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# Portrane Little Tern project 2021

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*Figure 1: Nest L1120 a little tern family*

## Sternula albifrons albifrons

A continuation of the attempt to save their last nesting site in county Dublin.

The Little Tern Conservation Project in Portrane, Co. Dublin is managed by Bird Watch Ireland, Fingal Branch. In 2021 this project received support from The Department of Housing, Local Government and Heritage through the National Parks and Wildlife Service's National Biodiversity Action Plan Fund, and by Fingal County Council.

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## Abstract

Wardening of the Little Tern (*Sternula albifrons*) colony at Portrane began in mid-May 2021. On April 16<sup>th</sup> we erected the inward netting fence around an area of the beach that looked a suitable breeding area for little terns. We then erected a rope fence ten meters outward from the northern, eastern and southern sides of the netting. We had done so to allow the returning little terns a safer space in which to nest. After the site construction we inserted a number of shortened Wavin pipes and wooden huts to provide shelter and hiding places for the chicks to use. We also inserted a number of terra cotta little terns to encourage the little terns to nest.

Due to resource issues we were unable to operate a night wardening roster. A total of 11 nesting attempts were made this season by little terns. This year we had 6 extra birds one of whom was identified as a least tern (*Sterna Antillarum*). The first eggs were found on May 27<sup>th</sup>. The last clutch was completed on July 8<sup>th</sup>. A total of 26 eggs were laid, the mean clutch size was 2.36 eggs per nest. We had

no loss of eggs again this year. A total of 26 chicks hatched from 11 nests between 15th June and 28st July. The mean incubation period was 19.22 days. In total 25 chicks were ringed with both Darvic and BTO metal rings this season. Re-trap data were collected to estimate average growth rates. Of the 26 chicks hatched, 1 is known to have died. It died by eating a fish the wrong way which caused it to choke. A1B went missing when it was twelve days old. A1A its sibling was seen fledged at the shoreline. Both these chicks were always very difficult to locate so we are uncertain as to its fate. Thus, 24 chicks were known to have fledged, which equates to productivity this year of 2.18 fledglings per breeding pair. This we believe is due to the level of wardening and the close proximity of the colony to an exceptional food source. This year has been the most successful since we began in earnest in 2018.

## Project aims

Portrane little tern project strives:

“To provide a safe and secure environment in which little terns can reproduce and fledge their young and so contribute to the fulfilment of Ireland’s legal obligation under the EU Bird’s directive”.

In order to achieve this, BWI Fingal through its wardening sets out:

To promote awareness within the local community and the visiting public that it is only through their co-operation that success will be achieved.

To erect a physical barrier to discourage ground predation of the nesting site.

To maintain surveillance during daylight hours to deter avian and other predators from taking eggs, chicks or adult birds.

To monitor, record, analyse and tabulate adult behaviour, food consumption, scrape location, egg yields, egg types, hatching efficiency, fledging proficiency, the returning Portrane birds.

To expand our knowledge of little tern conservationism.

To liaise with other projects in order to gather external experiences to enhance our project.

To record and monitor the ecosystem that is Portrane Beach.

## “little” Terns

There are five species of tern breeding in Ireland, Artic tern *Sterna paradisaea*, Common tern *Sterna hirundo hirundo*, Little tern *Sternula albifrons albifrons*, Roseate tern *Sterna dougallii dougallii* and Sandwich tern *Thalasseus sandvicensis*. The knowledge that the reclassification of species is an organic process, ongoing and forever. It is my understanding that science will prove that these seemingly similar species are on different branches of the phylogenetic ‘tree’ with common ancestry. According to eBird/Clements Checklist v2018 there are seven species within the Genus *Sternula* with a further ten subspecies. Similar species, the Least tern *Sternula antillarum antillarum* breeds in North America and winters to northern Brazil. Saunders tern *Sternula saundersi* nests from the Red Sea to India and Sri Lanka and winters to the Malay

Peninsula. Little tern *Sternula albifrons albifrons* nests across the western Palearctic and winters on both sides of the African continent. The wintering location of Irish Sea little terns is as yet unknown. The relatively recent reclassification of “little” terns has led to the creation of a variety of subspecies. Future research on the migration patterns, food consumption, and the further divergence/isolation of these subspecies it is easy to conclude that the evolutionary process is occurring before our eyes on Portrane beach.

## The Bird and its history in Ireland

The Little Tern (*Sternula albifrons*) is the smallest and scarcest of Ireland’s five breeding tern species. They are long distance migrants, wintering in West Africa and returning to Irish coasts to breed in late April and early May and departing again from late July to mid-September. The majority of little terns in Ireland nest on beaches that have a mixture of sand and shingle. Nests are composed of a shallow dip scraped in the beach substrate generally above the high tide line. The eggs and chicks are well camouflaged in the sand and shingle. Due to their nesting habitat, little terns are very vulnerable to recreational human disturbance, sea level rise and predation. Little terns are classed as an Annex 1 species under the EU birds Directive (79/409/EEC), requiring member states to take special conservation measures to ensure their survival and breeding success. In Ireland and the United Kingdom, the species is amber listed by BirdWatch Ireland and the RSPB (Royal Society for the Protection of Birds), indicating that this species is of medium conservation concern. The little tern is fully protected under the Wildlife Act (1976, Amended 2000).

Little tern adults, average 21-25 cm in length and have a 41-47 cm wingspan. *Sternula Albifrons Albifrons* has been recorded in Ireland by Usher and Warren before the early part of the 20<sup>th</sup> Century. They noted that the largest colony in Ireland had over 50 pairs “known to nest”. Later Kennedy, Ruttledge and Scroope noted that little tern colonies were small and were up to 25 “little terns breeding” and that perhaps the species was in decline. However they did record a colony of 40 to 50 pairs in County Wexford. Today little terns are probably the scarcest breeding tern in Ireland. Post the 2019 project I visited Tory island in Donegal and during a discussion with local birder Anton Meenan discovered that a pair of little terns had attempted to nest near the lighthouse at the western end of the island. During the 2021 project, a team member had a 2 adults flying near an island near Belmullet. In 2004 Pickerell cited in Cabot and Nisbet (p136, 2013) estimated that there were 206 breeding pairs in Ireland. This number for certain has increased and I estimate it to be approximately 330 breeding pairs in Ireland this season. However their reproductive strategy places them in perilous situations ranging from inundation by the sea, loss of habitat, human and canine disturbance, natural predation and parental skills.

## The Little Terns of Portrane

## The early years

There are written personal accounts of little tern breeding attempts at Portrane beach between 1990 and 2017. It was during this period that the Fingal Co Parks Dept fenced off a section of the beach using rope and fence posts at the request of members of the Fingal branch of BWI. A number of signs were attached to the fence to inform the public about the conservation project. From 1990 to 2017 it is probable that chicks did fledge at Portrane, however the total number is likely to be no more than seven. Prior to 1990 it is likely that the environment at Portrane was unsuitable for breeding.

There are accounts from the 1970's that little terns nested to the south of the Island Golf Club. There are also records of them breeding on the north end of Bull Island. Sadly these sites are no longer being used for breeding purposes. This abandonment may well have been due to the constant disturbance by the public of these nesting sites.

When I received a call from Paul Lynch (BWI Fingal) in May 2018 that he had counted 22 adult little terns at Portrane again, I said that I would take a look. I arrived in late May at the most southerly end of the old roped off area and scanned the area to the North. This area had been roped off by Fingal BWI branch members prior to 2016.



Figure 2: Previous sites

When we started our 13 hour roster programme in 2018 we started a process that has led to the following code for the little tern nests. The example L0719 may be decoded as follows. L = little tern, 07 = the 7th located nest in the season, 19 = the year of the project. Re-nests are registered as follows R0520 R = little tern, 05 = the 5th located re-nest in the season, 20 = the year of the project. Although we count the number of ringed plover nests in the vicinity of the site we do not label them. We do make an attempt to monitor the number of ringed plover chicks that fledge.



The impact of the Covid-19 pandemic was again to influence the 2021 project. This year the government's policy known as "Lockdown" was easing. We did have however a warden who was classified as a close contact. Fortunately after self-isolating the warden was able to return. Thankfully we had encouragement and support from National Parks and Wildlife Service (NPWS), Bird Watch Ireland (BWI), and Fingal County Council (F.C.C.). With the easing of government restrictions we were able to erect the netting on April 16<sup>th</sup> with the assistance of F.C.C. as planned.

Having referenced as much material as we could we discovered that in the cases where nests are lost, little terns lay a single replacement egg at a new scrape. With regards to the 2018 inundation it was recorded that little terns waited four days before using the inundated area again. We had six re-nests that year. Four re-nests had two eggs, one had three eggs, with only one having a single egg.

When our 14 fledged chicks departed from Portrane in August 2018 we had no idea whether or not if any would survive to return to nest successfully. We hoped that if any of them returned we might learn more about little terns through observation. The list of 2018 birds returning to the east coast of Ireland in 2020 would include IX0 IX1 IZ0 IZ2 IZ5 IZ6 IZ7 IZ8 and IZ9. Because of the number of sightings of some of these birds we are fairly certain that IX0 IX1 IZ5 IZ6 and IZ9 did not nest in 2020. IZ7 only arrived at Portrane quite late the season and it is possible that it nested somewhere else. Prior to the erection of the netting IZ8 was located with a partner at the North end of the beach. Despite its attempts to nest what we believe was human disturbance caused IZ8 to move north to attempt at Baltray Co Louth. We have had no reports of any of our little terns visiting Kilcoole but their numbers prohibit an accurate survey. When Jan Rod visited Baltray Co Louth he spotted IZ8, a female, apparently nesting. We have no information regarding the success of IZ8's first attempt at breeding. We noted that as the season progressed other little terns arrived on site. They included IX0, IZ9 as a prospective pair. Through observation we concluded that IX0, IX1 are females and that IZ6, IZ7 and IZ9 are males. We could not determine the gender of the other birds. Being able to identify the gender of several birds from 2018 has added to the knowledge of what we are about at Portrane and it is hoped that we can continue to do so in the future.

Since 2018 we noted that after the last nest was put down we always had a number of birds flying about looking like they too were about to nest. Similar in appearance to the breeding little terns these turned out to be non-breeding birds. They would fly over the site in groups of three. They always announced their arrival with what I refer to as a trumpet call. This behaviour was observed at various times throughout the day. On occasion the birds would land within the site for a very short period, usually less than 30 seconds. Landings were also noted at the shoreline at high tide. Normally one of the three carried a fish and initiated a behaviour that mimicked part of little tern courtship. However as soon as the fish was presented the prospective recipient would take off. A most definite refusal to nest. The 2020 season was no different in this matter, however we now had ringed birds to observe. With this information we hypothesised that what we were looking at were inexperienced birds. We now refer to them as "teenagers". Our visits of support to Baltray revealed that they too had similarly behaving little terns

My limited observations of the nesting process revealed that whilst most nesting pairs take some time becoming established others seem to settle into the process shortly after their



arrival. There is an opinion that little terns are monogamous, however whether an established pair remain intact until the death of one of the parties is unconfirmed. Due to the ringing in 2018 we were able to observe IX0 being courted by IZ9 in 2020. These birds did return in 2021 but not as a pair. Female IX0 would pair with IN1 a Kilcoole bird and fledge chicks A1J and A1K. Further research of little tern partnerships is required before any conclusions might be drawn. In 2020 I17 (6 year old) partnered with an un-ringed bird. They were the last pair to nest. Their inability to feed their chicks meant that the chicks starved. We attributed their failure to inexperience. It raised many questions about what age a bird becomes a breeding adult. It should be noted that female I17 returned again this year with an un-ringed partner and established L0321. They fledged A0N, A0L, A0K, successfully.

Another presumption is that fledged chicks migrate with their parents to Africa. This behaviour may happen for some but not for all breeding pairs. In 2021 the pair from nest L1121 did not depart together. The family of four were last seen on August 29<sup>th</sup>, however the adult male IZ6 and chick A5S were present with some 2021 fledglings from the Kilcoole project.

## Portrane beach and site

The entire beach and dune/saltmarsh of Portrane beach is classified as a Special Area of Conservation (SAC) and a Special Protection Area (SPA) National Parks and Wildlife Service (NPWS). It is thus a protected area by law. The area also falls within the jurisdiction of Fingal County Council (F.C.C.) and is also protected by their bye-laws. At high tide the area becomes a peninsula with The Burrow to the West and Rogerstown outer estuary. The outflow of the Ballyboghil and Ballough rivers are the main two feeders. There are also Bride's Stream, Jone's Stream and Baleally Stream feeding the estuary. They flow from the surrounding farmland and feed a deep channel to the sea to the East.

Prior to 2018 BWI Fingal had an area of shingle beach cordoned off with 2 meter poles 10 meters apart with a single connecting blue rope 90-100 cm high. The site's length was 150 meters north-south 40 meters East-West. The signage attached was bleached with age but was still serving Bird Watch Ireland (BWI), BWI Fingal and FCC. The sands of time had buried the western side to the extent that the rope was 20 to 30 cm from the ground. The other 3 sides still had purpose. This area was referred to as the old area. By 2021 most of the area to the southern end of the beach had been washed away together with the eastern side of the nesting area including part of the dunes, by high tides. This year's site contained approximately a 20m by 15m portion of the old area. The remainder of the site bordered the river to the North at high tide and was 30m to 40m wide in places East West. The Portrane site is subject to very high tides. The intertidal area exposed at low tide is approximately 1.5km by 1km. This area is very uneven and thus is pock marked by intertidal pools. Most of this area is covered by a fine sand however there are two areas of shingle. Both shingle areas are adjacent to the river. The nearest shingle area starts about 20m from the northern end of the nesting site. Its area was approximately 30m East-West by 70m North South. In the early part of the season it was used by prospecting males and later, fledged chicks used this area for washing on the incoming tide. The second area was much further out and was used by some of the little terns as a low tide roost.

## Functions of wardens.

Monitoring the arrival of little terns at Portrane began May 1<sup>st</sup>. Each morning the external netting was checked for any night-time activity by predators. At first the daily visits were to take counts of little terns and observe what other species were nesting and the type and number of predators that were in the area. We held off for as long as possible the activation of the on-line roster. This was done in order to conserve our resources for the actual breeding season. The roster was activated when the little terns started scraping. One of our non-beach wardens wrote the programming for an agreed design for the roster. It is an Excel spreadsheet with four columns for each day. Each row represented a 30 minute period from 06:00 until 20:00. Each week the wardens received a text asking for them to notify the administrator of their availability which was then updated. Wardens could then check to see the critical times that were un-wardened and thus fill any gap. For health and safety reasons a minimum of two wardens were allocated where possible. The roster can be used year on year.

It was decided to utilise the human resources differently in 2021. The priority of data collection was increased. When three wardens were on duty two were selected to protect the colony. The third was set to observe and collect data on specific nests. Those who were new to the collection of data this year were given a very basic outline on data collection. "This is the nest you will be recording, note down what you see". This was an attempt to avoid influencing the type of data being collected which would reduce the quality of the data being recorded. From our records "When eggs are being laid down there is a time when the observer notices the laying adult that is sitting exchanges her position with her male counterpart". This is the moment when we know when incubation starts. We can then calculate the approximate hatching date. As this day approaches we intensify our observations and in certain circumstances video trail cameras were installed. The adult's behaviour alters during the period of actual hatching. Shell removal does not occur immediately after hatching. Observations this year show that it can take up to two hours to remove the shell from the scrape. The data collectors other duties pre-hatching included the length of time adults spent sitting, the time changeovers occurred and whether feeding took place. Post hatching the documentation of feeds to chicks is of paramount importance. This data informs us about the food supply and its quality. It also informs us about the hunting capabilities of the parents and the likelihood of the chicks fledging successfully.

In order to simplify this data recording as much as possible. The standardisation of fish sizes (small, medium and large) were based upon the length of the bill of the adult little tern. Thus a small fish feed was any fish that was smaller than the adult bill length. Post ringing the identification of recipients was also recorded where possible. However the identification the recipient is more problematic when the chicks become more mobile. On many occasions all that the observer saw was the adult deliver a fish to a location hidden by vegetation and depart without any. As more wardens became available the number of observers were increased. Nest observation can become a tedious task. In order to ease the boredom some of those on protection duty exchanged roles with certain data recorders.

Protection duty always held the highest priority thus in emergency situations wardens were

permitted to enter the site to ward off avian predators. The only other occasions where we entered the site were to insert or remove cameras or recording devices. During the ringing sessions in order to minimise the disturbance we created a procedure for these and future events.

Nests were targeted for ringing based upon the age of the chicks. Ideally chicks should be less than ten days old but more than three days old. Chicks at this age at Portrane do not wander and therefore we are able to catch the entire clutch together with relative ease. There are circumstances where chicks outside this age profile are processed for the convenience of the ringers. We hope to create an historical profile/map of relationships at the Portrane site that will also contain egg types together with a full biometric profile for each nest.

Our policy on disturbance is that other than for the ringing of chicks we always wait for the colony to rise before entering the site. From our observations there is a vast amount that we have yet to understand and so we must be vigilant in keeping our interaction to a minimum. We are in a sense a service provider for the little terns that choose to spend their summer at Portrane.



*Figure 3: Site construction*

## Site Construction

This year despite the pandemic there was an increase in traffic in and out of Rogerstown harbour in the form of yachts, canoes, rowing boats, jet skis, motorised ribs and other craft. There was little impact upon the colony by this traffic, however canoeists, swimmers and paddle boarders who crossed over from Rush did impact the colony during the incubation period. The brooding birds would rise to investigate but after about two minutes they settled again. The disturbance declined once the chicks had hatched.

This year an area of shingle beach was cordoned off with 2 meter poles 10 meters apart. Netting in 50m lengths were attached with the base of the netting buried beneath the sand to discourage predators. The site's length was 300 meters north-south and 25 meters at its widest East-West. The signage attached was informative and served Bird Watch Ireland (BWI), BWI Fingal, NPWS, and F.C.C. A number of signs were strategically placed asking the public to maintain a 10 metre distance from the netting. Despite the signage the public did not stay 10m out from the netting. It was very apparent that walkers and their pets were a significant disturbance to the colony. Because of the narrowness of the site any dog leashed or otherwise passing by, caused the colony to rise. It was proposed to erect an outer ring to the eastern side of the site 15m where possible to counteract the disturbance. A temporary fence was erected with posts 10m apart that were linked together by 2 strands of blue nylon rope. The top rope was 1m from the ground and the bottom strand about 20cm from the ground. For future reference this worked as the walking public were now a further 15m from the nesting terns. There were a small number of persistent members of the public who insisted that they had the right to walk anywhere and who simple ignored our pleas.

When the Covid restrictions eased, blackboards were located at both the northern and southern ends of the site. The idea of a notice board had been discussed at the beginning of the 2018 project. We had used them in 2019 but their true impact was revealed during the 2020 project. The blackboards were updated regularly to give a concise report on the colony's development. The blackboards functioned extremely well as the public at large seemed to be drawn to them. Usually the passing public would stop for a short period and depart with a wave or a thumbs up. This behaviour was in sharp contrast to the informational signage which was generally ignored by the public.

## The Site 2021

### Erosion

Compared to the 2020 site it was obvious that we had lost about ten metres of shingle from the eastern side of the site in 2021. The previous 2021 spring tides together with wind action had created two ridges on the eastern edge. We noted that the most easterly outer ridge was breached by tides greater than four meters. This ridge was situated between the external blue rope fence to the east of the site and the eastern side of the netting. Fortunately no little tern nest was established in this area. Therefore the tidal inundations were never a threat. The inner ridge was more noticeable to the northern end of the site. Generally the northern half of the site was of higher elevation and I believed that any nest established within this area would be safe from any tidal inundation. The inner most ridge sloped downwards into a dip and then gently rose towards the western side of the site. Throughout the project this ridge area was generally avoided by our chicks and adults alike. The shingle narrowed as it extended northward from centre of the enclosed area.

There is no doubt that the beach at Portrane is undergoing a significant change in structure and



thus the breeding site available to the little terns is at risk of disappearing. The West of the site still has a dune system containing marram grass whose extensive systems of creeping underground rhizomes helped stabilise the dune system, which is gradually extending eastward. It contained low lying areas as well as a number of ridges containing various shoreline plants. Much of the north end of the site contained stands of marram grass and although the adult birds appeared to avoid this when nest prospecting, the chicks used the area for shelter from both the weather and predators.

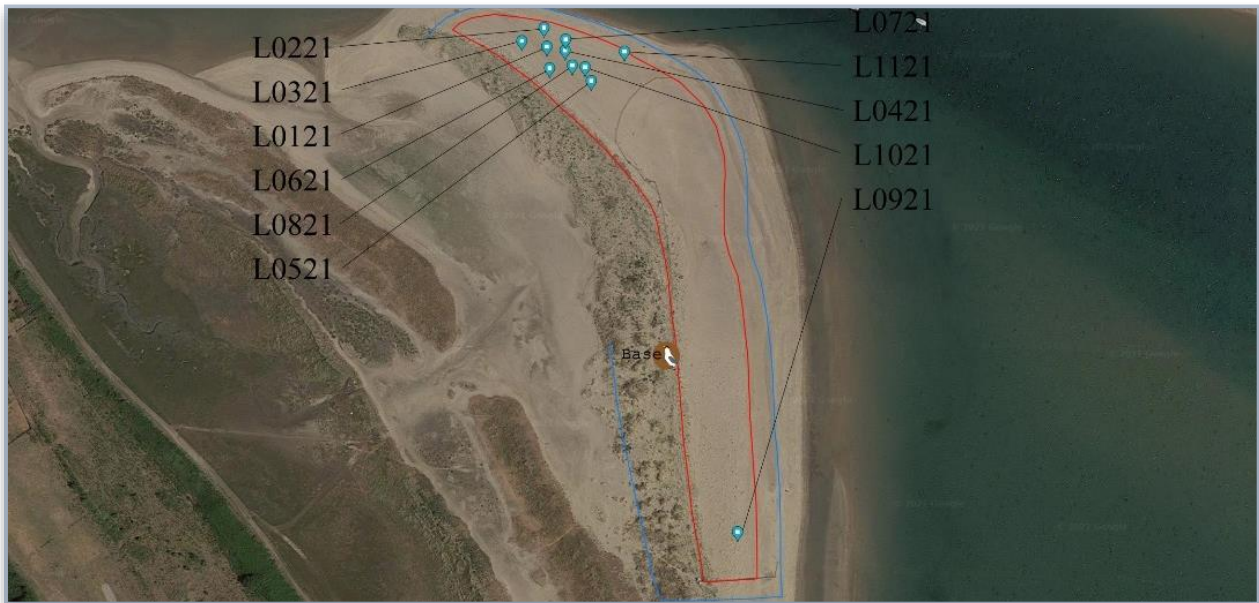


Figure 4: 2021 site map and nest locations

## Signage

The signs were placed strategically around the outer perimeter of the site. There are a number of public access points to Portrane beach. There are a number of access points to the beach that include “The Brook”, Beach lane, Valley lane and from the caravan park near Rogerstown harbour. It was necessary to post signage at most of the access points asking the public to circumvent the nesting site and if appropriate to keep dogs under control. Our initial signage contains basic informational text and photographs to notify the public about the project. Some signs describe briefly the little tern and its nesting behaviour. Other signs request the public’s co-operation with the project’s wardens. The public in general have become very supportive of the project. Many of the locals who walk the beach on a daily basis stop to inquire about the little terns.

We also added blackboards at either end of the colony. The role of the blackboards was to give the public up to date colony news. It is hoped to increase the number and variety of signs for next year. In particular warning signs regarding the electric fencing shall be required for 2022.

## Protection shelters

In 2018 we used both wooden and plastic pallets to offer the chicks some protection from predators and the elements. We then added ridge tiles to augment the pallets. We made contact with Wavin plastics Ireland who offered pipe sections to us gratis. These were cut into sections and placed about the site prior to nesting. When the nests of 2021 were established some of the pipes had trail cams installed to observe the behaviour of the little terns. The data recorded will be used to increase our knowledge of the little tern behaviour during the hours of darkness. This year a number of wooden tents were made and added to provide extra cover for the chicks. From our observations we can safely say that the shelters have proved an essential addition to maintenance of the welfare of our chicks.



*Figure 5: Feeding time at Portrane*



## Predator Management

“Not on my watch” was a phrase coined by a volunteer during the 2018 project. This statement is central to our attitude towards the predation of our charges. Jackdaws (*Corvus monedula*) were the main predator of 2018. They did not fly into the colony but walked in from beyond the maram grass to attack the nests and eat the eggs. Another predator was a pet canine that also ate the eggs from a nest. Fingal County Council provided 400 metres of netting in 2019 and a further 350 was ordered to completely encircle the site. Red foxes (*Vulpes vulpes*) however provided a lesson in 2019. Of the original 18 little tern nests put down one survived. Of the three re-nests attempted none survived. Our trail cams identifies the culprits as foxes. Discussions with NPWS (N Harmey) and F.C.C. (H Visser) left us in no doubt that a predator management scheme was required at Portrane. Since then we have an active night-time operative. Thanks to funding from the NPWS this year we were able to purchase 200 metres of electric fencing. This fence was not installed this year due to the lateness of its acquisition. If we have a similar sized colony it will be necessary to increase the electric fencing for 2022 to 600 metres. The electric fencing will be activated for night time usage and will be as a second line of defence. Daytime wardens carry air horns and whistles to ward off avian predators. Avian predators at the Portrane site include sparrowhawk (*Accipiter nisus*), kestrel (*Falco tinnunculus*), peregrine (*Falco peregrinus*), merlin (*Falco columbarius*), and buzzard (*buteo buteo*).

## Public Awareness

### Interaction with beach users

There are four categories of visitors to the beach at Portrane. There are the residents of the burrow who frequent the beach on a regular basis. They have an understanding of what we are about. Many take an active interest in what is happening at the colony through regular interaction with wardens. Secondly there were the anglers who visited the area in numbers particularly at period around the spring tides. Despite being in close proximity to the colony they had little effect upon it and the birds seen to ignore them. Many of the anglers would stop and chat about the colony and how well it was feeding.

There were also the holiday makers from the caravan parks who may have been visiting for the first time. Once they were informed about what was going on they appeared to supportive of the project. However a small number of these visitors were the source of some difficulties for the colony. Being on “holidays” some brought quad bikes into the dunes whilst others use scramblers. Despite our pleading they simply ignored the wardens. Fortunately, the soft sand to the North, East and West of the site prevented these visitors from causing too much disturbance to the colony.

## Group visitations and presentations

In previous years we received a number of inquiries from the local Educate Together primary school. Finally after many cancellations we provided a presentation for the teachers and students. This year we hosted a group from Roots and Wings" a crèche's final year students from Donabate. Unfortunately the visit was interrupted by torrential rain and the visit was abandoned. Arrangements were made to repeat the visit again next year. We have received an invitation by the South Dublin Branch BWI to give a talk on the Portrane project on the 1<sup>st</sup> February 2022.

## Colony output

### Colony numbers

One of the advantages of the size of the colony at Portrane is that it is easy to get an accurate count of the colony. For most of the breeding season we had 11 pairs plus 5 non- breeders and a least tern (*sternula antillarum*). Of the 22 breeding adults 7 were un-ringed, 7 were from Kilcoole, 4 were from Baltray, 3 were from Portrane and 1 from Gronant.

Little tern counts varied greatly post hatching with small numbers of Baltray and Kilcoole fledglings and adults were sighted on a daily basis. Post fledging over 120 little terns were counted at Portrane. This number included little terns from 5 colonies. Shortly afterwards in early August we visited both Kilcoole and Baltray and discovered that both colonies appeared deserted. This poses the question as to why do little terns congregate at Portrane? It is our belief that the food supply is so good that little terns congregate there to prepare for migration. Our first egg was laid on May 27<sup>th</sup> at approximately 08:15. Our final egg was laid on July 7<sup>th</sup> at 08:05.

### Nesting locations, Incubation period and clutch sizes

The nest/scrape sites at Portrane are typical in that they are a bare scrape in the shingle. In comparison to ringed plover the little tern scrapes are shallower. It has been our experience that little terns seldom have a nest that is decorated. It has been recorded that little terns usually have between two and three eggs but on rare occasions four.

In our experience there is a direct link between the incubation period and the number of eggs being incubated. However, our experiences in 2020 adds a caveat to this statement. Our experiences to date noted that inexperienced breeding birds do not always get it right and thus their immaturity may contribute to a delay in incubation time. Likewise experienced adults a likely to have shorter incubation times. Our observations in 2020 revealed a wider spectrum of incubation times than in 2018. Ehrlich et al suggest that incubation periods vary from 18 to 21 days. In 2020 however we have records of 22 day incubation periods. We are fortunate to have

a small colony and these observations are not too difficult to collect. Interestingly Ehrlich et al suggest a general fledging period of 19 to 21 days but add a cautionary “(15-18)” possibility. 2020’s fledglings IV0 to IV5 were most definitely in the 15-18 group whereas IV7 and IV8 were 21 to 22 days. We can safely discount food supply or weather as influencing factors. Portrane has more than enough sand eels, shrimp, and other small fish for both the colony and other tern species that visit. In 2020 the shortest fledging period that year was 18 days, whilst the longest was 20 days. An unexpected result of our observations revealed that weather was not an influencing factor on incubation time. Despite the erosion that took place at Portrane beach again during the winter of 2020 it was agreed that there was an obvious area at the North end of the beach for the little terns to breed in 2021.

On April 27<sup>th</sup> 2021 I noted that 9 little terns were now at Portrane. There was one pair displaying but on May 1<sup>st</sup> this number had reduced to 4. From discussions I had with both Baltray and Kilcoole wardens it would appear that the little terns returned in three migration surges. The unusual weather patterns we experienced in May and June may have contributed to this. Nests L0121, L0220 and L0320 were quickly established by our first arrivals. There was an overlap with migrating whimbrel and dunlin still waiting for a change in the weather to move North. What unfolded in 2021 at the North end of Portrane beach during the latter days of May through to mid-August added another chapter to the conservation of little terns in Dublin. We had studied the beach in March and April for likely nesting locations at Portrane. As a result of our investigations we mapped out the area see *Figure 4*. The red enclosed area is the where the netting was erected. The blue line represents the external perimeter that was placed approximately 10 metres outside of the netting. *Figure 4* also contains all of the little tern scrape locations. L0921 was referred to as the hermitage was approximately 18 metres from the southern end of site. The remainder of the nests were located at the northern end. This year was our most successful to date. All of the eggs laid hatched successfully. Our average clutch size was 2.36. The shortest incubation time was 18.5. The mean incubation time was 20.48 days, and the longest being 23 days. The shortest fledging time was 17 days. The mean fledging time was 19.5 days. With the longest fledging period at 23 days. During the 2021 season the newly fledged were observed to see how long they stayed at Portrane. This was calculated from the day the chick hatched until the date the fledged chick was last sighted. The mean period was 47.41 days. We shall be exploring this information in the future with regard to migration strategies. From our initial data it appears that fledglings from the early nesting stayed in the area for up to 6 weeks whereas those that fledged later stayed for slightly over 2 weeks.

## How we measure success

At Portrane only chicks seen flying are considered fledged. Hence this year we have 24 fledglings from 26 with 1 death and 1 unknown. At the finish of the 2018 project we reviewed the assortment of data collected. We concluded that together with the 14 fledged (13 ringed) chicks, the knowledge gathered/studied was also considered to be part of the success of the project. We know that IX0, IZ8 and IZ6 bred at Portrane this year and produced 6 fledglings. Whilst IX2 bred at Chesil, Dorset, England 2021. Other sightings from 2018 included IZ0 at

Gronant, Wales. Non-breeding IZ5, IZ7, IZ9 (2018) and IV0, IV5 (2020) were also sighted. We have no idea who will return next year to breed or where they might breed. From a statistics perspective our team of volunteers have had success in facilitating the colony in 2021. This year we had a hundred percent hatching rate, a ninety two percent fledging rate and a nest productivity rate of 2.18 percent. Portrane’s little tern colony is becoming an efficient and effective reproducer of little terns on Ireland’s east coast. In 2021 we have added 24 little terns to the Irish Sea community. We believe that due to the excellent supply of food at Portrane this year’s chicks have an excellent chance of returning to breed in the years to come.

## Ringling and biometrics

This year we managed to ring all of our chicks with both BTO and Darvic rings. We received excellent support from BWI Ireland and Jen Lynch the NPWS ranger from County Louth. Five dates were chosen due to the breeding patterns of the adults. We also gave support to our sister projects at Baltray and Kilcoole at some of their ringing sessions. Due to what we believe to be an abundant and convenient food supply at Portrane, our chicks compare favourably to those chicks of equal age at other colonies.

Table 1:

Year	Code	Sex	Comment
2018	IZ0		single chick, seen in Gronant, Wales July 21 2020
2018	IZ1		family of 3
2018	IZ2		family of 3, seen in 2020
2018	IX2		family of 3
2018	IZ3		family of 2
2018	IZ4		family of 2
2018	IZ5		family of 2, seen in 2020, Baltray
2018	IZ6	M	family of 2, seen in 2020, Portrane
2018	IZ7	M	family of 2, sibling unringed
2018	IZ8	F	family of 2, female
2018	IZ9	M	family of 2, seen in 2020, Portrane
2018	IX0	F	family of 2, seen in 2020, Portrane
2018	IX1	F	family of 2, seen in 2020, Portrane
2019	IX4		Family of 3, 3rd one not ringed
2019	IX5		Family of 3, 3rd one not ringed
2020	IV5		family of 2, sibling unringed
2020	IV0		family of 2
2020	IV1		family of 2

2020	IV2	family of 3, not seen after fledging, siblings have been seen multiple times
2020	IV3	family of 3
2020	IV4	family of 3
2020	IV7	family of 3
2020	IV8	family of 3
2020	IV9	family of 3, Disappeared on or before 18th July, prior to fledging, remains found 2/8/20, was not predated.
2021	A0E	Family of 3
2021	A0C	Family of 3
2021	A0J	Family of 3
2021	A0A	Family of 2
2021	A0B	Family of 2
2021	A0L	Family of 3
2021	A0N	Family of 3
2021	A0K	Family of 3
2021	A1K	Family of 2
2021	A1J	Family of 2
2021	A0H	Family of 2
2021	A0Z	Family of 2
2021	A1A	Family of 2
2021	A1B	Family of 2
2021	A0T	Family of 2
2021	A0S	Family of 2
2021	A0P	Family of 2
2021	A0V	Family of 2
2021	A1C	Family of 3
2021	A1E	Family of 3
2021	A1H	Family of 3
2021	A2Z	Family of 2
2021	A3A	Family of 2
2021	A5S	Family of 2
2021	A5T	Family of 2

## Sightings and re-sightings

For convenience of reporting, sightings of Darvic ringed birds at Rush Point and Portrane are considered as one area. Over 700 sightings from 136 birds were recorded by Paul Lynch, Jan Rodd and myself at Baltray, Gormanstown, Laytown and Portrane/Rush roosting sites.

## Biometric data

At Portrane biometric data is collected only at ringing sessions to reduce any possible stress or disturbance to the colony. The data below represents the 34 biometric readings taken this year during the ringing sessions.

Table 2:

			Wing mm.				Weight gr.	
Age (days)	n	Min Val	Mean Val	Max Val	n	Min Val	Mean Val	Max Val
1	1		14		1		8.6	
2	4	13	14	16	4	7.4	8.56	9.8
3	3	14	15.6	17	3	9.9	10.4	11.1
4	3	17	21	25	3	12.1	15.6	17.7
5	3	19	20.6	22	2	18.2	18.3	18.4
6	3	26	27	28	3	18.6	19.5	20.3
7	1		46		1		33.9	
8	5	36	43.8	56	4	27.6	32.3	37.4
9	2	55	56	57	2	34.9	36.4	37.9
10	2	56	59	62	2	36.1	38.2	40.3
11	1		62.1		1		36.48	
12	6	61	63.6	71	6	36.9	40.65	43.2

## Human disturbance

There was an increase in the number of holidaying visitors to Portrane beach in 2021. Many of these were completely unaware of the project. Most took an interest and showed an appreciation for the work we were doing, others however were problematic. A few climbed through the outer perimeter despite the signage requesting them to stay away and use alternative paths. Visitors who declared themselves to be “wildlife photographers” were particularly troublesome in that despite not having the required licence attempted to photograph sitting nesting birds. On a small number of occasions they attempted to climb the inner fencing perimeter. There were several occasions where wardens had to remain on-site to keep probable intruders outside the fencing. The adult birds got used to the daily walkers and only seemed troubled if people stopped opposite the eastern side of the perimeter. Our other distraction was the discovery of a least tern within the colony. At first it was the Irish birders who came. They were followed by British visitors and finally some European visitors. We had

set up a viewing area for these visitors and thankfully this worked very well.

Drones were an issue again this year. There is little we can do when their owners are controlling them from North of the river. We have signage requesting drone operators not to use them near the colony. When the owner is operating the machine from the southern end of the beach it is also impossible to manage this situation. On Tuesday August 3<sup>rd</sup> two drones were hovering over the site. Normally at this time of the year they would have been of no consequence for the tern colony. This year however we had a late breeding pair. It was discovered that the drones were measuring the erosion of the beach and they were working on behalf of F.C.C. The operators believed that drones that fly above 40 metres do not impact upon nesting birds. It should be noted that during the survey no chick feeding took place. Shortly after the drones finished their survey the feeding recommenced.

### Other breeding avian species at Portrane

This year we counted at least 14 nesting pairs of ringed plover (*Charadrius hiaticula*), 2 of skylark (*Alauda arvensis*), in excess of 15 meadow pipit (*Anthus pratensis*), and 1 common cuckoo (*Cuculus canorus*). The 1<sup>st</sup> ringed plover clutches were put down before any little tern had laid an egg. These clutches were predated by corvids with only 1 of the 14 hatching. It is likely that 2 of the hatchlings survived. The 2<sup>nd</sup> attempts were more successful with approximately 12 chicks fledging. Ringed plover chicks are extremely vulnerable to predation as they wander unprotected to the tide line at all times of the day. This behaviour brings them close to *Larus* spp. Grey heron (*Ardea cinerea*) also patrol this area on a daily basis. Two fledged skylark chicks were seen on the netting close to their nest site. Meadow pipit fledglings were also seen feeding in the area. The common cuckoo is not liked by little terns who pursue them relentlessly until they leave the area. An adult female was heard and seen in the early part of the season. An adult male was heard calling at the same time. A juvenile cuckoo was seen quite late in the season for over a 2 week period.

### Review

#### The breeding season 2021

We now had three breeding seasons behind us and thus felt reasonably confident that we would get fledglings away in 2021. On Friday April 23<sup>rd</sup> 3 little tern were located among various tern species at the point at the southern end of Rush beach. The following day Paul Lynch had one flying over the site. Having had the experiences since 2018 we were better informed as to how to go about the business of little tern conservation in 2021. The review of the 2020 project included a proposal that the fencing and signage should be installed on the Monday of the May bank holiday in 2021. We were now several weeks ahead of schedule. Daily visits to Portrane saw the number of little tern vary.



The time of day and tide position are important in relation to pre-nesting little tern observations. When I visited the site on the April 28<sup>th</sup> I had no sightings of little tern. The tide was on the ebb and it was mid-afternoon. Jan had been at the site before high tide and he had had 4 pairs in the morning. The following day I returned with Cormac before high tide. I sighted my first little tern just before 10:00. For the next hour 4 pairs flew high above the site constantly calling. Later we had 13 birds flying above the site however by 13:00 there was silence. On May 4<sup>th</sup> saw the little tern count rise. Visiting the site before high tide I saw 16 birds flying high above the site at 19:51. Shortly afterwards 7 birds were fishing close offshore. By 20:11 there were at least 19 birds. A visit to the site on the 6<sup>th</sup> saw LT's constantly offshore. Numbers rose from an initial 10 at 11:30 to 30+ at 17:00. It was noted that the hooded crow pair were present about 11:45 and needed to be chased away. A male kestrel hunted near Beach Lane around midday. It later returned around 16:00 and gave the site a good looking over. It flew north over the golf course.

I had planned a day off to catch up on some domestic chores but Jan's text at 09:12. He had witnessed the first pair scraping in the site. He also noted that he had seen a similar number of LT's as recorded the previous day. There were several visitors to the site and several birds were fishing in close to the site. Four other volunteers turned up in the afternoon. The roster was updated with some new names. The web link was sent to the volunteers as the BWI Fingal's web site was being updated.

The weekend of the 8<sup>th</sup> and 9<sup>th</sup> of May saw pairs of birds scraping however the weather was stormy and once again the sea came up to the netting. There were 35 LT's sheltering out of the weather to the West of the site. A south easterly wind has been pummelling the site and on the 10<sup>th</sup> I received a report that there had been severe damage to both the rope section and the netting. Later in the day I did some emergency repairs. The better news of the day was a pair scraping to the southern end as well as two pairs at the northern end. There were many other flying about and landing outside at the edge of the tide. Little tern numbers fluctuated but by May 15<sup>th</sup> our observations showed that four pairs seemed to be settling in the Northern section. Monday the 17<sup>th</sup> would tell us more.

We speculated that our 1<sup>st</sup> little tern egg would be laid between the 23<sup>rd</sup> and the 30<sup>th</sup> of May. However when I arrived on Sunday May 22<sup>nd</sup> there was considerable activity within the site. Jan observed three areas in particular where the birds were returning to. It was also noted that the little terns were chasing every corvid that came too close. We noted that we had 3 definite pairs with a possible 4<sup>th</sup>. It looked likely that we would have completed nests by Wednesday 25<sup>th</sup>.

This year the corvid threat was from rook *Corvus frugilegus* and hooded crow *Corvus cornix* with the occasional Jackdaw *Corvus monedula*. The rooks and hooded crows were persistent and unwelcomed visitors throughout the project. On Monday 24<sup>th</sup> I arrived at the beach at 09:00 and I was surprised to see 33 LT's. They were flying around the site however after about an hour they went out to sea. Small numbers of little terns returned from time to time during the day. Daniele reported 12 at 20:00 at close.

We received news of a sighting of IX2 which was born at the very northern end of Portrane beach in 2018. It was our youngest chick that year. It's a triplet and both its siblings were seen at Portrane last year. Its parents were re-nesters whose earlier attempt had been washed away in a storm. It was born 3 hours before the spring tide which would have washed it away. Its parents however led the 3 chicks away from the rising tide by waving a fish in front of them. About 3 days later a parent was keeping them under its body when it was attacked by a female kestrel. 2 volunteers' ran to their rescue and drove the kestrel away. This is the youngest bird from that nest. It hatched on the 11<sup>th</sup> July 2018 ringed BTO NW46293 left tarsus on July 17<sup>th</sup> and colour ringed right on 21<sup>st</sup> July 2018. It was at Chesil beach Dorset in South East England this breeding season.

Towards the end of May the ringed plovers began re-nesting. The 28<sup>th</sup> saw our 1<sup>st</sup> little tern egg and the nest was completed with two white shaded egg type pattern on Saturday the 29<sup>th</sup>. Our 2<sup>nd</sup> nest was started on Sunday the 30<sup>th</sup>. It was finished on Tuesday with 3 greenish type eggs. At close of day three other pairs were scraping and there were 16 + birds at Portrane. Wednesday June 2<sup>nd</sup> our nest count went from 2 to 5 and our egg count went from 5 to 9. There were 2 other pairs within the site. There are also 9 ringed plover within the site with another 4 nests within the dunes.



*Figure 6: Our first white type eggs*

There was a noticeable number of new arrivals in early June. The evening of June 4<sup>th</sup> saw the nest count rise to 6 and the egg count to 15. We had what appeared to be 2 other pairs. Other fledged chicks included meadow pipit, stonechat and mistle thrush. The female skylark was now foraging so we assumed that we had skylark chicks nearby. By the 5<sup>th</sup> however the Rush female kestrel was also active which meant that her eggs had also hatched. By evening time we had 3 pairs not yet nesting but mating IX1 was among them. Another right leg green ringed bird was close by but flew before it could be read. A 7<sup>th</sup> new scrape was found belonging to one of these pairs during the site inspection. A minimum of 21 birds were flying above the site at 19:15.

June 7<sup>th</sup> saw an increase in the number of little tern with a count of 27. From the new arrivals 3 pairs were mating at the same time IX0+IN1 I45+ Metal R and 2 Wicklow birds. Jan discovered that nest 4 had laid a 3<sup>rd</sup> egg. We now had 16 eggs. The female kestrel from Portrane had been seen in the vicinity the previous day and it returned to hunt on several occasions. It was harassed by the colony. A sparrowhawk also passed by late in the evening. The 1<sup>st</sup> adult ringed plover fell victim to a female kestrel attack in the southern section of the site afternoon of June 8<sup>th</sup>. The evening saw yet another photographer wilfully disturb the site by attempting to photograph the nesting little terns on the ground. Fortunately Jan was observing the ringed birds at the shoreline. His presence seemed to deter the photographer somewhat. The lady in question lingered for a while however as Jan stayed she departed. The NPWS were notified of yet another photographic incident.

The morning of June 9<sup>th</sup> Jan checked the site. The 1<sup>st</sup> 6 nests were intact with 16 eggs, but 3 more nests were added and it was hoped that more eggs would be added during the coming days. By June 11<sup>th</sup> our 1<sup>st</sup> 9 nests were complete with 2 eggs in nests L0721, L0821, and L0921. We now had 22 eggs. It was during this time that the then unseen L1021 was laid down. Our 1<sup>st</sup> chick arrived June 15<sup>th</sup> and the following day L0121 hatched its second and final chick. It was noted that both chicks were fed. The kestrel's activities were increasing along with sparrowhawk, buzzard and peregrine. The colony had been noticeably aggressive over the past few days. Saturday the 19<sup>th</sup> revealed that our colony of little terns contained a squeaky tern that turned out to be a least tern (*Sterna antillarum*). The twitchers came and went throughout the duration of the project. Nest L0221 had yet to hatch. The 20<sup>th</sup> saw more twitchers and they again respectfully kept their distance. The kestrel visits intensified as did that of the sparrowhawk. We had observed nest L0221 all day and all the indications were that it was about to hatch.

Prior to hatching both adults were in close proximity to each other. One of the parents walked about the scrape picking up and flicking away small pieces of shell and other beach material. The sitting bird appeared to be uncomfortable and was continuously shifting and checking beneath its self. At 19:39 the 1<sup>st</sup> chick from nest L0221 hatched. The following day all 3 chicks had hatched. We planned to ring the chicks on Thursday 24<sup>th</sup>. Observations on the 23<sup>rd</sup> indicated that L0321 and L0521 were about to hatch. Any effort to view L0621 was met with aggression from the adult little terns.

June 24<sup>th</sup> saw the 1<sup>st</sup> ringing. I had hoped that we might ring nests L0121 and L0221. Bad weather was due later in the afternoon and Jen was caught in Drogheda traffic. The chicks had scattered shortly before we were due to start. The ringing process always fills us with anxiety and tension. Despite our attention to detail and careful execution of the catching plan there is always doubt. We went in at 15:29 and the ringing started at 15:30 with nest 3. Nest L0221's chicks were then found and bagged as nest L0321 were returned. With minutes to spare we found our largest chicks from L0121. During the process we discovered that nests L0521 and L0621 had hatched. We now had 13 chicks of which 4 had been fitted with Darvic rings and 8 had had BTO metal fitted. The rain came but the chicks were covered and all was quiet when we left. Friday 25<sup>th</sup> the day started with very heavy rain and we decided not to check L0421. Jan checked L0421 early on the 26<sup>th</sup>. It had hatched and we now had 16 chicks. Nest L0921 was next, followed by L0821 and finally L0721 hatched its second and final chick on July 1<sup>st</sup>.

We had made arrangements to have a second ringing session on Friday July 2<sup>nd</sup> at 17:00. Brian Burke, Tara Adcock and Niamh Fitzpatrick came to ring. We agreed to start with nest L0921, then L0821 and L0721. The four chicks from our first ringing session were caught and a Darvic ring attached. Of the remaining 8 chicks from L0421-L0621 one was found to be choking and it died shortly afterwards. We had 3 chicks that could not be found. We have now 13 chicks fully ringed with Darvic and 5 more with BTO. We found a new nest L1021 with 2 eggs. We now had 21 chicks as sadly a chick choked on a fish that was swallowed tail first. We watched our eldest chick fly over 80m and thus we were unable to catch it for a second biometric reading. On Monday July 5<sup>th</sup> we had our 3<sup>rd</sup> ringing session and we succeeded in fully ringing all of the chicks. The first egg in L1121 was laid July 6<sup>th</sup> and its second and final egg was laid July 8<sup>th</sup>. The adults were IZ6 and a Kilcoole female. At first she appeared to refuse access to the eggs by IZ6. Four days later L1021 hatched unexpectedly. July 13<sup>th</sup> saw our 10<sup>th</sup> chick fledge. July 14<sup>th</sup> saw a transformation in the behaviour of the kestrel from Portrane. The female intensified her hunting and her 1<sup>st</sup> recorded kill occurred that day. She had come down the river at low level turned slightly south outside the rope and took a ringed plover chick. She flew out to sea pursued by terns and plovers alike but their pursuit was to no avail. The kestrel's daily visits were now counted in tens rather than units. Nest L1021 was ringed on July 16<sup>th</sup>.





*Figure 7: Returned post ringing*

By July 9<sup>th</sup> the chicks of L0121 and L0221 had fledged. During the previous week we recorded 4 2020 birds from Kilcoole were feeding at Portrane. This information was passed to Killian Mularney for some research that he was involved with. By July 20<sup>th</sup> we had 19 confirmed fledged chicks. L0821's A1A and A1B have yet to be seen flying. A1A was next to be observed flying and a few days later A2Z and A3A were flying. A1B was way past its fledging time however it has not been observed for some days. Our concern for L1121 had to some degree eased as the female was now allowing IZ6 to sit on the eggs. I witnessed both chicks hatching on Wednesday 28<sup>th</sup> as scheduled. Shortly before the alpha chick was born we had had a thunderstorm. I thought that we should name the chicks Thunder and Storm. For both parents it was their first time at breeding. We decided that we had an opportunity to observe this pair in great detail.



*Figure 8: A5T Thunder and A5S Storm fledged August 15<sup>th</sup> our 49<sup>th</sup> and 50<sup>th</sup> chicks since we started in 2018.*

Cameras were placed strategically to record in both video and still mode. Parental activity, chick activity and family interactions were noted. At first we believed we were about to have a repeat of I17 from 2020 where the adults did not possess the skills to feed their chicks. Niall O'Reilly stayed the night to observe the nest. The morning of the 29<sup>th</sup> the following observations were recorded. "Female sitting and male lands close to the scrape, chicks appear from under female in begging posture". "chick pecks at IZ6's beak shortly afterwards IZ6 flew away later to return with a fish" This occurred several times. The fish that were brought in were small and perfect in size for young chicks. It was noted that most of these fish were being ate by the female. There were changeovers where the female flew away. IZ6 would encourage the chicks under its wings. When the female returned the chicks would rush out and peck at her beak which was always empty. On a number of occasions both adults when without fish, would put their beaks into the chick's mouth. When IZ6 did this he would fly away and return with a fish feed the adult and repeat the procedure. After about 36 hours of this behaviour IZ6 finally started to feed the entire family. The female would initiate a changeover thus freeing IZ6 to fish for food. We surmised that due to its youth the female was not in the best of condition. This was noticeable from the female being in the moult process although its partner was not so. IZ6 fed



the family for two days when eventually the female joined in the feeding process. Both chicks were caught and ringed on August 4<sup>th</sup>. It was noted that the weight and wing length were below average for Portrane. It was estimated that the chicks were about 1 day behind. The inexperienced parent's confusion around feeding may explain the chick's slower growth rate at Portrane. When we cross checked the biometrics with other sites we discovered that chicks of a similar age at Kilcoole were of similar development.

August has never been kind weather wise at Portrane and 2021 was no different. In the week ending the 8<sup>th</sup> we had had 5 thunderstorms. I was concerned about the feeding of the chicks as the adults were grounded during the severe weather conditions. The parents however took every lull in the storms as opportunities to feed their chicks. Another uneasiness I had was the fact that many of our early breeders and their charges had departed. Other colonies at Kilcoole and Baltray had reported that the departing adults and fledglings had triggered nest abandonment. At Portrane however the little tern visitor numbers rose as the gathering for migration began. The reason for this assemblage may be the apparent abundance of food. A count of 200+ little tern was made on Sunday the 8<sup>th</sup>, with a count of 250+ sandwich tern also present. It was hoped that this increase in numbers may encourage L1121's adults to persevere and thus enable A5S and A5T to fledge.



*Figure 9: little terns over Portrane*

Our final week started on Monday August 9<sup>th</sup>. We had 8 visits from the female kestrel, but it was the female sparrowhawk that was most menacing. It landed upon the netting to the North East also the North West and South West during the day. On three other occasions it seemed to be reconnoitring the area. It's was going to be a very long week. The mornings of the 10<sup>th</sup> to the 13<sup>th</sup> saw A5T and A5S walk through the net down to the tide line to wash and preen. After



about an hour they walked back inside the site where they were fed in bursts throughout the days. Both chicks were alive, however it was becoming very difficult to see them outside of wash and preen time. Just before 08:00 on the 13<sup>th</sup> both chicks were at the water's edge. A dog walker with an uncontrolled dog proceeded up the beach despite being asked not to do so. The little tern adults rose immediately to protect their young. In typical tern fashion they swooped upon the intruders who turned about and left. By close of day both chicks had flapped and rose but failed to fly but they were very close to fledging. I noted the A5S the beta chick appeared to be more advanced than the alpha chick A5T. My records for later that day registered something I had not noticed before. Both parents fed a medium and a large fish to A5S simultaneously. On Friday evening both of the chicks were flapping about but had yet to fledge (*Figure 10*). We removed sixty percent of the site on the 15<sup>th</sup>. Both A5T and A5S were confirmed as being fledged on August 15<sup>th</sup>.



*Figure 10*: learning to flap

The following tables record the details of each breeding pair for Portrane 2021.

Table 3 Parents and their eggs

Nest No.	Male	Female	1st Egg	2nd Egg	3rd Egg
L0121	Unringed	Unringed	27.5.2021   8:15	28.5.2021   8:19	
L0221	Metal left	Unringed	30.5.2021   8:34	31.5.2021   12:56	1.6.2021   15:34
L0321	Unringed	I17	1.6.2021   15:42	2.6.2021   14:44	3.6.2021   15:59
<i>Nest camera</i>					
L0421	Metal left	Unringed	2.6.2021   14:46	4.6.2021   18:00	7.6.2021   20:34
L0521	Metal left	I28	2.6.2021   15:37	4.6.2021   18:01	
<i>Nest camera</i>					
L0621	Metal right	Unringed	4.6.2021 18:01	4.6.2021 18:01	4.6.2021 18:01
			<i>Found with 3 eggs</i>		
L0721	I45	Metal right	9.6.2021  9:51	12.6.2021  10:51	---
L0821	Metal right	PLV	9.6.2021   9:49	11.6.2021   10:06	
<i>Nest camera</i>					
L0921	IN1	IX0	9.6.2021   10:16	10.6.2021   9:06	
L1021	Unringed	IK2	2.7.2021   7:00	2.7.2021   7:00	
<i>Nest camera</i>			<i>Found with 2 eggs</i>		
L1121	I26	Metal right	6.7.2021   19:27	8.7.2021   8:03	
<i>Nest camera</i>					
			First egg 27.5.2021	Last egg 8.7.2021	

Table 4 Incubation periods

Nest	Clutch complete	1st Egg hatched	2nd Egg Hatched	3rd Egg Hatched
L0121	28.5.2021	15.6.2021   18:20	16.6.2021   14:16	
L0221	1.6.2021	20.6.2021   19:00	21.6.2021   12:00	21.6.2021   21:15
L0321	3.6.2021	23.6.2021   19:00	23.6.2021   23:00	24.6.2021   6:00
L0421	7.6.2021	25.6.2021   20:00	25.6.2021   20:00	26.6.2021   4:00
L0521	4.6.2021	24.6.2021   12:00	24.6.2021   12:00	
L0621	4.6.2021	24.6.2021   5:00	24.6.2021   5:00	24.6.2021   5:00
L0721	12.6.2021	30.6.2021   3:00	1.7.2021   17:00	
L0821	11.6.2021	30.6.2021   16:00	1.7.2021   3:00	
L0921	10.6.2021	30.6.2021   13:11	30.6.2021   18:02	
L1021	20.6.2021	9.7.2021   15:25	9.7.2021   15:25	
	<i>Estimate</i>			
L1121	8.7.2021	28.7.2021   12:00	28.7.2021   14:39	

Table 5 from hatching to fledging

Nest	Incubation period	Chicks hatched	Lost (chicks)	1st Fledged	Age	2nd Fledged	Age	3rd Fledged	Age
L0121	18.5	2	0	2.7.2021	17	3.7.2021	17		
				A0A		A0B			
L0221	19	3	0	8.7.2021	18	9.7.2021	18	9.7.2021	18
				A0C		A0E		A0J	
L0321	20	3	0	12.7.2021	19	12.7.2021	19	12.7.2021	18.5
				A0N		A0L		A0K	
L0421	18	3	1	12.7.2021	17	Dead*		17.7.2021	21
				A0P		Unringed		A0V	
L0521	19.5	2	0	13.7.2021	19	17.7.2021	23	---	---
				A0T		A0S			
L0621	19.5	3	0	17.7.2021	23	16.7.2021	22	17.7.2021	23
				A1E		A1C		A1H	
L0721	18	2	0	19.7.2021	19.5	19.7.2021	18		
				A0H		A0Z			
L0821	19	2	1?	22.7.2021	22	Missing*			
				A1A		A1B			
L0921	20	2	0	18.7.2021	18	20.7.2021	19.5		
				A1K		A1J			
L1021	?	2	0	26.7.2021	17	27.7.2021	18		
				A2Z		A3A			
L1121	20	2		15.8.2021	18	15.8.2021	18		
				A5T		A5S			

Table 6 Ringing and Biometrics part 1

BTO	Darvic	Wing	Weight	Ringer	Date	Time	Nest
NW55006		13mm	9.5g	BB	24.6.2021	15:30	L0321
NW55007		16mm	9.8g	BB	24.6.2021	15:35	L0321
NW55008		14mm	8.6g	BB	24.6.2021	15:40	L0321
NW55009	A0A	62mm	36.4g	BB	24.6.2021	15:45	L0121
NW55010	A0B	56mm	36.1g	SN	24.6.2021	15:50	L0121
NW55011	A0C	21mm	18.2g	BB	24.6.2021	15:55	L0221
NW55012	A0E	21mm	17.1g	JL	24.6.2021	16:00	L0221
NW55013		17mm	12.1g	SN	24.6.2021	16:05	L0221
NW55014		14mm	10.2g	BB	2.7.2021	18:30	L0921
NW55015		17mm	11.1g	BB	2.7.2021	18:35	L0921
NW55016	A0H	25mm	17.07g	BB	2.7.2021	18:40	L0721
NW55017		14mm	7.9g	BB	2.7.2021	18:45	L0721
NW55018		13mm	7.4g	BB	2.7.2021	18:55	L0821
NW55019		16mm	9.9g	BB	2.7.2021	19:00	L0821
NW55020	A0P	56mm	37.4g	JR	2.7.2021	19:20	L0421
NW55021	A0S	55mm	34.9g	TA	2.7.2021	19:25	L0521
NW55022	A0T	57mm	37.9g	JR	2.7.2021	19:30	L0521
NW55023	A0V	46mm	33.9g	BB	2.7.2021	19:35	L0421
NW55024	A1C	68mm	40.1g	BB	5.7.2021	16:15	L0621
NW55025	A1E	71mm	43.2g	SN	5.7.2021	16:20	L0621
NW55026	A1H	61mm	36.9g	BB	5.7.2021	16:25	L0621
NW55069	A2Z	49mm	54.0g(ERROR)	BB	16.7.2021	19:30	L1021
NW55070	A3A	37mm	33.2g	JR	16.7.2021	19:40	L1021
NW55423	A5S	36mm	27.6g	BB	4.8.2021	16:05	L1121
NW55424	A5T	41mm	31.3g	JR	4.8.2021	16:15	L1121

Table 7 Biometrics part 2 and re-trap

Nest	Retrap	Darvic added	Wing	Weight	Ringer	Date	Time
L0321	Yes	A0L	57mm	41.2g	TA	2.7.2021	19:10
L0321	Yes	A0N	62mm	40.3g	TA	2.7.2021	19:15
L0321	Yes	A0K	57mm	40.1g	NF	2.7.2021	19:05
L0121							
L0121	Yes		109mm	46.7		2.7.2021	
L0221							
L0221	Yes		78mm	45.2g		2.7.2021	
L0221	Yes	A0J	68mm	42.4g	TA	2.7.2021	18:50
L0921	Yes	A1K	28mm	20.3g	BB	5.7.2021	16:35
L0921	Yes	A1J	26mm	18.6g	SN	5.7.2021	16:30
L0721	Yes		43mm	30.3g	SN	5.7.2021	15:35
L0721	Yes	A0Z	22mm	18.4g	SN	5.7.2021	16:00
L0821	Yes	A1B	19mm	?	TA	5.7.2021	16:10
L0821	Yes	A1A	27mm	19.8g	BB	5.7.2021	16:05
L0421							
L0521							
L0521							
L0421	Yes		66mm	41.1g	SN	5.7.2021	15:50

## Conclusion

Portrane little tern project 2021 has once again seen the majority of eggs that hatch, fledge successfully. Without the wardens to protect the site the beach would be devoid of breeding little terns. We can say with some certainty that we have had some success in 2021. As in 2018 the effort in time and resources could possibly be measured against the outcome. The learning experience, the shared social capital, the observation data gathered, the 26 hatched chicks, the 24 fledged chicks and the plans for the future can be considered when taking these measurements. We were fortunate that the resources were available for the critical first two weeks of May. It is hoped that 2022 will be a less stressful time and that the winter storms will leave a breeding site for little terns. An early start to the nesting period in 2022 may give us a start on the breeding sparrowhawk and kestrels and so reduce the stress of their visits. I would be very hopeful of a shorter successful project next year.

Finally, my gratitude to the people of BWI Fingal who asked me to participate in this project and for their support. To participate in the protection and preservation of our heritage is indeed a worthwhile privilege. To the public who despite the inconvenience we caused to their leisure time thanks for your curiosity, acceptance, cooperation and toleration. Without this we would surely have failed. To the agencies, Fingal County Council, National Parks and Wildlife Service and Birdwatch Ireland thank you for your resources, support, and approval. Most importantly to Hans Visser without who's help we would surely have never got started. The volunteers, you came, your efforts protected our charges and once again gave hope for little terns at Portrane. A motley crew, your commitment, enthusiasm, and resolve made possible a shale full of wonder. Because of you there are 24 new little terns from Portrane. It is a wish that some of the 2021 chicks might return to breed sometime in the future and continue their species.





*Figure 11: A5S and dad IZ6*

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