Mink trapping at Lough Mask 2007 to protect breeding gulls

by
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Disguised mink trap on Rialisk Island, Lough Mask, 2007

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Summary

Eleven Islands on Lough Mask were selected for mink trapping during the gull breeding season. Five of these islands had breeding colonies of Gulls (Lesser Black-backed Gull, Common Gull and Black-headed Gull). Four mink were successfully trapped during the project. No mink predation was recorded at any of the nesting gull colonies. At the colonies with mink predation in 2006 breeding success was greater in 2007. The limitations of presenting only two years of data are acknowledged. Notwithstanding these limitations the project was successful in trapping mink and evaluating trapping methods.

Introduction

Drastic declines in the numbers of ground nesting gulls at Loughs Corrib, Mask, Carra, Conn and Cullin, have been recorded in recent years (Whilde *et al.*, 1993; Mitchell *et al*, 2004). In the 1970s thousands of gulls nested on these lakes but by 2000 numbers had declined by as much as 80% for some species (Seabird 2000 data, BirdWatch Ireland).

Data collected in 2006 found the breeding gull population on Lough Mask to be stable. However productivity was found to be moderate to poor. Evidence of mink predation was recorded at two colonies (photo 1), with heaviest predation at a Lesser Black-backed Gull colony where a mink was later trapped (Hunt and Heffernan, 2006).

Predation by mink can take place annually and can cause complete breeding failure and eventually site abandonment. In South West Scotland a mink control project has been underway since the 1980s. This work has proven conclusively the disastrous effects of mink predation on gull and tern colonies in this area (Craik, 1995, 1997, 1998, 1999, 2004 and 2005). Mink will also predate the eggs and chicks of other ground nesting birds.

A mink trapping programme commenced on Lough Mask in March 2007. The aim of the programme was to prevent mink predation of nesting gulls and to evaluate the success of mink trapping by comparing breeding success in 2006 to that of 2007. The limitations of the data from this study are acknowledged as there is only one year of pre - mink trapping data with which to compare results. Furthermore, there is little other data on gull productivity for Lough Mask. Another aim of the programme was to make general recommendations in relation to mink trapping for ground nesting birds.

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Photo 1: One of 23 predated Lesser Black-back Gull fledglings found on Rams Island, 27th June 2006. Puncture wounds typical of mink were present.

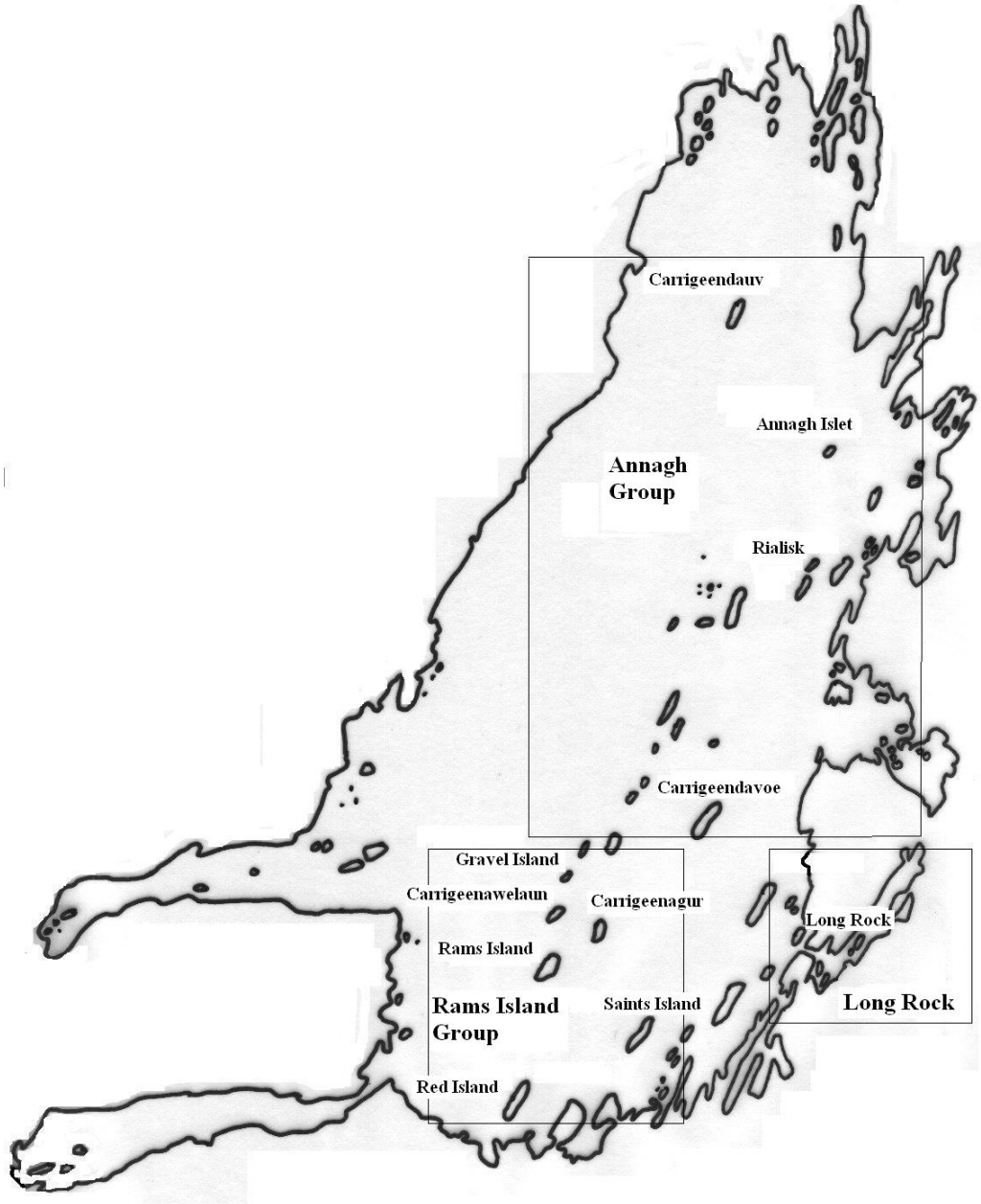
Methodology

1. Mink Trapping

The main breeding gull colonies of Lough Mask are located on five islands (Table 1) and mink traps were placed on each of these islands (see Map 1). Further traps were placed on "stepping stone" islands between the mainland and the colonies, to trap any mink which may be on their way to the colonies. Traps were also located on islands, which historically, have supported nesting gulls (Table 1). The islands have been grouped into three groups: the Annagh Group, which are the islands to the north of the lake, the Rams Group which are the islands around Ram's Island and Long Rock which is two islands located off the main lake (see Map 1).

On the 17th of April 15 traps were placed on the Islands in the Rams Island Group and the Annagh Group. The traps were opened for a three week period from this date. Four traps were put on Long Rock on the 24th April. Once the traps were opened they were checked daily (weather permitting) to prevent undue stress to any trapped animals. From mid April to mid May gulls are at the nest building and egg laying stage and so are particularly vulnerable to mink predation.

After this initial trapping period the islands were visited weekly by an ecologist to check for signs of mink (such as tracks, faeces, a den) and of mink predation, (such as stashes of eggs and chicks, broken eggs with puncture marks, empty nests where there should have been eggs, dead adults with puncture wounds). Signs of damage by other predators were also checked for. Only when signs of mink predation were noted or suspected, were the traps opened.



Map 1: Lough Mask showing the islands where mink traps were set in 2007.

Table 1: The Islands on Lough Mask where mink traps were located (with grid reference). Where the island supported a colony of gulls in 2006 the species present are indicated with an X. The other islands are stepping stone islands and where italicised islands with a history of nesting gulls.

Group Name	**Name of Island**	**Grid Ref.**	**Common Gull**	**Lesser Black-backed Gull**	**Black-headed Gull**
Annagh Group	Carrigeendauv	M125685		X	
	Annagh Islet	M135665			X
	Rialisk	M132646			
	Carigeendavoe	M114615			
Rams Island Group	Ram's Island	M091598	X	X	
	Gravel Island	M093609	X	X	
	Saint's Island	M103587			
	Red Island	M085580			
	Carrigeenagur	M098601			
	Carrigeenaweelaun	M092604			
Long Rock	Long Rock	M134596	X		

Placing and disguising traps

The mink were caught using live traps. The traps were placed along possible mink runs, such as gullies or streams, along possible mink tracks and at obvious landing spots. The shoreline of the islands were identified as the mink "run" and traps were placed along the shore and at possible landing places. Traps were positioned close to the water's edge and were moved down the shore as the water level dropped. A minimum of two and up to 7 traps, were placed on each island (the largest island had 1 km of shoreline).

Traps were wrapped in black plastic bags to stop small stones and twigs from jamming the trapping mechanism. The traps where then covered in vegetation and rocks as available on the islands. The traps provided an attractive dark hole for any mink seeking cover. They also provided shelter for any trapped animal, preventing potentially stressful exposure to the weather.

Photo 2: Mink trap disguised with stones on Annagh Islet, Lough Mask 30th April 2007

Baiting and luring traps

In Ireland it is common to bait mink traps with tinned fish. In Scotland the Hebridean Mink Project use a commercially available mink scent gland extract as a lure and the Mink Seabird project in South West Scotland generally does not use any bait or lure (Dr Clive Craik pers. comm.). Use of tinned fish increases the risk of attracting other birds or small mammals into a trap. If no lure or bait is used the traps must be well placed along known strategic runs used by mink. Given the proven effectiveness of the mink scent gland extract (Roy et al, 2006), it was used as a bait during this project.

A small amount of the scent gland extract was placed into the tray at the back of the trap every 4 to 5 days. The lure was used for the duration of the project except during late May and June. At this time it was suspected a mink was active on Rams and Gravel Islands and was not being caught using the lure, so tinned fish were used instead. Once the chicks were mobile the tinned fish were removed and replaced again by the scent gland lure to prevent chicks being attracted to the traps.

Despatching of mink

Captured mink were despatched following the methods outlined by The Game Conservancy Trust (The GCT, 2003). Mink were killed, using an air rifle, by a licensed firearms holder

2. Gulls: Nest census and breeding success

Following the methods used in Walsh *et al.* (1995) whole colony counts were made by walking transects of the colonies and counting Apparently Occupied Nests (AON). Nest counts were completed in late April and early May (see Results). Counts were of active nests as defined by Walsh *et al.* (1995).

To measure breeding success, the number of fledged or nearly fledged young were counted at each colony. Following the methods outlined by Craik (2000) a short, well-timed visit to each colony caused fledglings to move to the water where they were counted as discreet groups of young. The timing of these counts was based on hatching dates and the time taken for each species to fledge. Counting accuracy was considered to be good.

Results

1. Mink Trapping

All traps were open as planned for three weeks during the egg laying period (Table 2) and three mink were caught. On April 25th two mink were trapped, one at Rialisk in the Annagh Group and one at Red Island in the Rams Group (Table 3). On April 26th the third mink was trapped at Saints Island in the Rams Group (See Map).

Table 2: Trap opening times. Dark grey represent the weeks where the traps were open and white is when they were closed. *Mainland shore to west of island only, trapped.

Month	April		May					June				July	
Islands/week	**3**	**4**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**1**	**2**
Rams Group													
Annagh Group													
Long Rock Group	*												

After the intensive trapping phase all traps were closed, except those in the Rams Group (Table 2). At Rams Island mink scat and a stashed mallard were found and on Gravel Island a gull's nest had been predated. While the traps were left open no further signs of mink predation were recorded on Rams or Gravel Islands. It was considered likely that the mink, which had been active on Rams Island, was one of those trapped on Saints or Red Island.

After the predation of three eggs in a single nest on Gravel Island, no further signs of predation were recorded. The predation at this island was considered more likely to have been the actions of a territorial gull than of a mink (Dr. Clive Craik pers. comm.).

No signs of mink predation were recorded from Carrigeendauv or Annagh Islet for the duration of the project.

The Long Rock islands were heavily predated during May and June. Although mink were initially suspected and the traps left open, it became clear that the predator was fox and not mink. The traps were closed and no mink activity was recorded at Long Rock. Predation by fox was continuous and led to complete breeding failure and abandonment of this site.

As planned all traps (except at Long Rock) were opened for the start of the gull fledgling period, which is also when young mink begin to hunt with their mothers. During this period one female mink was trapped on Rialisk on July 3rd. In the past Rialisk island has been used by nesting gulls. No signs of mink predation were recorded at any of the colonies during this period.

During the project signs of other predators were recorded. There was regular predation of Black-headed Gull fledglings by Ravens on Annagh Islet. At Rams Island and Carrigeendauv regular predation of Mallard and Tufted Duck nests by Grey Crow was recorded. Predation of Mallard by Peregrine falcon was suspected at Rams Island.

Table 3: The location, date and description of mink trapped during the project.

	Location	Date	Description of Mink
Rams Group	Red Island	25th April	1 adult female (pregnant with five kits)
	Saint's Island	26th April	1 adult male
Annagh Group	Railisk Island	25th April	1 adult male
	Rialisk Island	3rd July	1 adult female

2. Gulls: nest census and breeding success (data from 2006 is also presented for comparison).

In 2007 1,767 pairs of nesting gulls were recorded on Lough Mask, these were 1,123 Black-headed Gull, 400 Common Gull and 244 Lesser Black-back Gull (Table 4). The main colonies were located on Carrigeendauv, Annagh Islet, Long Rock and Ram's Island, with smaller numbers at Gravel Island (see Map 1). Total numbers of gulls nesting on Lough Mask remained stable compared to 2006, however the total number of fledged young in 2007 was lower than in 2006.

Breeding success was again good at Carrigeendauv, with one fledgling per Lesser Black-backed gull pair, both in 2006 and in 2007. Mink predation was not recorded at this site in 2006 or in 2007 (Table 4).

At Long Rock where breeding success had been good in 2006, fox predation caused complete breeding failure in 2007. While mink predation had been suspected at this site in 2006, none was recorded in 2007.

At Annagh Islet the number of fledged young was lower in 2006 than in 2007. Regular predation of fledglings by Ravens was recorded at this site, but was not quantified. Fledgling mortality was also recorded at this site in 2006, but the cause was unknown. Mink predation was not recorded at this site in 2006 or in 2007.

At Rams Island and Gravel Island where mink predation of Lesser Black-backed Gull fledglings had been recorded in 2006, breeding success was higher in 2007. Two mink were trapped at likely stepping stone islands to Rams Island and Gravel Island. While signs of mink activity had been recorded on the island early in the season no predation of gulls, eggs or chicks was recorded. It is considered likely that one of the trapped mink had been active on Rams Island early in the season.

The Common Gull colonies at Rams Island and Gravel Island showed some improvement in breeding success in 2007. However, in 2006 the low breeding success for Common Gulls, was partly due to flooding. The effects of mink predation and control on the Common Gull colonies are not clear.

The above results are presented tentatively and the limitations of any comparison between two years of data are acknowledged.

Photo 3: Lesser Black-backed gull chicks on Lough Mask

Table 4: Numbers of Apparently Occupied Nests (AON), numbers fledged and breeding success on Lough Mask 2006 and 2007

Gull species	**Island**	**AON 2006**	**AON 2007**	**No. Fledged 2006**	**No Fledged 2007**	**Breeding Success 2006**	**Breeding Success 2007**
Black-headed	Annagh Islet	1200	1123	844	603	0.7	0.54
Lesser Black – backed	Carrigeendauv	143	136	165	138 est	1.15	1.01
	Ram' s Island	89	69	21	59	0.23	0.86
	Gravel Island	44	39	5	17	0.11	0.43
Common	Ram's Island	141	129	57	71	0.4	0.55
	Long Rock (main colony)	164	257	145	0	0.88	0
	Long Rock (small colony)	46	1	0	0	0	0
	Gravel Island	20	13	2	14	0.1	1.08
Total		**1,868**	**1,767**	**1,239**	**902**	**-**	**-**

Discussion

In 2006 mink predation was recorded at Rams Island and Gravel Island on Lough Mask. At the Lesser Black-backed gull colony on Rams Island only 0.23 young fledged per pair. Predation by mink of nearly fledged young was considered to be one reason for the low productivity at this colony (Table 4). In 2007 productivity at the Rams Island Lesser Black-backed Gull colony increased to 0.89 fledged young per pair. It is considered that improved breeding success at this colony was due, at least in part, to the trapping of mink at nearby Saints and Red Island. The mink caught at these islands are likely to have reached Rams Island. The removal of mink resulting directly in improved breeding success at seabird colonies has been well documented (Craik, 1997).

This project found that mink were only trapped in late April and July. There seemed to be a period of no mink activity during May and June. This same pattern has been observed in the Hebrides in Scotland (Hebridean Mink Project, 2006).

This pattern of trapping mink coincides with their breeding cycle. Mink are active during the mating season (Feb to April) and then again when the young begin to hunt with their mothers (end of June to August) (Dunstone, 1993; Hayden and Harrington, 2000). In the months of May and early June mink are least active as the female mink are in the den with their young (Table 5).

Table 5: Breeding pattern of gulls on Lough Mask, periods of mink activity and recommended trapping times.

Activity	April	May	June	July
Gulls	Nest building and egg laying	Chicks	Fledglings	
Mink	End of mating season	Females denning with kits		Kits hunt with mother
Traps	**Traps open**		**Traps open**	

The first period of mink activity (mating season) coincides with when the gulls are nesting and are therefore vulnerable to predation. The second period of mink activity (start of hunting) coincides with the fledgling stage. Mink trapping can then be focussed at these two times. This will minimise the trapping effort but at the same time should give the best return for this effort.

The above theory can be applied to Lough Mask for 2007 and is supported by more detailed findings from the Hebridean Mink Project in Scotland. However, the Mink Seabird Project in SW Scotland reports mink predation and captures throughout May and June (Craik, 2006).

While any conclusions drawn from the data in this study can only be tentative, good practical information has been gained. Based on the Lough Mask work and on our discussions with others involved in mink trapping a number of observations can be made. These observations may be useful to other mink trapping projects where the aim is to protect breeding birds.

Recommendations for mink trapping:

1. Mink trapping programmes should take account of the pattern of mink activity and how this relates to the breeding pattern of the target species. This may reduce the trapping effort necessary.

2. Mink traps should be disguised, well hidden and placed along identified mink runs.

3. The mink scent gland extract should be used as a lure. This has been found to be effective and removes the risk of attracting non-target species.

4. On Islands, the use of a brightly coloured disc on the trap door means that traps can be checked from a boat and landing is only necessary when the trap has been sprung or the bait needs to be replenished.

5. Any mink trapping work should be completed in conjunction with nest and fledgling counts to measure breeding success and to evaluate the success of the trapping.

Conclusion

Lough Mask supports nationally important numbers of nesting gulls. Reasons for the decline in the number of nesting gulls on Lough Mask and on Connaughts other inland lakes may be due, in part, to predation by mink. Mink control has been shown to be effective in improving breeding success in SW Scotland and in the Hebridean Islands of Scotland. The results from this project also suggest improvements in breeding success due to mink control. While mink control can be labour intensive it is proposed that targeted control at the most appropriate times and at the most vulnerable sites, could be less time consuming and very effective.

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