

Ropes are attached to a half-sized net (13 x 13m) (Figure 2) in a similar way to a full-sized net, except that the middle eight trace-ropes on a half-size net are omitted.

CANNON SETTING

The positioning of the cannons on a full-sized net is crucial if the net is to extend fully. The end cannons should be set 5 m in from the end jump rope pegs, with the cannon angled outwards, aimed at a point 12 m out from the end peg. The central pair of cannons on a full-sized net should be set to fire straight out, and so that each pulls evenly on its 4 trace-ropes.

For a half-net the principal is the same. The cannons are set 5 m in from each end, i.e. 3 m apart in the middle. Again they should be angled outwards at a point 12 m out from the end-peg. This angle is especially important for a half net: if the cannons deviate from this position the middle of the net will not be fully extended.

I use 4 m jump-ropes (these are the ropes attached to the back of the net that are

designed to stop the net going too far after it is fired) and find that the half-net always extends fully, with all jump ropes pulled taut.

As an additional improvement, I have increased the weight of the two centre projectiles for a full-sized net from 3.6 kg to 6.8 kg, to ensure that the net extends fully when it is fired.

Through these modifications in the basic design, I have increased the distance from the net that birds can readily be caught from 8 m to 13 m. This has greatly increased catching success, especially on flat beaches where the position of high tide is difficult to predict.

REFERENCE

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KEEPING-CAGES AND KEEPING-BOXES

by Nigel A. Clark

Keeping-cages have been used for many years to house birds which have been extracted from cannon-nets and are awaiting processing. The design of special cages for Curlews *Numenius arquata* and other long-legged waders has already been published (Bainbridge 1975, Stanyard 1979). However the basic design of keeping-cages for smaller waders has not been published, although cages of this design have been in use by some groups for many years. This paper describes the design of both keeping-cages, and some simple keeping-boxes which can be used to move birds from the net to the keeping-cages.

KEEPING-CAGES

The design is shown in Figure 1. The best

material has proved to be hop sacks made from 50/50 hessian and polypropalene. This is strong, and dark enough to deter the birds from escaping. Each cage consists of a 4.2 m long semicircular tunnel which is divided into seven compartments, each with a hole in the top for inserting and removing birds. The cage is kept rigid by eight 1.4 m long wire hoops, the ends of which are pushed into the ground. A guy-rope at each end, with an elastic loop, keeps the structure taut and prevents birds from escaping through the slits.

A keeping-cage is constructed as follows:

Mark out a 4.7 m X 0.9 m piece of sacking is marked out as shown in Figure 2a. The sacking is now folded along B₁ and A₁ is sewn to C₁ to form a narrow tube. Repeat through A₂-B₂,

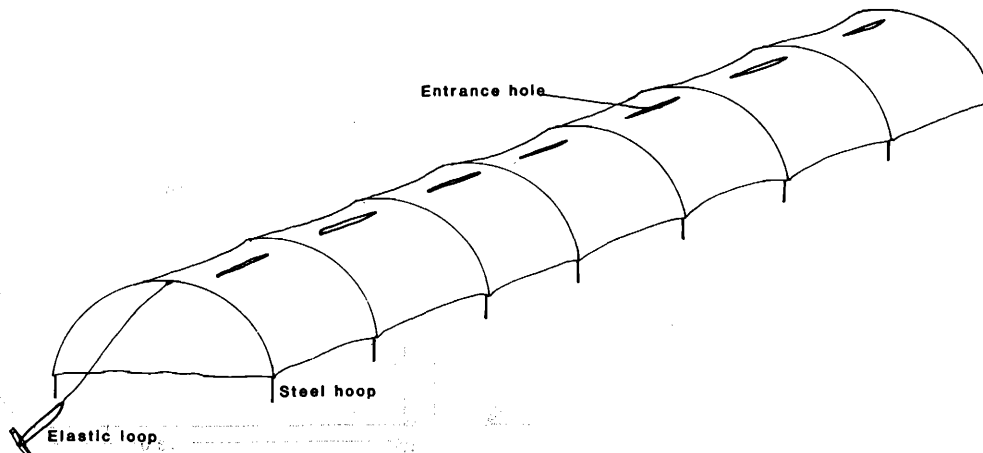


Figure 1. A keeping cage set up ready for use.

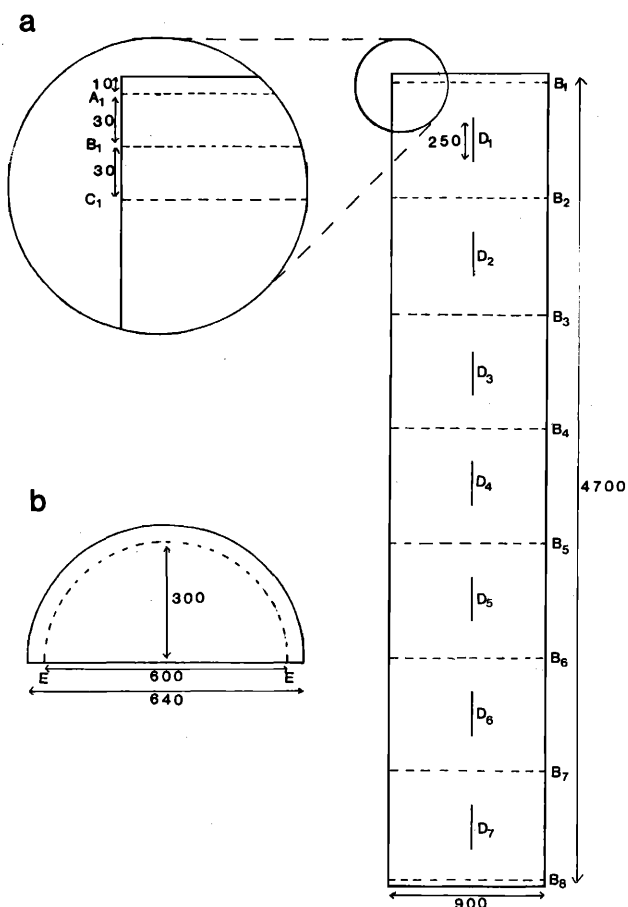


Figure 2. The material for a keeping cage marked out for assembly. Points A_2-A_8 and C_2-C_8 are not shown but are in the same positions relative to B_2-B_8 . Inset a shows the positions of A and C relative to B. All measurements are in mm.

making sure that all the tubes are on the same side.

Now cut along D to make the slits for the entrance holes and on each side sew a flap that extends about 20 mm over the slit. This overlap will help prevent birds escaping.

Cut eight semi-circular pieces as shown in figure 2b, fold along E-E and sew this flap down. Attach each of the semi-circles to the strip by sewing E-E to B. This is best done with thick twine and a sacking needle.

When all the semi-circles are sewn in, thread the wire hoops through the tubes. The best hoops are made from 5 mm galvanised pre-stressed steel wire. Ordinary fencing wire is not strong enough to be pushed into the ground without it bending.

Finally, tie a guy-rope around the top of the hoop of each end wire. On one end guy-rope tie a 300 mm loop of thick elastic. This not only tensions the cage, but when the cage is folded up (like a concertina), the loop can be placed around all the hoops and sacking to keep the cage closed during transit.

When birds are caught in winter or the cages have to be erected on damp ground, they should be placed on top of hessian covering material

or, better still, on strips of old carpet. This prevents the birds getting cold and wet whilst in the cages. A complete keeping cage will normally hold about 35 Oystercatchers, 100 Knot or 140 Dunlin.

KEEPING-BOXES

In recent years, we have been operating with experienced, but small, teams. By using various types of keeping boxes to transfer birds from the net to the keeping-cages, all members of the team can extract birds from the net, thus speeding the process. At first we used collapsible boxes of the type designed by Sheldon (1977). However, although useful, these boxes are easily damaged. We then tried converted wooden fruit-boxes and although these were better, they lasted only about one year. For the past 5 years we have been using 25 litre plastic containers. These come in a variety of shapes, but the best for small waders (up to the size of Grey Plovers *Pluvialis squatarola*) are rectangular with dimensions of about 400 X 300 X 200 mm and a carrying handle moulded into the top. To prepare the boxes for use, cut a 150 mm hole is cut in the centre of the largest side and sew a piece of soft rubber, with a cross cut in the centre of it, over the hole. This enables a bird to be placed in the box with one hand. We have found that a piece of an old wellington boot works well for this flap, as it is soft enough not to harm the bird, but will close up again as soon as the hand is removed. This side now becomes the top, and it and the remaining sides have 100-200 5 mm diameter holes drilled in them to allow ventilation. Do not drill holes in the lower half of the sides, otherwise small waders such as Dunlins *Calidris alpina* could get their bills caught in them.

These boxes will hold up to 15 Dunlins or 10 Knots *Calidris canutus* for transfer to the keeping-cages. Boxes of this type should be used to keep birds in captivity for only very short periods, otherwise condensation forms inside the boxes and the birds' feathers become wet even if they are dry when placed into the box. This problem is reduced if a piece of carpet is used on the bottom of the box, but this must be washed regularly. Although these boxes are more bulky to transport than collapsible boxes, they have the advantage that they are virtually indestructible, and can even be used when empty as seats for the processing team!

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