

TECHNICAL CONTRIBUTION

PORTABLE HANDLING FACILITIES TO IMPROVE THE WELFARE OF FARMED RED DEER (*CERVUS ELAPHUS*)

W J Hamilton

Macaulay Land Use Research Institute, Glensaugh Research Station,
Laurencekirk AB30 1HB, UK

Abstract

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The welfare of farmed animals can be greatly influenced by the availability of appropriately designed and tested handling systems. Farmers who start a new enterprise, such as deer farming, with a small herd may be reluctant to invest in a permanently located handling facility, and this may have an adverse effect on the welfare of the deer. The design, construction and use of a portable handling facility for farmed deer is described. The advantages to management and the benefits to the welfare of deer of being able to transport the handling system to where the deer are grazing are illustrated. The system enhances the ability to monitor the incidence of disease and injury in a deer herd and provides for proper therapeutic or prophylactic treatments to be given as required.

Keywords: *animal welfare, deer, handling, portable*

Introduction

The domestication of the red deer (*Cervus elaphus*) for farming purposes commenced in Scotland in 1970 and soon thereafter deer farms were established in England, Wales and Ireland. Presently some 25,000 red deer hinds (females) are being farmed in the United Kingdom. Deer farming enterprises have been established in most western European countries. Mature hinds range in liveweight from 80kg in the uplands of Scotland to 120kg in the deer parks of southern England. Mature stags (males) range from 180kg to 275kg. Red deer farmed in New Zealand and Australia also come into these ranges of liveweight. Carefully designed and robust handling facilities are required if the welfare needs of these large animals of variable liveweights are not to be compromised under farm conditions.

Handling facilities are essential for the regular weighing and inspection of stock and the implementation of a veterinary prophylactic programme on a number of occasions during the year, as well as for the monitoring and treatment of disease. They are also required to be flexible to meet changes in deer numbers and management requirements.

Handling facilities for the management of farmed red deer are usually permanent fixtures and are based upon various designs of solid-sided races and holding pens. The principal uprights of these structures are frequently 150x150mm in square section, usually of timber or steel sunk in concrete, and clad with 18mm plywood or 25mm close-boarding to a height of 2.5 metres. Deer grazing in outlying fields are taken to the facility through long deer-

fenced races to which all fields connect. Permanent handling facilities for deer have been described by Blaxter *et al* (1974, 1988). The inflexibility of the design and its permanence demand a long-term commitment to a deer farming enterprise.

There are several circumstances in which portable handling facilities would meet a wider range of requirements than conventional systems and improve the welfare of farmed red deer. For example, portable facilities would prove useful to farmers who do not have a breeding herd, but who purchase weaned deer calves at four months of age and sell them for venison at 15 to 18 months a year later (Hamilton 1994). These enterprises often involve moving the deer around the farm to newly established grass pastures every three or four years with semi-permanent fences being erected. Long deer-fenced races from the fields to a central facility are both undesirable, since injury may occur as deer move along fence lines, and expensive, whereas portable handling facilities provide a basis for a less stressful system of handling. Also, when breeding herds are kept on grassland some distance from buildings, a portable handling system may give more flexibility in management eg in the choice of field, and obviate the need for separate handling systems for housed deer and grazing areas.

This paper describes a basic module which provides a simple system to accommodate the welfare and management requirements of a small herd of farmed deer, which can be easily extended as the herd develops and numbers increase, and to which more sophisticated equipment can be added.

Design criteria

The handling facilities are required to meet the following criteria:

1. Provide a means of restraint, whereby animals can be safely examined, blood sampled, tuberculin tested, ear tagged and also allow for the administration of prophylactic and other treatments.
2. Provide a weighing and inspection facility.
3. Incorporate a drafting facility where animals can be divided into groups and held in a pen until required eg for transport.
4. Provide an isolation pen for sick or injured animals and a loading bay to allow the movement of deer into a livestock transporter.
5. Provide animals with a welcoming and safe environment.
6. Provide staff with an easily operated system and safe working environment while keeping labour requirements to a minimum.

In addition to these basic requirements, it was considered important that portable pens should be a) strong but easily handled by two people; b) of a size which can be transported on a flat deck trailer suitable for towing behind a four-wheel drive vehicle on public roads, and c) easy to erect and be securely joined together when ready for use.

The basic module and its operation

A prototype module was manufactured and tested and on the basis of experience several modifications were made to the original design before a satisfactory module was produced.

The basic module (with dimensions shown in Figure 1, System 1) consists of a small holding pen suitable for holding 10 to 12 adult red deer hinds, or 16 to 20 weaned red deer calves, which leads into a restraining pen with a sliding exit door. The restraining pen is where an animal is physically restrained, where it may be examined, given prophylactic drugs, or vaccinated. The size and shape of the restraining pen are important. The pen has to allow enough space to accommodate a mature red deer hind and two stockpersons while not being too small to deter the free entry of the animal from the holding pen.

Physical restraint is achieved by taking one animal at a time from the holding pen into the restraining pen. The adjoining door is then closed. Stockperson 1 (see Figure 1) puts his left arm around the neck and cradles the head with his arm while holding the lower jaw in his left hand. The animal is then reversed into the corner of the pen where it is held by Stockperson 2 by holding on to the top rails of the side panel and compressing the animal firmly into the corner and against the side panel. At this point the first stockperson restrains the animal while administering any treatment to the head with his right hand. The second stockperson from his position at the rear of the animal can administer drugs or vaccines by injection if required. When treatment is complete, the sliding door, operated from inside or outside the pen, allows the animal to exit easily.

By interchanging panel D with panel C and reversing panel B a pen is created which is suitable for a left-handed leading stockperson. The basic module can be used within livestock buildings on concrete floors to handle deer at any time of the year. The module can be dismantled and stored and the area used for other purposes until the next handling is required.

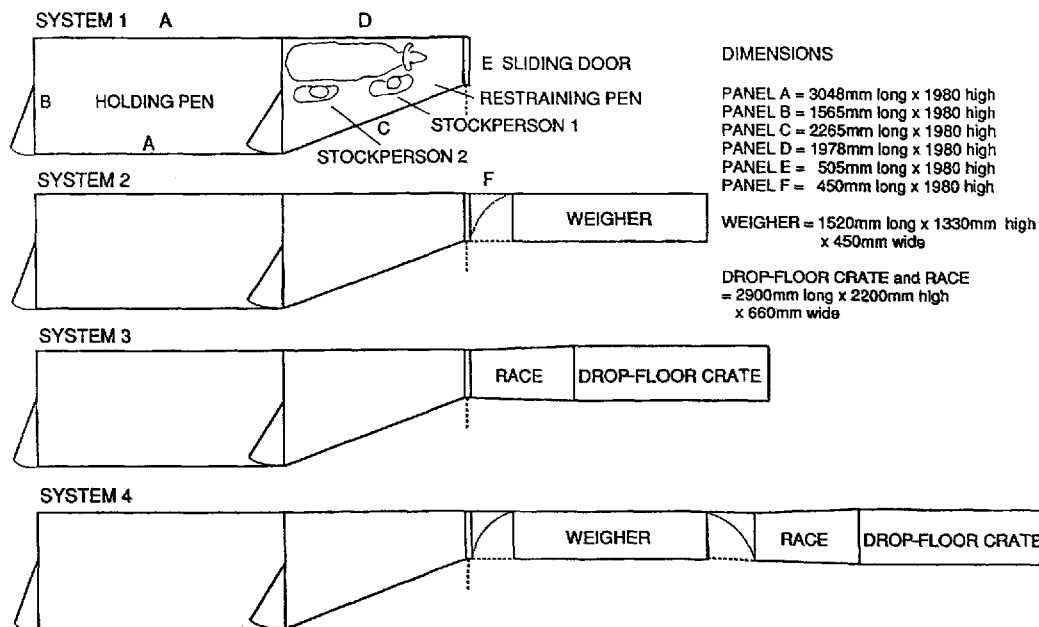


Figure 1 Plan view of portable deer handling systems.

The weigher

Regular weighing of deer is important to monitor animal performance and also to provide an index of health and welfare status. The weigher (with dimensions shown in Figure 1, System 2) is capable of weighing deer up to a maximum weight of 200kg, and so can accommodate adult red deer hinds and de-antlered stags up to three years of age. The weigher is joined to the restraining pen by means of connecting panel F (see Figure 1, System 2). The entrance door of the weigher is opened before the deer is released from the restraining pen. Once the deer has entered the weigher, the door is closed. Another panel F fitted at the other end of the weigher may be used to connect the weigher to a drop-floor crate (see Figure 1, System 4).

The drop-floor crate

The purpose of the machine is to gently and mechanically immobilize the deer so that operations such as tuberculin testing, blood sampling or the removal of hard antlers from young stags can be carried out safely. Immobilization by mechanical means dispenses with the need to administer immobilizing drugs and sedatives and reduces any associated trauma.

This machine is designed with a long narrow central floor plank which is 180mm wide and is hinged on its long axis (Figure 1 System 3; Figure 2). The side walls follow approximately the contours of the legs and body of a deer and form a V-shape 450mm above the floor. The sides of the V-shape are clad in thick coconut matting. When an animal is properly positioned on the floor and the floor is released, the animal, on losing the floor support, slides down and is held firmly in the V-shape formed by the side walls, c 15cm from the floor. One side of the crate wall is also hinged at the top on its long axis and to release an animal swings outward allowing the animal to slide down and on to the ground.

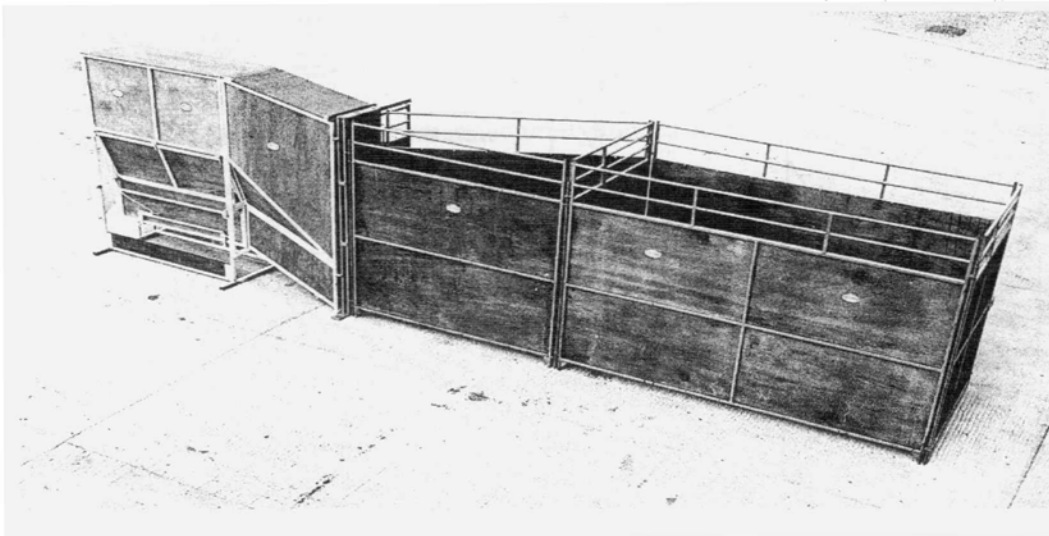


Figure 2 Photograph of System 3. From right to left: holding pen, restraining pen, race, drop-floor crate.

The crate is fitted at the front with two doors. Opening the top half gives access to the head, neck and shoulders while the bottom half gives access to the chest, forelegs and forefeet. Paring of the hooves on the rear feet can be done from underneath the crate. A side wall panel opens above the V-shape to allow inspection of the animal's back, and to allow a stockperson to hold the head steady while accurate sensitive measurements are obtained eg measuring skin thickness during a tuberculin test. The crate is connected to the other systems by a connecting race. The width of this race is important: deer can pass along freely but cannot turn around and cause the system to jam. Mature stags in full antler must be de-antlered before being handled in this system, and pregnant hinds should not be handled in the crate during the last two months of pregnancy.

A field layout

This system can also be used in a field situation in association with a simple back-up deer-fenced area. A typical layout is shown in Figure 3. High tensile deer netting with verticals spaced at 150mm to a height of 1.8m is perfectly adequate for use in this area. Experience has shown that the deer will become familiar with the facilities if they are fed concentrates in troughs sited within the area. Two experienced stockpersons can handle 60 to 70 adult deer per hour, with each deer receiving up to three different treatments in the restraining pen.

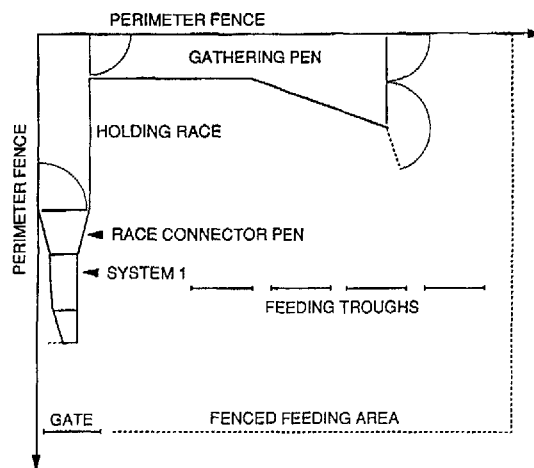


Figure 3 Layout of back-up fencing in the corner of a grass field within a feeding area showing the race connector pen and System 1.

An alternative layout is shown in Figure 4. This system is constructed from the panels used in the basic module. The system can be erected at the end of the holding race shown in Figure 3 or within a livestock building. The race connector pen which makes the connection between the permanent field facility and the portable pens will hold 25 adult red deer from which animals can be drawn to fill holding pen 1 and from there to the restraining pen. If hinds and calves enter the race connector pen, the calves can be shed off into holding

pen 2, while the hinds are put through the system, thus preventing possible injury to the calves. Animals which have to be removed from the group can be taken off into the isolation pen as they leave the restraining pen, and held there until required.

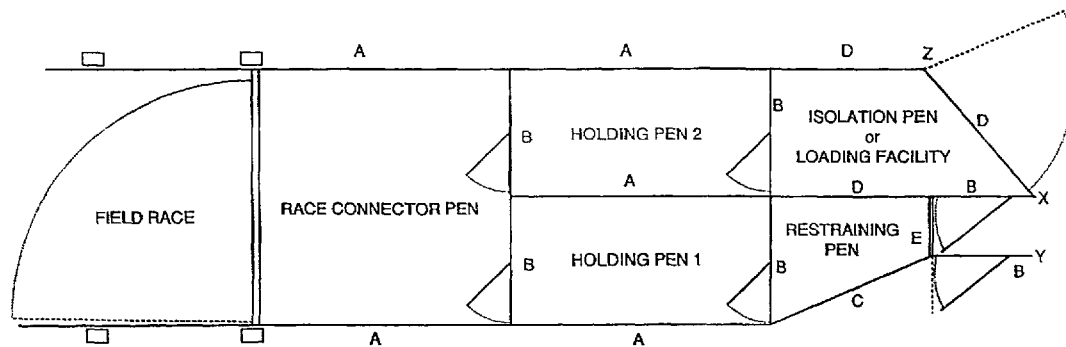


Figure 4 Layout of a facility in a field situation showing the panels used.

To facilitate loading of deer into a transporter, they are firstly moved into holding pen 2, the panel XZ is then opened at X and swung round to accommodate the tail door of the transporter. When the pen and transporter are secure, the deer are brought forward from holding pen 2 and into the transporter.

There are many possible layouts for a portable deer handling system, although the layout of the basic module relative to the weigher and drop-floor crate cannot be changed. In the example shown in Figure 4, the other parts of the system fit on at points X and Y. The layout of the basic components for building a complete portable system is shown in Figure 1.

Construction

The pens are constructed with a robust rolled hollow section frame which is hot-dipped galvanized and clad with exterior grade plywood rather than sheet steel to minimize noise. Sections are each fitted with holed lugs and are joined together by solid metal pins to facilitate easy assembly. The drop-floor crates are similarly constructed, but the weigher is constructed of a strong tubular frame and is clad with galvanized sheet metal sides and roof and has a galvanized expanded metal floor. The weigher is fitted with a pair of wheels and handles and has a paint finish.

Conclusions and welfare implications

The welfare of farmed animals can be greatly influenced by the availability of appropriately designed and tested handling systems. Carefully designed and robust handling facilities are required for deer if the welfare needs of these large animals are not to be compromised under farm conditions. There are several circumstances in which portable handling facilities would meet a wider range of requirements than conventional systems and improve the welfare of the farmed deer.

Portable handling facilities provide a basis for a less stressful management system for deer. The advantages to management and the benefits to the welfare of deer of being able to transport the handling system to where the deer are being kept in livestock housing or while grazing, are illustrated. The system enhances the ability to monitor the incidence of disease and injury in a deer herd and provides for proper therapeutic or prophylactic treatments to be given as required. The availability of relatively cheap portable handling facilities for deer is likely to encourage deer farmers to provide appropriate handling facilities and therefore lead to an improved level of welfare for their stock.

The handling systems as manufactured by David Ritchie (Implements), Forfar, Scotland have been widely tested and are now in use in a number of commercial farms in the United Kingdom. They have also proved invaluable in research institutes and universities where small numbers of deer are kept for research.

Acknowledgements

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