

# The effectiveness of different methods to deter large gulls *Larus* spp. from competing with nesting terns *Sterna* spp. on Coquet Island RSPB reserve, Northumberland, England

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## SUMMARY

A range of approaches were adopted to deter large gulls *Larus* spp. from competing with nesting terns *Sterna* spp. A gas gun, scarecrows, rockets, taped distress calls and direct human disturbance were all effective. A 'humming line', a grid of binder twine and 'scarer' rope all had associated practical problems. A number of methods are deployed over a breeding season in order to prevent the gulls from habituating to any one technique.

## BACKGROUND

Coquet Island supports around 30,000 pairs of breeding seabirds. These include three UK Red Data list (high conservation concern) species, roseate tern *Sterna dougallii* (c.91 pairs), Sandwich tern *S. sandvicensis* (c. 1,250 pairs) and Arctic tern *S. paradisaea* (c. 1,000 pairs), as well as five Amber listed (lower conservation concern) species, fulmar *Fulmaris glacialis*, kittiwake *Rissa tridactyla*, black-headed gull *Larus ridibundus*, herring gull *L. argentatus* and Atlantic puffin *Fratercula artica*.

The number of large gulls (lesser black-backed gull *Larus fuscus* and herring gull) breeding on Coquet Island has been increasing and although the number is not as high as in the 1970s, when up to 350 pairs bred, the increase has given cause for concern. This increase could lead to greater competition with the terns for nesting space, and increased gull predation on tern eggs and young. Large gulls have already occupied an area in the north of the island formerly used by roseate terns. The roseate terns now breed in plots near to the lighthouse and terraces by the jetty on the southwest of the island (Morrison & Gurney 2007).

An aim of the site management plan is to discourage colonies of large gulls from

establishing early in the breeding season in an attempt to enhance breeding success of terns and other seabirds. This case study describes the efficacy of the measures used.



**Figure 1.** Aerial view of Coquet Island looking southwards. (Photo: RSPB)

## ACTION

On Coquet Island RSPB reserve (Fig. 1), Northumberland, northeast England, a number of methods, other than culling, have been explored in order to try to resolve the problem of large gulls (lesser black-backed gull *Larus fuscus* and herring gull) since 2000. The

number of large gulls increases with the return of the black-headed gulls, puffins and other breeding species, but the deployment of gull scaring techniques once the breeding season is underway produces a conflict of interest with the smaller species. Therefore, once the non-target birds have returned at the onset of the breeding season, most scaring techniques have to be stopped. Active human disturbance can still be used however to specifically target large gulls, and when puffins are absent from the island the distress caller and 'scary man' (see below) can be used.

Disturbance techniques are therefore targeted at the period prior to the return of the key breeding bird species e.g. puffins and terns, with the aim of fragmenting groups of roosting and loafing gulls and preventing gull pairs forming early season territories. Several disturbance methods have been employed:

**Gas gun:** A gas gun that had a number of firing options were hired. The options available included: a time delay between firing, from 15 to 60 minutes; the number of firings (range 1 to 4), including a random option; and a timer for the firings at intervals of 1 to 10 seconds. The gun was erected on the leeward side of a wall to provide some shelter and positioned so that it was firing with the wind towards the loafing gulls on the intertidal area. It was set to fire 4-times every 30 minutes. The gun was deployed from when the wardens arrived on the island in mid-March until puffins were observed grouping offshore prior to breeding. The gun was left running except during bird counts.

**The scarecrow and scary man:** Initially a traditional scarecrow, constructed from two sticks, a plastic head, a boiler suit and a fluorescent jacket, was used. This was erected after puffins had arrived back in spring. In 2004, an inflatable scarecrow known as a 'scary man' was introduced. Once activated the scary man inflates and deflates five times every eighteen minutes. The scary man was modified in 2005 to be activated by remote control from a hide. There is a light and a siren attached to the inflatable, both of which can be operated independently of each other. The scary man was re-positioned regularly whilst deployed to maximize its effect. It cannot be used in strong winds, as it is easily blown over, reducing its effectiveness.

**Human disturbance:** Primarily directed at loafing large gulls on the intertidal area, human disturbance took place from mid-March

and continued, after the puffins and black-headed gulls had returned, as the main form of gull scaring. Human disturbance took two forms, a passive form achieved whilst undertaking various routine tasks and activities on the island plateau (e.g. monitoring birds or collecting firewood), and active disturbance which involved deliberately walking towards a gull until it flew, or flapping the arms while standing on the plateau, to disturb the birds on the intertidal areas. Fluorescent yellow coats were worn during all gull-scaring activities.

**Rockets:** Large rockets, with relatively silent ascents followed by a large bang, were used to scare over the whole island. Fired from tubes pushed into the ground, they travel long distances and effect large areas making them ideal for remote scaring and targeting gulls that attempted to settle on the waters around the island.

**Distress caller:** A megaphone, with an in-built recording of a distressed herring gull, was used. The megaphone was used early in the season, when puffins were absent from the island. It was used three times during the day at different states of tide to see what effect it had on the gulls loafing on the south beach. It was set to 'herring gull' volume (8) and placed at the top of the south beach. There is currently no lesser black-backed gull call commercially available for this device. Care was taken to be upwind of resting gulls to ensure the distress call carried. The distress caller was played from the top of the beach for approximately 90 seconds and directed towards the loafing gulls on the rocks below.

**Humming line:** The design used consisted of two long narrow flat strips of plastic fixed to a row of posts. This then vibrates in the wind to produce a humming sound. It was used for a couple of seasons to define the boundary between the tern breeding area and the rest of the island, creating a no-man's land.

**String grid:** This consisted of a grid of binder twine (plastic string) set up at 0.5 m height and at 1 m spacing to cover an area of 60 x 60 m. The idea was to prevent large gulls settling.

**Scarer rope:** These are ropes, designed to be hung above ground with explosives attached at set intervals so that when lit the rope acts as a smouldering fuse, igniting an explosive every half hour. When a rope is hung within a barrel, the noise of each explosion is noticeably magnified and different in sound to those hung in the open.

## CONSEQUENCES

**Gas gun:** Following the initiation of the gas gun disturbance, there was a rapid initial reduction in the number of gulls present on the intertidal areas. The gas gun was very efficient at scaring the gulls, as despite being temperamental it kept the numbers of gulls loafing on the intertidal area to a minimum. It was simple to use and could be transported easily in a wheelbarrow.

The only non-target species affected by the gas gun were feral pigeons *Columba livia* that took flight each time it went off, and 16 curlew *Numenius arquata* on its first use. Fulmars appeared unaffected and waders landed again quickly.

**The scarecrow and scary man:** The original scarecrow had some success within the puffin nesting areas, with gulls avoiding the immediate proximity but had less success in reducing overall gull numbers on island.

2004 was the first year that the scary man was used. It was targeted against large gulls loafing on the south beach. Juvenile gulls flew off immediately after the initial inflation whilst adult herring gulls only flew on the fifth inflation. During the period when it was intended to deploy the scary man, there were few gulls on the intertidal zone and the weather conditions were unfavourable (too windy), rendering any judgements of its usefulness questionable. To be most effective the scary man needs to be positioned as close as possible to the sites the gulls use, but as all the control switches are on the scary man itself, the presence of the person setting up or activating the scary man tends to scare the gulls away (see human disturbance below). More trials need to be conducted to find out the true effectiveness, including night scaring trials (using the light and siren) and to investigate the potential for remote control or pre-programming (as done in 2005). A hide might be needed from which to undertake observations to assess its effectiveness, as otherwise human presence will confound the results.

The scary man did scare gulls from the beach with the return rates of the birds being between 10-15 minutes. Given the correct timings on inflation, this could prove a useful deterrent to gull roost formation and the establishment of breeding territories. There was a limited affect on non-target species, mainly black-headed gull, oystercatcher *Haematopus ostralegus*,

fulmar and shag *Phalacrocorax aristotelis*, but these returned to the area within a few minutes.

**Human disturbance:** In the early part of the season, active human disturbance always caused the gulls to fly. Gulls could be lifted from the intertidal zone by waving from the edge of the plateau, although some were more reluctant to fly than others, the intertidal zone could always be cleared. As the season progressed and birds became habituated to human activity, it became more difficult to scare the gulls, especially at low tide. Instead of waving from the plateau, it was necessary to go nearly onto the beach for them to move. Most of the birds would fly and land on the sea then return within approximately 20 minutes.

Human disturbance was effective throughout the season, especially once the puffins had returned. Even though some of the gulls were more reluctant to move than others, they did eventually move off. As the season progressed, more effort was necessary to flush the birds, walking closer whilst waving the arms for longer. This method would also cause the black-headed gulls to lift but they soon settled again.

**Rockets:** Rockets were fired when puffins were absent from the island. On all firings, the intertidal zone and plateau cleared of gulls. Monitoring return rates showed that no gulls returned within an hour of firing and dawn counts for the plateau indicated some overnight impact of evening firings, with lower than expected numbers of gulls the following morning.

**Distress caller:** After the prescribed period of distress calls, all of the targeted gulls had lifted, as well as any black-headed gulls present, although the majority returned whilst the caller was still playing. Large gulls that were initially unresponsive to the distress call would often lift in response to the black-headed gull colony being disturbed. Shags *Phalacrocorax aristotelis* and a few puffins that were on the roseate tern terraces were also disturbed. Although some gulls landed again straight away, as the distress caller continued, they finally moved off. Some settled on the sea just offshore or flew over the area but they did not settle back in the target zone, the juveniles that attempted to come back were chased off by black-headed gulls.

The distress caller seemed to be effective at scaring gulls. Their average return rate to the

area was 15-20 minutes. In some years, there was evidence that gulls became habituated to this form of disturbance so it became necessary to play the calls for longer periods, or repeat them or use additional scaring techniques at the same time.

**Humming line:** There were no large gulls present on the plateau when the humming line was erected and no gulls were recorded whilst it was deployed. This technique was abandoned after continual snapping of the line in the strong coastal breezes.

**String grid:** This method was a complete failure as birds became caught up in the lines and they were therefore taken down.

**Scarer rope:** Used in conjunction with other devices, the scarer rope helped maintain the plateau as a large gull free area. However, the rope can be difficult to light, may go out in damp weather and not all the detonators fired.

There was limited disturbance recorded for non-target species with most returning within a few minutes after the disturbance. The one exception was eider ducks *Somateria mollissima* which abandoned the plateau area and occasionally even left the intertidal zone, leaving their eggs vulnerable to gull predation.

**Conclusions:** It was deemed prudent to deploy several methods at the same time in order to prevent large gulls from habituating to one technique. This work was started in 2000 and now concentrates on using those methods which have been demonstrated to be safe and most effective in reducing gull numbers, whilst not impacting on non-target species.

## REFERENCES

Morrison P. & Gurney M. (2007) Nest boxes for roseate terns *Sterna dougalliion* Coquet Island RSPB reserve, Northumberland, England. *Conservation Evidence*, 4, 1-4.