# Kilcoole Little Tern Conservation Project Report 2024

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Front Cover Image: Little Tern pair from nest 01, on Kilcoole Beach in 2025 © BirdWatch Ireland

Tern colony management and protection at Kilcoole, Co. Wicklow was conducted under a Services Contract awarded to BirdWatch Ireland by the National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

**The 2024 project team was** Chris Johnson, Jonathan Stanley, Peter Kavanagh, Angus Lee, Paul Cullen, Tony Malone, Robert Kelly, Steve Newton and Brian Burke from BirdWatch Ireland, and Jason Monaghan, John Griffin and Wesley Atkinson from NPWS. Volunteers Daniele Gioppo, Jan Rod, Kevin Brooks, Stephen Donoghue and Eamonn Coogan were also key to the project this year.

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## Summary

- A peak of 285 breeding pairs of Little Terns was recorded at the Kilcoole colony in 2024. An additional two pairs nested in Cooldross
- Productivity was estimated at between 0.65 and 1.50 chicks fledged per pair, with an arithmetic mean of 1.09 chicks/pair which is likely close to the actual figure.
- Twenty four-hour colony surveillance and monitoring began May 15 and continued until July 31.
- Nesting began exceptionally early with the first nests being established around May 9th. Over 100 had been established by the start of 24/7 colony surveillance.
- Mean clutch size for the season was 2.6 eggs.
- Overall, 332 nesting attempts were recorded, 254 of which successfully hatched, while the fate of 11 could not be determined.
- Causes of nest losses included predation by Corvids (40 nests), high tides (12), abandonment or unviability (13), Oystercatchers (3) and trampling (1).
- The first Little Tern chicks were found on May 31 and the last ones to hatch were on July 16. The first fledglings were noted on June 20.
- The number of chicks fledged from Kilcoole this year is estimated in the range between 184 and 439, with a likely more realistic mean of 312.
- A total of 579 chicks were BTO-ringed, of which 192 were also colour-ringed. 75 adults were trapped,
   18 of which were unringed and 57 already had rings and so had a known age and origin.
- There were 256 unique ring reads of adult Little Terns this year. Most were originally ringed at Kilcoole (40 as adults, 200 as chicks), with the rest from Baltray (3 as adults, 4 as chicks), Portrane (5 as adults, 1 as a chick) and three birds from the UK (two from Gronant as chicks, one to be traced). These resightings will form the basis for the newly registered 'Retrapping Adults for Survival' (RAS) project.
- Highlights include a 19-year old bird, originally ringed in Kilcoole as a chick in 2005. Another individual was born in Portrane in 2021, nested in Baltray in 2023 and nested in Kilcoole in 2024.

## 1. Introduction

#### 1.1 Little Terns in Ireland

The Little Tern is listed on Annex I of the European Union Birds Directive (2009/147/EC), thus requiring member states to take special conservation measures to ensure the survival and breeding success of this species. On a national level in Ireland, due to decline in localised breeding populations, the species is currently 'amber-listed' as being of medium level conservation concern (Gilbert *et al.*, 2021). The latest population estimate derived from the 4th national seabird census (2015-2019) is in the range 350-400 pairs (Cummins *et al.* 2019). To place the Irish breeding population in context, the recent 'Seabirds Count' found that 19% of the Little Tern population of Britain and Ireland breed in Ireland (Burnell et al., 2023), which represents around 0.8% of the European population (Birdlife International 2024).

Threats to breeding Little Terns include human disturbance, loss of suitable habitat and flooding from extreme tides and storms. Human disturbance, however, has been a major and long-standing cause of low breeding success (Fasola *et al.*, 2002, Ratcliffe *et al.*, 2008). Wardening schemes and the use of signs and fences to protect the breeding birds (regularly implemented since the mid-1970s in Britain and 1985 in Ireland) can effectively reduce this disturbance. Depredation by foxes, corvids, rats and raptors is arguably the biggest threat to breeding colonies and predation can often reduce the breeding productivity to zero. Predator control has therefore been of huge importance to Little Tern conservation in Ireland and elsewhere in recent years.

#### 1.2 Kilcoole Colony

Little Terns have been recorded breeding at Kilcoole since at least 1879 (O'Briain & Farrelly, 1990). By the 1980s breeding success at the colony was consistently low due to predation pressures and disturbance. In response to this, the Little Tern protection scheme was set up in 1985. The colony has steadily grown, though there have been some setbacks with years of very low productivity. The most recent year of total failure was 2012 when a total of 110 nesting attempts were made by a minimum of 86 breeding pairs. However, no eggs survived to hatch due to the effects of severe storm events backed by high tides and subsequent depredation by corvids (Keogh *et al.*, 2012). In 2022 the colony reached a peak of 245 breeding pairs (Johnson *et al.*, 2022), and 2020 saw the highest number of chicks fledged in a season (a potential maximum of 381 chicks; Johnson *et al.*, 2020).

At Kilcoole the Little Terns nest on the shingle beach to the north of "the Breaches" (53.091508, -

6.037523). This part of the colony encompasses c.500m of beach, starting from the Breaches and continuing northwards beyond the southern end of the stand of Sea Buckthorn. Although most nesting attempts are concentrated in this area (named K-colony), a smaller sub-colony, known as S-colony, is sometimes established on the south side of the Breaches. The size of this sub-colony has varied throughout the years, with a peak of 29 nesting attempts in 2019 (Johnson *et al.*, 2019) but none at all from 2020 to 2023.

The breeding habitat at Kilcoole is classified as 'shingle and gravel bank', after Fossitt (2000). The shingle is approximately 20-30m wide and has accumulated to form an elevated ridge above the mean high-water mark. The structure of the shingle is subject to intermittent changes during spring tides and adverse weather. On the landward side, the shingle has been colonised by patches of Sea Sandwort, Sea Spurge, along with occasional Sea Mayweed, Yellow Horned Poppy and Sea Rocket. Behind the shingle lies a strip of flattened fixed dunes some 30-40m wide (Fossitt, 2000). Marram Grass dominates the vegetation. The dunes are bisected by a pathway which runs the length of the beach and have been greatly degraded by persistent trampling. However, the vegetation is advantageous in that it provides a small buffer between birds nesting on the shingle and pedestrians walking on the footpath. This buffer zone, however, does not fully shield nesting birds from disturbances, as the presence of pedestrians often causes nesting birds to take flight. This section of beach, described in conjunction with the Murrough to the south, was classified as a site of high conservation interest in the National Shingle Beach Survey of Ireland (Moore and Wilson, 1999).

The adjacent brackish lagoon (i.e. 'The Breaches') is thought to be one of the main reasons Little Terns have been attracted to this site (O'Briain & Farrelly, 1990). This lagoon is tidal in nature, filling and ebbing through the narrow Breaches channel and otherwise separated from the sea by the shingle bank. Several freshwater channels feed this lagoon and provide the terns with water for bathing and brackish water shrimps (*Gammarus spp.*) and gobies (*Pomatoschistus spp.*) for feeding. Common Goby (*Pomatoschistus microps*) can be a large part of the diet of Little Tern chicks up to three or four days old (Phalan, 2000). This feeding area is often essential during poor weather conditions when offshore feeding opportunities are reduced. Newly fledged chicks also practice hunting there when the tide is high. Due to the mobile nature of the shingle, strong tidal currents offshore, and the exposed nature of this stretch of coastline to easterly winds, the shingle often shifts, blocking the Breaches outlet, and the lagoon remains flooded.

#### 1.3 Project Aims

The principal aim of the Little Tern Protection Scheme is "To ensure and promote the survival and breeding success of Little Terns at Kilcoole by minimising disturbance by humans and predation, in order to fulfil Ireland's legal obligations under the EU Birds Directive".

Strategies employed by BirdWatch Ireland to achieve this aim include:

- Promote awareness amongst the visiting public, to seek their co-operation in minimising human disturbance but allowing them to appreciate a seabird colony in action
- > Create physical barriers to prevent people and terrestrial predators accessing nest sites
- Maintain colony surveillance for the early detection of predators and take appropriate steps to minimise loss to predation and environmental factors.
- Monitor the breeding performance of the colony, to measure the success of the project and increase our knowledge of Little Tern ecology
- Ring and colour ring Little Terns to improve our understanding of site fidelity, survival rates and longevity, movements and other demographic information

## 2. Methods

#### 2.1 Project Staffing

The 2024 project team was comprised of day wardens Chris Johnson, Peter Kavanagh and Jonathan Stanley, and night wardens/conservation keepers Angus Lee, Paul Cullen, Tony Malone and Robert Kelly. The three day wardens have worked on the project before, and the experience of CJ in particular has been a huge asset to the project in recent years and has allowed for much greater organisation, efficiency and retention of knowledge than in previous years when completely different wardens started each year. Similarly, AL has worked as a night warden on the project for a number of years, bringing valuable skill, experience and knowledge of the site and the threats to the colony which has been of critical importance to recent successes. The other night wardens too brought a high level of experience and skill with regards predator control. Some were able to use thermal equipment which was of huge benefit to the project.

#### 2.2 Project Set-up

The set-up period ran from April 29 to May 14, during which time staff set up the fencing, signage and equipment for the project and began to exclude people from the core nesting area. An initial effort at necessary predator control was also carried out beginning on the night of May 3. Full 24/7 monitoring began on Wednesday May 15, and ran until Wednesday July 31, by which time all chicks had long since left the main colony area.

Colony monitoring utilises an elevated, weatherproof hide positioned approximately at the mid-point of the colony, just into the marram grass adjoining the shingle beach. This provides excellent vantage to the north and south of the colony. The day warden's daily routine typically consists of making counts of birds, locating and recording new nests, monitoring existing nests for brooding birds, and nest visits to check the status of eggs or chicks. The extent to which these activities are conducted changes as the season progresses and as weather dictates. A daily log is maintained where details of personnel, weather, tides, work undertaken, tern activity, nest status, disturbances, visitors, and other wildlife observations are recorded.

A general consideration is that human presence in the colony causes disturbance which can result in nests or chicks being chilled or otherwise jeopardised, so efficient and co-ordinated practices are adhered to which minimise the amount of time wardens spend in the colony. For this reason too, the colony is not entered during adverse weather such as rain, high winds, or low temperatures.

#### 2.2.1 Colony Fencing

The colony is enclosed within a series of fences which afford high levels of protection from people and predators. A "predator fence" comprising a flexi-net fence, and a three-strand electric fence positioned approximately 20 cm outside it, encloses the nesting area. Each strand of the electric fence is connected to an individual battery unit, and these are activated overnight. A "buffer" fence (a.k.a. the public fence) is also put in place to minimise disturbance to nesting birds. It comprises another line of flexi-net which deters members of the public, and dogs, from approaching the interior predator fence. It also cordons-off the beach and foreshore areas to the north and south of the colony. At the northern end, the flexi-net barrier extends as far down the beach as practical. Then, a rope barrier is used which can be extended down the beach at low tide. To the south, the fence is attached to the railings of the railway footbridge. These measures reasonably maximise the distance between public approach and the interior predator fence, minimising disturbance, and also afford an outer barrier to potential intruders. This year, extra fencing was put in place on the beach just south of the Breaches channel (S-Colony) following discovery of Little Tern and Ringed Plover nests.

#### 2.2.2 Information Signs

Twelve new double-sided signs were commissioned in 2022 thanks to a donation by ICA Ashford, which forewarn and advise people that they are approaching the colony and provide basic ecological information about Little Terns. These were placed at the northern and southern approaches to the colony to provide sufficient forewarning that walkers are approaching the nesting area. Other signage advising the public on the presence of electric fencing, and requests to refrain from crossing fences and maintain control of their dogs by keeping them leashed, are also put in place.

#### 2.3 Predator Management

Whilst the fencing system provides a basic level of protection from predators, other tactics to deter and control avian and mammalian predators are critical to the success of the colony. The colony at Kilcoole is particularly vulnerable to Corvid predation because of high numbers of these birds in the area, and predation of nests and chicks occurs in most years. Hooded Crows forage extensively around the lagoons, and often on the beach, so are well placed to exploit unguarded nests or chicks. Rooks, Magpies and even Jackdaws pose similar threats when present. Day

wardens maintain a high level of vigilance against all avian predators, and if any approach or enter the colony, they are chased off. This approach can be found wanting on occasions, given the size of the nesting area and the cleverness and determination of the predators involved. Raptors too are nearly impossible to deter once they have learned there is a food source available. The conservation keepers (night wardens) control problematic corvids on a regular basis throughout the season, but particularly in June and early July when they pose the greatest threat.

Mammalian predators (mostly Fox, secondarily Mink) also pose a significant threat and have been the cause of major losses of eggs, chicks and adult birds in the past, and these are also controlled by night wardens in the vicinity of the Little Tern colony. Two deterrent "Fox Lamps" are installed at the northern and southern ends of the colony and are operated throughout the season, though their effectiveness is limited at best. In addition, two baited cage traps for foxes were maintained in discrete locations at the colony this year in an attempt to minimise the necessity of lethal control, though these have proven similarly ineffective to date. With regards Mink, a number of Mink traps are deployed when a Mink or signs of Mink have been seen. Hedgehogs also pose a threat. During setup, after the internal fencing is erected, the core nesting area is thoroughly searched for any hidden hedgehogs. This internal fencing comprises a doublelayer of flexi-netting and provides an effective barrier against incursions.

#### 2.4 Monitoring

#### 2.6.1 Flush Counts & Roost Counts

Counts of dreading Little Terns are conducted at opportune times during each day and the maximum recorded in daily logs. These provide a ballpark figure for the number of birds present that may be expected to nest. Once chicks start to fledge, separate fledgling counts can be conducted to provide a rough assessment of colony productivity. These counts, however, decrease in usefulness after the first two weeks, as fledglings often begin to leave the colony around two weeks after fledging (Keogh *et al.*, 2011) and cannot, therefore, be used in estimating seasonal totals. Regardless, they can be a useful monitoring technique. For example, very consistently low counts may indicate significant chick losses. Counting is best conducted during evenings when most of the birds roost along the foreshore. Time permitting, ring reading during counts can also provide useful information, for example, in monitoring survival and assessing the duration of time spent at the colony before dispersal, though this requires calm conditions and a high-powered spotting scope due to the small size of the Little Tern rings.

#### 2.4.2 Nest Location and Recording

Nests are found by observing the behaviour of the birds and noting particular cues including courtship displays and courtship feeding, copulations, and scrape building activities, which indicate that birds are preparing to start, or have started nesting. When a bird is observed sitting, an exploratory visit is made to the spot to determine if a nest has been established. If so, the nest is marked and recorded. Marking uses a system of 3 marker stones placed approximately 0.5 - 1.0 metre around the scrape, each of which is inscribed with a nest number. The marker stones are oriented to be visible from key vantage points including the hide, the "warden's path", and from the northern or southern ends of colony fencing. The nest is then described in terms of the date it was discovered, the number of eggs it contains, the nature of any adornments, the composition of the substrate, and its approximate distance to the edge of the marram grass vegetation. Numbers are allocated to each nest in the order in which they are found. "Pinning" in Google Maps is then used to record coordinates for each nest and provides a handy nest location map on mobile devices. Later, this data is imported into a GIS to produce a colony map.

Once marked and processed, nests are then monitored. Incubation checks are conducted from the hide and other vantage points each day to monitor nest status (active/incubated etc.). Arguably the most important reason for daily monitoring of nests is to quickly identify any predation incidents so that a focused effort can be put into addressing these. In addition, nests are visited to record nest progress and the condition of eggs and chicks during the laying and hatching stages. A Nest History data sheet (see Table 1) for all nests is kept which records whether incubation has been observed at the nest. Following nest visits, the number of eggs or chicks observed is added. Shorthand notes can be used to log specific events or occurrences. Monitoring of nests continues until all chicks and adult birds have stopped using it.

Table 1: Example of a Nest History sheet where: i = incubating; ni = not incubating; e = egg; y = chick	; b =
brooding; In = chicks have left the nest. Depredation incidents (P) and egg or nest losses are also recor	ded.

Nest no.	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul
1	2e, i	2e, i	2e, i	1e,1y, b	2y, b	2y, b	In	1
2	3e, i	3e, ni	3e, ni	3e, ni	3e, ni	ab	523	<u> </u>
3	3e, i	3e, i	P, 2e,i	2e, i	2e, i	tide	1955	2
Etc.		111	340	1999				3940

#### 2.4.3 Chick Ringing and Biometrics

Chicks are fitted with a British Trust for Ornithology (BTO) metal ring (size B+) on their right leg. This distinguishes them from chicks ringed at the Baltray, Portrane and Cahore colonies, which are ringed on the left leg. Most Little Tern chicks are ringed in or near the nest scrape so the nest of origin is known, and their exact ages can be calculated if subsequently re-trapped. The day of hatching is deemed Day 0, the day after that, Day 1, and so forth.

During ringing and any subsequent re-trapping, the wing and weight of each chick are measured. Any chicks caught when they are around two weeks or older are colour-ringed using a green ring with a unique three-character alpha-numeric code beginning with the letter 'I', 'A', 'B' or 'C' (Figure 1). This colour ringing scheme is coordinated by BirdWatch Ireland and used at all Irish Little Tern colonies. All Kilcoole Little Terns have their colour rings applied to the left leg, to distinguish them from those at the Baltray, Portrane and Cahore colonies where they are colour ringed on the right leg. In periods of poor weather ringing is prioritised and biometrics are not taken, to minimise disturbance and impacts to the chicks and colony.

In 2024, bad weather around the time of hatching, as well as the need to fend off Rooks and Hooded Crows from predating nests, meant that many chicks could not be assigned to their nest of origin, and so be accurately aged. In addition, the sheer volume of chicks hatching often overwhelmed ringers, and a priority was placed on simply ringing (and colour ringing) as many chicks as possible, over the collection of biometric data from re-trapped chicks.



Figure 1: Colour ringed Kilcoole Little Tern chick, GW(IPN).

#### 2.4.4 Ringing and Resighting of Adults

Ringing of chicks is important to determine survival and productivity, and subsequent resighting of ringed birds as adults is important to also assess breeding site fidelity, site interchange, breeding performance, mate fidelity and differential survival rates, all of which may help explain changing numbers of breeding pairs at the colony, or differing population trends at different locations. While some ring-reading is carried out via scope at Kilcoole, the reality of the small size of the birds' tarsi, the corresponding rings, and the undulating terrain of a shingle beach mean that ring-reading is very difficult here in comparison to other colonies where there is more flat sandy terrain, or other larger tern species that perch on walls, railings, boulders etc.

To improve on the recording of ringed adults at the Kilcoole colony, nest-trapping has been carried out at Kilcoole since 2021. This has the advantage of not only recording colour-ringed individuals that might not otherwise be seen, but also catching birds only wearing a metal ring that may have preceded the recent colour-ringing project. These individuals can then be colour-ringed and will be more likely to be recorded in the future, thus reducing the potential bias in the dataset. Lastly, a number of unringed birds are also caught, and while these don't provide information on origins or age on first capture, they will be able to contribute in the future. Nest-trapping is best done in the latter half of the incubation period, and by experienced licensed ringers. It should only be done during suitably calm, dry weather, and for a few hours at a time so as not to cause significant disturbance in one part of the colony for extended periods.

GoPros are also used as a means of ring-reading at Kilcoole (Hogan, 2020). As of 2024 we have four GoPros to maximise the efficiency and returns of this method. The camera is placed on the edge of the nest, angled so that the sun is behind it, and set on a timelapse setting to take a photograph every 0.5 seconds. As the adult birds return to the nest, adjust their sitting position or leave the nest, there are potential opportunities for a colour ring to be photographed. The cameras are retrieved after 10-15 minutes, and successive GoPro deployments are spread out around the colony so as to minimise disturbance. Keeping the deployments short also ensured that several nests could be recorded within the battery life of the cameras. Given the rapid accumulation of nests early in the season, and the large total number of nests to be monitored, as well as limitations on staff time, batter power and suitable weather conditions, each nest was only recorded once via GoPro in 2024. The main drawback of this method is that metal rings can't be read, but as nest-trapping of adults continues over the years we will achieve a higher proportion of colour-ringed individuals nesting in the colony.

The Kilcoole Little Tern project has now been registered with the BTO as a 'Retrapping Adults for Survival' (RAS) project and resightings of ringed birds at the colony, from all sources, will contribute to these statistics. This is only the second Little Tern project to be registered as a RAS and will help develop adult survival rates for the Kilcoole Little Terns in the future.

#### 2.5 Ringed Plover and Oystercatcher

Given that Ireland's breeding populations of Ringed Plover and Oystercatcher are amber- and red-listed respectively (Gilbert *et al.* 2021), there has been an increased effort in recent years to document and monitor their nesting attempts in and around the Little Tern colony. A new colour-ringing project for Ringed Plover began in 2022, coordinated by BB, and efforts to nest-trap and colour-ring adults have continued this year. Little Terns from other sites are also ringed under this project. Oystercatchers are also colour-ringed, using rings from the Dublin Bay Birds Project.

#### 2.6 Public Awareness and Media

Wardens interacted with the public on a regular basis and provided information and updates on the season's progress. Local wildlife photographers were present on a regular basis throughout the season, photographing the Little Terns and Ringed Plovers, and in July arrived in numbers to photograph a juvenile Cuckoo. The Wicklow Branch of BirdWatch Ireland made their annual visit to the colony and to talk to the wardens.

This year a creative project entitled 'Tern the Tide' took place, funded by Creative Ireland and Irish Rail, celebrating the Little Tern conservation work in Kilcoole, along the Dublin-Rosslare railway line. The project consisted of four art workshops, for adults and free of charge, which took place in Kilcoole in June. BB gave an overview of the Little Tern conservation project and the work of NPWS and BirdWatch Ireland at the first workshop. The second workshop involved a site visit by project participants, where BB again gave an overview of the project and an update on the 2024 season, answered questions and showed participants the birds through scopes and binoculars. The final phase of the project will involve the installation of a Little Tern sculpture at Kilcoole Railway Station in October. The workshop was very well received, and participants were grateful for the chance to learn more about the Little Tern conservation project and the birds themselves. More information on the project is available at https://www.ternthetide.com/

## 3. Results

#### 3.1 Weather

Although late April and early May were considered "wild and windy" (Met Éireann) with frequent showers, the weather stabilised from May 4. A low-pressure system however briefly interrupted this stability on May 12, with high tides causing a minor collapse of fencing at the southern end of the colony, and also the loss of at least two undiscovered nests (wardens found stray eggs along the drift-line). Conditions remained mild for most of the rest of the month and although heavy downpours were frequent across the country, these largely missed the colony.

The first two weeks of June were "cool and dry" (Met Éireann), with wardens' daily logs regularly noting "cold", "cool", or "chilly" days, which were also "fine" or "dry". This was due to a northerly Arctic airflow which persisted to the end of the main hatching window in mid-June. Such conditions are broadly favourable to nesting terns and their chicks, "dry" being the key consideration. Low temperatures mean it is important to keep any disturbance to a minimum, however.

Things changed catastrophically, however, on June 13 - 15 when stormy conditions associated with Atlantic low pressure brought large amounts of rain, strong winds, and a strong southerly swell. Chick casualties were high, with the remains of approximately 100 chicks recovered in the aftermath. Remarkably, this system coincided with neap tides; if it had been otherwise, not only would the seaward fencing have been greatly impacted, but also a significant number of nests would have been lost. Conditions for the rest of the month did not improve greatly, with several episodes of wet and cold weather believed to be the cause of further chick losses. The first two weeks of July saw wardens' logs again emphasise "cool" and "cold" days, with several days of rainfall. A spring tide driven by strong northerlies around July 8 and 9 washed out four relaid nests. By this stage, although conditions were not ideal, no weather-related chick deaths were recorded.

#### 3.2 The Breaches

The Breaches channel was already veering northwards when nesting began, bringing it into close proximity to the nesting area at the southeast corner of the colony. Weather conditions and tidal phases then caused the channel to further erode into the nesting area on two occasions during May, causing minor collapses of colony fencing. This can be a problem after 24-hour wardening has started, as erecting fencing work often requires 2 people. Very windy conditions on May 23, in combination with spring tides, caused a blockage, which was speedily cleared the following day by Peter Valentine. Prolonged blockages may also have specific indirect effects on the colony, for example, through depriving Hooded Crows of food resources normally gleaned in the Breaches inlet (estuary). The muddy shoreline areas where they pick through weed and debris can become

unavailable and if this situation persists for too long, birds may instead focus more attention on foreshore areas (including the colony). The quick response by NPWS and Peter Valentine to correct the outflow and prevent further erosion of the colony was both important and appreciated this year.

#### 3.3 Colony Size and Breeding Activity

#### 3.3.1 Nesting Activity

When set-up work commenced on April 29, approximately 200 Little Terns were present, and counts over the following days indicated an increasing trend. From early on, large numbers of pairs were exhibiting breeding behaviours across the whole nesting area, strongly suggesting an early start to nesting was imminent. It was not a surprise when the first nest was discovered on May 9 and it was suspected that there were many others besides. This is a very early date for the first eggs and was 5-6 days earlier than the last three years (first eggs on or immediately before May 15). With ongoing fine weather conditions and a seemingly plentiful supply of fish (many large sandeels observed), conditions seemed very favourable. A very strong synchronous surge in nesting was underway. Between May 13 and May 17, 196 nests were established (Figures 2, 3). Egg predation was low during this period, with only a handful of unobserved incidents recorded (possibly Oystercatchers). The high rate of establishment only started to slow around May 19, peaking eventually on June 1 at 275 active nests (Figure 2). This exceeds the previous colony record of 245 active nests in 2022. Noteworthy was the establishment of 5 nests in the S-colony which has not seen nesting since 2019.

Nineteen nests were lost up to May 30, including 8 abandonments. Eleven, including those at S-colony, were lost to predation. Generally, as can be seen in Figures 2 and 3, nest establishment, and later hatching, proceeded in a straightforward manner. The very last nests of the season (4) were laid on June 30.

There was a low but persistent level of predation throughout much of the season (Figure 3), with predation events noted on 27 days. Not all of these were fatal to nests, however when they were, we assume that many of the nests lost up to the end of the third week of June were replaced. GoPro footage identified some birds present on early and late nests, the latter being replacements. Figure 3 also reveals a marked "bump" in nests gained around June 21 - 22. While this indicates a short burst of re-lay activity, especially in response to losses caused by the June 13 storm, and to prior losses to predation, the number of these new nests exceeds by half, the numbers lost in the preceding 3 weeks. It is possible therefore some of these new nests might have belonged to newly arrived birds (perhaps 5 to 10 pairs). Of more general interest was the apparent absence this season of Little Terns nesting toward the Newcastle Airfield (as is usual). To the north of the colony, 2 of 3 nests recorded 200m - 250m north of the Buckthorn are known to have hatched chicks, with the fate of the third unclear.

## Active Nest Count and Adult Tern Counts

•• Active Nests • Adult Terns



Figure 2: Counts of Adult Little Terns and Active Nests at the Kilcoole Colony during the 2024 Breeding Season

### Predation Events, Nests Gained, Nests Lost, Nests Hatching

- Nests Gained •• Nests Lost - Predation Events - Nests Hatching



Figure 3: Broad chronology of nest establishment, loss and hatching, and other significant events at the Kilcoole Little Tern Colony during the 2024 breeding season.

## Kilcoole Little Tern Colony - Breeding Season 2024



#### Location and Fates of Nests

Public Fence ? Fate Unknown **Clutch Inviable** Nest Fates • Exclosure Main O Abandoned Clutch predated and destroyed ٠ Google Satellite image 21 July 2021 Exclosure South 🔹 • Partial Hatch - eggs lost to various causes **Fully Hatched** ٨ Hide Nest inundated by Tide/Storm surge Hatched but some eggs predated  $\diamond$ \*

Figure 4: Aerial view of the Little Tern colony at Kilcoole in 2024, including positioning of fences and hide, and the small S-colony south of the Breaches outflow.

In addition, two pairs nested within the Cooldross conservation project and there were reports of 2-3 nests north of Kilcoole train station in June, though it was not possible to investigate these. Late June also saw the establishment of a significant number of nests at the north end of the beach at Buckroney in south Wicklow. Unfortunately it was not possible to monitor these to read rings or try and determine to what extent this might have consisted of 'Kilcoole birds' though this should be a priority in the future.

Figure 4 shows the location and fates of nests established during the season (though note GPS accuracy can vary somewhat). Nest density is highest toward the southern end of the colony, while nests are quite sparse in the vicinity of the hide. Overall, there was a high rate of nest success. The figure also highlights the vulnerability to predation at either end of the colony. For the first time since 2019, Little Terns nested in S-colony, just south of the Breaches outlet, establishing 5 nests. Unfortunately these were quickly predated by both Rooks and Hooded Crows. Details of nest/egg losses to predation are discussed more fully below.

#### 3.3.2 Breeding Pairs

The number of active nests in the main colony reached a peak on June 1 at 275 clutches. Not included in this total, however, are a number of nests lost in the days prior (predations and abandonments). Clutch replacement following a loss is typical in Little Terns, especially under favourable circumstances (such as were present at the colony), and an 8 day re-lay interval is applied in our considerations (Massey and Fancher, 1989). Thus, 9 pairs which had lost nests between May 25 and June 1 would not yet have re-nested and been included in the 275 peak of June 1, should be added to the 275, giving a total of 284 pairs. There was nothing to suggest any significant later influx of breeders (although see note in section 3.2.1). Thus, later nests were likely to have been a combination of replacement clutches for nests lost, and inexperienced breeders arriving late to the colony. We therefore base season productivity estimates on a breeding population of 284 pairs. This total does not include two pairs that nested successfully on the artificial beach at Cooldross, fledging 5 young, or another successful pair found nesting some 200m north of the colony on May 18. <u>Thus the total number of primary nesting pairs at Kilcoole and associated satellite nests in 2024 was 287 pairs.</u> From a historical perspective (Figure 5), this represents the highest breeding population on record.



#### Historical Breeding Pairs and Potential Maximum Fledge

**Figure 5:** Number of Little Tern breeding pairs, and potential maximum number of chicks fledged at the Kilcoole colony from 1999 to 2024.

#### 3.3.3 Clutch Size and Incubation Period

A total of 332 nesting attempts were recorded at the Kilcoole colony in 2024, consisting of primary/original nesting attempts as well as re-laid nests and late nests by inexperienced breeders. Of these, 254 are known to have hatched out chicks, while the fates of 11 nests could not be determined. Clutches were usually completed within three days of the first egg being laid, although longer times were occasionally noted.

Two hundred and fourteen clutches (~65%) were of 3 eggs, 97 were of 2 eggs (~29%), with the remaining 21 clutches being of 1 egg (6%). Eight "Egg Dumps" (8 eggs) were also found. In total, 851 eggs were laid giving a mean clutch size of 2.6 eggs. Figure 6 shows the fates of the clutches.

Hatching success was high for 2-egg and 3-egg clutches, however single egg clutches mostly failed. These were generally laid late in the season and were almost certainly re-lays. Most were predated by Rooks, while others were abandoned, or lost to the sea. The fates of 11 nests remained unknown, with most of these "disappearing" around the time of the June storm. Data for incubation period was deemed too imprecise this year due to the very early laying of the majority of clutches during the period the colony was being set up, meaning nests were found some days after clutches were completed. Because of this, incubation periods have not been calculated and analysed this year.

#### Clutch Size and Fate



**Figure 6:** Little Tern clutch statistics showing % hatched, predated, inundated (by tide), abandoned and inviable clutches from nests at the Kilcoole colony during the 2024 breeding season.

#### 3.3.4 Hatching Success

The known fates of all eggs are shown in Figure 7. A total of 851 were laid across the 332 breeding attempts. Of these, 637 hatched (~75%). Of those that did not, 85 were lost to predation (~10%, believed to be exclusively avian), 12 were inviable, 59 were abandoned (~7%) and 24 (from 13 nests) were lost to storm surge or spring tides. The fates of 34 eggs (~4%) could not be determined. One egg was trampled. Egg predation occurred at a constant, but low level across the season and was most impactful towards the end of the season on late re-lay nests. By this time nests were widely distributed within the colony and most adults were feeding young and spending time on the shoreline, meaning there was a lower density of birds in the colony to drive away corvids.

The "Abandoned" category represents eggs deserted before the end of a typical incubation, however frequently this year, the last egg of a clutch was left behind at the scrape and presumed to have been abandoned (as opposed to "inviable" i.e. eggs which did not hatch despite the efforts of parents). The first chicks hatched on May 31st, and the last on July 16th.





Figure 7: Fates of all Little Tern eggs at the Kilcoole colony during the 2023 breeding season.

#### 3.3.5 Productivity

The first fledglings were recorded on June 20. Because the Kilcoole colony produces large numbers of highly mobile chicks which hatch, develop and fledge across a 4–5-week period, and after which become capable of leaving at different times, it is practically difficult to determine accurate estimates of fledgling numbers. We can, however, define reasonable upper and lower bounds within which the true value lies.

We base a *Hypothetical Maximum* on the undoubtedly unrealistic assumption that we are able to account for *all* chicks which do not survive to fledging i.e. we find all chicks that die at the colony *and* make realistic estimates of the numbers taken by predators. Thus, we subtract from the number of hatched chicks (637), our known total for chicks found dead (-114), plus our estimates of chicks known to have otherwise perished through predation by corvids (upper estimate -65) and fox (upper estimate -19). A fox gained entry to the colony in June and blood marks were subsequently found at various points in the colony, though there were no remains of either chicks or adults. It is not clear whether this blood came from the fox therefore, or from predated chicks, though the lack of any other remains implies it may be the former. The presence of blood alone but no feathers, legs, wings etc. is not typical of a fox predation incident. Out of an abundance of caution however, we have included an estimate of 19 chicks lost. These known and estimated figures giving a *Hypothetical Maximum* of 439 chicks fledged, i.e. productivity of 1.5 chicks fledged per pair.

For our lower bound – a *Best Minimum*, varying approaches are considered, as different seasonal contexts can favour one approach over another. A preferred method derives the estimate from the number of chicks reaching a certain age or size close to fledging, and assumes these birds fledge, barring any subsequent deleterious circumstances after last capture. Another approach bases the estimate on fledgling count data, an approach that is most likely conservative, given the likelihood that many fledglings will not be represented, having already left the colony, or simply having not been seen. Circumstances

during the 2024 season however, posed several problems with these approaches. Broadly, our usual foreshore counts were not conducted as these were deemed an excessive disturbance given the traumatic events that had occurred. Moreover, levels of disturbance were already very high, with wardens spending significant amounts of time in the colony trying to ring the huge number of chicks, while cold and often wet weather hampered much of this work and prevailed for much of this period. The collection of biometric data for re-encountered chicks became a low priority, so our database for assessing chick development was far from ideal. Deciding on a value for *Best Minimum* has therefore been more difficult than in many previous years. We chose to base this estimate on the number of chicks receiving colour rings. Although some of these might be excluded from a more rigorous category of, say, *10 days or older*, all colour ringed chicks are generally well developed and on their way to fledging. <u>Not including those from Cooldross</u>, a total of 190 Little Tern chicks were colour-ringed at Kilcoole, six of which were <u>subsequently recovered dead</u>, leading to an estimated of 184 chicks fledged. This gives a best minimum <u>productivity figure of 0.65 chicks fledged per pair</u>. This is undoubtedly an underestimate as fledglings with metal rings only were regularly seen on the foreshore later in the season, but as in previous years it provides a useful lower estimate on which to try and base a more accurate productivity figure on.

With the K-colony breeding population at 285 pairs, and the number of chicks surviving to fledge between 184 and 439, the lower and upper productivity estimated are 0.65 and 1.50 fledglings per pair, respectively. The arithmetic mean of these two values is 1.09 and we feel this is a reasonable estimate of productivity in 2024.

#### 3.4 Avian Flu (HPAI H5N1)

There were no signs of avian flu in the colony this year, nor in any other Irish seabird colonies, and the threat level throughout Ireland and the UK in summer 2024 was considered low.

A peer-reviewed paper entitled 'A case study of the 2023 Highly Pathogenic Avian Influenza (HPAI) outbreak in tern (Sternidae) colonies on the east coast of the Republic of Ireland' was recently accepted for publication in a special HPAI edition of the journal Bird Study, covering the relative impacts of HPAI. This involves discussion of the birds from Kilcoole in 2023 and includes BB, JM and CJ as co-authors.

#### 3.5 Predation and Nest Loss

#### 3.5.1 Corvid Depredation

Forty-nine nests were raided by avian predators (mostly by Rooks and Hooded Crows), of which 41 were destroyed directly or indirectly, while 8 progressed to hatching. This represents approximately 10% of all eggs laid. While most pairs affected earlier in the season probably made successful second breeding attempts, 20 (presumed re-lay) nests established from June 20 onwards were fully predated, with no opportunity for further nesting. This was largely due to the sparse distribution of nests along the entire colony and the fact that most of the other birds were feeding chicks on the shoreline at that stage, and so less concerned about corvids in the nesting area.

Corvid predation of chicks this year was significant, with an upper estimate of 65 chicks taken. Remarkably, an upper estimate of 49 were taken over the course of a single day by a pair of Hooded Crows, operating largely at the southern end of the colony. These birds were feeding a fledgling which was in Stringers fields across the Breaches estuary. Two night wardens came to the colony early in response and quickly removed the birds responsible. An upper estimate of 16 other chicks are thought to have been taken by both Rooks and Crows, with one Rook in particular responsible for a large proportion of these.

Night wardens frequently arrived early in the evening, stayed late in the morning, or came to the colony in the middle of the day to respond to incidents of corvid predation, and extra Larsen traps were also deployed. Opportunities to shoot problematic individual birds were limited, however. The levels of corvid predation were comparatively high this year. In future years some contingency plan needs to be made for potentially high corvid predation from early June to early July.

#### 3.5.2 Raptor Depredation

Kestrel and Sparrowhawk were spotted nearby on rare occasions but showed no interest in the colony. A Peregrine started making sporadic visits to the colony from July 4, and although it was never seen to have a successful hunt, it may have taken a small number of birds on the wing. We do not think it relied on the colony for its prey as its visits were usually noted as short and unsuccessful and so its impact was minimal.

A Long-eared Owl was seen in the colony late in the season and is suspected to have taken an adult Ringed Plover from the nest, the remains of which were found on the morning of July 17. Two eggs from the nest were damaged and abandoned thereafter, however 2 hatched chicks were later found in a nearby Plover nest. A Barn Owl was seen around the Breaches and Little Tern colony during the season but caused no problems.

#### 3.5.3 Oystercatcher Depredation

This year, only one pair of Oystercatchers nested in the colony and were suspected of depredating three nests in their vicinity. Other Oystercatchers may have taken a low number of eggs in the early season.

#### 3.5.4 Mammalian Predation

Foxes were seen regularly from the very start to the very end of the season and approached the colony from all directions. Fox cages were deployed near the colony in two locations but failed to catch anything, and similarly fox lights have been deployed at either end of the colony but they are not thought to be having much of a benefit in deterring foxes. On the morning of June 17, a fox was shot inside the colony fencing at the northern end. Signs suggest it moved through the colony along the marram grass border at the top of the beach. It is not known how many chicks it might have taken before it was stopped. It has been a few years since a fox has managed to enter the colony, and the fact that this incident occurred despite typical numbers of foxes being controlled on site in 2024 (Table 2) highlights the constant threat posed by foxes to the colony.

Species	Total
Red Fox	25
Hooded Crow	15
Rat	3
Rook	5
Jackdaw	2
Magpie	1

Table 2: Predators controlled by the Kilcoole Little Tern Conservation project staff in 2024.

A Mink was seen north of the colony in late July. Four Mink traps were quickly deployed in strategic locations. No Mink was caught and there were no further sightings.

A lot of rat activity was noted at the start of the season, coming from the rocks on the south side of the breaches but with rats running along the metal bridge to the north side where the main colony is. Night wardens kept a close eye on this, and traps, bait and appropriate boxes and pipes were all quickly made available; however the rats did not have an impact on any of the nesting birds. A small number were shot by night wardens. Despite the lack of impact, this is something that should be closely monitored each season and suitable control options deployed quickly as needed.

#### 3.5.5 Storms and High Tides

Three high tides destroyed a small number of nests over the course of the season. At least 2 nests were destroyed on May 12. Very stormy conditions and associated high tides on June 13 caused a mass fatality of chicks with the remains of c.100 chicks recovered from the tideline and across the nesting area. This occurred at a stage when many chicks had moved out of the colony and down to the shoreline but were still small and 'fluffy' enough to be vulnerable to getting wet or not quick enough to flee incoming tides. The tides (backed by strong southerly winds) also caused the loss of nine nests. Strong onshore winds on July 9 caused tides to wash out four late-season nests.

#### 3.5.6 Human Disturbance

Public disturbance was limited to infrequent and accidental incursions of beach walkers passing the northern buffer-zone fence at low tide. The introduction of the extendable rope fence in recent years has done much to reduce such incidents. No incidents of challenging or rude behaviour were recorded. Dogs off the leash progressed down the colony foreshore from the north on two occasions, with no serious consequence. A single egg was trampled this year by wardens.

#### 3.6 Little Tern Ringing & Resighting

The ringing of chicks has been an important part of the monitoring of Little Terns at Kilcoole through the history of the project. Colour-ringing began in 2014, allowing for an infinitely greater amount to be collected. To further enhance data collection from ringing, particularly on survival and breeding site fidelity, and reducing biases in data, we have begun a programme of nest-trapping and ringing/colour-ringing of adults at Kilcoole. This work is further complemented by traditional ring-reading efforts via spotting scope, and as of 2022 we have begun a programme of GoPro nest monitoring to read rings of nesting adults. Together, these actions will ensure a suitable sample size with which to develop adult survival estimates, which together with productivity data will help with future development of population models. The project has now been registered as a RAS (Retrapping Adults for Survival) project with the BTO to maximise its value and comparability of the data.

#### 3.6.1 Chick Ringing

A total of 579 chicks received BTO metal rings during the season, with 192 also fitted with a colour ring. The number receiving metal rings represents 91% of all chicks hatched. Unfortunately, 66 of these were recovered from dead chicks following bouts of poor weather, especially after the storm of June 13. In addition, an unknown number would also have been lost to depredation by Corvids (especially on June 11), and possibly to fox on June 17. By contrast, only 6 dead colour ringed chicks were found (evidently caused by poor weather), leaving 186 (including two Cooldross chicks), most of which were expected to have fledged.

#### 3.6.2 Biometrics and Chick Growth

For several reasons, normal routines usually undertaken during our chick ringing sessions were compromised this year. At the time of peak hatching, frequent episodes of bad weather, corvid depredation (and the threat thereof), limited the amount of time that could spent gathering biometric data, particularly given the very high numbers of chicks present. A priority was placed on simply applying BTO metal rings and colour rings to as many chicks as possible, with biometric data to be gathered later if the opportunity arose. The collection of biometrics was largely restricted to measures for day 1 or 2 chicks (ageable because hatching times were known), and measures taken during colour ringing. Hatching times for large numbers of chicks could not be determined (making accurate age impossible), thus precluding these from analyses. Overall, the data that was collected was limited in range and broadly insufficient to produce reliable growth curves. It may however be of use in future analyses of data from all years.

#### 3.6.3 Ringing and Ring-resighting of Adult Little Terns

Nest-trapping of adults for ringing was carried out on nine dates between May 16 and June 26, with a total of 75 adult Little Terns caught (Table 3). Captured birds include unringed individuals, birds with a BTO ring only and birds already colour-ringed, but some of whom required new rings as their existing colour ring was worn or broken. All birds were given BTO and colour-rings if they did not already have them. In total, 57 rings were read via nest-trapping, and 18 unringed birds are now colour-ringed and will be able to contribute to future monitoring and data collection. Broadly speaking, the results of this year's nest trapping indicate that 44% of the adult Little Terns at Kilcoole were colour-ringed, a third were BTO-ringed only, and less than a quarter were unringed, upon arrival this season. Full ringing details are outlined in Appendix 2.

Details of origins of those birds that were already ringed are compiled with other ring-read data via GoPro and scope and illustrated in Figure 8 and 9.

#### Table 3: Results of Little Tern nest-trapping for ringing at Kilcoole in 2024.

Record Type	Count
Unringed	18
BTO-ringed only	25
Colour-ring replaced	8
Colour-ring retrap	24
Total Individuals	75

#### 3.6.4 Ring-reading

A total of 122 unique Little Tern colour rings were read using a GoPro placed beside a nest. The proportions of colour-ringed, BTO ringed and unringed birds identified via GoPro nest monitoring are outlined in Table 4 below, and the relative ages and origins of birds identified through colour rings are compiled with other sources of sightings in Figure 8 and 9.

**Table 4:** Results of GoPro ring-reading at Little Tern nests, at Kilcoole in 2024.

Rings	Unique Individuals
Unringed	50
BTO-ringed only (right leg)	64
BTO-ringed only (left leg)	6
Colour-ringed	127
Total Individuals	247

Ring-reading of Little Terns at Kilcoole is particularly difficult due to the size of the rings and the undulating terrain and large shingle substrate of the beach. It is generally quite time consuming to do, with modest gains to be made, and requires a very high-quality spotting scope. Ring-reading of this nature is much more easily carried out at Portrane, Baltray and Cahore where the beaches are sandy and gently sloping. Nonetheless, a total of 189 unique ring-reads were made this year via scope – an extremely high total. The majority of these were by Daniele Gioppo, a long-serving volunteer at the Kilcoole and Portrane Little Tern colonies. Daniele's work has continued at Portrane and neighbouring areas in the post-breeding season and he has read several rings of birds from Kilcoole and other colonies which are not summarised here. Additional resightings were by BB, Jan Rod, and single sightings from passing photographers, as well as two dead adult Little Terns.



**Figure 8:** Age and origins of colour-ringed adult Little Terns at the Kilcoole colony in 2024. This figure only includes birds originally ringed as chicks, so are of known age.



**Figure 9:** Year of ringing and origins of colour-ringed adult Little Terns at the Kilcoole colony in 2024, which were originally ringed as adults and therefore are of unknown age beyond year of ringing plus two years.

The results of nest-trapping, GoPro nest monitoring and traditional ring-reading with a spotting scope are outlined separately here to highlight the value of each method and provide additional details on the number of unringed and metal-ringed-only birds in the colony. This 'three-pronged' approach is now a core aspect of the Kilcoole Little Tern conservation project, allowing for the provision of a suitably large and representative sample size to determine rates of survival, emigration and immigration, natal and breeding site fidelity, and other research questions. These sightings will all be logged as part of the new RAS project. It should be noted that colour-ringing of Little Terns in Ireland only began in 2014, and in subsequent years at other colonies, and therefore there is some bias in the age ratios present here. This bias is reducing as the population ages, and the bias is also being reduced through the ringing of adult birds in recent years. Though these birds are of an unknown age (beyond time since ringing plus two years), they can still contribute to much of the analyses including adult survival rates, site fidelity and postbreeding movement.

When the total number of rings read via GoPro and adult nest-trapping and ring-reading are summed, 256 adult Little Terns were identified at Kilcoole in 2024. A small minority of these might be birds passing through and not nesting here, but that number is thought to be very small given the bulk of ring-reading occurred in the middle of the nesting season and in the context of the highest ever total of breeding pairs at Kilcoole. Full details of rings read are illustrated in Figure's 8 and 9. Of the 256, 94% were originally ringed at Kilcoole (40 as adults, 200 as chicks), 3% were ringed at Baltray (3 as adults, 4 as chicks), 2% were ringed at Portrane (5 as adults, 1 as a chick), and 1% were ringed in the UK (two at Gronant as chicks, one still to trace). The oldest bird identified in the colony this year was 19 years old, bearing the colour-ring YN(ACA). It was ringed as a chick in Kilcoole in 2005, subsequently caught and colour-ringed on the Isle of Man in 2016, seen in Denbighshire and Flintshire in Wales in 2018, Baltray in Louth in 2020, and most recently in Kilcoole in 2023 and now again in 2024. A total of 27 birds more than 10-years old were seen at Kilcoole this year, and the bulk of the population consisted of birds aged 3- to 10-years (n=171, 67%). A small number of two-year old chicks (n=7) were present and breeding, including one from Gronant.

Amongst the more interesting records were a bird known to have nested in Baltray in 2023 (originally from Baltray as a chick), and a bird that nested in Portrane in 2022 and 2023. Another individual was born in Portrane in 2021, caught at Baltray as a nesting adult in 2023, and was nesting at Kilcoole in 2024, highlighting the interconnectivity of these sites.

To date, at Kilcoole and other Tern colonies, the main focus of monitoring has been on productivity. This is understandable, as the most immediate measure of how conservation efforts have worked in each season. Survival rates, both to breeding age and from year to year thereafter, are the other critical factor in determining whether a colony or population will grow, stabilise or decline. In the last three years we have significantly increased our focus on this aspect of Little Tern ecology and this should be continued. A similarly high ringing and ring-reading effort is carried out at Portrane. Efforts are increasing again at Baltray after a few years of reduced effort. A small amount of ringing was done at the Cahore colony this year and it is hoped that this can be increased in future years to help provide better clarity on the links between this and other colonies. Similarly, in the event that other colonies are established late in the season, as happened in 2024 at Buckroney, it would be desirable to dedicate some ringing and ring-reading effort here to better elucidate the origins of the nesting birds, and their habits in future years.

#### 3.7 Ringed Plover

Nine Ringed Plover nests were found during May, including some complete clutches in the first week of May. Two abandoned efforts were also recorded. The first chick seen belonged to nest RP3. Only 1 chick was ever seen and it is believed that either 3 (eggs or hatched chicks) were predated. Five of the 7 remaining nests hatched out at least 19 chicks (1 nest abandoned, 1 nest predated), 17 of which were ringed.

Further nests (mostly second broods) started appearing from mid-June, with 4 located from June 10, while 2 nests were found in early July. One parent bird from a late nest was killed while incubating by a Long-eared Owl. Although 2 eggs from the clutch were abandoned, 2 chicks had already hatched. A day after the predation, these chicks were found in the nest belonging to the other late nesting pair. Another nest was found several hundred metres north of the colony and was monitored sporadically. Three chicks are known to have hatched from there and were ringed. In all, 18 chicks hatched from these second broods, 17 of which were ringed.

At least ten adult Ringed Plover, colour ringed in previous years, were seen at Kilcoole in 2024. A full list is still being compiled. In addition, a Ringed Plover chick metal-ringed at Kilcoole in 2018 was caught this year at Lady's Island Lake in Wexford as a breeding adult.

#### 3.8 Oystercatcher

One pair of Oystercatcher nested successfully within the colony, having already established a nest before the colony set-up period. Three chicks hatched between May 29 and June 1 and were eventually brought into the Breaches estuary by the parents. Their fate beyond this stage is not known. Interestingly, one bird from this pair nested at the same spot last year, but this year had a new (unringed) mate. Two further nesting attempts were recorded in the estuary area - one near the southern estuary shore, and another adjacent to Cooldross. The latter is known to have hatched out chicks, while the former is presumed to have also been successful.

## 4. Discussion

The 2024 season at Kilcoole was remarkable on several counts this year, smashing several welcome records, but ended on a rather muted but thankful note. It comes against a backdrop of long-term positive trends, starting from the striking recovery since the total wipe out of 2012 (Figure 10). It seems also that other east coast colonies had generally positive outcomes this year, both in terms of the number of breeding pairs and subsequent productivity. That the high nesting numbers at Kilcoole this year seemingly weren't the result of an influx from elsewhere, but rather a true increase in the Irish/Irish Sea population, is very welcome and bodes well for the species' future.



Productivity Range - Fledglings per Breeding Pair 2010 - 2024

Figure 10: Measures of Little Tern breeding productivity at Kilcoole, 2010-2024.

Strikingly large numbers of Little Terns were already present when set-up work began at Kilcoole this year, both earlier and in much greater numbers than in previous years, and breeding behaviour was well advanced. The first clutches arriving around 6 days ahead of the usual date of May 15 and continued apace, with over 100 nests present by May 15 when 24/7 monitoring and protection began. This presented logistical challenges

as wardens had to continue colony set-up, including fencing and hides, which posed a disturbance threat to the early clutches. Wardens worked around this as much as was practicable, working at different parts of the colony to give birds a 'break' as much as possible. It is also the case that disturbance at the very start of incubation likely poses a much smaller risk than in later weeks when eggs are more developed. There was seemingly little or no impact from this disturbance as most early clutches went on to hatch successfully. In addition to this, poor weather in the first week of set-up, coupled with the presence of Lapwing chicks in Cooldross, meant the need for additional precautions that prolonged the setup period. With both the Lapwing chicks and early-nesting Little Terns in mind, it is recommended that the Kilcoole Little Tern Project should start a minimum of one week earlier in future years.

In total, 285 pairs are believed to have nested at the Kilcoole colony, far surpassing the 2022 record of 245 pairs. An additional two pairs in Cooldross, and small number of nests north of the main colony area further push that total. A notable aspect to these nests was the preponderance of 3-egg nests, 65% of all nests. Only the 2015 and 2017 seasons come close by comparison, at 56% and 55% respectively.

One noteworthy aspect of these numbers is that the population has not encountered or suffered from HPAI at the staging or wintering grounds since last season, despite the prevalence of the virus in terns and gulls in 2023. Common, Arctic and Roseate Terns were all impacted last summer and there is information to suggest the Lady's Island Sandwich Tern population was impacted by HPAI on migratory or wintering grounds, but still nothing to suggest that Little Terns from Ireland, Britain or north-west Europe have been impacted to any tangible degree.

Weather conditions for May and early June were favourable for the rapid colony development that occurred. Egg predation also occurred at a low rate. There was little surprise then when unprecedented numbers of chicks started hatching during the first week of June. Wardens, however, had difficulties keeping pace with hatching chicks, and a deterioration of weather conditions from June 4 exacerbated the situation. Mid-June saw significant losses in a short space of time to both corvid predators and bad weather. With so many small and vulnerable chicks present, this short window of time featured 3 significant deleterious impacts in what had been a potentially highly productive season. The week of June 11 - 17 was difficult for both the Little Terns, and the wardening team. Nevertheless, the colony productivity estimate of approximately 1.1 chick per pair, remains close to the 10-year average of 1.2.

Finer grain details of the population dynamics of the Kilcoole terns (and of the broader Irish Sea metapopulation) are increasingly coming into focus as our colour ringing and resighting programs gather momentum (and data). The Kilcoole Little Terns have now been registered for a RAS project with the BTO, allowing for the standardised calculation of adult survival rates, which will be informative in their own right but may also gain additional importance in the future as offshore development in the Irish Sea progresses. A high level of ringing and resighting effort exists at Portrane too, and a renewed effort began at Baltray this year which we hope to build on. The addition of the NPWS conservation project at Cahore and provision of reliable and safe nesting space for Little Terns there also provides a chance to fill in some of the gaps in our

knowledge of the Irish population through ringing efforts there in the coming years. The collection of representative ringing and resighting information is undoubtedly labour intensive, especially at a colony like Kilcoole which has greatly increased in size in recent years and therefore already keeps the wardens busy. In future years there may need to be refinement of the daily work activity of wardens and the data which is desirable to gather. This discussion is warranted across all Irish Sea Tern colonies to ensure we are gathering the most useful data, in as standardised a way as possible to inform the future protection of these birds.

Predation pressure was particularly high in 2024. Foxes were present from the very start to the very end of the season, and the number of foxes shot was consistent with many recent years but included one fox managing to gain entry into the colony. One pair of Hooded Crows, feeding a fledgling in Stringers field, caused a huge amount of damage in a matter of hours despite best efforts of wardens and additional help from volunteers and the project manager throughout the day, before night wardens could put a stop to them later the same day. The amount of chicks taken in such a short time is unprecedented at Kilcoole. Additional lower-level predation occurred before and after this by Hooded Crows and Rooks, much of which occurred later in the season when nests were at low density and the remaining pairs were not benefitting from the rest of the flock. Unfortunately Larsen traps proved largely ineffective at this stage of the season. Though the levels of corvid predation are usually more manageable, it is recommended that additional resources be devoted to corvid control during daylight hours from early June to early July.

Additional predators present and showing interest in the colony included Magpie and Jackdaw. Badgers were seen on occasion and Otters regularly, though thankfully neither appeared to show any interest in the Little Terns. Rat activity at the Breaches bridge was a cause for some concern early in the season but thankfully never amounted to much, though should be given due consideration in future years.

Overall the high number of pairs returning to Kilcoole was encouraging, particularly given that other Irish colonies also had healthy numbers, suggesting overall growth in the population rather than just a shift in distribution. Losses to predation and waves were disappointing and underline the fact that conservation projects such as Kilcoole require a huge amount of work and attention each year. Thankfully, while productivity was lower than preferred it was still 'good' overall, which bodes well for the colony and Irish Sea population in the coming years.

## 5. Recommendations & Requirements

These recommendations are based on the 2024 season and cover a range of issues, some of which will be more relevant to BirdWatch Ireland (e.g. equipment purchases, staff time) and some of which will be pertinent for NPWS to consider.

- The existing project vehicle is no longer working and a new vehicle will have to be purchased for 2025.
- A new cordless drill and drill bit set are needed for hide construction.
- The hide is showing its age and will need to replaced in the near future. Otherwise, stocks of equipment for set-up and colony protection are adequate and up-to-date.
- New water containers may be needed ahead of the 2025 season.
- A lack of an additional scope has been highlighted as a limiting factor when recruiting volunteers to help with incubation checks and nest finding. Similarly, the current scope is not sufficient for ringreading. A new, high-powered scope and suitable tripod should be purchased.
- An earlier start date for the project, commencing 7-10 days earlier than in recent years, is
  recommended based on the very early start to nesting in 2024, restrictions on set-up activity due to
  weather, May Bank Holiday and the sheer number of tasks that need to be completed in advance of
  nesting, including admin and desk-based preparations.
- Greater flexibility on staff presence on site in the final 7-10 days of the season, in years where almost all chicks have fledged or are near fledging at that stage, would also be beneficial.
- Additional resources should be dedicated to corvid control during daylight hours from mid-June to mid-July when corvid depredation is at its highest and most impactful. Night wardens have prolonged their shifts in the morning to tackle problematic corvids this year, but really this problem requires additional staff on site for a few hours on multiple days, to efficiently tackle any problematic birds.
- Though additional time for the report-writing period has been added in recent years, this still falls short of what is needed and additional staff time will have to be budgeted for in future years.
- Greater synchrony in data collection between Little Tern projects, and consensus on priorities, is
  desirable. The workload for Kilcoole wardens has increased dramatically in line with colony size
  increase, and with the additional burden of deterring predators such as corvids during the peak of the
  season. We feel we have prioritised data collection and other tasks well when needed but it would be
  good to have a wider consensus.
- An additional staff member, even part-time during the peak of the season, would greatly help with the above data collection and corvid deterrence. This person could also be tasked with monitoring of

nests further away from the colony (e.g. at Newcastle in previous years, north Kilcoole near Greystones and Buckroney Marsh in 2024). Some key volunteers have made a huge contribution to the project in recent years, but there is a limit to what can be asked of or achieved with volunteers.

- Nest protection cages have been trialled in other countries, to protect Ringed Plover in particular. Results can be mixed, with some sites showing it greatly reduced predation from the likes of corvids, but others having issues with regards Sparrowhawks. A trial of a small number of nest cages for Ringed Plover and/or Little Tern nesting in either the south colony or further away from the colony towards either Greystones or Newcastle, should be considered in the future.
- Nesting history and success of Ringed Plover and Oystercatcher should be better monitored, to the same level of detail as the Little Terns. The submission of this data to the BTO Nest Record Scheme should be considered.
- The increased level of ring-reading, through a variety of methods, is proving hugely informative. Gaps remain however, with regards unringed birds. An increased effort should be made for ringing and ring-reading effort at satellite colonies and stray nests along the north Wicklow coast. Similarly, a coordinated ringing effort at newer projects such as Cahore would help fill in some of the 'blanks' at other colonies and 3-4 days of ringing at different stages of the season could achieve a lot.

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# Appendix 1: Outcomes of Little Tern Nesting Attempts

**Table A1:** Outcome of each nesting attempt at the Kilcoole colony in 2024. AB = abandoned, NM = natural mortality, INV = eggs infertile/addled, HD = human disturbance, prPr = presumed predated, P = predated, Unk = Fate Unknown. Each code is followed by the number of eggs (e) or chicks (y) to which it refers.

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially Fledged	Other outcome	Notes
1	09/05/2024	3	3	01/06/2024	3		
2	15/05/2024	3	2	09/06/2024	2	1e AB	
2a	15/05/2024	3	3	02/06/2024	3		
3	15/05/2024	3	3	05/06/2024	3		
4	15/05/2024	3	3	09/06/2024	3		
5	15/05/2024	3	3	06/06/2024	2		
6	15/05/2024	3	3	06/06/2024	3		
7	15/05/2024	3	3	08/06/2024	1		1y exposure
8	15/05/2024	2	2	ND	2		
9	15/05/2024	1	0		0	1e AB	
10	15/05/2024	3	3	02/06/2024	3		
11	15/05/2024	3	3	02/06/2024	2		
12	15/05/2024	3	3	06/06/2024	2		1y tide
13	15/05/2024	3	3	ND	3		
14	15/05/2024	3	3	06/06/2024	3		
15	15/05/2024	3	3	06/06/2024	2		
16	15/05/2024	2	1	06/06/2024	1	1e AB	
17	15/05/2024	2	2	ND	2		
18	15/05/2024	3	3	06/06/2024	1		
19	15/05/2024	2	2		1		1y exposure
20	15/05/2024	2	1		1	1e P	
21	15/05/2024	3	3	04/06/2024	2		
22	15/05/2024	3	3	07/06/2024	2		
23	15/05/2024	3	3	07/06/2024	3		
24	15/05/2024	2	2	08/06/2024	2		
25	15/05/2024	3	3	07/06/2024	3		
26	15/05/2024	1	1	06/06/2024	1		
27	15/05/2024	3	3	01/06/2024	2		
28	15/05/2024	2	2	03/06/2024	2		
29	16/05/2024	3	3	03/06/2024	2		
30	16/05/2024	2	0	ND	0	2e AB	
31	16/05/2024	3	3	ND	1		
32	16/05/2024	2	2	05/06/2024	1		

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially	Other	Notes
					Fledged	outcome	
33	16/05/2024	2	2	ND	2		
34	16/05/2024	3	1	06/06/2024	1	2e AB	
35	16/05/2024	2	2	02/06/2024	0		
36	16/05/2024	3	3	06/06/2024	3		
37	16/05/2024	3	3	02/06/2024	3		
38	16/05/2024	2	2	03/06/2024	2		
39	16/05/2024	3	3	ND	3		
40	16/05/2024	2	2	05/06/2024	2		
41	16/05/2024	3	2	04/06/2024	1	1e AB	
43	16/05/2024	3	3	06/06/2024	3		
44	16/05/2024	3	3	06/06/2024	3		
45	16/05/2024	3	3	31/05/2024	3		
46	16/05/2024	3	3	06/06/2024	3		
47	16/05/2024	3	3	06/06/2024	3		
48	16/05/2024	3	3	09/06/2024	3		
49	16/05/2024	3	3	02/06/2024	2		
50	16/05/2024	3	2	ND	1	1e AB	
51	16/05/2024	2	2	08/06/2024	2		
52	16/05/2024	3	3	08/06/2024	3		
53	16/05/2024	3	3	06/06/2024	3		
54	16/05/2024	3	3	07/06/2024	3		
55	16/05/2024	3	3	06/06/2024	3		
56	16/05/2024	3	3	08/06/2024	1		
57	16/05/2024	3	3	08/06/2024	3		
58	16/05/2024	3	3	06/06/2024	3		
59	16/05/2024	3	3	06/06/2024	3		
60	16/05/2024	2	2	06/06/2024	2		
							1y D at
61	16/05/2024	3	3	ND	2		nest
62	16/05/2024	3	3	03/06/2024	3		
63	16/05/2024	2	2	04/06/2024	2		
64	16/05/2024	3	1	10/06/2024	0	2e AB	
65	16/05/2024	3	3	04/06/2024	3		
66	16/05/2024	2	2	05/06/2024	2		
67	16/05/2024	2		ND	0	1e P 1e Unk	
68	16/05/2024	3	3	04/06/2024	3		
69	16/05/2024	3	3	ND	3		
70	16/05/2024	3	3	10/06/2024	3		
71	16/05/2024	3	1	ND	1	2e AB	
72	16/05/2024	3	3	03/06/2024	3		
73	16/05/2024	3	3	06/06/2024	3		
74	16/05/2024	3	2	02/06/2024	2	1e AB	

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially	Other	Notes
					Fledged	outcome	
75	16/05/2024	3	2	05/06/2024	2	1e AB	
76	16/05/2024	3	3	03/06/2024	3		
77	16/05/2024	3	2	09/06/2024	2	1e Unk	
78	16/05/2024	3	3	04/06/2024	3		
79	16/05/2024	3	3	ND	3		
80	16/05/2024	3	3	02/06/2024	2		
81	16/05/2024	3	3	04/06/2024	2		
82	16/05/2024	2	2	05/06/2024	2		
83	16/05/2024	3	3	04/06/2024	3		
84	16/05/2024	3	3	03/06/2024	2		
85	16/05/2024	3	3	04/06/2024	3		
86	16/05/2024	3	3	02/06/2024	1		
87	17/05/2024	3	3	05/06/2024	3		
88	17/05/2024	2	0		0	2e AB	
89	17/05/2024	3	3	05/06/2024	3		
90	17/05/2024	3	3	08/06/2024	3		
91	17/05/2024	3	3	ND	3		
92	17/05/2024	3	3	ND	3		
93	17/05/2024	3	3	08/06/2024	2		
94	17/05/2024	3	3	06/06/2024	3		
95	17/05/2024	2	2	ND	2		
96	17/05/2024	3	3	ND	3		
97	17/05/2024	3	3	ND	3		
98	17/05/2024	3	2	ND	2	1e P	
99	17/05/2024	3	3	04/06/2024	1		
100	17/05/2024	3	3	04/06/2024	2		
101	17/05/2024	3	3	05/06/2024	3		
102	17/05/2024	3	3	05/06/2024	3		
103	17/05/2024	3	1	10/06/2024	1	2e AB	
104	17/05/2024	2	2	04/06/2024	2		
105	17/05/2024	3	3	07/06/2024	3		
106	17/05/2024	3	3	08/06/2024	3		
107	17/05/2024	3			0	3e Unk	
108	17/05/2024	2	2	06/06/2024	2		
109	17/05/2024	2	0		0	2e P	
110	17/05/2024	1			0	DUMP	
111	17/05/2024	3	3	09/06/2024	3		
112	17/05/2024	2	2	09/06/2024	2		
113	17/05/2024	1			0	DUMP	
114	17/05/2024	3	0		0	2e P 1e AB	
115	17/05/2024	3	3	ND	3		
116	17/05/2024	3	3	05/06/2024	3		

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially	Other outcome	Notes
117	17/05/2024	2	2	09/06/2024			
118	17/05/2024	2	2	03/06/2024	2		
119	17/05/2024	2	1	10/06/2024	1	2e Link	
120	17/05/2024	2	1	10/00/2024	0	2e Unk	
120	17/05/2024	3	2	09/06/2024	2	1e AB	
122	17/05/2024	3	3	09/06/2024	3	10,10	
123	17/05/2024	3	3	09/06/2024	2		
125	17/05/2024	3	2	09/06/2024	2	1e Unk	
126	17/05/2024	1	0	00,00,2021	0	1e INV	
120	17/05/2024	3	3	06/06/2024	2	10 111	
128	17/05/2024	2	1	ND	1	1e INV	
129	17/05/2024	3	0		0	2e P 1e AB	
130	17/05/2024	3	2	04/06/2024	2	1e P	
131	17/05/2024	3	3	02/06/2024	3		
132	17/05/2024	3	3	05/06/2024	3		
133	17/05/2024	3	3	08/06/2024	3		
134	17/05/2024	3	2	06/06/2024	1	1e P	
135	17/05/2024	2	2	07/06/2024	1		
136	17/05/2024	3	3	02/06/2024	2		
137	17/05/2024	3	3	ND	3		
138	17/05/2024	3	2	08/06/2024	2	1e INV	
139	17/05/2024	3	3	02/06/2024	3		
140	17/05/2024	2	2	10/06/2024	0		
141	17/05/2024	3	2	ND	2	1e INV	
142	18/05/2024	3	3	ND	3		
143	18/05/2024	3	3	ND	3		
144	18/05/2024	3	3	04/06/2024	2		
145	18/05/2024	3	2	11/06/2024	1	1e Tide	
146	18/05/2024	3	3	01/06/2024	2		
147	18/05/2024	1	_	ND	0	DUMP	
148	18/05/2024	3	3	ND	3		
149	18/05/2024	3	2	06/06/2024	1	1e INV	
150	18/05/2024	2	2	ND	2		
151	18/05/2024	2	2	ND	2		
152	18/05/2024	3	3	03/06/2024	3		
153	18/05/2024	3	3	04/06/2024	3		
154	18/05/2024	3			3	3e Unk	
155	18/05/2024	3	3	01/06/2024	3		
156	18/05/2024	3	2	05/06/2024	2	1e AB	
157	18/05/2024	3	3	ND	3		
158	18/05/2024	3	3	09/06/2024	3		
159	18/05/2024	3	3	07/06/2024	3		

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially Fledged	Other outcome	Notes
160	18/05/2024	2	2	07/06/2024	2		
161	18/05/2024	1			0	DUMP	
162	18/05/2024	3	3	ND	3		
163	18/05/2024	2	2	03/06/2024	2		
164	18/05/2024	3	1	07/06/2024	1	2e INV/AB	
165	18/05/2024	3	3	06/06/2024	3		
166	19/05/2024	3	3	04/06/2024	3		
167	19/05/2024	3	3	04/06/2024	3		
168	19/05/2024	3	3		3		
169	19/05/2024	3	3	04/06/2024	2		
170	19/05/2024	3	2	07/06/2024	2	1e AB	
171	19/05/2024	3	2	01/06/2024	2	1e AB	
172	19/05/2024	3	3	08/06/2024	3		
173	19/05/2024	3	3	06/06/2024	2		
174A	19/05/2024	3	2	17/06/2024	2	1e AB	
174C	19/05/2024	2	2	02/06/2024	2		
175	19/05/2024	3	3	ND	3		
176	19/05/2024	3	2	10/06/2024	0	1e AB	
177	19/05/2024	1	0		0	1e AB	
178	19/05/2024	3	3	ND	2		
179	19/05/2024	3	3	12/06/2024	2		
180	19/05/2024	3	3	06/06/2024	2		
181	19/05/2024	3	2	03/06/2024	2	1e AB	
182	19/05/2024	2	2	02/06/2024	2		
183	19/05/2024	3	3	04/06/2024	3		
184	19/05/2024	3	0		0	1e P 2e AB	
185	19/05/2024	3	3	07/06/2024	3		
186	19/05/2024	3	3	08/06/2024	3		
187	19/05/2024	3	3	ND	3		
188	19/05/2024	3	3	08/06/2024	3		
189	19/05/2024	2	2	ND	2		
190	19/05/2024	2	2	08/06/2024	2		
191	19/05/2024	3	0		0	2e P 1e AB	
192	19/05/2024	3	3	04/06/2024	1		
193	19/05/2024	3	3	ND	2		
194	19/05/2024	3	3		2		
195	19/05/2024	2	2	07/06/2024	2		
196	19/05/2024	3	3	ND	3		
197	19/05/2024	3	2	10/06/2024	2	1e P	
198	19/05/2024	2	2	ND	2		
199	19/05/2024	3		ND	0	3e Unk/Tide?	
200	19/05/2024	3	0		0	2e P 1e AB	

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially	Other	Notes
		00-			Fledged	outcome	
201	19/05/2024	2	0		0	2e AB	
202	20/05/2024	3	3	08/06/2024	2		
203	20/05/2024	3	3	05/06/2024	3		
204	20/05/2024	3	3	10/06/2024	2		
205	20/05/2024	3	3	08/06/2024	3		
206	20/05/2024	3	3	07/06/2024	3		
207	20/05/2024	3	3	ND	3		
208	20/05/2024	2	2	06/06/2024	2		
209	20/05/2024	3	3	ND	3		
210	20/05/2024	3	3	05/06/2024	3		
211	20/05/2024	3	2	ND	2	1e P	
212	20/05/2024	1	0		0	1e AB	
213	20/05/2024	3	3	10/06/2024	1		
214	20/05/2024	2	2	07/06/2024	1		
215	20/05/2024	2	2	07/06/2024	2		
216	20/05/2024	3	3	08/06/2024	3		
217	20/05/2024	2	2	09/06/2024	2		
218	20/05/2024	1	0		0	1e AB	
219	20/05/2024	3		ND	0	3e Unk	
220	20/05/2024	3	3	03/06/2024	3		
221	20/05/2024	3	3	10/06/2024	3		
222	20/05/2024	2	2	07/06/2024	2		
224	20/05/2024	2	2	07/06/2024	2		
225	20/05/2024	3	3	ND	3		
226	20/05/2024	3	0		0	3e P	
227	20/05/2024	3	3	10/06/2024	1		
228	20/05/2024	1	1	06/06/2024	0		
229	21/05/2024	3	ND	ND		3e Unk	
230	21/05/2024	3	3	ND	2		
231	21/05/2024	2	1	08/06/2024	1	1e AB	
232	21/05/2024	3	3	ND	3		
233	21/05/2024	3	3	09/06/2024	3		
234E	21/05/2024	2	1	ND	1	1e AB	
234B	21/05/2024	2	2	09/06/2024	2		
235	21/05/2024	1	0		0	1e AB	
236	21/05/2024	3	2	05/06/2024	1	1e Unk	
237	21/05/2024	3	0		0	3e AB	
238D	21/05/2024	2	2	06/06/2024	2		
238A	25/05/2024	3	3	ND	2		
239	21/05/2024	2	0		0	2e P	
240	21/05/2024	3	1		1	2e P	
241	21/05/2024	3	3	ND	2		

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially Fledged	Other outcome	Notes
242	22/05/2024	3	3	ND	3		
243	22/05/2024	3	3	11/06/2024	3		
244	22/05/2024	3	3	ND	3		
245	22/05/2024	3	3	02/06/2024	2		
246	22/05/2024	2	2	ND	2		
247	22/05/2024	3	3	05/06/2024	2		
248	22/05/2024	3	0		0	2e P 1e AB	
249	22/05/2024	2	2	ND	2		
250	22/05/2024	3	0		0	3e AB	
251	22/05/2024	3	2	08/06/2024	2	1e AB	
252	22/05/2024	3	0		0	3e AB	
253	22/05/2024	2	2	ND	2		
254	22/05/2024	2	0		0	1e P 1e INV	
255	22/05/2024	3	2	12/06/2024	1	1e AB	
256	22/05/2024	3	3	05/06/2024	3		
257	22/05/2024	1	1	07/06/2024	1		
258	22/05/2024	3	2	10/06/2024	2	1e AB	
259	24/05/2024	2			2	2e Unk	
260	24/05/2024	2	2	10/06/2024	1		
261	24/05/2024	3	3	07/06/2024	3		
262	24/05/2024	3	0		0	3e INV	
263	24/05/2024	3	3	17/06/2024	2		
264	21/05/2024	3	3	03/06/2024	3		
265	25/05/2024	3	2	17/06/2024	1	1e AB	
266	25/05/2024	3	0		0	3e P	
267	27/05/2024	2	0	ND	2	2e Unk	
268	27/05/2024	2	0	ND	2	2e Unk	
269	27/05/2024	3	3	21/06/2024	2		
270	27/05/2024	3	3	04/06/2024	1		
271	27/05/2024	3	1		2	1e Unk	
272	27/05/2024	3	3	04/06/2024	1		
273	27/05/2024	3	3	08/06/2024	3		
274	27/05/2024	1			0	DUMP	
275	27/05/2024	3	3	15/06/2024	2		
276	27/05/2024	3	3	15/06/2024	3		
277	27/05/2024	2	0		0	2e Tide	
278	27/05/2024	2	2	04/06/2024	2		
279	27/05/2024	2	1	ND	0	1e AB 1y P	
280	28/05/2024	2	0		0	2e Tide	
281	28/05/2024	2		ND	2	2e Unk	
282	28/05/2024	2	0		0	2e Tide	
283	28/05/2024	3	0		0	2e P 1e INV	

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially	Other	Notes
					Fledged	outcome	
284	29/05/2024	2	2	21/06/2024	2		
285	29/05/2024	3	3	17/06/2024	3		
286	29/05/2024	2	0		0	2e Tide	
287	31/05/2024	1			0	DUMP	
288	01/06/2024	2	2	20/06/2024	2		
289	01/06/2024	3	0		0	3e P	
290	01/06/2024	2	0		0	2e Tide	
291	01/06/2024	2	2	22/06/2024	2		
292	02/06/2024	2	0		0	2e Tide	
293	02/06/2024	2	2	23/06/2024	2		
294	02/06/2024	3	0		0	2e P 1e AB	
295	05/06/2024	2	1	08/06/2024	1	1e Tide	
296	12/06/2024	3	0		0	3e Tide	
297	14/06/2024	1	1	01/07/2024	1		
298	14/06/2024	2	0		0	1e P 1e AB	
299	17/06/2024	2	2	06/07/2024	2		
300	17/06/2024	2	0		0	2e P	OC?
301	18/06/2024	2			0	1e P 1e Unk	
302	19/06/2024	1	1	08/07/2024	1		
303	19/06/2024	3	3	ND	3		
304	19/06/2024	2	0		0	2e P	
305	19/06/2024	2	0		0	2e P	
306	22/06/2024	2	0		0	2e Tide	
307	22/06/2024	1	0		0	1e P	
308	22/06/2024	2	2	16/07/2024	2		
309	22/06/2024	1	0		0	1e P	
310	23/06/2024	2	0		0	2e Tide	
311	23/06/2024	2	2	13/07/2024	1		
312	23/06/2024	1	0		0	1e Tide	
313	23/06/2024	2	0		0	2e P	
314	23/06/2024	2	0		0	2e Tide	
315	23/06/2024	2	0		0	2e P	
316	23/06/2024	2	0		0	2e P	
317	24/06/2024	2	0		0	2e P	
318	24/06/2024	2	0		0	2e P	
319	24/06/2024	2	0		0	2e P	
320	25/06/2024	2	2	06/07/2024	2		
321	25/06/2024	1	0		0	1e P	
322	25/06/2024	2	0		0	2e P	
323	25/06/2024	2	0		0	2e P	
324	25/06/2024	1	0		0	1e P	
325	25/06/2024	1	0		0	1e P	

Nest	Date Found	Eggs	Hatched	First Hatched	Chicks Potentially Fledged	Other outcome	Notes
326	28/06/2024	2	1	16/07/2024	0	1e AB 1y AB	
327	30/06/2024	1	0		0	1e P	
328	30/06/2024	1	0		0	1e P	
329	30/06/2024	1	0		0	1e P	
330	01/07/2024	2	0		0	2e P	
331	01/07/2024	2	0		0	2e P	
SC1	19/05/2024	3	0		0	3e P	
SC2	19/05/2024	3	0		0	3e P	
SC3	22/05/2024	3	0		0	3e P	
SC4	22/05/2024	3	0		0	3e P	
SC5	22/05/2024	3	0		0	2e P 1e AB	
N1	18/05/2024	3	2		2	1e Unk	
N2	22/06/2024	2			2	2e Unk	
N3	01/07/2024	2	2		2		
Cooldross							
1		3	3				
Cooldross		2					
2		2					

# Appendix 2: Ringing Data

All 2024 ringing data is compiled below and will be submitted to the BTO via DemOn, under the NPWS Ringing Group.

**Table A2a:** Ring sequences used on Little Tern chicks at Kilcoole in 2024. Note that rings from these strings were also used at other Irish Little Tern colonies in 2024.

Sequence	Chicks	Adults
NW45922	1	-
NW45970	-	1
NW46301-400	77	-
NW55601-700	69	1
NW87121	-	1
NW87401-500	-	4
NW87501-600	84	6
NW87601-700	99	1
NW87701-800	97	3
NW87801-900	70	-
NW87901-88000	99	1

Date	Record Type	вто	CR	CR-Leg	New CR
24/05/2024	Retrap	NW46867	GW(AJZ)	Left	No
23/05/2024	Retrap	NW55278	GW(AT9)	Left	No
07/06/2024	Retrap	NW45353	GW(B3Z)	Left	No
29/05/2024	Retrap	NW38352	GW(B4J)	Left	No
26/06/2024	Retrap	NW55932	GW(BC1)	Left	No
26/06/2024	Retrap	NW46460	GW(BP1)	Left	Yes
16/05/2024	Retrap	NW46865	GW(BP2)	Left	Yes
16/05/2024	Retrap	NW38128	GW(BP3)	Left	Yes
29/05/2024	Retrap	NW55329	GW(BP4)	Left	Yes
26/06/2024	Retrap	NW55307	GW(BP7)	Left	Yes
29/05/2024	Retrap	NW45510	GW(BP8)	Left	Yes
24/05/2024	Retrap	NW46770	GW(BP9)	Left	Yes
29/05/2024	New	NW87501	GW(BP6)	Left	Yes
29/05/2024	New	NW87502	GW(BP5)	Left	Yes
20/05/2024	Retrap	NW87082	GW(B3D)	Left	No
29/05/2024	Retrap	NW44090	GW(B4P)	Right	No
16/05/2024	Retrap	NW38265	GW(B8J)	Left	Yes, replaced
07/06/2024	Retrap	NW38603	GW(B8L)	Right	Yes
16/05/2024	Retrap	NW38204	GW(A6H)	Left	No
20/05/2024	Retrap	NW45504	GW(BP0)	Left	Yes, replaced
12/06/2024	Retrap	NW55007	GW(A0N)	Right	No
07/06/2024	Retrap	NW46131	GW(B2N)	Left	No
20/05/2024	Retrap	NW46256	GW(B9N)	Left	Yes
20/05/2024	Retrap	NW45567	GW(B9P)	Left	Yes
05/06/2024	Retrap	NW38683	GW(B9S)	Right	Yes
07/06/2024	Retrap	NW38197	GW(B9X)	Left	Yes
07/06/2024	New	NW87503	GW(B9Z)	Left	Yes
07/06/2024	New	NW87504	GW(B9V)	Left	Yes
12/06/2024	New	NW87505	GW(B9T)	Left	Yes
12/06/2024	New	NW87506	GW(B9L)	Left	Yes
12/06/2024	Retrap	NW55156	GW(AB2)	Left	Yes
12/06/2024	Retrap	NW45645	GW(AZH)	Left	No
24/05/2024	Retrap	NW29517	GW(B2L)	Left	No
24/05/2024	Retrap	NW38040	GW(B2P)	Left	No
24/05/2024	Retrap	NW46096	GW(B2S)	Left	No
24/05/2024	Retrap	NW45355	GW(B3Z)	Left	No
16/05/2024	Retrap	NW46061	GW(BX0)	Left	Yes, replaced
12/06/2024	Retrap	NW46086	GW(BX2)	Left	Yes, replaced
12/06/2024	Retrap	NW29367	GW(BX3)	Left	Yes
23/05/2024	Retrap	NW38858	GW(BX4)	Left	Yes, replaced
16/05/2024	New	NW87121	GW(BX1)	Left	Yes
16/05/2024	Retrap	NW46838	GW(B8P)	Left	Yes
16/05/2024	New	NW87639	GW(B8N)	Left	Yes

**Table A2b:** Ringing data from nest-catching of adult Little Terns at Kilcoole in 2024.

Date	Record Type	вто	CR	CR-Leg	New CR
16/05/2024	Retrap	NW46250	GW(A9E)	Right	No
16/05/2024	Retrap	NW38044	GW(B4E)	Left	No
16/05/2024	Retrap	NW87164	GW(B85)	Left	No
16/05/2024	Retrap	NW38432	GW(B8V)	Left	Yes
07/06/2024	Retrap	NW55413	GW(B8Z)	Left	Yes
29/05/2024	Retrap	NW70712	GW(B9A)	Left	Yes
29/05/2024	Retrap	NW46823	GW(BT1)		Yes
29/05/2024	Retrap	NW38497	GW(BX7)		Yes
29/05/2024	Retrap	NW45322	GW(BX8)		Yes
07/06/2024	Retrap	NP11538	YN(TN4)	Right	No
07/06/2024	New	NW87453	GW(BX6)		Yes
26/06/2024	New	NW87476	GW(BX9)		Yes
12/06/2024	New	NW87477	GW(BT2)	Right	Yes
12/06/2024	New	NW87478	GW(BT3)		Yes
07/06/2024	New	NW87731	GW(B8S)	Left	Yes
26/06/2024	New	NW87733	GW(B8T)	Left	Yes
12/06/2024	New	NW87741	GW(B8X)	Left	Yes
29/05/2024	Retrap	NW55508	GW(B70)	Left	No
07/06/2024	Retrap	NW45303	GW(B9B)	Left	Yes, replaced
07/06/2024	Retrap	NW46083	GW(B9C)	Left	Yes, replaced
07/06/2024	Retrap	NW46935	GW(B9D)	Left	Yes, replaced
07/06/2024	Retrap	NW46706	GW(B9E)		Yes
16/05/2024	Retrap	NW45539	GW(BL1)		Yes
16/05/2024	Retrap	NW55166	GW(BL2)		Yes
24/05/2024	Retrap	NW46041	GW(IH2)	Left	No
24/05/2024	Retrap	NW46621	GW(IT5)	Right	No
24/05/2024	New	NW55633	GW(BL3)		Yes
24/05/2024	New	NW87999	GW(BL0)		Yes
05/06/2024	Retrap	NW55271	GW(AC9)	Left	No
07/06/2024	Retrap	NW46730	GW(ACE)	Left	No
07/06/2024	Retrap	NW45645	GW(AZH)	Left	No
07/06/2024	Retrap	NW87047	GW(CAT)		Yes
12/06/2024	New	NW45970	GW(BLV)		Yes

**Table A2c:** Ringing data from Little Tern chicks ringed at Kilcoole in 2024.

вто	Colour Ring	Found Dead
NW45922	GW(BN2)	
NW46301		Yes
NW46302		
NW46303	GW(CBP)	
NW46304		
NW46305	GW(BSH)	
NW46306	GW(BSP)	
NW46307	GW(CDB)	
NW46308		
NW46309	GW(CEE)	
NW46310	GW(CEP)	
NW46311	GW(BZZ)	
NW46312		
NW46313	GW(BZB)	
NW46314		
NW46315	GW(CAX)	
NW46316	GW(CCB)	
NW46317	GW(BTB)	
NW46318		
NW46319		
NW46320		Yes
NW46321	GW(CEA)	
NW46322	GW(CDX)	
NW46323	GW(CDN)	
NW46324	GW(BVN)	
NW46325		
NW46326		
NW46327	GW(CED)	
NW46329		Yes
NW46330		Yes
NW46331	GW(CEK)	
NW46332		
NW46333	GW(CEV)	
NW46334	GW(BVX)	
NW46335	GW(BXB)	
NW46336		
NW46337		
NW46339	GW(BXP)	
NW46340	GW(BXZ)	
NW46341	GW(BZL)	
NW46342	GW(BZS)	
NW46343	GW(BZX)	
NW46344	GW(CEC)	

BTO	Colour Ring	Found Dead
NW87685	GW(BPJ)	
NW87686		
NW87687		
NW87688	GW(BPD)	
NW87689	GW(BNX)	
NW87690	GW(BPE)	
NW87691	GW(BZD)	
NW87692		
NW87693		
NW87694	GW(BNV)	
NW87695	GW(BNT)	
NW87696		
NW87697		
NW87698	GW(BTZ)	
NW87699		
NW87700		
NW87701		
NW87702		
NW87703		Yes
NW87704	GW(BSK)	
NW87705		
NW87706		
NW87707		Yes
NW87708		
NW87709		Yes
NW87710	GW(BPV)	
NW87711		Yes
NW87712		Yes
NW87713		
NW87714		
NW87715		
NW87716		
NW87717		
NW87718		
NW87719		
NW87720		
NW87721		
NW87722		
NW87723		Yes
NW87724		
NW87725		
NW87726		
NW87727		

вто	Colour Ring	Found Dead
NW46345	GW(CDS)	
NW46346		
NW46347	GW(CET)	
NW46348	GW(CDV)	
NW46349	GW(CAB)	
NW46350	GW(CAL)	
NW46351	GW(CBB)	
NW46352		
NW46353	GW(CES)	
NW46354		Yes
NW46355	GW(CCK)	
NW46357	GW(CCN)	
NW46358	GW(CCS)	
NW46359	GW(CDA)	
NW46360	GW(CDC)	
NW46361	GW(CBB)	Yes
NW46362	GW(CDE)	
NW46363	GW(CDH)	
NW46364		
NW46365		
NW46366		
NW46367		
NW46368	GW(CEZ)	
NW46369	GW(CEX)	
NW46370		
NW46371		
NW46372		
NW46373		
NW46374		
NW46375		
NW55631	GW(CAV)	
NW55632		
NW55634	GW(BNB)	
NW55635		
NW55636		
NW55637		
NW55638		
NW55639		
NW55640	GW(CCT)	
NW55641	GW(CCC)	
NW55643	GW(CBA)	
NW55647	GW(BNE)	
NW55648	GW(BSA)	
NW55649		
NW55652	GW(BZP)	Yes

вто	Colour Ring	Found Dead
NW87728		
NW87729		
NW87730		
NW87732	GW(BVS)	
NW87734	GW(BSV)	
NW87735		
NW87736	GW(CCE)	
NW87737		
NW87738		
NW87739	GW(CAA)	
NW87740		Yes
NW87742		Yes
NW87743		
NW87744		Yes
NW87745		
NW87746	GW(CAH)	
NW87747		
NW87748		
NW87749	GW(BSL)	
NW87750		
NW87751		
NW87752		
NW87753		
NW87754		
NW87755		
NW87756		
NW87757		
NW87758	GW(BVK)	
NW87759		
NW87760		Yes
NW87761		
NW87762		
NW87763		
NW87764		
NW87765	GW(CBH)	
NW87766	GW(CBK)	
NW87767	GW(BXN)	
NW87768		
NW87769		Yes
NW87770		Yes
NW87771		
NW87772		Yes
NW87773	GW(BVP)	
NW87774		
NW87775		

вто	Colour Ring	Found Dead
NW55653		
NW55654		
NW55655	GW(CDP)	
NW55656		
NW55657	GW(BVC)	
NW55658		Yes
NW55659	GW(BVH)	
NW55660	GW(CCV)	
NW55661	GW(BSX)	
NW55662		
NW55663		
NW55664		Yes
NW55665	GW(BNL)	
NW55666	GW(BTX)	
NW55667		
NW55668	GW(BXD)	
NW55669		
NW55670	GW(BVL)	
NW55673		Yes
NW55674		
NW55675	GW(CBX)	
NW55676	GW(CCZ)	
NW55677	GW(CEB)	
NW55678		
NW55679	GW(BPC)	
NW55680		
NW55681	GW(CEJ)	
NW55682		
NW55683	GW(CEL)	
NW55684	GW(CEH)	
NW55685	GW(BSC)	
NW55686		
NW55687	GW(BXE)	
NW55688	GW(BXX)	
NW55689		
NW55690	GW(CBE)	
NW55691	GW(BXH)	
NW55693	-	
NW55694	GW(BZT)	
NW55695	-	
NW55696	GW(CCX)	
NW55697	GW(CAZ)	
NW55698		
NW55699	GW(CBL)	
NW55700		

вто	<b>Colour Ring</b>	Found Dead
NW87776		
NW87777		
NW87778		
NW87779		
NW87780		
NW87781		
NW87782		
NW87783		
NW87784		
NW87785		
NW87786		
NW87787		
NW87788		
NW87789	GW(CAN)	
NW87790	GW(CAD)	
NW87791	GW(CAJ)	
NW87792		
NW87793		
NW87794		
NW87795		
NW87796		
NW87797		
NW87798	GW(BTS)	
NW87799		
NW87800		
NW87831	GW(CCD)	
NW87832		
NW87833		
NW87834	GW(BST)	
NW87835		Yes
NW87836		Yes
NW87837		Yes
NW87838	GW(BSE)	Yes
NW87839	GW(CBS)	
NW87840		
NW87841	GW(BLX)	
NW87842	GW(BXJ)	
NW87843		
NW87844		
NW87845		
NW87846		
NW87847	GW(BXS)	
NW87848		
NW87849		
NW87850		

вто	Colour Ring	Found Dead
NW87507		
NW87508		
NW87509		Yes
NW87512		Yes
NW87513		
NW87514		
NW87515		
NW87516		
NW87517		
NW87518		
NW87519		
NW87520		
NW87521		
NW87522		
NW87523		
NW87524		
NW87525		
NW87526		
NW87527		
NW87528	GW(BPL)	Yes
NW87529	. ,	Yes
NW87530		
NW87531		
NW87532		Yes
NW87533	GW(B9K)	
NW87534		
NW87535	GW(BPP)	
NW87536		
NW87537		
NW87538		Yes
NW87539		
NW87540		
NW87541	GW(BN8)	
NW87542		
NW87543		Yes
NW87544	GW(BN9)	
NW87545		
NW87546	GW(BSN)	
NW87547		
NW87556		
NW87557		
NW87558		
NW87559		
NW87560		
NW87561		

вто	<b>Colour Ring</b>	Found Dead
NW87851		
NW87852		
NW87853		
NW87854		
NW87855		
NW87856	GW(BZJ)	
NW87857	GW(BZA)	
NW87858	GW(CAP)	
NW87859		
NW87860		
NW87861		Yes
NW87862		
NW87863	GW(BVD)	
NW87864		
NW87865		
NW87866		
NW87867	GW(BNH)	Yes
NW87868		
NW87869	GW(BPS)	
NW87870		
NW87871		
NW87872		
NW87873		
NW87874		
NW87875		
NW87876	GW(BTV)	
NW87877		
NW87878		
NW87879	GW(BVT)	
NW87880		
NW87881		
NW87882	GW(CCA)	
NW87883		
NW87884	GW(BSD)	
NW87885	GW(BXT)	
NW87886	GW(BTN)	
NW87887	GW(BTL)	
NW87888		
NW87889		
NW87890		
NW87891		
NW87892		
NW87893		
NW87894	GW(BVE)	
NW87895	GW(BVJ)	

вто	Colour Ring	Found Dead
NW87562		Yes
NW87563		
NW87564		
NW87565		
NW87566		
NW87567		
NW87568		
NW87569	GW(BPT)	
NW87570	GW(BNK)	
NW87571		
NW87572		
NW87573		
NW87574		
NW87575	GW(BTA)	
NW87576	GW(B9J)	
NW87577	GW(BPK)	
NW87578	GW(BNJ)	
NW87579		
NW87580		
NW87581	GW(BTC)	
NW87582	GW(BTD)	
NW87583	GW(BZK)	
NW87584		
NW87585		
NW87586	GW(BPN)	
NW87587		
NW87588		
NW87589	GW(BXK)	
NW87590		
NW87591		
NW87592		
NW87593		
NW87594		
NW87595		
NW87596		
NW87597		
NW87598		Yes
NW87599	GW(BND)	
NW87600	GW(BNZ)	
NW87601	. ,	
NW87602		
NW87603		
NW87604		
NW87605		
NW87606		Yes
	1	

вто	Colour Ring	Found Dead
NW87896		
NW87897		
NW87898		
NW87899		
NW87900	GW(CBJ)	
NW87901	GW(CBV)	
NW87902		
NW87903		
NW87904		
NW87905		
NW87906		
NW87907	GW(BTT)	
NW87908		
NW87909		
NW87910		
NW87911		
NW87912		
NW87913		Yes
NW87914		Yes
NW87915		
NW87916	GW(CCP)	
NW87917		
NW87918	GW(CDD)	
NW87919		
NW87920		
NW87921		
NW87922		
NW87923		Yes
NW87924	GW(CBC)	
NW87925	GW(CBN)	
NW87926	GW(BTP)	
NW87927		
NW87928		Yes
NW87929	GW(CAS)	
NW87930		
NW87931		
NW87932		
NW87933		
NW87934	GW(BPX)	
NW87935		
NW87936		Yes
NW87937		
NW87938		Yes
NW87939		Yes
NW87940	GW(CBT)	

вто	Colour Ring	Found Dead
NW87607		Yes
NW87608		
NW87609		
NW87610		Yes
NW87611		Yes
NW87612		Yes
NW87613	GW(BVB)	Yes
NW87614		
NW87615		
NW87616		Yes
NW87617		
NW87618		Yes
NW87619		
NW87620		
NW87621		
NW87622		
NW87623		
NW87624		Yes
NW87625		
NW87626		
NW87627		Yes
NW87628	GW(BNN)	
NW87629		Yes
NW87630		
NW87631		
NW87632		
NW87633		
NW87634		
NW87635		
NW87636		
NW87637		
NW87638		
NW87640		
NW87641		
NW87642		Yes
NW87643		
NW87644	GW(BXA)	
NW87645	GW(BNP)	
NW87646		
NW87647	GW(BVZ)	
NW87648		
NW87649		
NW87650	GW(BN7)	
NW87651		
NW87652		
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вто	<b>Colour Ring</b>	Found Dead
NW87941		Yes
NW87942		
NW87943		
NW87944		Yes
NW87945		
NW87946	GW(CCJ)	
NW87947		
NW87948		Yes
NW87949		
NW87950		
NW87951	GW(BN6)	
NW87952		
NW87953	GW(CCL)	
NW87954	GW(CAK)	
NW87955		Yes
NW87956		
NW87957		Yes
NW87958		
NW87959		Yes
NW87960		
NW87961		
NW87962		Yes
NW87963		
NW87964		
NW87965		
NW87966	GW(BVA)	
NW87967		
NW87968	GW(CDT)	
NW87969		
NW87970	GW(BXL)	
NW87971		
NW87972		
NW87973	GW(BSB)	
NW87974		
NW87975		
NW87976		
NW87977	GW(CAE)	
NW87978		
NW87979		
NW87980	GW(BZC)	
NW87981	GW(BSJ)	
NW87982	GW(BLT)	
NW87983		Yes
NW87984	GW(BSZ)	
NW87985		

вто	Colour Ring	Found Dead
NW87653		
NW87654	GW(BPA)	
NW87655		
NW87656	GW(BVV)	
NW87657	GW(BPZ)	
NW87658		Yes
NW87659		Yes
NW87660		Yes
NW87661		
NW87662		
NW87663	GW(BTJ)	
NW87664	GW(CBD)	
NW87665	GW(BTH)	
NW87666		
NW87667		
NW87668		
NW87669	GW(BNA)	
NW87670	GW(BNC)	
NW87671		
NW87672	GW(CAC)	
NW87673		
NW87674	GW(B9H)	
NW87675		
NW87676		
NW87677		
NW87678		Yes
NW87679	GW(BXC)	
NW87680		
NW87681		Yes
NW87682	GW(BNS)	
NW87683	GW(BTE)	
NW87684	GW(BPA)	

вто	Colour Ring	Found Dead
NW87986		
NW87987		
NW87988		
NW87989	GW(CBZ)	
NW87990		
NW87991	GW(BTK)	Yes
NW87992	GW(CCH)	
NW87993		
NW87994		
NW87995		Yes
NW87996		Yes
NW87997	GW(BZN)	
NW87998	GW(BLZ)	
NW88000		