
RPS

Common Tern monitoring

Port of Cork

Summary of 2014 breeding season at Ringaskiddy



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Cover: Mooring dolphins at Ringaskiddy Deepwater Port, on which the Common Terns nested in 2014

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1 INTRODUCTION

1.1 OBJECTIVES

This report presents a summary of Common Tern (*Sterna hirundo*) breeding activity at Ringaskiddy, Port of Cork during the 2014 season. The objectives of the survey were:

- To establish the location of the Ringaskiddy sub-colony within the Port of Cork
- To monitor the sub-colony in order to establish number of breeding pairs, productivity and fledging success
- To maintain the ongoing dataset of breeding terns for Port of Cork, as set out in previous report prepared by RPS

1.2 COMMON TERN ECOLOGY

Common Terns are long-distance migrants, spending the summer months in Europe where they breed, before migrating south in early autumn. The majority of the population winter on the western seaboard of Africa before returning in April and May.

The diet of the Common Tern consists almost exclusively of small, surface dwelling fish which are caught by plunge-diving. Prey is normally swallowed immediately upon resurfacing, unless intended for mate or young. When provisioning mates and chicks at the nest, fish can clearly be seen in the bill and flight is characteristically direct and steady.

Traditionally, they nest colonially on the ground in the open on bare substrate such as gravel, sand or shell-fragments. The nest is constructed by creating a scrape in the substrate, in which the eggs are laid. Unlike other species of tern in Ireland, they can regularly be found breeding at inland, freshwater sites as well as on the coast.

The breeding season in Ireland extends from April to August, with returning birds appearing from late-April and egg-laying can begin in mid-May. Incubation lasts 21-22 days with fledging taking a further 22-28 days. Birds begin to disperse from August, although it can be as early as July, with juveniles moving south both on their own and with adults.

Due to their localised breeding distribution in Ireland and a decline in their breeding range, Common Terns are listed as an amber species of conservation concern in Ireland (Colhoun and Cummins, 2013).

Common Terns are listed as an Annex 1 bird in the EU Birds Directive, meaning there are special penalties in place for disturbing them during the breeding season.

1.3 COMMON TERNS AT PORT OF CORK

Breeding Common Tern is a species of Special Conservation Interest (SCI) within the Cork Harbour Special Protection Area (SPA) (Site Code: 004030), with a mean of 69 pairs for the period 1998-2000 and a maximum of 102 pairs in 1995 (NPWS, 2008).

Common Terns have nested in a number of locations within Cork Harbour since about 1970. Since 1983, they have chosen various man-made structures as nest sites, including a group of semi-derelict steel barges moored in Foaty Channel until these were removed c.1999; and

the roof of a Martello Tower adjacent to the railway line between Great Island and Fota Island.

In 2012, the total population of Common Terns which nested within Cork Harbour was between 85 and 95 pairs, close to the maximum recorded population of 102 pairs in 1995. This represents c.2.1% of the all-Ireland population estimated at 4,189 during Seabird 2000 (Mitchell *et al.*, 2004).

1.4 COMMON TERNS AT RINGASKIDDY

Since 2010, the mooring dolphins at Ringaskiddy Deepwater Basin (DWB) have supported a sub-colony of Common Terns, with additional pairs noted nesting at the ADM Training Wall (an unsuccessful nesting attempt in one year only); an island in the lagoon at the Pfizer-owned Raffeek Creek Golf Course; and a rocky island in Lough Beg.

It is assumed that pairs which previously nested at these additional sites have relocated to the DWB mooring dolphins, a theory supported by evidence from ringing studies. The Martello Tower at Marino Point and the Ringaskiddy DWB mooring dolphins now comprise the only known sub-colony sites within Cork Harbour, with the Martello Tower sub-colony being the only site located within the Cork Harbour SPA boundary.

The Ringaskiddy DWB sub-colony is subjected to an extraordinarily high level of anthropogenic disturbance to which the birds appear habituated. The occurrence of loud irregular noise from humans, machinery, vehicles and vessels and the presence of people in high-visibility clothing is a near-constant feature of the environment immediately surrounding the mooring dolphins. Key disturbance sources include road traffic from the internal Port roads and the N28 within 100m, including a high proportion of trucks and other large commercial vehicles many of which are stopping and starting, revving engines and using air brakes; port activity including mass bulk handling within 200m; pedestrians and regular human voices and presence within and the regular docking of very large ocean going passenger ferries within 30m of the dolphins and on rare but regular occasions, directly up against the dolphins themselves, requiring direct access to mooring facilities on the dolphins.

2. METHODOLOGY

Regular visits by an ornithologist were made throughout the breeding season in order to locate and monitor the Ringaskiddy sub-colony. These visits were planned to coincide with all stages of the breeding season, i.e. pre-breeding (May), incubation (June), chick provisioning (July) and post-breeding (August).

Birds were recorded using a "look-see" approach at three sites in the Ringaskiddy area where Common Terns have nested in the recent past; Rafeen Creek, Lough Beg and Ringaskiddy DWB (Figure 2.1).

Figure 2.1 - Locations of recent Common Tern nesting attempts in the Ringaskiddy area



For recording purposes, the Ringaskiddy DWB mooring dolphins were numbered D1 to D5 (Figure 2.2). The number of individual adults, nesting pairs and young associated with each dolphin was recorded and are presented separately.

Figure 2.2 - Showing labelling of mooring dolphins for recording purposes



Eight visits were made across the breeding season. These visits were planned to coincide with pre-breeding (May), incubation (June), chick provisioning (July) and post-breeding (August).

Table 2.1 - Details of 2014 surveys at Ringaskiddy, Port of Cork

	Count Section	Date	Tide	High tide (Depth)	Low tide (Depth)	Start Time	End Time	Wind	Precip.	Cloud	Visibility
MAY - PRE-BREEDING											
1	DWB	07/05/14	Falling	11h37 (2.9m)	18h16 (1.3m)	14h00	15h55	F1-3	Dry	7/8	>3km
	Lough Beg	07/05/14	Falling	11h37 (2.9m)	18h16 (1.3m)	14h00	15h55	F1-3	Dry	7/8	>3km
	Raffeen Creek	07/05/14	Falling	11h37 (2.9m)	18h16 (1.3m)	14h00	15h55	F1-3	Dry	7/8	>3km
2	Lough Beg	08/05/14	Rising	12h04 (3.8m)	06h10 (1.2m)	09h30	11h40	F0-2	Dry	8/8	>3km
	DWB	08/05/14	Rising	12h04 (3.8m)	06h10 (1.2m)	09h30	11h40	F0-2	Dry	8/8	>3km
	Raffeen Creek	08/05/14	Rising	12h04 (3.8m)	06h10 (1.2m)	09h30	11h40	F0-2	Dry	8/8	>3km
JUNE - INCUBATION											
3	Raffeen Creek	04/06/14	Falling	10h20 (3.5m)	17h00 (1.0m)	12h00	13h45	F5-4	V. light shower	4/8	>3km
	DWB	04/06/14	Falling	10h29 (3.5m)	17h00 (1.0m)	12h00	13h45	F5-4	V. light shower	4/8	>3km
	Lough Beg	04/06/14	Falling	10h20 (3.5m)	17h00 (1.0m)	12h00	13h45	F5-4	V. light shower	4/8	>3km
4	DWB	05/06/14	Rising	11h21 (3.4m)	05h29 (1.1m)	09h45	10h15	F0-2	Dry	1/8	>3km
JULY - CHICK PROVISIONING											
5	DWB	10/07/14	Rising	16h42 (3.9m)	10h48 (0.8m)	12h05	13h05	F3	Dry	8/8	>3km
6	DWB	11/07/14	Falling	17h37 (4.2m)	11h44 (0.7m)	09h15	09h55	F3	Dry	3/8	>3km
AUGUST - POST-BREEDING											
7	DWB	11/08/14	Rising	19h04 (4.6m)	13h12 (0.2m)	16h30	17h45	F3-4	Heavy showers	6/8	>2km
	Lough Beg	11/08/14	Rising	19h04 (4.6m)	13h12 (0.2m)	16h30	17h45	F3-4	Heavy showers	6/8	>2km
	Raffeen Creek	11/08/14	Rising	19h04 (4.6m)	13h12 (0.2m)	16h30	17h45	F3-4	Heavy showers	6/8	>2km
8	DWB	12/08/14	Falling	07h27 (4.5m)	13h59 (0.1m)	09h20	10h30	F5	Dry	4/8	>3km
	Lough Beg	12/08/14	Falling	07h27 (4.5m)	13h59 (0.1m)	09h20	10h30	F5	Dry	4/8	>3km
	Raffeen Creek	12/08/14	Falling	07h27 (4.5m)	13h59 (0.1m)	09h20	10h30	F5	Dry	4/8	>3km

3. RESULTS

3.1 VISITS 1 & 2 - PRE-BREEDING

Visit 1 (07/05/2014)

A pre-breeding visit was made in early May. No terns were recorded at the DWB, Lough Beg or Raffeen Creek, although seven birds were seen from the DWB foraging on the River Lee. A single Great Black-backed Gull (*Larus marinus*) was observed roosting on a street-light above the mooring dolphins.

Visit 2 (08/05/2014)

A mixed flock of c.30 Sandwich (*Sterna sandvicensis*) and Common Terns were seen foraging at the mouth of Lough Beg near Currabinny Wood. The flock moved into Lough Beg as the tide came in and four Sandwich Tern were observed joining the Oystercatcher (*Haematopus ostralegus*) roost near the Glaxo-Smith Kline factory at 09h59.

Three Common Terns were observed flying low over the DWB mooring dolphins at 10h30. They circled and called for several minutes before heading off towards Lough Beg. A single bird flew low over the site calling for a few seconds at 11h08 before heading off upriver. One other Common Tern was seen foraging on the River Lee. A Kestrel (*Falco tinnunculus*) was noted hunting over waste ground to the south-east of the DWB (10h51).

No terns were observed at Raffeen Creek. Two Lesser Black-backed Gulls (*Larus fuscus*) were seen roosting on the island.

3.2 VISITS 3 & 4 - INCUBATION

Visit 3 (04/06/2014)

In order to establish how many pairs were nesting at each site, firstly the number of adults present were counted and then the number of apparently occupied nests (AON).

Approximately 100 individuals were recorded at DWB. The breakdown of locations were:

- Dolphin 1 (D1) - 0
- Dolphin 2 (D2) - two individuals displaying and courting
- Dolphin 3 (D3) - 36-40 individuals
- Dolphin 4 (D4) - 44-50 individuals
- Dolphin 5 (D5) - c.10 individuals

Total: 90-100 individuals

No terns were observed at Raffeen Creek or Lough Beg.

Visit 4 (05/06/2014)

Breakdown of locations:

- D1 - 0
- D2 - 0

- D3 - 46 individuals, c.16 AON
- D4 - 45 individuals, c.21 AON
- D5 - 30 individuals, c.10-15 AON

Total: 47-52 AON

3.3 VISITS 5 & 6 - CHICK PROVISIONING

Chick provisioning - Visit 5 (10/07/2014)

Upon arrival (12h05) at the DWB, a Grey Heron (*Ardea cinerea*) was observed on D4 being mobbed by c.50 adult terns (Figure 3.1). The heron proceeded to predate unfledged chicks on the dolphin, seemingly undeterred by the aerial attacks by the adults.

Although the presence of the heron, and subsequent disturbance, meant conditions were not ideal for monitoring, the following totals were observed:

- D1 - 0
- D2 - 0
- D3 - 10 adults, 0 young
- D4 - Grey Heron, 0 adults and four young
- D5 - c.20 chicks

Figure 3.1 - Digiscoped photograph of Grey Heron on D4 being mobbed by adult terns



At 12h24, the heron flew off, pursued by adult terns. The adults returned to the mooring dolphins and settled. A second count, at 12h35, showed:

- D1 - one adult perched on hand-rail
- D2 - one adult perched on hand-rail
- D3 - five AON, nine adults perched on hand-rail and 0 young seen
- D4 - ten AON, 15 adults perched on rail
- D5 - c.10-15 AON, several other pairs seen courting and c.10 young seen

Three young birds were seen swimming around the DWB being fed by adults.

Chick provisioning - Visit 6 (11/07/2014)

- D1 - 0
- D2 - 0
- D3 - three AON, 17 adults and two chicks
- D4 - six AON and c.10 chicks
- D5 - 10+ chicks seen

Around ten adults were mobbing a Grey Heron which was on the rock armour beside the slip-way to the south of the mooring dolphins.

Following visits 5 and 6, nesting attempts were reported at several other locations within the DWB (B. O'Mahony *pers comms*). This relocation and secondary nesting attempt (Figure 3.2) is most likely in response to birds failing as a result of predation by herons.

Figure 3.2 - Locations of secondary nesting attempts within Ringaskiddy DWB environs



- 1 - A single nest with eggs on this structure
- 2 & 3 - A minimum of six nests between these two sections of the structure. One active nest, a number of empty nests and unhatched (addled) eggs found. Port staff report having to avoid young terns and being attacked by adults when working in the area!
- 4 - Some nest scrapes here
- 5 - A few possible nest scrapes here but no indication that they were used

3.4 VISITS 7 & 8 - FLEDGING

Post-breeding - Visit 7 (11/08/2014)

A visit was made in mid-August to check for any late nesting attempts or large young which may still present on site.

On arrival at Raffeen Creek, two Common Tern were seen roosting on the island, along with four Oystercatcher, a Black-tailed Godwit (*Limosa limosa*) and a Cormorant (*Phalacrocorax carbo*). A third Common Tern was foraging over the lake.

No terns were recorded on the mooring dolphins at the DWB. A single Common Tern was observed flying over the site calling. Two Herring Gulls (*Larus argentatus*) were perched on a lamp-post on D3 and a large container ship was secured to D1 and D2 (Figure 3.2).

Figure 3.2 - Ship secured to D1 and D2



No terns were seen at Lough Beg. The small, rocky island did however, hold a large number of roosting birds, including Mallard (*Anas platyrhynchos*), Little Egret (*Egretta garzetta*), Black-tailed Godwit, Cormorant, Redshank (*Tringa totanus*), Greenshank (*Tringa nebularia*), Curlew (*Numenius arquata*), Great Black-backed Gull and the unusual sight of a Great White Pelican (*Pelecanus onocrotalus*)! The pelican was confirmed as an escapee from Fota Wildlife Park, rather than a wild vagrant.

Figure 3.3 - Digiscoped photograph of Great White Pelican at Lough Beg



Post-breeding - Visit 8 (12/08/2014)

No terns present on the island at Lough Beg, which contained four Cormorant, a single Great Black-backed Gull and the Great White Pelican. Two Common Tern were observed foraging over Lough Beg.

At the DWB, two Common Tern were seen fishing on the River Lee and a single bird flew over the site calling. No terns were observed on the mooring dolphins or surrounding structures.

The island at Raffeen held 14-15 adult Common Tern and a Black-tailed Godwit. Several terns were also foraging over the lake.

4. CONCLUSION

The number of nesting pairs in the Common Tern sub-colony at Ringaskiddy DWB was estimated to be between 47-52 pairs. This is consistent with recent years (48 in 2013 and 45-50 in 2012). Nesting was also recorded at Raffeen Creek (B. O'Mahony *pers comms*), taking the total number of nesting pairs in the Ringaskiddy area to c.60+ pairs in 2014.

Although 113 chicks were ringed in early July as part of ongoing studies into the Cork Harbour colony (B. O'Mahony *pers comms*), the low count of chicks recorded during July surveys is presumably as a result of predation by avian predators, primarily Grey Herons. The subsequent relocation and nesting attempts at other structures within the DWB are considered to be a response to this predation.

This is the first time nesting has been attempted at structures within the DWB, other than the mooring dolphins and illustrates how versatile the species is at relocating in response to environmental and predation pressures.

5. REFERENCES

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Common Tern monitoring

Summary of 2015 breeding season at
Ringaskiddy Deepwater Port



September 2015

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Cover: Common Terns

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1 INTRODUCTION

1.1 OBJECTIVES

This report presents a summary of Common Tern *Sterna hirundo* breeding activity at Ringaskiddy Deepwater Port, Co. Cork during the 2015 season. The objectives of the survey were:

- To establish the nesting location(s) of the Ringaskiddy sub-colony within the Port of Cork
- To monitor the sub-colony in order to establish number of breeding pairs, productivity and fledging success
- To update the existing breeding tern dataset for Port of Cork, as set out in previous reports prepared by RPS (2011 – 2014).

1.2 COMMON TERN ECOLOGY

Common Terns are long-distance migrants, spending the summer months in Europe where they breed, before migrating south in early autumn. The majority of the population winter on the western seaboard of Africa before returning in April and May.

The diet of the Common Tern consists almost exclusively of small, surface dwelling fish which are caught by plunge-diving. Prey is normally swallowed immediately upon resurfacing, unless intended for mate or young. When provisioning mates and chicks at the nest, fish can clearly be seen in the bill and flight is characteristically direct and steady.

Traditionally, they nest colonially on the ground in the open on bare substrate such as gravel, sand or shell-fragments. The nest is constructed by creating a scrape in the substrate, in which the eggs are laid. Unlike other species of tern in Ireland, they can regularly be found breeding at inland, freshwater sites as well as on the coast.

The breeding season in Ireland extends from April to August, with returning birds appearing from late-April and egg-laying can begin in mid-May. Incubation lasts 21-22 days with fledging taking a further 22-28 days. Birds begin to disperse from August, although it can be as early as July, with juveniles moving south both on their own and with adults.

Due to their localised breeding distribution in Ireland and a decline in their breeding range, Common Terns are listed as an amber species of conservation concern in Ireland (Colhoun and Cummins, 2013).

Common Terns are listed as an Annex 1 bird in the EU Birds Directive, meaning there are special penalties in place for disturbing them during the breeding season.

1.3 COMMON TERNS IN CORK HARBOUR

Breeding Common Tern is a species of Special Conservation Interest (SCI) within the Cork Harbour Special Protection Area (SPA) (Site Code: 004030), with a mean of 69 pairs for the period 1998-2000 and a maximum of 102 pairs in 1995 (NPWS, 2008).

Common Terns have nested in a number of locations within Cork Harbour since about 1970. Since 1983, they have chosen various man-made structures as nest sites, including a group of semi-derelict steel barges moored in Foaty Channel until these were removed c.1999; and the roof of a Martello Tower adjacent to the railway line between Great Island and Fota Island.

In 2012, the total population of Common Terns which nested within Cork Harbour was between 85 and 95 pairs, close to the maximum recorded population of 102 pairs in 1995. This represents c.2.1% of the all-Ireland population estimated at 4,189 during Seabird 2000 (Mitchell *et al.*, 2004). Data collected by Port of Cork has been used to assist in setting site specific conservation objectives for Common Tern in Cork Harbour SPA (NPWS, 2014).

1.4 COMMON TERNS AT RINGASKIDDY

Since 2010, the mooring dolphins at Ringaskiddy Deepwater Berth (DWB) have supported a sub-colony of Common Terns, with additional pairs noted nesting at:

- the ADM Training Wall (an unsuccessful nesting attempt in one year only);
- an island in the lagoon at the Pfizer-owned Raffeek Creek Golf Course; and
- a rocky island in Lough Beg.

It is assumed that pairs which previously nested at these additional sites have relocated to the DWB mooring dolphins, a theory supported by evidence from ringing studies (O'Mahony, *pers.comm.*). The Martello Tower at Marino Point and the Ringaskiddy DWB mooring dolphins now comprise the only known sub-colony sites within Cork Harbour, with the Martello Tower sub-colony being the only site located within the Cork Harbour SPA boundary.

The Ringaskiddy DWB sub-colony is subjected to an extraordinarily high level of anthropogenic disturbance to which the birds appear habituated. The occurrence of loud irregular noise from humans, machinery, vehicles and vessels and the presence of people in high-visibility clothing is a near-constant feature of the environment immediately surrounding the mooring dolphins.

Key disturbance sources include road traffic from the internal Port road and the N28 within 100m, including a high proportion of trucks and other large commercial vehicles many of which are stopping and starting, revving engines and using air brakes; port activity including mass bulk handling within 200m; pedestrians and regular human voices and presence within and the regular docking of very large ocean going passenger ferries within 30m of the dolphins and on rare but regular occasions, directly up against the dolphins themselves, requiring direct access to mooring facilities on the dolphins.

2. METHODOLOGY

Regular visits by an ornithologist were made throughout the breeding season in order to locate and monitor the Ringaskiddy sub-colony. These visits were planned to coincide with all stages of the breeding season, i.e. pre-breeding (May), incubation (June), chick provisioning (July) and post-breeding (August).

Birds were recorded using a "look-see" approach at three sites in the Ringaskiddy area where Common Terns have nested in the recent past; Pfizer Pond at Raffeen Creek, Lough Beg and Ringaskiddy DWB (Figure 6.1).

For recording purposes, the Ringaskiddy DWB mooring dolphins were numbered D1 to D5 (Figure 6.2). The number of individual adults, nesting pairs and young associated with each dolphin was recorded and are presented separately.

Eight visits were made across the breeding season (Table 2.1) to coincide with pre-breeding (May), incubation (June), chick provisioning (July) and post-breeding (August).

Table 2.1 - Details of 2015 surveys at Ringaskiddy, Port of Cork

Visit	Date	Tidal state	High tide (Depth)	Low tide (Depth)	Start Time	End Time
MAY - PRE-BREEDING						
1	10 May 2015	Low	10h24 (3.7m)	17h07 (0.9m)	16h00	18h30
2	16 May 2015	High	17h06 (4.1m)	11h15 (0.4m)	16h00	19h00
JUNE - INCUBATION						
3	03 June 2015	High	13h14 (0.7m)	19h03 (4.3m)	12h00	15h30
4	15 June 2015	High	17h40 (4.1m)	11h51 (0.5m)	15h00	18h30
JULY - CHICK PROVISIONING						
5	04 July 2015	Low	20h14 (4.4m)	14h26 (0.5m)	10h00	17h00
6	20 July 2015	Low	09h02 (3.8m)	15h29 (0.7m)	12h00	17h00
AUGUST - POST-BREEDING						
7	11 August 2015	Rising	16h24 (3.7m)	10h31 (1.0m)	11h30	16h00
8	18 August 2015	Low	08h34 (4.0m)	14h57 (0.7m)	12h00	17h30

3. RESULTS

3.1 VISITS 1 & 2 - PRE-BREEDING

Visit 1 (10/05/2015)

A total of 25 Common Terns were recorded at the DWB, in flight and on D3, D4 and D5. Five birds were recorded perched on railings nearby.

Ten birds were on the small island within the Pfizer Pond at Raffeen Creek Golf Course, but no nesting behaviour was recorded. Two birds were foraging within Raffeen Creek and a single Sandwich Tern was at Lough Beg.

Visit 2 (16/05/2015)

Approximately 30 Common Terns present at DWB, both in the air and on the dolphins.

Over 25 terns observed on Pfizer Pond, with several apparently occupied nests. Ten birds were observed feeding across Raffeen Creek and commuting to the Pfizer Pond.

No terns present at Lough Beg.

3.2 VISITS 3 & 4 - INCUBATION

Visit 3 (03/06/2015)

Approximately 60 individuals were recorded at DWB. The breakdown of locations were:

- Dolphin 1 (D1) - 0
- Dolphin 2 (D2) - 0
- Dolphin 3 (D3) - 20 AON (apparently occupied nests)
- Dolphin 4 (D4) - 30 AON
- Dolphin 5 (D5) - 25 AON

Total: c75 AON

No terns present at Pfizer Pond. Nests most likely flooded out during high spring tides on 18th May (>4.3m).

No terns were observed at Lough Beg.

Visit 4 (15/06/2015)

Approximately 110 individuals were recorded at DWB. The breakdown of locations were:

- Dolphin 1 (D1) - 0
- Dolphin 2 (D2) - 0
- Dolphin 3 (D3) - 28 AON
- Dolphin 4 (D4) - 29 AON
- Dolphin 5 (D5) - 19 AON

Total: c76 AON

One bird present at Pfizer Pond, no AON.

No terns at Lough Beg.

3.3 VISITS 5 & 6 - CHICK PROVISIONING

Visit 5 (04/07/2015)

Upon arrival no adults observed within the DWB or environs. Dolphins accessed and 134 deserted nests were recorded.

- D1 - 0
- D2 - 0
- D3 - 47 deserted nests (13 with cold eggs)
- D4 - 53 deserted nests (12 with cold eggs)
- D5 - 34 deserted nests (8 with cold eggs)

One pair of Black-headed Gulls nesting on D3, one nestling present.

Two birds at Raffeen Creek and 24 birds present at Pfizer Pond. Eight apparently occupied nests on island.

No terns at Lough Beg.

Chick provisioning - Visit 6 (20/07/2015)

No birds present at DWB.

Four adults feeding on Raffeen Creek and eleven birds present at Pfizer Pond. Four apparently occupied nests.

Mixed flock roosting at Lough Beg contained 20 Common Tern and 80 Sandwich Tern.

3.4 VISITS 7 & 8 - Post-breeding

Visit 7 (11/08/2015)

A visit was made in mid-August to check for any late nesting attempts.

No terns were recorded on the mooring dolphins at the DWB. Two birds were feeding on River Lee near-by.

Four Common Tern observed feeding on Raffeen Creek, no birds present at Pfizer Pond.

Two Common Tern and two Sandwich Tern were seen feeding at Lough Beg.

Visit 8 (18/08/2015)

No terns present at Raffeen Creek or DWB.

Low-tide roost at Lough Beg contained 8 Common Tern and 280 Sandwich Tern.

4. CONCLUSION

The number of nesting pairs in the Common Tern sub-colony at Ringaskiddy DWB was estimated to be around 75 pairs. This is higher than totals in recent years (47-52 pairs in 2014, 48 in 2013 and 45-50 in 2012). Nesting was also recorded at Pfizer Pond, Raffeen Creek, taking the total number of nesting pairs in the Ringaskiddy area to c.80+ pairs in 2015.

Although the number of nesting pairs increased in 2015, as with 2014, the sub-colony at DWB failed to fledge any young, most likely as a result of predation by Grey Herons. Evidence of an avian predator on abandoned eggs in early July was supported by reports from a local birdwatcher who observed two Grey Herons within the colony in late-June.

Failure at the Pfizer Pond followed high spring tides on two occasions which coincided with both the first clutches and any repeat nesting attempts.

By late summer, the activity levels of Common Tern in the lower harbour had decreased very significantly and numbers present at evening low-tide roosts at Lough Beg were lower than normal.

Elsewhere in Cork Harbour, the sub-colony on the Martello Tower at Marino Point had some difficulty, most likely as a result of weather conditions. Activity at the colony during August indicated this colony had some success.

The pair of Black-headed Gulls present at DWB also failed, most likely also as a result of Grey Heron predation. This is the first nesting record since 2009 when a pair nested in the Common Tern colony in Lough Beg (O'Mahony, *pers comm*).

Port of Cork is committed to delivering new nesting opportunities for the benefit of Common Tern in Cork Harbour as conditioned to planning approval for the redevelopment of Ringaskiddy Port (Ref: 04.PA0035 granted in May, 2015). These works are detailed in a report submitted to An Bord Pleanála in 2014, titled Recommendations on Common Tern Nesting Habitat Improvement Measures in Cork Harbour'. The planning condition commits POC to implementing the short term measures as specified in that report.

"Each of the new nesting platforms will provide at a minimum, equal nesting habitat extent as occurs on the existing dolphins, fitted with a wooden or metal perimeter edge (c.30cm height) to create a secure bund. A series of internal wooden baffles and built-in chick shelters will be constructed and the floor will be covered with a layer of suitable coarse aggregate and mussel shells as nesting substrate."

For simplicity, those short term measures are included as Appendix 1 to this report.

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FIGURES

6.1 Locations of recent Common Tern nesting attempts in Ringaskiddy area



6.2 Showing labelling of mooring dolphins for recording purposes



APPENDIX 1: SHORT TERM MEASURES

An extract from '*Recommendations on Common Tern Nesting Habitat Improvement Measures in Cork Harbour*', a report submitted to An Bord Pleanála in 2014 as part of a planning application to redevelop Ringaskiddy Port (Ref: 04.PA0035) consented in May 2015.

Proposed Habitat improvement and creation Measures

Ringaskiddy Deepwater Port Mooring Dolphins

Site Considerations: Current and future level of disturbance. Limited nesting material and shelter. Predation.

The mooring dolphins are owned and maintained by POC, and it is proposed to implement habitat improvement measures on one of the mooring dolphins.

A flat platform will be constructed and attached to the side of the mooring dolphin (Plate 7). The platform will be fitted with a wooden or metal perimeter edge (c.30cm height) to create a secure bund. A series of internal wooden baffles and built-in chick shelters will be constructed (not unlike the construction in Plate 8) and the floor will be covered with a layer of suitable coarse aggregate and mussel shells as nesting substrate.

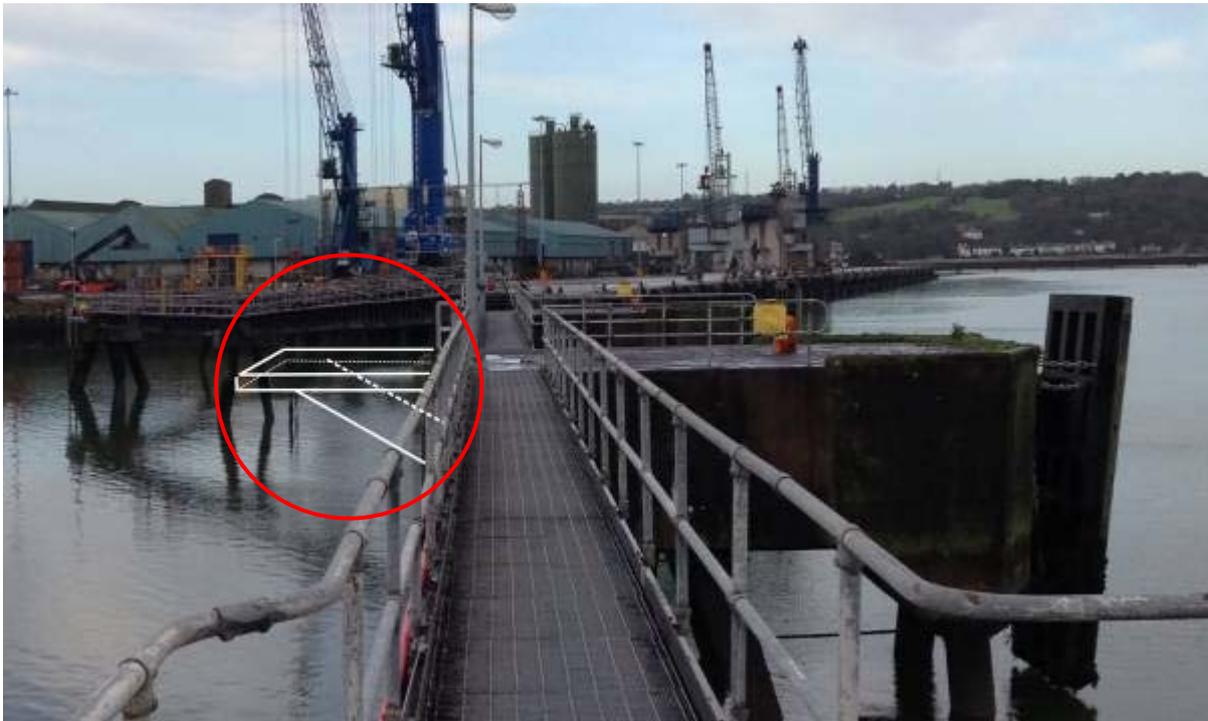


Plate 7: Concept of enhancement at DWB dolphin. White sketch circled in red reflects broad concept of nesting platform design.



Plate 8: Wooden baffles with built-in shelter arrangement on former ESB dolphin at Dublin Port.

ADM Liquids Jetty

Site Considerations: Current level of disturbance. Not a historical nest location. Predation.

The ADM Liquids Jetty is owned and maintained by POC. The Jetty is subject to a minimum amount of anthropogenic disturbance with the exception of occasional storage berthing and the offloading of liquid bulks. The Jetty, notably the guardrails on its terminal arms, and the nearby breakwater form an important roosting site for Cormorants throughout the year and this species is also listed as a Special Conservation Interest of Cork Harbour SPA. Proposed habitat creation measures will not retract the attractiveness of the ADM Jetty and breakwater as a roosting location for Cormorants.

As is illustrated in Plates 7 and 8 at the mooring dolphin, a level platform will be suspended off the northern terminal arm of the dolphin. Wooden kerbing to create secure nesting bunds will be placed around the perimeter followed by infilling with nesting substrate. This will be accompanied by the provision of tern chick shelters and internal divisions to increase nesting opportunities. The provision of tern decoys and playback calls at the Jetty location will serve to increase the site's initial attractiveness.

Concerns have been raised by NPWS over the potential for predation by large gulls (e.g. Herring, Great Black-backed and Lesser Black-backed Gulls) and Corvids at this location however, the risk of predation by Grey Heron is already a real threat at the existing Deepwater Port mooring dolphins (refer Plate 6) where a number of chicks were taken in July 2014. Following the establishment of a Common Tern sub-colony at the ADM Liquids Jetty with provision of chick shelters, this risk will be reduced. Large Gull numbers typically peak within Cork Harbour outside of the breeding bird season.



Plate 6: Existing predation risk (Grey Heron) at the mooring dolphins (July 2014). Predation has not been a problem at the existing mooring dolphin site until July 2014 when a Grey Heron was observed preying on unfledged chicks on the central dolphin.

Common Tern monitoring

Summary of 2016 breeding season at
Ringaskiddy Deepwater Port



September 2016

DOCUMENT CONTROL SHEET

Client:	Port of Cork
Project Title:	Ringaskiddy Port Redevelopment
Document Title:	Summary of 2016 Common Tern breeding season at Ringaskiddy Deepwater Port
Document No.:	NI1579_Rpt_Ec04_A01

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A01	For planning	AMC/BOM	JMC	JMC	Belfast	23.09.2016

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Cover: Common Tern

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1 INTRODUCTION

1.1 Objectives

This report has been written in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) *Guidelines for Ecological Report Writing* (CIEEM 2015). The aim of the report is to provide a description of the survey methods used; to provide the detailed results of surveys; and to provide an interpretation of the results.

This report presents a summary of Common Tern *Sterna hirundo* breeding activity at Ringaskiddy Deepwater Berth (DWB), Port of Cork during the 2016 season.

The objectives of the survey were to:

- establish the nesting location(s) of the Ringaskiddy sub-colony within the Port of Cork
- monitor the sub-colony in order to establish number of breeding pairs, productivity and fledging success
- update the existing breeding tern dataset for Port of Cork, as set out in previous reports prepared by RPS (2011 – 2015).

1.2 Common Tern ecology

Common Terns are long-distance migrants, spending the summer months in Europe where they breed, before migrating south in early autumn. The majority of the population winter on the western seaboard of Africa before returning in April and May.

The diet of the Common Tern consists almost exclusively of small, surface dwelling fish which are caught by plunge-diving. Prey is normally swallowed immediately upon resurfacing, unless intended for mate or young. When provisioning mates and chicks at the nest, fish can clearly be seen in the bill and flight is characteristically direct and steady.

Traditionally, they nest colonially on the ground in the open on bare substrate such as gravel, sand or shell-fragments. The nest is constructed by creating a scrape in the substrate, in which the eggs are laid. Unlike other species of tern in Ireland, they can regularly be found breeding at inland, freshwater sites as well as on the coast.

The breeding season in Ireland extends from April to August, with returning birds appearing from late-April and egg-laying can begin in mid-May. Incubation lasts 21-22 days with fledging taking a further 22-28 days. Birds begin to disperse from August, although it can be as early as July, with juveniles moving south both on their own and with adults.

Due to their localised breeding distribution in Ireland and a decline in their breeding range, Common Terns are listed as an amber species of conservation concern in Ireland (Colhoun and Cummins, 2013). Common Terns are listed as an Annex 1 bird in the EU Birds Directive, meaning there are special penalties in place for disturbing them during the breeding season and a disturbance licence must be acquired from National Parks and Wildlife Service (NPWS).

1.3 Common Tern in Cork Harbour

Breeding Common Tern is a species of Special Conservation Interest (SCI) within the Cork Harbour Special Protection Area (SPA) (Site Code: 004030), with a mean of 69 pairs for the period 1998-2000 and a maximum of 102 pairs in 1995 (NPWS, 2008).

Common Terns have nested in a number of locations within Cork Harbour since about 1970. Since 1983, they have chosen various man-made structures as nest sites, including a group of semi-derelict

steel barges moored in Foaty Channel until these were removed c.1999; and the roof of a Martello Tower adjacent to the railway line between Great Island and Fota Island.

In 2012, the total population of Common Terns which nested within Cork Harbour was between 85 and 95 pairs, close to the maximum recorded population of 102 pairs in 1995. This represents c.2.1% of the all-Ireland population estimated at 4,189 during Seabird 2000 (Mitchell *et al.*, 2004). Data collected by Port of Cork has been used to assist in setting site specific conservation objectives for Common Tern in Cork Harbour SPA (NPWS, 2014).

1.4 Common Terns at Ringaskiddy

Since 2010, the mooring dolphins at Ringaskiddy Deepwater Berth (DWB) have supported a sub-colony of Common Terns, with additional pairs noted nesting at:

- the ADM Training Wall (an unsuccessful nesting attempt in one year only);
- an island in the lagoon at the Pfizer-owned Raffeen Creek Golf Course; and
- a rocky island in Lough Beg.

It is assumed that pairs which previously nested at these additional sites have relocated to the DWB mooring dolphins, a theory supported by evidence from ringing studies (O'Mahony, *pers.comm.*). The Martello Tower at Marino Point and the Ringaskiddy DWB mooring dolphins now comprise the only known sub-colony sites within Cork Harbour, with the Martello Tower sub-colony being the only site located within the Cork Harbour SPA boundary.

The Ringaskiddy DWB sub-colony is subjected to an extraordinarily high level of anthropogenic disturbance to which the birds appear habituated. The occurrence of loud irregular noise from humans, machinery, vehicles and vessels and the presence of people in high-visibility clothing is a near-constant feature of the environment immediately surrounding the mooring dolphins.

Key disturbance sources include road traffic from the internal Port road and the N28 within 100m, including a high proportion of trucks and other large commercial vehicles many of which are stopping and starting, revving engines and using air brakes; port activity including mass bulk handling within 200m; pedestrians and regular human voices and presence within and the regular (weekly during summer) berthing of very large ocean-going ferries within 30m of the dolphins; and on rare but regular occasions, POC service vessels mooring directly up against the dolphins themselves, an activity which requires direct access to the dolphins¹.

Recent survey has revealed that, while nesting attempts were made at the DWB in 2014 and 2015, the sub-colony failed to fledge any young (RPS, 2015).

1.5 Statement of authority

The surveyor, Barry O'Mahony, is an independent ecologist with a life-long interest in ornithology. Barry has served on the national council of the Irish Wildbird Conservancy (now BirdWatch Ireland) and has been involved in various surveys including IWeBS, atlas survey of Wintering Birds and two atlas surveys of breeding birds. Since 2008, Barry has worked as a research assistant at UCC where his research has been focussed on the ecology of the Hen Harrier (*Circus cyaneus*). He is licensed bird ringer and protected species license holder.

The author, Adam McClure, is an ecologist with RPS and holds a BSc (Hons) in Palaeoecology and Archaeology with seven years experience in the field of ornithology. Adam has extensive expertise in breeding bird surveys, vantage point surveys, wetland bird surveys, wintering bird surveys, is a licensed bird ringer and protected species licence holder. Adam is a full member CIEEM.

This ecological contract was managed, and the output report reviewed and approved by James McCrory. He is a Senior Associate with RPS and holds a BA in Plant Science and a MSc in Habitat Creation and Management. James is a Chartered Environmentalist (CEnv); a Chartered Ecologist (CEcol) and full member of the CIEEM; and he is also a Chartered Biologist (CBiol) and full member

¹ Note that this activity is now regulated and seasonally restricted in accordance with planning permission PL04.PA0035

of the Royal Society of Biology. James is part of the CIEEM policy review group in Ireland and is a member of the CIEEM technical working group which oversaw the recent update of the seminal Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2016a).

The information prepared and provided is true and accurate at the time of issue of the report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM, 2016b). We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

2. METHODOLOGY

Regular visits by an ornithologist were made throughout the breeding season in order to locate and monitor the Ringaskiddy sub-colony. These visits were planned to coincide with all stages of the breeding season, i.e. pre-breeding (May), incubation (June), chick provisioning (July) and post-breeding (August).

Birds were recorded using a "look-see" approach at three sites in the Ringaskiddy area where Common Terns have nested in the recent past; Pfizer Pond at Raffeen Creek, Lough Beg and Ringaskiddy DWB (Figure 1). For recording purposes, the Ringaskiddy DWB mooring dolphins were numbered D1 to D5 (Figure 2). The number of individual adults, nesting pairs and young associated with each dolphin was recorded and are presented separately.

3. RESULTS

Sixteen visits were made across the breeding season (Table 3.1), with visits timed to coincide with pre-breeding (May), incubation (June), chick provisioning (July) and post-breeding (August). In order to investigate the cause of failures in recent years and closely monitor the success of chicks, more emphasis was placed upon surveying during the chick provisioning period.

Table 3.1 - Details of 2016 surveys at Ringaskiddy, Port of Cork

Visit	Date	Tidal state	High tide (Depth)	Low tide (Depth)	Start	End
April / early-May - PRE-BREEDING						
1	18th April	Rising	16h17 (3.5m)	10h33 (0.8m)	11h00	14h00
2	4th May	Low	16h20 (3.9m)	10h27 (0.5m)	10h00	13h00
3	5th May	Low	17h14 (4.1m)	11h22 (0.3m)	10h00	13h00
Mid-May - June - INCUBATION						
4	14th May	Falling	12h19 (3.2m)	18h59 (1.0m)	16h00	18h00
5	27th May	Falling	09h41 (3.7m)	16:14 (0.9m)	10h00	14h00
6	17th June	High	04h07 (3.5m)	10h37 (0.9m)	09h00	14h00
7	30th June	Rising	14h19 (3.6m)	08h25 (0.9m)	10h00	14h00
July - CHICK PROVISIONING						
8	1st July	Rising	15h26 (3.7m)	09h33 (0.8m)	10h00	16h00
9	7th July	High	20h33 (4.0m)	14h45 (0.3m)	20h00	20h15
10	14th July	Rising	13h45 (3.3m)	07h58 (1.2m)	09h45	14h30
11	19th July	Low	18h13 (3.9m)	12h17 (0.6m)	10h00	16h00
12	29th July	Rising	13h54 (3.5m)	07h57 (1.0m)	09h00	14h00
13	31st July	Falling	16h20 (3.7m)	23h00 (0.7m)	19h30	20h30
August - POST-BREEDING						
14	4th August	Low	19h33 (4.1m)	13h43 (0.3m)	13h00	16h00
15	9th August	Rising	16h45 (0.9m)	22h35 (3.6m)	20h20	21h00
16	19th August	Low	06h49 (4.0m)	13h14 (0.3m)	10h00	13h00

3.2 Visits 1 - 3 - Pre-breeding

Visit 1 (18th April 2016)

Western shore of Cork Harbour from Lough Mahon to Lough Beg surveyed. No Common Terns present during the survey. Five Sandwich Terns feeding on the eastern shore near Whitegate.

DWB: mooring dolphins held a large number of resting feral pigeons, an indication that the terns are absent. One Grey Heron was perched on the railings at D4.

Visit 2 (4th May 2016)

Western shore Cork Harbour from Lough Mahon to Lough Beg surveyed.

Lough Beg: 36 Common Terns feeding and roosting along tide-line at Lough Beg, two Sandwich Terns in flight. Most likely to be recent arrivals that haven't proceeded to the nesting areas yet or that are on passage to other locations.

No terns present at Pfizer lagoon, Lough Beg rocky island, Ringaskiddy dolphins or the Martello Tower by Fota Island.

The flock of approx 40 feral pigeons occupied the POC dolphins, as they normally do when the terns are absent.

One POC contractor on D6 arranging ropes and equipment. Tugboat/vessel nearby whose occupants were issuing directions via loud-hailer public address system.

Visit 3 (5th May 2016)

Delay in works at DWB. Linkspan remains in place. Temporary mooring bollard at the deepwater quay (just in front of D3) and towing eyes were only being fitted this morning.

No terns present, but some birds seen near the Ringaskiddy and Pfizer colony sites.

3.3 Visits 4 - 7 - Incubation

Visit 4 (14th May 2016)

Minimum of eight apparently occupied nests (AON) at Pfizer Lagoon.

Visit 5 (27th May 2016)

Pfizer Lagoon: spring tides during previous appear to have cleared the site - no birds were present at the Pfizer Lagoon or in Raffeen Creek.

DWB: minimum of 49 sitting birds. No indication of nesting on any of the other structures nearby or at the ferry port. One bird was perched on top of one of the new nest platforms but no other birds were associating with them or showing interest.

One Grey Heron present - seen off by small group of mobbing terns.

Visit 6 (17th June 2016)

Pfizer Lagoon: terns have resumed nesting activity with five birds present including one AON.

DWB: minimum of 78 birds either in flight, attending at nest sites or sitting on nests Full view of the dolphin surfaces is obscured by the new nesting platforms and a count of 32 AON is a conservative minimum. Two nests with three eggs each were found on an adjacent structure referred to as D6.

Activity at the Martello colony appears to be slightly reduced with only about twelve birds in the area and none apparently on or flying above the tower as is normally obvious at this time of the season.

Visit 7 (30th June 2016)

Activity at the Pfizer Lagoon has increased, with 20 birds present and 5 AON.

3.4 Visits 8 - 13 - Chick provisioning

Visit 8 (1st July 2016)

Pfizer Lagoon: 19 birds at the island with seven AON.

DWB: Approximately 130 birds took to the air on approach by surveyor (under licence from NPWS). Thirty-two nests containing eggs and/or young were active. Twenty-six young were ringed and eleven dead young were counted, some of which were well grown.

It isn't unusual to find dead chicks at a colony but it is unusual to find well-grown young that have died. This might be a sign of undernourishment or exposure to inclement weather. The presence of corpses in the colony *may* indicate that predation by Grey Herons is not occurring as much as previously observed.

One Grey Heron was present on the nearby shoreline but was chased-off by terns whenever it took flight.

Of the six eggs in the nests on D6 (June 17th) only one remains. This egg loss indicates some degree of predation at the site but as this dolphin is a bit isolated (further away and with fewer adult birds) from the other dolphins it is likely to be less protected

No eggs or young were found in any of the recently-installed boxes although, in one compartment, a depression in the added aggregate looked like a nest scrape.

Visit 9 (7th July 2016)

Twenty birds present in the island at Pfizer Lagoon, with ten AON. No young seen but vegetation is too high for recently-hatched young to be visible.

Visit 10 (14th July 2016)

Lough Beg: Four terns were feeding mid-estuary and three were perched on the rocky island. One AON with sitting and attending birds was visible and another bird appeared to be offering a fish to an unseen recipient at a second location on the rock. This is the first breeding attempt at this sub-site since 2006.

Pfizer Lagoon: 34 birds on the island, with 14 AON. One well-grown downy chick present and one adult provisioning (recipient not visible)

DWB: Generally quiet, approx. 70 adults present. Only three live young and four dead young present. No juveniles present indicating a series of predation events since the previous visit. Thirty active nests, all but one with eggs, and some were new nests/new eggs since previous visit, e.g. D6 now has three nests with a total of five eggs. One Heron was in the area and was mobbed by terns whenever it took flight.

Elsewhere, small feeding groups of Common Terns were present near Spike Island .

Post-breeding Sandwich Terns with juveniles were seen near Haulbowline (five in flight upstream) and at the Lough Beg Island (c.40 high-tide roost)

Visit 11 (19th July 2016)

Lough Beg - island holds as many as 4 AON.

Activity at the Pfizer Lagoon sub-colony continues to increase with a peak count of 40 nests with eggs.

It is likely that many of these increases at Pfizer and Lough Beg are due to relocation of breeding pairs that have failed at the Ringaskiddy and Marino Point sub-colonies.

Visit 12 (29th July 2016)

DWB: nest count continues to decrease as eggs hatch but there has been no evidence of chick survival and it is assumed that predation by Grey Heron is the most likely cause. The extra nesting platforms installed by POC have not been used by terns.

There is greater tern activity in many areas of the harbour as foraging activity increases, coinciding with the main hatching period.

Visit 13 (31st July 2016)

Lough Beg: ten adults flying over island. One nestling visible. Approximately 45 adults feeding in the estuary and 38 Sandwich Terns were present at the low-tide evening roost.

3.5 Visits 14 - 16 - Post-breeding

Visit 14 (4th August 2016)

Lough Beg: one active nest with a single nestling. Roosting Common (80) and Sandwich (35) terns, present at low tide, are the first of the autumn movement of migrant birds.

Pfizer Lagoon: colony was quiet with 16 birds present and 4 AON. There was no provisioning activity or apparent nest defence activity. Recent spring tides flooded the island on at least three cycles and it is likely that the majority of eggs and any nestlings were chilled or washed away.

DWB: quiet with very few adult birds in the area.

Small numbers of roosting / feeding terns were present elsewhere in the harbour.

Visit 15 (9th August 2016)

Lough Beg: c12 birds active on island with display and carrying fish. One nestling present.

Pfizer Lagoon: c25 birds present and 5 AON. Although many birds are carrying fish, there is no feeding of young.

Visit 16 (19th August 2016)

Lough Beg: the single juvenile close to fledging.

Pfizer Lagoon: c15 birds present, 3 AON and 2 juvenile birds are well grown and close to fledging.

DWB: no terns present. One long-dead nestling was found and any remaining eggs and nestlings were absent, presumed eaten.

Terns were absent from most areas of the harbour apart from Raffeen Creek and Lough Beg where the last few active nest are nearby.

4. CONCLUSION

The number of nesting pairs in the Common Tern sub-colony at Ringaskiddy DWB was estimated to be around 55 pairs. This is down on 2015 (c.75 AON) (RPS, 2015), although in keeping with recent years (47-52 pairs in 2014 (RPS, 2014a), 48 in 2013 and 45-50 in 2012).

Although 34 nestlings were ringed at DWB (under separate contract), it is estimated that only five survived to fledging. The sub-colony failed to fledge any young in 2015 or 2014. Once again predation by Grey Herons, was thought to be the most likely cause for failure.

By late summer, the activity levels of Common Tern in the lower harbour had decreased very significantly with the only birds recorded being those at Pfizer Lagoon.

Approximately 40 pairs of Common Tern were recorded at Pfizer Lagoon and one pair at Lough Beg. The sub-colony on the Martello Tower at Marino Point did not have any success in 2016, taking the total number of nesting pairs in Cork Harbour area to c.90 pairs in 2016. This figure is down on the baseline population of 102 pairs in 1995. More worryingly was the poor productivity, with almost complete failure to fledge any young.

Condition 11(b) of planning permission PL04 .PA003 requires that within one breeding season of the commencement of development, the short term measures as specified in the Recommendations Report shall be implemented in full. Each of the Nesting platforms will provide at a minimum equal nesting habitat extent as occurs on the existing dolphins, fitted with a wooden or metal perimeter edge (30 cm in height) to create a secure bund. A series of internal wooden baffles and built in chick shelters shall be constructed and the floor shall be covered with a layer of suitable coarse aggregate and mussel shells as nesting substrate.

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FIGURES

Figure 1 Locations of recent Common Tern nesting attempts in Ringaskiddy area



Figure 2 Showing labelling of mooring dolphins for recording purposes

