HOW TO EXCLUDE PINE MARTENS FROM GAME AND POULTRY PENS

AND AN INTRODUCTION TO THE SPECIES IN SCOTLAND

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FOREWORD

As pine marten populations recover, keepers of game and domestic fowl are asking three questions:

1. **Can game birds in release pens be protected from martens without considerable expense?**
2. **Can domestic fowl be protected from martens?**
3. **Will martens reach plague proportions locally?**

This pamphlet addresses these questions. Section 1 gives cost-effective measures for excluding martens from release pens. Section 2 gives guidelines for preventing marten predation on domestic fowl and Section 3 provides background information on pine martens in Scotland, detailing how their spacing behaviour is a natural limit to numbers.

1. PREVENTING PINE MARTEN PREDATION ON PENNED GAME BIRDS

Introduction

Pine martens can easily gain access to traditionally-built game bird release pens. Once inside they can cause considerable losses of poults in the early stages of release, particularly when the birds are unable to fly. Lethal control of martens is now illegal without a licence and is not a certain solution. This section describes measures, tried and tested on game release pens in Scotland, which have successfully excluded martens and prevented losses. Once the birds are free-flying outside the pens, marten predation has not been a significant problem.

Martens can usually gain access to pens in three ways. In order to exclude them successfully, all three methods of entry need to be prevented.

(a) Preventing access over a fence using electric fencing

Electric fencing will deter martens from climbing up and over the mesh walls of release pens. The current-carrying wires are held off the main fence on insulators. A predator climbing the fence and touching both the main fence and one of the electric wires will earth the current and experience an electric shock. The electric shock alarms but does not injure or kill.

The specification of the electric fencing is important because, for the system to function properly, it is necessary to ensure that:

- The predator remains in contact with the current-carrying wire for longer than the pulse interval (the voltage is generated by an energiser which emits short pulses at about one-second intervals).
- The predator does not jump over or pass under the current-carrying wires without touching them.

Line wire electric fencing

The most usual form of electric fencing on or around pens consists of between one and three line wires. During our tests, even fences with only one line wire prevented mammalian predation within a pen. However, we do recommend placing at least one

wire 50-60mm (c. 2-2.5in) above the top of the fence and one wire 50-60mm out from the mesh, parallel with the top of the fence.

Positioning wires at lower levels may increase the chance of a predator passing too quickly over them and missing the voltage pulse, or jumping over them. Martens take only two or three seconds to climb a 1.8m (c. 6ft) fence - between one and two seconds to go up and one second to pass over the top.

Baggy wire netting and electric fencing are incompatible as short-circuits occur, often when birds fly into the fence and distort the mesh by pushing it against the live wire. The fence then requires continuous maintenance and poults may be left vulnerable overnight.

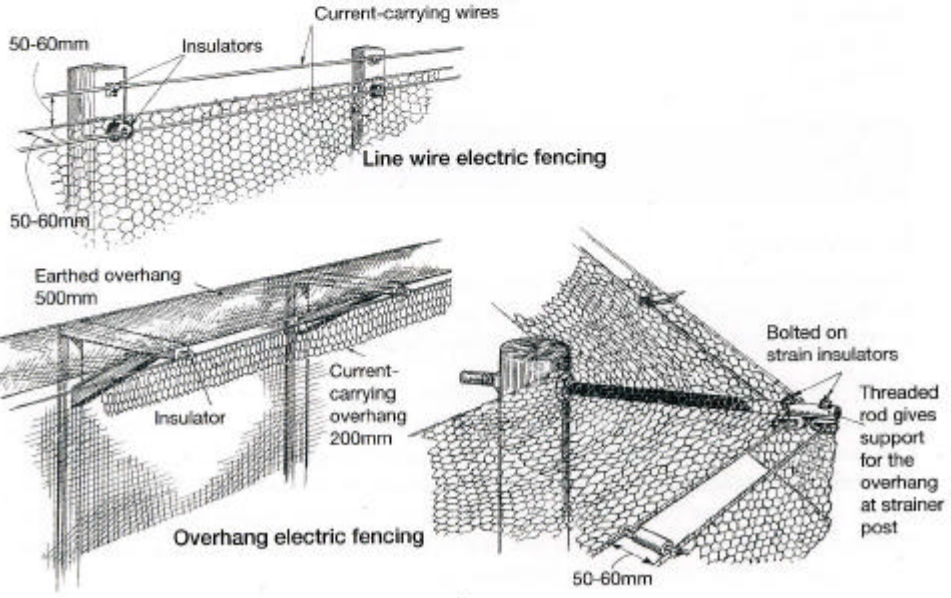
For pens with a perimeter length of 160m (c. 175yd), line wire electric fencing costs about £185 for both fencing materials and the power supply.

Overhang electric fencing

This is a certain defence against martens as it has been used to contain them in captivity. Short-circuits are prevented by the rigidity of the construction. Martens take considerably longer to negotiate the overhang than to pass over the top of line wire fencing and therefore are certain to encounter an electric pulse every time they attempt to cross the fence. The overhang will also prevent a predator jumping forwards after receiving a shock. We recommend this type of fencing for newly-built permanent enclosures.

For pens with a perimeter length of 160m, this type of fencing costs about £350, for both fencing materials and the power supply. Construction time is estimated at 2.5 man days.

Further details on the construction and costs for both types of fencing are available from The Vincent Wildlife Trust.



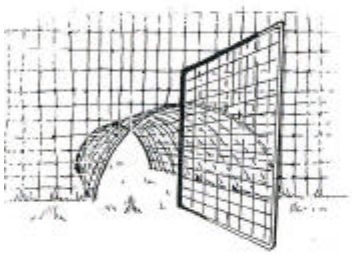
(b) Preventing access through holes in a fence

A marten can squeeze through a hole into which it can get its head. The skull width of adult martens averages 58mm for males and 50mm for females. We therefore suggest ensuring that a pen has no gaps greater than 45mm (1.75in) in its construction and that a mesh size of 31mm (c. 1.25in) is used.

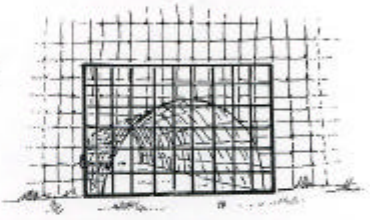
Martens will actively search for a hole through which to squeeze and may enlarge holes in rotten wood, but do not chew through sound wood or wire to enter pens. Provided that the mesh at the bottom of the fence is dug in or well-pegged down, they do not attempt to dig under it.

Re-entry tunnels for game birds (pop holes)

Some martens will be deterred completely from approaching pens once they have received an electric shock, others over time, will re-approach close to the fence and will thus discover re-entry tunnels. The best way to keep martens out of pop holes is to keep the holes shut at night when martens are active. Shutting the pop holes between dusk and dawn is suggested for at least five to six weeks after releasing poults.



Pop holes should be shut at dusk to prevent predator access



(c) Preventing access via tree branches

Martens can jump a horizontal distance of about 2m (c. 2yd) and climb trees with ease. A gap in canopy cover around the pen is essential and at least 3m (c. 3yd) is recommended.

2. PREVENTING PINE MARTEN PREDATION ON DOMESTIC FOWL

Introduction

There have been many incidents of pine martens taking domestic fowl. However, nearly all kills happen at night after the hens and ducks have gone to roost, and so provided the fowl are shut into a marten-proof enclosure they will be safe.

Making a hen house marten-proof

Hen houses are generally marten-proof when constructed of new timber but tend to deteriorate over time, particularly around the base. There are many incidents of martens gaining access to hens, which had been shut in, by enlarging a hole in rotten wood. Holes of about 50mm in diameter will allow a female marten to enter a hen house. There has also been at least one case where a marten entered by lifting a sliding door. Thus the door does need to be fixed shut.

In summary:

- Ensure that there are no holes into the hen house greater than 45mm in diameter.
- Replace any rotten wood.
- Close the hen house door during the hours of darkness after the hens have gone to roost.
- Secure the door to prevent it being lifted by a marten.

Using electric fencing

Hens can gain additional protection from electric fencing which is switched on at night after they have gone to roost. One or two current-carrying wires on the hen house, just off the ground, will deter martens from digging at rotten wood at the base of the house. Such electric fencing may also deter martens from visiting and thus reduce the risk if, on occasion, the hens are not shut in at night.

It is not always possible for someone to be available to shut hens in at night, and equally to let them out in the morning. Hens kept inside a fenced enclosure can be protected with line wire electric fencing (see Section 1). The hen house door does not then need to be shut at night.

3. THE PINE MARTEN IN SCOTLAND

Introduction

Pine martens are native to Britain and are now our rarest species of carnivore. Their gradual range expansion in Scotland, this century, is thought to be due to afforestation and a reduction in predator control. The pine marten's strict territorial spacing behaviour and its slow reproductive rate contributed to the ease with which populations were controlled and made locally extinct during the 19th century.

Description

Martens are brown, with a large patch of pale-coloured fur over the throat and chest. The pattern of dark fur spots which intrudes into the throat patch enables individuals to be recognised. Martens have large feet, large ears ringed by pale fur, and a long bushy tail. In winter the coat is mostly light brown with dense under-fur, but the lower legs and area around the nose are dark brown and the throat patch is cream-coloured. In summer the coat is sleeker and dark brown except for the throat patch which is yellow with orange under-fur.

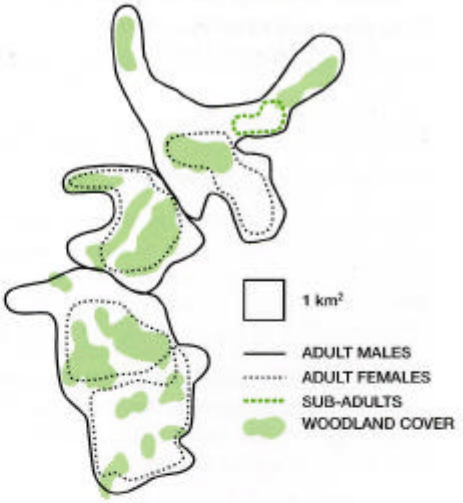
Females are smaller and lighter than males. Females weigh between 1.1kg and 1.4kg (c. 2.4-3.1lb) and males 1.6kg and 2.2kg (c. 3.5-4.8lb). From nose to tip of tail females are on average 67cm (c. 26in) and males 75cm (c. 29in).

As with many carnivores, scent is an important method of communication. Martens have scent glands on the pads of the feet. There is an abdominal scent gland which is frequently scraped over protruding objects, and secretions from an anal gland coat the droppings. During the breeding season the abdominal scent gland becomes exposed and waxy on the adult animals.

Territory size and spacing

Martens are essentially intrasexually territorial, such that adult males exclude other adult males and adult females exclude other adult females. Thus in any patch of ground, no more than two adult animals (one of each sex) will be present. However, one or perhaps two sub-adults may be tolerated. These sub-adults move on when they reach breeding age. Differences in territory size are largely explained by the amount of open ground contained within a territory. Where woodland cover is scarce male territories are large, averaging 1500ha (c. 3,700 acres), but where there is extensive forest cover, territory size is smaller, averaging 426ha (c. 1,052 acres). Males tend to establish larger territories than females, which can include the territories of more than one female.

Marten territory spacing along a glen in an area of poor woodland cover



Reproduction

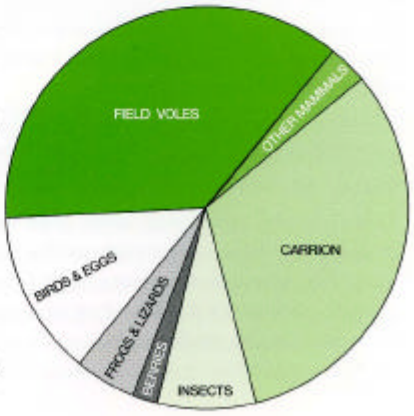
Martens are slow to mature and have few young each year. Males are thought to mate in their third year and females in their second, from late June to early August. Implantation of the fertilised eggs is, however, delayed until February. Thus, male martens are four years old and female martens three before their first young are born. The young, generally two or three, are born in early April. Maternity dens can be in hollow trees, rabbit burrows, under jumbled rocks or tree roots and in sheds and even in roofs of houses. Males are not known to assist in feeding young. The young are blind and helpless at birth but by six to eight weeks are starting to explore outside the den. By July/August they are able to find their own food.

Food

Martens feed mainly on small mammals, such as field voles, and carrion but are opportunistic and eat rabbits, birds, frogs, insects and berries when available. In winter, they feed almost exclusively on small mammals and deer carrion. In spring and early summer, passerine birds and eggs can account for 20% of their food. In late summer, insects can provide over 40% of the diet when bees' and wasps' nests are dug up for the grubs and honey.

Unlike cats, which tend to sit and wait for their prey, martens are active foragers and cover large distances each night while searching for food.

Components of the annual diet of martens



Distribution

Pine martens, *Martes martes*, occur throughout Europe, but are listed as rare or endangered in many countries. The pine marten is related to the sable, *Martes zibellina*, the Japanese marten, *Martes melampus*, and the American marten, *Martes americana*. In parts of Europe the pine marten co-exists with the beech marten, *Martes foina*.

Martens were widespread in 18th-century Britain, but were hunted for fur and sport and became scarce in some counties. During the 19th century intensive predator control led to decline and local extinction. Today, in England and Wales, martens remain scarce with little evidence of a recovery in distribution taking place. However, in Scotland, from a remnant population in 1915 a gradual re-colonisation of the north-west has taken place. If control of martens remains relaxed then the recovery to their former distribution will continue.

Legal protection of martens

The pine marten was first protected under Schedule 6 of the Wildlife & Countryside Act (1981). In March 1988 it was given increased protection and added to Schedule 5 of the Act. This makes it an offence (subject to certain exceptions) intentionally to kill, injure, take or sell martens or disturb places that they use for shelter or refuge.

The Government has a responsibility under the EC Habitats and Species Directive to ensure that martens are maintained at a favourable conservation status. The obligations of this EC directive were brought into UK law through The Conservation (Natural Habitats, etc.) Regulations 1994.

Predation on livestock

There are exceptions under the Wildlife & Countryside Act (1981) when martens can be taken or killed. Under licence, martens can be killed "if it is necessary to prevent serious damage to livestock". In Scotland the licensing authority is the Scottish Office Agriculture Environment and Fisheries Department (SOAEFD). Licences have been granted to allow martens, captured within release pens, to be killed provided reasonable precautions had been taken to prevent them entering the pens.

The use of electric fencing on release pens has, to date, prevented further kills within pens, and additional marten control should therefore not be necessary.

THE VINCENT WILDLIFE TRUST

The Vincent Wildlife Trust is a registered charity and has been involved in wildlife research and conservation since 1975. It has focused particularly on the needs of British mammals and has concentrated on species such as the otter, pine marten, polecat, stoat, weasel, water vole, dormouse and the bats.

Artwork by Guy Troughton and Terry Hood-Cree.

Special thanks are due to Brahan, Corrour and Scatwell estates and James Fraser.

Information on the marten in Scotland is from David Balharry (1993) Ph.D. thesis University of Aberdeen and from field work carried out by the author.

Published by THE VINCENT WILDLIFE TRUST 1998

ISBN 0 946081 39 5 (43)

Printed in England by Leberl Group Limited