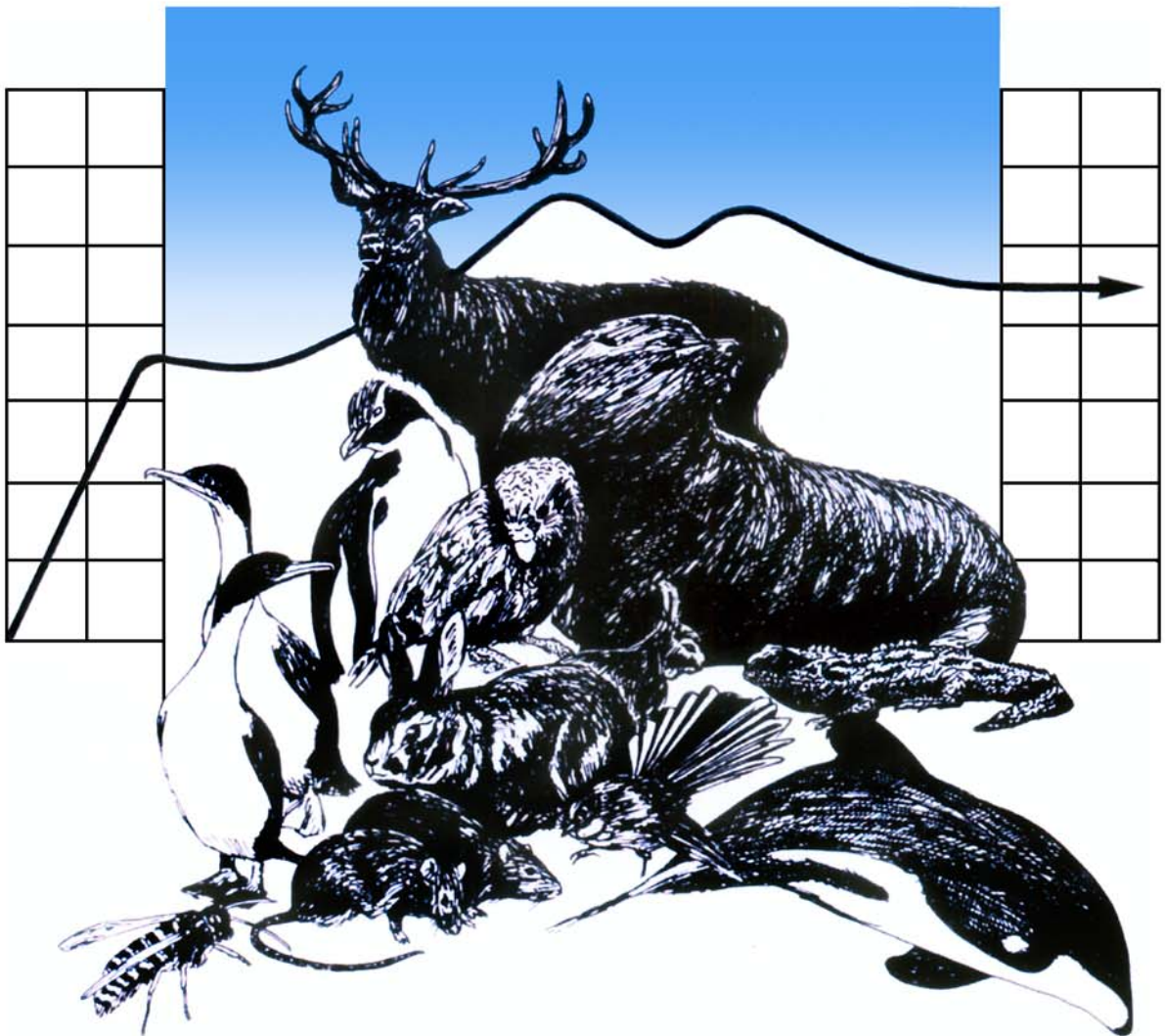


DEPARTMENT OF ZOOLOGY



WILDLIFE MANAGEMENT

A new technique for
catching endangered
captive kaki (black stilt,
Himantopus novaezelandiae)

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Abstract

Injuries have occurred, resulting in the death of one bird, while catching kaki (black stilt, *Himantopus novaezelandiae*) inside aviaries using a hand netting technique, necessitating the development of a new system of capture. Ideally this method needed to enable the 2 – 6 birds in each aviary to be caught quickly and preferably all at once, without making the birds fly, repeatedly, and without causing injury and stress. These criteria were met with the development of a tunnel net. Methods of construction and capture technique are described.

Introduction

The ability to capture birds is often a critical aspect for the effective management of a species (Seddon et. al., 1999). Birds must be captured in order to band or mark them for individual identification, fitting with tracking devices, for translocation and relocation, and for establishing or adding to a captive population. It is also necessary to be able to capture captive birds in aviaries in order to administer routine health checks and care, for release and for relocation. Whenever catching and handling of birds is required there is always the associated risk of causing stress and injury (Hofle et. al., 2004; Luna-Jorquera, 1996). A wide range of techniques have been developed for catching birds in the wild, with net designs and methods often specific to a particular species (Wilson & Wilson, 1989; Gutzke, 1981). However a lacuna exists in the literature regarding nets for catching birds in captive situations. Capturing birds should be achieved efficiently and with as little stress and risk of injury as possible. This is especially important when working with endangered species.

The black stilt or kaki (*Himantopus novaezelandiae*) is a critically endangered wading bird endemic to New Zealand. The species has been intensively managed by the Department of Conservation since 1981 when the population fell to just 23 individuals. Many factors threaten kaki survival, including predation of eggs and chicks by introduced predators, habitat loss, human disturbance and hybridization with the more common pied stilt (*Himantopus himantopus leucocephalus*) (Maloney and Murray, 2002). Management plans have focused on increasing breeding success

in the wild through trapping and poisoning predators around nest sites, habitat enhancement, cross fostering kaki eggs to hybrid and pied stilts (Keedwell et al., 2002) and increasing the population by establishing a captive breeding and rearing facility (Reed, 1998). By 1997 all eggs were being collected and incubated artificially and the chicks reared in captivity for release as juveniles (Sancha et al., 2004). The wild population currently stands at 194 birds. There are 14 breeding pairs in the wild and 7 in captivity. 19 adults and 57 juvenile birds are currently held in the aviaries at the Twizel Black Stilt Captive Management Centre.

A hand netting method has traditionally been used for catching kaki in the aviaries. This involves two or more people with long handled nets entering the aviary and inciting the birds to fly until they tire. When the birds land they are netted while on the ground. No attempts are made to net the birds in flight. This can take up to 15 minutes for each bird to be caught. This method is extremely stressful for birds and the incidence of injuries have been unacceptably high; since 1998 one juvenile kaki was euthanased after hitting the aviary and breaking a wing during capture, three kaki have broken or damaged beaks on the wire netting of the aviary and lots of minor injuries to wings and beaks have occurred after colliding with aviary beams and netting (E Sancha, pers. comm.). As part of risk management the aviaries have been fitted with soft netting hung inside the wire netting to prevent injuries from collisions. As kaki are caught a minimum of three times in a year for health screening, fitting of radio transmitters and for release, it was identified that a more safe and efficient catching technique was also necessary.

Due to the endangered status and the physiology of the kaki some techniques, such as mist nets and noose mats, were rejected based on the high risk of injury, difficulty of use and on limitations in the conditions they could be used in. Baited drop nets are used to capture kaki in the wild but were considered too slow for use inside the aviaries. There is also a risk of the birds developing an aversion to the food used to bait nets.

An ideal system would catch the 2 – 6 aviary birds (1) quickly, and preferably all at once; (2) without making them fly; (3) repeatedly without the birds learning to avoid the net; and most importantly (4) without injury and with minimal stress.

Method

Net construction

A tunnel net was designed and a prototype constructed using materials sourced from the aviary workshop. The availability, cost and ease of construction were primary considerations in choice of materials used.

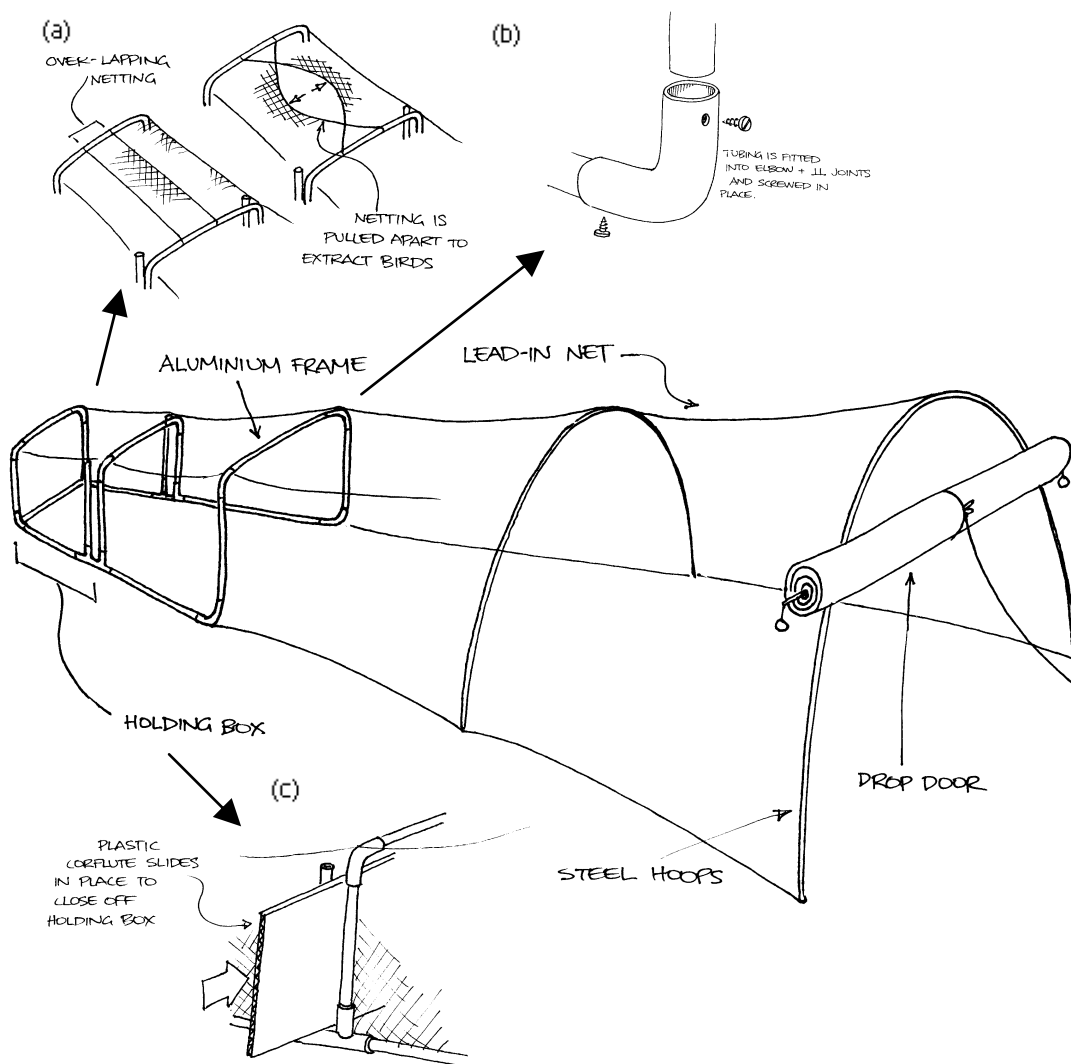


Figure 1: Diagram of the tunnel net showing detail of (a) the overlapping netting on top of the holding box, (b) the aluminium elbow joints and (c) the gap in the holding box where the corflute slides through.

The net consisted of a holding box joined to a 'lead-in' net. The frame for the holding box was made from lengths of 18mm diameter aluminium tubing. Elbow and double T-joints were made from larger, 20mm diameter tubing that the smaller tubing fitted into (fig. 1(b)). This enabled the frame to be constructed and dismantled easily. To prevent the joints from loosening, holes were drilled through the tubes and joints and secured together with screws. The lead in net consisted of two large hoops, 1500mm high by 2000mm wide and 1300mm high by 1700mm wide, made of concrete reinforcing steel. The hoops of the net were of decreasing size leading down to the holding box. The netting was strong, non-abrasive, durable black nylon, the same as used to line the inside of the aviaries. Netting was woven around the poles with string or tied using zip ties so that it was stretched tight across the frames. String was used to link the bottom of the netting of the lead-in hoops so it could be folded up for easier transportation and storage.

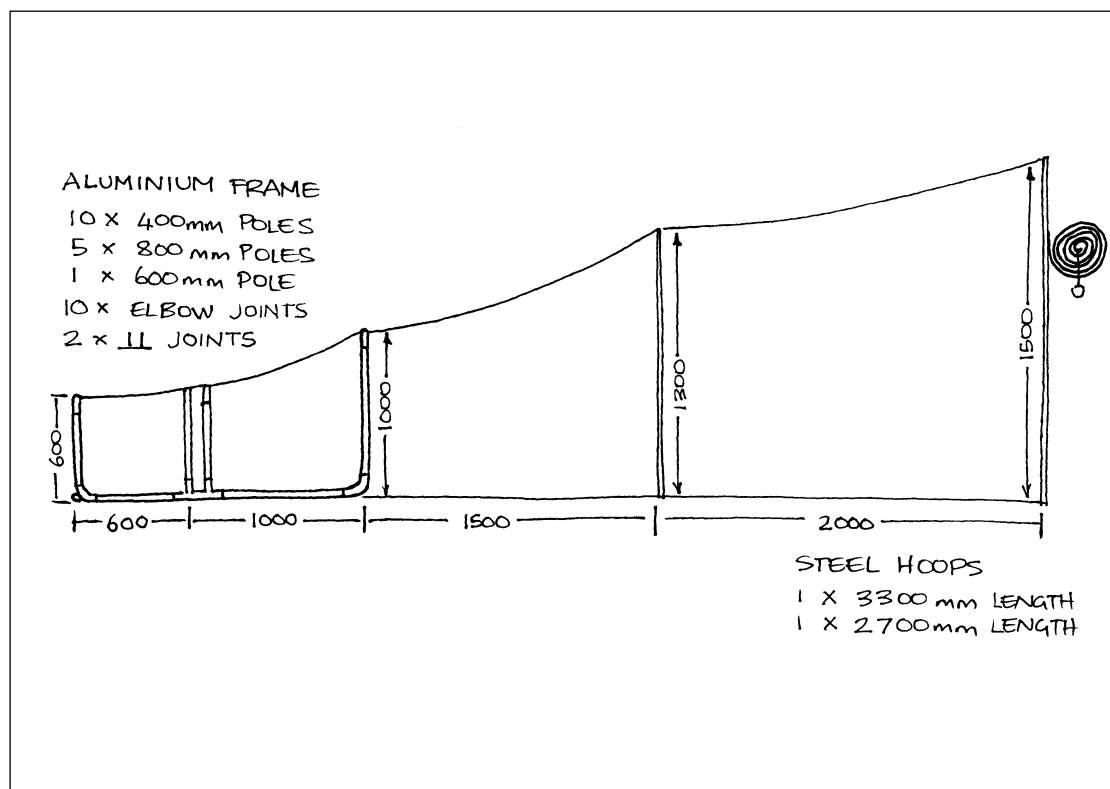


Figure 2: Side profile of tunnel net showing measurements and separate components that make up the net. Elbow and double T-joints were bent and welded at Ullrich Aluminium, Dunedin at a cost of \$35.

The completed holding box was 600mm high by 600mm wide by 600mm long with a larger, 1000mm by 1000mm aluminium hoop leading into it (fig. 2). There was a

150mm gap in the netting between two aluminium poles at the front of the box where a sheet of plastic corflute slotted through to block off the rest of net, trapping the kaki in the box (fig. 1(c)). The birds were extracted through overlapping netting on the top of the holding box (fig. 1(a)). There was 2000mm length of netting linking the entrance and second hoop, 1500mm length between the second hoop and the first aluminium hoop and another 1000mm to the holding box (fig. 2). The complete set net was 5.1m long. The net was freestanding in the aviaries and anchored with two guy ropes off the front of the entrance hoop. The door was made from a square of netting with wire threaded through the bottom; this was rolled up and tied in a simple slip knot with the long end trailing. The tie line was laid along the ground and pulled to release the door once all the birds were well inside the net. The ends of the door were weighted with a small rock at each end.

Capture process

The kaki can be easily herded in a group by two people walking slowly with arms held out to the side, while talking calmly and quietly. Once the birds are well inside the entrance of the net the tie line is pulled, releasing the door. If the birds do not enter the holding box they can be moved into the box by shifting the lead in hoops toward the back of the net or by one person ducking under the door and walking the birds into the box. Once the birds are in the box the piece of corflute is slotted through the gap in the netting. Kaki are removed one at a time by parting the overlapping netting and reaching into the gap to bring them out through the top. The kaki are either transferred to a transportation box or processed straight from the holding box of the net.

Results and Discussion

The objectives for a new capture method were met. Using the tunnel net method all kaki in an aviary were able to be caught together, with minimal disturbance and rarely taking flight. The birds did not appear stressed and one group were recaptured immediately after being released. The net was effective for catching both adult and juvenile kaki.

The kaki can be herded and caught with two people and is a quiet and relatively passive approach to capture. It can take up to 30 minutes to successfully capture all

the birds in an aviary but is still a preferred method to the high stress, high risk hand netting technique. The large entrance of the lead-in net meant the kaki could be well inside the net before they realised they were trapped. Meal worms inside the entrance can be used as incentive to encourage kaki into the net. Additionally, the use of playback may also be an option.

The tunnel net is inexpensive and simple to construct and its portability enables it to be placed anywhere within the aviary. Cost effectiveness was a priority in the construction of the net and influenced the choice of materials used. A potential improvement would be to replace the heavy steel lead-in hoops with a lighter, non-corrosive material.

Future capture attempts should always begin with the tunnel net as it is a relatively passive, low stress method with minimal risk of injury. Hand nets should only be used when attempts at capture using the tunnel net have proven unsuccessful or when logistics, such as aviary size, prevent its use. The soft netting of the aviaries and the use of the tunnel net combine to significantly reduce the risk of injury during capture events. To date, no kaki have been injured using the tunnel net. As with any capture method care must be observed at all times and harassment kept to a minimum.

Acknowledgements

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