EMFF Operational Programme 2014-2020

Marine Biodiversity Scheme

Marine Institute Bird Studies

Poulnasherry Bay Waterbird Survey.

2019-2020

Lead Agency: Marine Institute

Authors: INIS Environmental Consultants Ltd.

Ireland's EU Structural and Investment Funds Programmes 2014 - 2020
Co-funded by the Irish Government and the European Union

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

EUROPEAN UNION
This measure is part-financed by the European Maritime and Fisheries Fund

Foras na Mara
Marine Institute

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Poulnasherry Bay Waterbird Survey

Winter 2019-20

Bird Survey Report

September 2020

This report considers the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

INIS Environmental Consultants Ltd.

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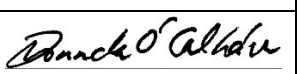
County Clare
Ireland.

Quality Assurance

The findings outlined within this report and the data we have provided are to our knowledge true and express our bona fide professional opinions. This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct. Where pertinent, CIEEM Guidelines used in the preparation of this report include the *Guidelines for Ecological Report Writing* (CIEEM, 2017), *Guidelines for Preliminary Ecological Appraisals* (CIEEM, 2015) and *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine*, (CIEEM, 2018). CIEEM Guidelines include model formats for Preliminary Ecological Appraisal and Ecological Impact Assessment. Also, where pertinent, evaluations presented herein take cognisance of recommended Guidance from the EPA such as *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017), and in respect of European Sites, *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2018).

Due cognisance has been given at all times to the provisions of the *Wildlife Act (1976),* the *Wildlife (Amendment) Act (2000)*, the *European Union (Natural Habitats) Regulations (SI 378/2005)*, the *European Communities (Birds and Natural Habitats) Regulations (2011),* EU Regulation on Invasive Alien Species under *EU Regulation 1143/2014*, the *EU Birds Directive 2009/147/EC* and the *EU Habitats Directive 92/43/EEC*.

No method of assessment can completely remove the possibility of obtaining partially imprecise or incomplete information. In line with Best Practice, any limitation to the methods applied or constraints however are clearly identified within the main body of this document.

Version	**Date**		**Name**	**Signature**
1	19/08/20	**Report prepared by:**	Dr. Lesley Lewis BSc PhD MCIEEM	
1	04/09/20	**Report checked by:**	Donncha Ó Catháin BSc MSc	
1	08/09/20	**Report signed off by:**	Howard Williams CEnv, MCIEEM CBIOL MRSB MIFM	
Title		Poulnasherry Bay Waterbird Survey – Winter 2019-20 Bird Survey Report		

Notice

This report was produced by INIS Environmental Consultants Ltd. (INIS) on behalf of the Marine Institute. for the specific purpose of assessing wintering bird populations in Poulnasherry Bay SPA, Co. Clare, with all reasonable skill, care and due diligence within the terms of the contract with the client, incorporating our terms and conditions and taking account of the resources devoted to it by agreement with the client.

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1. INTRODUCTION

INIS Environmental Consultants Ltd. were contracted to co-ordinate a series of waterbird surveys at Poulnasherry Bay, Co. Clare during the 2019/20 winter season. Following standard methodology used for surveying wintering waterbirds at low tide (Lewis & Tierney, 2014), the surveys included four low tide surveys and a single high tide survey.

This report details the results of the 2019/20 waterbird survey programme. The results are examined and discussed in light of similar surveys undertaken during recent previous winter seasons, and a baseline low tide survey undertaken during 2009/10 as part of the National Parks & Wildlife Service (NPWS) Waterbird Survey Programme (NPWS, 2012).

1.1. Constraints and limitations

There are a number of limitations inherent to field-based surveying. These particularly relate to availability of suitable weather conditions for completing surveys, with good visibility and little wind or rain of paramount importance. As such, when undertaking and completing fieldwork, careful consideration and planning is made to ensure optimal weather conditions during survey periods. The data presented here were all collected in optimal weather conditions.

When counting shorebirds, disturbance can substantially impact on the birds present within small areas if they are able to disperse away from the source of disturbance to adjacent areas of similar habitat but out with the areas where surveying is taking place. Such disturbance may happen in advance of the count taking place or during the survey period. To gauge levels of disturbance Best Practice methods include an assessment of disturbance levels encountered during the recording period. Such an assessment of disturbance allows the likely impact on shorebird numbers and distribution to be determined, particularly when looking at likely response to different disturbance events. Details of recorded disturbance are therefore provided.

Constraints and any limitations to available datasets used for comparative analysis are presented where known.

1.2. Statement of authority

Mr Howard Williams MCIEEM CEnv CBiol MRSB MIFM is Lead Ecologist with Inis and has more than 20 years' experience as a professional ecologist, specialising in birds. Following his degree, he worked as a biologist for the ESB for three years (1997-2000). Mr Williams has completed in excess of 500 separate ecology assessments in Ireland and the UK since 2000. Mr Williams is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). He is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Chartered Biologist (CBiol) with the Society of Biology. He is also a full member of the Institute of Fisheries Management. Mr Williams is principal ecologist with INIS Environmental Consultants Ltd and currently project manager on all INIS projects in the Republic of Ireland and the UK.

Dr. Lesley Lewis BSc PhD MCIEEM is a specialist waterbird ecologist. Lesley has a first-class honours degree in Zoology and a PhD in waterbird ecology (PhD Title: Ecological disturbance and its effects on estuarine benthic invertebrate communities and their avian predators).

Lesley has run the ecological consultancy 'Limosa Environmental' for the past 16 years. Lesley acts as Project Manager for each contract and over the years has gained considerable experience working on a range of contracts including Environmental Impact Assessments, Ecological Assessments (EcIA), Stage I Screening for Appropriate Assessment and Natura Impact Statements (NIS).

In addition, Lesley has worked part-time for BirdWatch Ireland since 2009, and from 2009 to 2014 was contracted to the National Parks and Wildlife Service (NPWS) as a Waterbird Ecologist. In this role, Lesley was responsible for the design and implementation of the NPWS baseline low tide waterbird survey programme and the preparation of site-specific Conservation Objectives for 32 coastal SPA sites. This work culminated in the publication of standard low-tide survey methods for waterbirds (Lewis & Tierney, 2014). Since November 2014, Lesley has been engaged in a number of BirdWatch Ireland projects including various aspects of the Irish Wetland Bird Survey (I-WeBS), as well as work on forestry birds, seabirds and the Hen Harrier. In 2015 she was assistant project manager on the Seabird4 Survey (survey of cliff-nesting seabirds 2015, NPWS). From September 2017, Lesley took over the management of both the Irish Wetland Bird Survey (I-WeBS) and the Countryside Bird Survey (CBS).

Mr. Donncha Ó Catháin BSc MSc is Assistant Senior Ecologist with INIS Environmental Consultants Ltd since 2018. Currently, he conducts ornithology surveying for various projects around Ireland, using standardised techniques and methods in line with Best Practice surveys including Low Tide and High Tide waterbird surveys at sites including Poulnasherry and Castlemaine, I-WeBS, breeding and wintering bird surveys, vantage point watches and CBS transects. He is also proficient in GIS and Appropriate Assessment Reporting and Habitat Identification. He is also a trained botanist and has extensive experience of biological sampling and surveying in freshwater environments.

2. EXISTING ENVIRONMENT

2.1. Site description

Poulnasherry Bay (see Figure 2.1.1) forms part of the wider Shannon Estuary which is designated as the River Shannon and River Fergus Estuaries Special Protection Area (SPA Site Code 4077) under the EU Birds Directive 2009/147/EC[1] (see Appendix I for the River Shannon and River Fergus Estuaries SPA Site Synopsis). Poulnasherry Bay is also a designated Shellfish Area under the EU Shellfish Waters Directive.[2] The *West Shannon Poulnasherry Shellfish Area* covers an area of 7.1 km^2 and extends from Querrin Point to Baunahard Point, taking in the entirety of Poulnasherry Bay (Co. Clare).

Figure 2.1.1: *Location of Poulnasherry Bay, Co. Clare*

On foot of a full assessment of oyster culture using bags and trestles in intertidal areas in Poulnasherry Bay as part of the Shannon and Fergus Estuary SPA, it was concluded that disturbance from aquaculture activities allied with other potential stressors on the distribution of some bird species could not be fully discounted. On this basis, a monitoring programme was deemed required to fully determine the current and ongoing status of waterbird species in the SPA, in light of current licencing decisions. The monitoring programme was required to have a minimum of four low tide surveys, and one high tide survey following standard methodology as used by the National Parks & Wildlife Service (NPWS) Waterbird Survey Programme 2009-2012 (Lewis & Tierney, 2014). This survey programme was therefore undertaken at Poulnasherry Bay during the period October 2019 to March 2020, and

[1] the codified version of Council Directive 79/409/EEC (as amended) (Birds Directive).

[2] Shellfish Waters Directive 2006/113/EC which is implemented in Ireland by the European Communities (Quality of Shellfish Waters) Regulations 2006 (SI No 268 of 2006) and the European Communities (Quality of Shellfish Waters) (Amendment) Regulation 2009 (SI 55 of 2009).

this report details the results of the surveys and examines these results in the context of existing waterbird data for the site and wider Shannon and Fergus estuaries system.

2.2. Poulnasherry Bay waterbirds

The Shannon estuary is a large estuary on the west coast of Ireland where Ireland's longest river, the River Shannon enters the Atlantic Ocean[3]. The largest estuarine complex in Ireland (Crowe, 2005), the Shannon estuary comprises the tidal reaches of the river between Limerick City and the Atlantic Ocean including the Fergus Estuary (Hickey & Healey, 2005).

The Shannon & Fergus Estuaries SPA covers a total area of 32,261 ha (NPWS, 2012a; NPWS, 2012b) and is of special conservation interest for 21 waterbird species (Table 2.2.1). In addition, the site is selected as a Special Protection Area because it regularly supports over 20,000 waterbirds during the non-breeding season making this a site of international importance.

Table 2.2.1 *Waterbird Special Conservation Interest (SCI) species listed for the Shannon & Fergus Estuaries SPA*

Species Name	Latin name	Annex I species	BoCCI[a]	Baseline population[b]	Population status at baseline
Whooper Swan	*Cygnus cygnus*	Yes	A	118	All-Ireland Importance
Light-bellied Brent Goose	*Branta bernicla hrota*		A	494	International Importance
Shelduck	*Tadorna tadorna*		A	1,025	All-Ireland Importance
Wigeon	*Anas penelope*		A	3,761	All-Ireland Importance
Teal	*Anas crecca*		A	2,260	All-Ireland Importance
Pintail	*Anas acuta*		R	62	All-Ireland Importance
Shoveler	*Anas clypeata*		R	107	All-Ireland Importance
Scaup	*Aythya marila*		A	102	All-Ireland Importance
Cormorant	*Phalacrocorax carbo*		A	245	All-Ireland Importance
Ringed Plover	*Charadrius hiaticula*		A	223	All-Ireland Importance
Golden Plover	*Pluvialis apricaria*	Yes	A	5,664	All-Ireland Importance
Grey Plover	*Pluvialis squatarola*		A	558	All-Ireland Importance
Lapwing	*Vanellus vanellus*			15,126	All-Ireland Importance
Knot	*Calidris canutus*		R	2,015	All-Ireland Importance
Dunlin	*Calidris alpina*		A	15,131	International Importance
Black-tailed Godwit	*Limosa limosa*		A	2,035	International Importance
Bar-tailed Godwit	*Limosa lapponica*	Yes	A	460	All-Ireland Importance
Curlew	*Numenius arquata*		R	2,396	All-Ireland Importance
Greenshank	*Tringa nebularia*		A	61	All-Ireland Importance
Redshank	*Tringa totanus*		R	2,645	All-Ireland Importance
Black-headed Gull	*Chroicocephalus ridibundus*		R	2,681	All-Ireland Importance

[a] Listed on Birds of Conservation Concern in Ireland (Colhoun & Cummins, 2013).
[b] Five-year peak mean for the period 1995/96 – 1999/00;

[3] http://www.infomar.ie/surveying/Bays/Shannon.php

2.2.1. Published status and trends of Poulnasherry Bay waterbirds

Waterbird site trends for the Shannon & Fergus Estuaries SPA were shown in the SPA Conservation Objectives document (NPWS, 2012b). However, these calculations, based on data up to 2010/11, are now considered out-of-date. Lewis *et al*. (2016) prepared a review and assessment of waterbird data for the Shannon & Fergus Estuaries based on I-WeBS data and data from the NPWS Waterbird Survey Programme. This review revealed that subsite count cover during I-WeBS has dropped considerably since 2010/11 largely due to a lack of volunteer counters in the area.

Given the limitations in the whole-site data, the review concluded that site totals generated using I-WeBS data largely underestimate the actual number of waterbirds using the Shannon and Fergus site complex. However, where adequate data existed, it was possible to examine trends at a smaller scale (i.e. subsite scale) and subsite trends are likely to be more accurate because they are based on the same count areas and calculated using data from years with the best count coverage (Lewis *et al*. 2016). It was further noted that I-WeBS subsites Poulnasherry Bay (0H498) which is an equivalent area to low tide subsites 0H519 and 0H520 (Poulnasherry inner and outer bay) almost exclusively exhibited negative trends for the period examined, with many waterbirds no longer recorded within these subsites.

3. METHODOLOGIES

3.1. Background to the low tide survey programme

I-WeBS is the primary method by which data are collected for wintering waterbird populations at Irish wetland sites. These data, largely collected by volunteer field surveyors since the winter season of 1994/95, have underpinned the designation of Special Protection Areas (SPAs), and have enabled the production of waterbird population estimates and trends at national and site level (e.g. Crowe & Holt, 2013; Burke *et al*. 2019). I-WeBS surveys are undertaken primarily on a rising or high tide, when birds are pushed closer to shore or are gathering at roost sites and are easier to count.

While I-WeBS surveys are designed to obtain the most accurate peak counts of waterbirds at a site, they cannot provide information about waterbird abundance or distribution during the low tide period, when many waterbirds are feeding. This gap in knowledge was addressed somewhat in 2009/10, when the National Parks and Wildlife Service (NPWS) initiated a programme of low tide surveys which took place over the three winter seasons of 2009/10, 2010/11 and 2011/12 at 33 coastal SPAs (The NPWS Waterbird Survey Programme). Each SPA site was surveyed in a single winter season and the Shannon & Fergus Estuaries was surveyed in 2010/11. Standard methodology was designed to ensure consistency in data capture and recording at each site (Lewis & Tierney, 2014).

Waterbird surveys at Poulnasherry Bay during the 2019/20 winter season therefore followed the standard methodology developed by the NPWS waterbird survey programme. Similar surveys were also undertaken during the 2018/19 season (Inis Environmental, 2019), and the 2017/18 season in relation to the Shannon Integrated Framework Programme (SIFP) (MKOS, 2019).

3.2. Survey design and count area

During the NPWS Waterbird Survey Programme, Poulnasherry Bay was sub-divided into two count subsites: 0H519 (Poulnasherry bay outer) and 0H520 (Poulnasherry bay inner).

During the waterbird survey programme of 2018/19, we discovered that subsites 0H519 (outer) and 0H520 (inner) were wrongly coded/allocated in the subsite map in Appendix 6 of the SPA Conservation Objectives Supporting Document (NPWS, 2012b). Within the winter bird survey report for 2018/19 (Inis Environmental, 2019), we therefore referred to subsites as 0H519 (outer) and 0H520 (inner).

Since then however, it was discovered that data collection and mapping for the SPA Conservation Objectives Supporting Document use **0H519 (Poulnasherry bay inner)** and 0H520 **(Poulnasherry bay outer**). The easiest way to rectify the error would therefore be to make changes to the text within the SPA Conservation Objectives Supporting Document i.e. the data tables/raw data are correct.

Consequently, we have used **0H519 (Poulnasherry bay inner)** and 0H520 **(Poulnasherry bay outer**) going forwards. Care has been taken throughout this report to ensure that data comparison over the various surveys are based on the correct subsite dataset.

As the Poulnasherry Bay Shellfish Area covers a larger area than that covered by subsites 0H519 and 0H520, additional count areas were included in the current monitoring. During their 2017/18 monitoring work MKOS (2019) included additional subsites in the outer bay as follows 0H517, 0H518,

0N025 and 0N026. The current monitoring work therefore followed suit and these subsites were included in the 2018/19 and 2019/20 survey work (Table 3.2.1, Figure 3.2.1). A further subsite (0N028 Kilrush Marina) was also added.

Optimum dates were chosen in each month when the survey period spanned midday to facilitate travel to/from the site and ensure surveys were carried out in the best weather and light conditions.

Table 3.2.1 Count Subsites of Poulnasherry Bay

Subsite Code	Subsite Name
0H517	Querrin
0H519	Poulnasherry inner bay
0H520	Poulnasherry outer bay
0N025	
0N026	
0N027	Subsite created to encompass 0H517 and 0H518 combined
0N028	Kilrush Marina

Figure 3.2.1: *Count subsites used for the Poulnasherry Bay waterbird surveys. 0N028 (Kilrush Marina) is the small water body immediately north east of 0N025.*

3.3. Field survey methods

The survey period extended two hours either side of low or high tide (depending on the survey being undertaken).

Waterbirds were counted within each count subsite, and the data for each subsite were recorded separately. Waterbird counts were conducted on the 'look-see' basis (Bibby *et al.* 2000) which involves scanning across the survey area and counting all birds seen. Birds were recorded according to their species code following the two-letter coding system used by I-WeBS and developed by the British Trust for Ornithology.

In addition to counts of each species, the behaviour of waterbirds during counts was attributed to one of two categories (foraging or roosting/other) while the position of the birds was recorded as per one of four broad habitat types (intertidal, subtidal, supratidal and terrestrial). Field maps of count subsites were used to map significant flocks of foraging/roosting birds ('flock maps').

Information was also collected which included the presence of activities that could cause disturbance to waterbirds. Following Lewis & Tierney (2014), activity types were categorised as follows:

(1) human, on-foot - shoreline (2) human, on foot – intertidal aquaculture, (3) bait-diggers (4) non-powered watercraft (5) powered watercraft, (6) water-based recreation (e.g. wind-surfers) (7) horse-riding (8) dogs (9) aircraft (10) shooting (11) other (12) winkle pickers (13) aquaculture machinery (14) other vehicles.

When an activity was observed to cause a disturbance, the waterbird species affected were recorded and a letter code system used to indicate the bird's response to the activity as follows:-

W - Weak response, waterbirds move slightly away from the source of the disturbance.
M - Moderate response, waterbirds move away from the source of the disturbance to another part of your subsite; they may return to their original position once the activity ceases.
H - High response, waterbirds fly away to areas outside of your subsite and do not return during the current count session.

The length of the activity was also recorded by adding by the codes **A – D** (see below) and a record was made as to whether the activity was already occurring within the subsite when the count started.

A – short/discrete event.
B – activity occurs for up to 50% of the count period.
C – activity length estimated at >50% but < 100% of the count period.
D – activity continues after the count period has ended.

3.4. Data analysis

3.4.1. General

Field data were collected in notebooks and later transferred by field surveyors into Excel datasheets. At the end of the survey season the Excel datasheets were compiled and validated before being formatted and entered into a MS Access database. From the database, data summaries were produced such as site totals, subsite totals etc.

Waterbird numbers were assessed in relation to the numbers of waterbirds that occur across the wider Shannon and Fergus system and with reference to national and international threshold levels as follows:

- A waterbird species that occurs in numbers that correspond to 1% or more of the individuals in the all-Ireland population of the species is said to occur in numbers of all-Ireland importance. Current population threshold values are published in Burke *et al*. (2019).

- A waterbird species that occurs in numbers that correspond to 1% or more of the individuals in the biogeographic population of the species or subspecies is said to occur in 'internationally important numbers.' Current international population threshold values are published by the African-Eurasian Migratory Waterbird Agreement (AEWA) Conservation Status Review 7 (CSR7) (AEWA 2018) (published online at wpe.wetlands.org).

3.4.2. Waterbird distribution

Following the methods used in NPWS (2012) data analyses were undertaken to determine the proportional use of subsites by each waterbird Special Conservation Interest (SCI) species for the River Shannon and River Fergus Estuaries SPA, relative to the whole area surveyed on each survey occasion. This gives an indication of the preferred distribution of each species. Analyses were undertaken on datasets as follows:

- Total numbers (low tide surveys)
- Total numbers (high tide survey)
- Total numbers of foraging birds (low tide surveys)

For each of the analyses listed above and for each survey date completed, subsites were ranked in succession from the highest to the lowest in terms of their relative contribution to each species' distribution across all subsites surveyed. NPWS (2012b) converted subsite rankings to categories (very high, high, moderate and low) but as the current survey did not cover all of the Shannon & Fergus Estuaries SPA, we simply ranked subsites as 1-7 (low-high) in each analysis.

Intertidal foraging density was calculated for SCI species and for each low tide survey occasion, by dividing the number of the species within subsites 0H519 and 0H520 by the area of intertidal habitat within the subsite. Outer bay subsites were not included in these calculations.

3.4.3. Trends

Poulnasherry Bay (I-WeBS subsite 0H498) received nearly full count coverage during the baseline period used for SPA designation (1995/96 – 1999/00). As this I-WeBS subsite is the same area as the subsites 0H519 and 0H520 combined, this enabled a comparison between the baseline mean peak number of waterbirds within Poulnasherry Bay, the peak count recorded during 2010/11 NPWS Waterbird Survey programme and the peak counts from the 2018/19 and 2019/20 surveys.

4. RESULTS

4.1. Survey schedule and conditions

The 2019/20 winter waterbird survey season proceeded unhampered by weather conditions. All surveys were carried out with good weather conditions (Table 4.1.1).

Table 4.1.1: *Dates and survey type for the 2018/19 survey programme.*

Date	Survey[a]	Wind	Cloud (%)	Rain	Visibility	Notes
16.10.19	LT1	Light	34 - 66	None	Good	No constraints
29.11.19	LT2	Light	34 - 66	None	Good	No constraints
12.12.19	LT3	Breezy	67 - 100	None	Good	No constraints
21.01.20	HT	Light	34 - 66	None	Good	No constraints
27.02.20	LT4	Calm	0 - 33	Showers	Good	No constraints

[a] LT = Low tide; HT = High tide.

4.2. Species assemblage, diversity and occurrence

A total of 38 waterbird species were recorded during the winter 2019/20 surveys (plus one record of an unidentified wader species (Table 4.2.1). The species list included 17 wildfowl and allies, 14 wader species (and one unidentified wader), five gull species, and Kingfisher, a non-waterbird species that is included in waterbird counts as standard.

The species list includes six species (Red throated Diver, Great Northern Diver, Little Egret, Golden Plover, Bar-tailed Godwit and Kingfisher) listed on Annex I of the EU Bird's Directive, and 29 species that are on the Birds of Conservation Concern in Ireland lists (Colhoun & Cummins, 2013), including six that are Red-listed and are of highest concern (Pintail, Shoveler, Curlew, Redshank, Black-headed Gull and Herring Gull), and a further 23 species that are Amber-listed. The species list also includes 19 out of the total 21 waterbird species listed as Special Conservation Interests (SCIs) for the Shannon & Fergus Estuaries SPA.

Species diversity across the entire survey area peaked in November 2019 (30 species) (Figure 4.2.1).

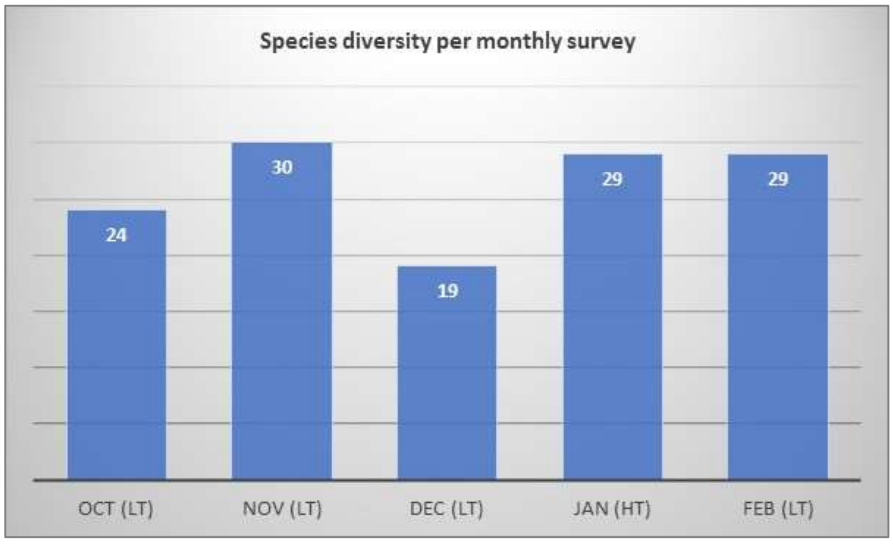


Figure 4.2.1: *Overall species diversity during the monthly surveys*

Table 4.2.1: *Species recorded during the winter surveys of Poulnasherry Bay 2019/20. A ticked cell means that a species was recorded in the monthly survey. The table also highlights Annex I species (EU Bird's Directive) and Red (R) and Amber-listed (A) species under Birds of Conservation Concern in Ireland (BoCCI)* (*Colhoun & Cummins, 2013*).

Species name	Latin name	BoCCI	Annex I	Code	LT1	LT2	LT3	LT4	HT1
Canada Goose	*Branta canadensis*			CG				√	
Light-bellied Brent Goose	*Branta bernicla hrota*	A		PB		√	√	√	√
Shelduck	*Tadorna tadorna*	A		SU		√	√	√	√
Wigeon	*Anas penelope*	A		WN	√	√	√		√
Teal	*Anas crecca*	A		T.		√	√	√	√
Mallard	*Anas platyrhynchos*			MA	√	√	√	√	√
Pintail	*Anas acuta*	R		PT	√	√		√	√
Shoveler	*Anas clypeata*	R		SV	√	√			√
Red-breasted Merganser	*Mergus serrator*			RM					√
Red-throated Diver	*Gavia stellata*	A	Yes	RH				√	
Great Northern Diver	*Gavia immer*		Yes	ND		√	√		√
Little Grebe	*Tachybaptus ruficollis*	A		LG					√
Great Crested Grebe	*Podiceps cristatus*	A		GG	√	√	√	√	√
Cormorant	*Phalacrocorax carbo*	A		CA	√	√	√	√	√
Shag	*Phalacrocorax aristotelis*	A		SA				√	√
Little Egret	*Egretta garzetta*		Yes	ET	√	√	√	√	√
Grey Heron	*Ardea cinerea*			H.	√	√	√		
Oystercatcher	*Haematopus ostralegus*	A		OC	√	√	√	√	√
Ringed Plover	*Charadrius hiaticula*	A		RP	√	√		√	
Golden Plover	*Pluvialis apricaria*	A	Yes	GP	√	√		√	√
Grey Plover	*Pluvialis squatarola*	A		GV	√			√	
Lapwing	*Vanellus vanellus*			L.	√	√	√	√	√
Knot	*Calidris canutus*	A		KN	√	√		√	
Dunlin	*Calidris alpina*	A		DN	√	√	√	√	√
Snipe	*Gallinago gallinago*	A		SN		√		√	√
Black-tailed Godwit	*Limosa limosa*	A		BW		√			
Bar-tailed Godwit	*Limosa lapponica*	A	Yes	BA	√	√		√	√
Curlew	*Numenius arquata*	R		CU	√	√	√	√	√
Greenshank	*Tringa nebularia*	A		GK	√	√	√	√	√
Redshank	*Tringa totanus*	R		RK	√	√	√	√	√
Turnstone	*Arenaria interpres*			TT	√	√	√	√	√
Unidentified wader sp.				U.				√	
Black-headed Gull	*Chroicocephalus ridibundus*	R		BH	√	√	√	√	√
Common Gull	*Larus canus*	A		CM	√	√		√	√
Lesser Black-backed Gull	*Larus fuscus*	A		LB	√	√		√	
Herring Gull	*Larus argentatus*	R		HG	√	√		√	√
Great Black-backed Gull	*Larus marinus*	A		GB		√	√		√
Kingfisher	*Alcedo atthis*	A	Yes	KF					√

Overall subsite diversity ranged from 12 species (0N028) to a maximum 37 species (0H519 Poulnasherry inner bay) (Table 4.2.2). Poulnasherry outer bay (0H520) supported a total of 17 species. This is reasonably consistent with the species diversity recorded during the NPWS Waterbird Survey Programme in 2011/11 when the inner bay supported 34 species and the outer bay supported 15 species.

The most widely distributed species were Oystercatcher and Curlew, both recorded within all seven count subsites. Five species occurred within six of the subsites (Cormorant, Redshank and Black-headed, Common and Lesser Black-backed gulls). Nine species occurred in only the inner bay (0H519) while Kingfisher was recorded only from 0N028 (Kilrush marina).

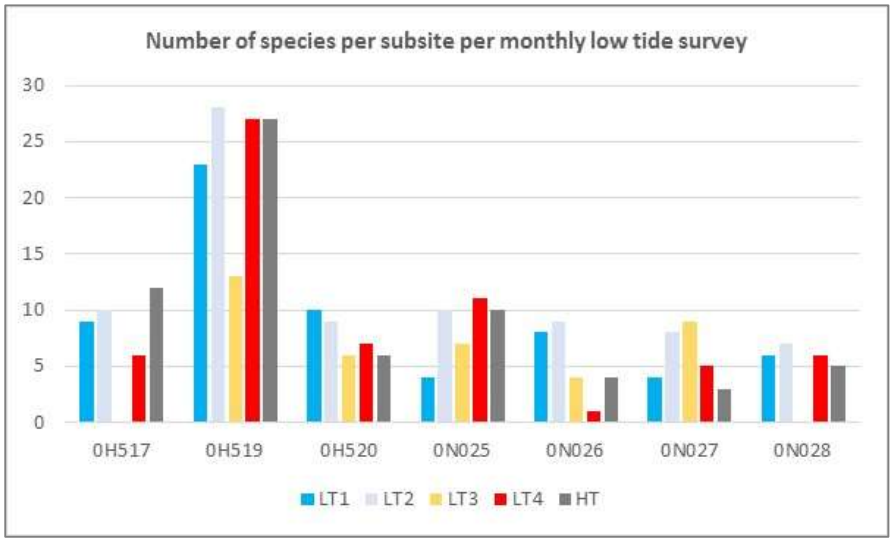
Table 4.2.2: *Subsite diversity recorded during the winter surveys of Poulnasherry Bay 2019/20. A ticked cell means that a species was recorded in the corresponding subsite. The table also shows the number of subsites that a species was recorded within, plus the percentage occupancy (% of the total number of count subsites).*

Species name	Latin name	BoCCI	Annex I	0H517	0H519	0H520	0N025	0N026	0N027	0N028	Number of subsites (% occurrence)
Canada Goose	*Branta canadensis*				√				√		2 (29)
Light-bellied Brent Goose	*Branta bernicla hrota*	A		√	√	√	√				4 (57)
Shelduck	*Tadorna*	A		√	√			√			3 (43)
Wigeon	*Anas penelope*	A		√	√				√		3 (43)
Teal	*Anas crecca*	A		√	√		√			√	4 (57)
Mallard	*Anas platyrhynchos*			√	√		√		√		4 (57)
Pintail	*Anas acuta*	R			√						1 (14)
Shoveler	*Anas clypeata*	R			√						1 (14)
Red-breasted Merganser	*Mergus serrator*				√						1 (14)
Red-throated Diver	*Gavia stellata*	A	Yes		√						1 (14)
Great Northern Diver	*Gavia immer*		Yes		√	√	√	√	√		5 (71)
Little Grebe	*Tachybaptus ruficollis*	A			√						1 (14)
Great Crested Grebe	*Podiceps cristatus*	A			√	√	√	√	√		5 (71)
Cormorant	*Phalacrocorax carbo*	A			√	√	√	√	√	√	6 (86)
Shag	Phalacrocorax aristotelis	A			√						1 (14)
Little Egret	*Egretta garzetta*		Yes	√	√	√		√	√		5 (71)
Grey Heron	*Ardea cinerea*			√	√	√	√	√			5 (71)
Oystercatcher	*Haematopus ostralegus*	A		√	√	√	√	√	√	√	7 (100)
Ringed Plover	*Charadrius hiaticula*	A			√	√	√				3 (43)
Golden Plover	*Pluvialis apricaria*	A	Yes		√	√					2 (29)
Grey Plover	*Pluvialis squatarola*	A			√						1 (14)

Species name	Latin name	BoCCI	Annex I	0H517	0H519	0H520	0N025	0N026	0N027	0N028	Number of subsites (% occurrence)
Lapwing	*Vanellus*			√	√			√	√	√	5 (71)
Knot	*Calidris canutus*	A			√						1 (14)
Dunlin	*Calidris alpina*	A		√	√	√			√		4 (57)
Snipe	*Gallinago*	A			√	√			√		3 (43)
Black-tailed Godwit	*Limosa*	A			√						1 (14)
Bar-tailed Godwit	*Limosa lapponica*	A	Yes	√	√				√		3 (43)
Curlew	*Numenius arquata*	R		√	√	√	√	√	√	√	7 (100)
Greenshank	*Tringa nebularia*	A		√	√		√		√	√	5 (71)
Redshank	*Tringa totanus*	R		√	√	√	√		√	√	6 (86)
Turnstone	*Arenaria interpres*				√			√	√		3 (43)
Uhnidentified wader					√						1 (14)
Black-headed Gull	*Chroicocephalus ridibundus*	R		√	√	√	√		√	√	6 (86)
Common Gull	*Larus canus*	A		√	√	√	√	√		√	6 (86)
Lesser Black-backed Gull	*Larus fuscus*	A		√	√	√	√	√		√	6 (86)
Herring Gull	*Larus argentatus*	R		√	√	√	√			√	5 (71)
Great Black-backed Gull	*Larus marinus*	A			√		√	√			3 (43)
Kingfisher	*Alcedo atthis*	A	Yes							√	1 (14)
TOTAL NUMBER OF SPECIES PER SUBSITE				**18**	**37**	**17**	**17**	**13**	**17**	**12**	

Waterbird species diversity was highest in 0H519 (Poulnasherry inner bay) during all low tide surveys and the high tide survey (Figure 4.2.2). Note, 0H517 was not counted during the third (December) low tide survey but was counted as 0N027 (0H517 and 0H518 combined); Kilrush marina (0N028) was also not counted during this survey.

Figure 4.2.2: *Monthly species diversity per subsite for low tide counts*



4.3. Total numbers of waterbirds

During winter 2019/20, total numbers of waterbirds during low tide surveys (across the entire survey area) ranged widely, from 915 individuals during December 2019, to a peak low tide count of 3,757 waterbirds during November 2019 (Table 4.3.1). During low tide surveys the total numbers of waterbirds in the inner bay (0H519) ranged between 71% and 84% of the total number of waterbirds in the entire count area, while 78% of waterbirds were recorded within 0H519 during the high tide survey. The relatively high count in the inner bay in November was related to a high count of Dunlin (921 individuals), more than eight times the number recorded in any other monthly survey, and a similarly high count of Wigeon on that date (763 individuals).

The peak count in the inner bay (0H519) was considerably higher than any count recorded within this same subsite during the 2010/11 NPWS Waterbird Survey Programme counts. Furthermore, the peak count recorded for the outer bay (0H520) (118 waterbirds) was nearly double that recorded during the 2010/11 NPWS Waterbird Survey Programme.

Table 4.3.1: *Total numbers of waterbirds counted within the study area during the five surveys of 2019/20, plus count totals from the 2010/11 Waterbird Survey Programme for 0H519 and 0H520, and from the waterbird survey during winter 2018/19.*

Winter	Subsite/Area	Total Numbers of Waterbirds				
		LT1 (Oct)	**LT2 (Nov)**	**LT3 (Dec)**	**LT4 (Feb)**	**HT (Jan)**
2019/20	Entire Survey area	1,756	3,757	915	1,170	1,691
2019/20	0H517	139	284		52	116
2019/20	0H519	1,477	3,099	715	825	1,315
2019/20	0H520	42	118	73	101	22
2019/20	0N025	18	80	25	158	183
2019/20	0N026	26	15	13	1	21
2019/20	0N027	9	17	89	11	10
2019/20	0N028	45	144		32	24
2010/11	0H520	52	32	63	64	44
2010/11	0H519	1,518	1,200	1,440	1,103	761
2010/11	0H519 + 0H520	1,570	1,232	1,503	1,167	805
		LT1 (Nov)	**LT2 (Dec)**	**LT3 (Feb)**	**LT4 (Mar)**	**HT (Mar)**
2018/19	Entire Survey area	1,294	3,314	760	547	614
2018/19	0H520	84	102	19	18	19
2018/19	0H519	1,198	1,943	677	511	573

4.4. Species totals

Waterbird species peak counts for the 2019/20 at Poulnasherry Bay are shown in Table 4.4.1. Seven waterbird species were recorded in numbers of all-Ireland importance: Wigeon, Pintail, Great Northern Diver, Little Egret, Ringed Plover, Dunlin and Turnstone.

Amongst the wildfowl and allies, Light-bellied Brent Goose, Wigeon and Teal were the most numerous species. Numbers of waders varied greatly between counts but peak counts of Dunlin (936), Ringed Plover (213) and Turnstone (216) are notable. Numbers of gull species also varied greatly between months and were highest in October 2019 (193) and February 2020 (260).

Table 4.4.1: *Waterbird species totals per survey (across entire survey area). 1% Nat and 1% Int are the national and international thresholds respectively, while * denotes numbers of birds of all-Ireland importance (after Burke et al. 2019).*

Species Name	Latin name	1% Nat	1% Int	LT1	LT2	LT3	LT4	HT1
Canada Goose	*Branta canadensis*						3	
Light-bellied Brent Goose	*Branta bernicla hrota*	350	400		180	131	125	161
Shelduck	*Tadorna tadorna*	100	2500		46	48	19	2
Wigeon	*Anas penelope*	560	14000	543	763*	323		126
Teal	*Anas crecca*	360	5000		353	110	76	305
Mallard	*Anas platyrhynchos*	280	53000	25	42	2	6	56
Pintail	*Anas acuta*	20	600	10	51*		2	20
Shoveler	*Anas clypeata*	20	650	4	3			13
Red-breasted Merganser	*Mergus serrator*	25	860					4
Red-throated Diver	*Gavia stellata*	20	3000				1	
Great Northern Diver	*Gavia immer*	20	50		11	6		34*
Little Grebe	*Tachybaptus ruficollis*	20	4700					4
Great Crested Grebe	*Podiceps cristatus*	30	6300	7	5	1	7	14
Cormorant	*Phalacrocorax carbo*	110	1200	9	1	14	1	18
Shag	*Phalacrocorax aristotelis*						7	69
Little Egret	*Egretta garzetta*	20	1100	33*	30*	9	24*	22*
Grey Heron	*Ardea cinerea*	25	5000	4	5	3		
Oystercatcher	*Haematopus ostralegus*	610	8200	62	45	19	29	108
Ringed Plover	*Charadrius hiaticula*	120	540	3	213*		16	
Golden Plover	*Pluvialis apricaria*	920	9300	1	31		47	102
Grey Plover	*Pluvialis squatarola*	30	2000	2			10	
Lapwing	*Vanellus vanellus*	850	72300	110	417	50	37	94
Knot	*Calidris canutus*	160	5300	26	17		1	
Dunlin	*Calidris alpina*	460	13300	72	936*	70	109	100
Snipe	*Gallinago gallinago*				18		7	11
Black-tailed Godwit	*Limosa limosa*	200	1100		4			
Bar-tailed Godwit	*Limosa lapponica*	170	1500	33	6		4	11
Curlew	*Numenius arquata*	350	7600	296	312	70	187	204
Greenshank	*Tringa nebularia*	20	3300	9	16	9	13	15
Redshank	*Tringa totanus*	240	2400	98	133	16	126	14

Turnstone	*Arenaria interpres*	95	1400	216*	40	8	22	54
Unidentified wader sp.							31	
Black-headed Gull	*Chroicocephalus ridibundus*			125	47	24	40	100
Common Gull	*Larus canus*			50	20		48	14
Lesser Black-backed Gull	*Larus fuscus*			8	1		159	
Herring Gull	*Larus argentatus*			10	9		13	13
Great Black-backed Gull	*Larus marinus*				2	2		2
Kingfisher	*Alcedo atthis*							1
			TOTAL NUMBER OF BIRDS	1,756	3,757	915	1,170	1,691

4.5. Trends in waterbird numbers

Poulnasherry Bay (I-WeBS subsite 0H498) received nearly full count coverage during the baseline period used for SPA designation (1995/96 – 1999/00). As this I-WeBS subsite is the same area as the subsites 0H519 and 0H520 combined, this enabled a comparison between the baseline mean peak number of waterbirds within Poulnasherry Bay, the peak count recorded during 2010/11 NPWS Waterbird Survey programme and the peak counts from the 2018/19 and 2019/20 winter waterbird surveys.

While a simple comparison of peak numbers is crude, it does provide some indication of the trends in numbers. The results of the comparison as shown in Table 4.5.1 suggest that almost all of the waterbird SCI species have decreased in number in Poulnasherry Bay since the baseline period (1995/96 – 1999/00) with only Teal, Pintail, Shoveler and Ringed Plover appearing to occur in greater or similar numbers. Comparing peak counts recorded in winter 2010/11 with the most recent surveys suggests that nine of the 21 species assessed have declined in number, while seven species have occurred in greater number recently, one species is stable (Greenshank) and three species show such variation in number that no trend is possible to discern.

Table 4.5.1: *Baseline data for waterbird SCI species of the Shannon & Fergus Estuaries SPA within Poulnasherry Bay, plus the peak count from the NPWS Waterbird Survey programme 2010/11, and the peak species count from the 2018/19 and 2019/20 seasons.*

Species	(a) Mean 95/96 - 99/00	(B) Peak count 2010/11	(C) Peak count 2018/19	(D) Peak count 2019/20	General trend ↑ or ↓ (A) vs (C/D)	General trend ↑ or ↓ (B) vs (C/D)
Whooper Swan	1	0	0	0	n/a	n/a
Light-bellied Brent Goose	539	56	256	179	↓	↑
Shelduck	180	196	115	48	↓	↓
Wigeon	1,125	61	332	763	↓	↑
Teal	176	510	218	274	↑	↓
Pintail	57	0	82	51	stable	↑
Shoveler	3	37	6	13	↑	↓
Scaup	22	8	0	0	↓	↓
Cormorant	58	12	8	5	↓	↓
Ringed Plover	155	28	53	213	variable	↑
Golden Plover	1,380	7	80	102	↓	↑
Grey Plover	66	37	7	10	↓	↓
Lapwing	2,522	155	483	238	↓	↑
Knot	164	33	0	26	↓	↓
Dunlin	2,300	457	336	921	↓	variable
Black-tailed Godwit	16	10	2	4	↓	↓
Bar-tailed Godwit	95	16	5	33	↓	variable
Curlew	654	209	146	269	↓	variable
Greenshank	32	13	8	10	↓	stable
Redshank	197	153	80	96	↓	↓
Black-headed Gull	1,818	42	109	118	↓	↑

4.6. Waterbird subsite totals

Numbers of Wigeon, Pintail, Little Egret, Ringed Plover, Dunlin, Turnstone exceeded the threshold for national importance within the inner bay during low tide surveys (0H519). During high tide, the inner bay supported numbers of national importance of three species: Pintail, Great Northern Diver and Little Egret. Monthly subsite count data are provided in Appendix 2.

4.7. Relative importance of subsites

Based on total numbers across all four low tide surveys, subsite 0H519 (Poulnasherry inner bay) was the most important for the majority of waterbird species assessed (Table 4.7.1), with all SCI species except Cormorant occurring in their largest numbers on at least one occasion in this subsite. The outer bay (0H520) also held peak numbers of Ringed Plover, Golden Plover, Redshank and Black-headed Gull. The inner bay (0H519) exclusively held peak numbers of four species foraging at low tide (Shelduck, Golden Plover, Grey Plover and Black-tailed Godwit) while a further seven species were recorded in their highest numbers within this subsite on at least one occasion (Table 4.7.2).

Poulnasherry inner bay was also found to support the greatest number of most waterbird SCI species during the high tide period (Table 4.7.3).

Table 4.7.1: *Relative importance of each subsite – subsites are ranked 1-7 based on the total numbers of waterbird SCI species during low tide surveys. The highest rank number from any of the four low tide surveys is shown and the number in brackets is the number of surveys that a species was recorded in that subsite. Blank cells mean that a species was not recorded in that subsite.*

Species	0H517	0H519	0H520	0N025	0N026	0N027	0N028
Light-bellied Brent Goose	3 (1)	1 (3)	2 (2)				
Shelduck		1 (3)			2 (1)		
Wigeon	2 (1)	1 (3)				2 (1)	
Teal	2 (2)	1 (3)		3 (2)			2 (2)
Pintail		1 (3)					
Shoveler		1 (2)					
Cormorant		2 (2)	3 (1)	1 (4)	1 (2)	2 (1)	
Ringed Plover		1 (2)	1 (1)	2 (1)			
Golden Plover		1 (2)	1 (1)				
Grey Plover		1 (2)					
Lapwing	2 (1)	1 (3)			2 (1)	1 (1)	2 (2)
Dunlin	2 (1)	1 (4)	2 (1)			2 (1)	
Black-tailed Godwit		1 (1)					
Bar-tailed Godwit		1 (3)				2 (1)	
Curlew	2 (3)	1 (4)	3 (4)	2 (4)	3 (4)	2 (3)	5 (1)
Greenshank	2 (2)	1 (4)		3 (2)		2 (2)	2 (2)
Redshank	2 (3)	1 (4)	1 (2)	2 (2)		5 (1)	3 (3)
Black-headed Gull	4 (2)	1 (3)	1 (3)	2 (4)		4 (2)	3 (2)

Table 4.7.2: *Relative importance of each subsite for SCI species foraging intertidally at low tide – selected species only (highest rank obtained in a low tide survey).*

Species	0H517	0H519	0H520	0N025	0N026	0N027	0N028
Light-bellied Brent Goose	3	1	2				
Shelduck		1					
Ringed Plover		1		2			
Golden Plover		1					
Grey Plover		1					
Lapwing		1					
Dunlin	2	1	2			2	
Black-tailed Godwit		1					
Bar-tailed Godwit		1				2	
Curlew	2	1	2	2	2	2	
Redshank	1	1	1	3		4	4

Table 4.7.3: *Relative importance of each subsite for SCI species at high tide based on ranked total numbers. *indicates species that were not recorded at high tide.*

Species	0H517	0H519	0H520	0N025	0N026	0N027	0N028
Light-bellied Brent Goose	3	1		2			
Shelduck	1						
Wigeon	2	1					
Teal	2	1					
Pintail		1					
Shoveler		1					
Cormorant		2	3	1		3	3
Ringed Plover*							
Golden Plover		1					
Grey Plover*							
Lapwing		1					
Dunlin		1					
Black-tailed Godwit	1						
Bar-tailed Godwit		1					
Curlew	2	1	4	3			
Greenshank	3	1		2			
Redshank	2	1					
Black-headed Gull	4	2		1			3

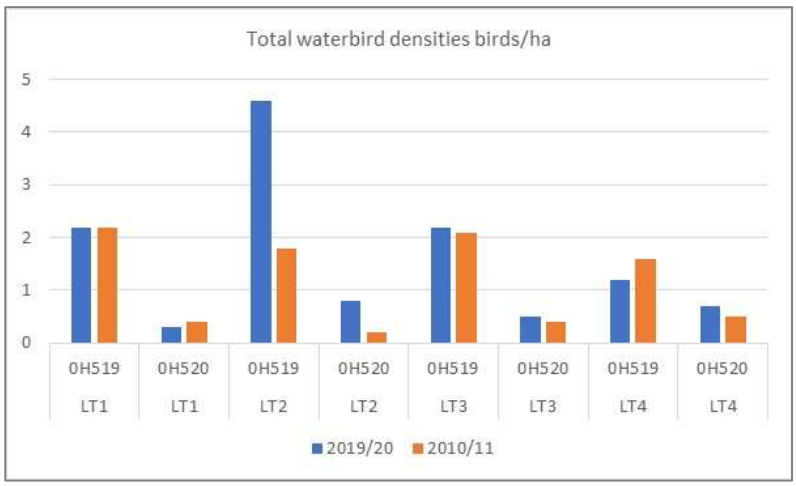
4.8. Waterbird densities

Waterbird densities (based on total subsite area) were greatest for Poulnasherry inner bay (0H519) in all low tide surveys (Table 4.8.1) and relatively similar or greater than recorded during the 2010/11 NPWS Waterbird Survey Programme (Figure 4.8.1).

Table 4.8.1: *Average density of total waterbirds (min-max) (individuals/ha^{-1}) within count subsites 2019/20.*

Subsite	LT1 (Oct)	LT2 (Nov)	LT3 (Dec)	LT4 (Feb)	Average	Min	Max
0H519 (inner)	2.2	4.6	1.1	1.2	2.3	1.1	4.6
0H520 (outer)	0.3	0.8	0.5	0.7	0.6	0.3	0.8
Both (0H519 + 0H520)	1.9	3.9	1.0	1.1	2.0	1.0	3.9

Figure 4.8.1: *Total waterbird densities birds/ha^{-1}*



The highest recorded intertidal foraging density was for Dunlin during the November low tide survey (2.8 birds/ha^{-1}) (Table 4.8.2).
No other species exceeded a foraging density of greater than 1 bird/ha^{-1}.

Table 4.8.2: *Intertidal foraging densities (birds/ha) for selected species within 0H519 and 0H520.*

Subsite	Species	LT1	LT2	LT3	LT4	Peak
0H519	Light-bellied Brent Goose		0.2	0.3	0.1	0.3
0H520			0.4	0.8	0.0	0.8
0H519	Shelduck		0.1	0.2		0.2
0H519	Ringed Plover		0.7			0.7
0H519	Lapwing	0.1				0.1
0H519	Knot		0.1			0.1
0H519	Dunlin	0.1	2.8	0.2	0.3	2.8
0H519	Bar-tailed Godwit	0.1				0.1
0H519	Curlew	0.6	0.5	0.2	0.3	0.6
0H520			0.2		0.2	0.2
0H519	Redshank	0.1	0.3		0.3	0.3
0H520				0.2		0.2

4.9. Activities and disturbance

Based on the results of the 2019/20 surveys, Poulnasherry Bay appears to be subject to a low level of disturbance during winter. Bait digging was the most frequently recorded activity that could cause a disturbance, with aquaculture activities only recorded on two low tide survey occasions.

Table 4.9.1*: Activities recorded at Poulnasherry Bay 2019/20.*

Subsite Code	Subsite Name	Activity	Number of survey occasions activity recorded	Causing a disturbance?	Response of waterbirds
0H517	Querrin	Bait diggers	2	Yes	Weak - high
		Human walking (intertidal)	1	No	
0H519	Poulnasherry inner Bay	Human walking (intertidal)	1	Yes	Moderate
		Aquaculture activities	2	Yes	Moderate
		Bait diggers	2	Yes	Moderate
0H520	Poulnasherry outer Bay	Bait diggers	1	Yes	Moderate
		Vehicles	2	Yes	Moderate

5. DISCUSSION

Poulnasherry Bay is an integral part of the larger Shannon & Fergus estuaries system that is known to support over 20,000 waterbirds during winter (Crowe, 2005). Although lack of count cover during I-WeBS means that site total counts have not exceeded 20,000 waterbirds in recent years, recent counts during the winter of 2017/18 season for the Shannon Integrated Framework Programme (SIFP) (MKOS, 2019) confirmed that 20,000 waterbirds were present across all winter months. The peak count of 43,093 waterbirds (December 2017) (MKOS, 2019) means that the Shannon & Fergus estuaries is the most important site in the Republic of Ireland in terms of total waterbird numbers.

Covering an area of little over 350ha, Poulnasherry Bay is a relatively small area within the overall Shannon and Fergus system. Seven waterbird species were recorded in numbers of all-Ireland (national) importance: Wigeon, Pintail, Great Northern Diver, Little Egret, Ringed Plover, Dunlin and Turnstone. The surveys of 2019/20 therefore again showed that this bay is important for several waterbird species listed as waterbird SCIs for the River Shannon and River Fergus Estuaries SPA.

Of note was that the peak count of total waterbirds in the inner bay (0H519) was considerably higher than any count recorded within this same subsite during the 2010/11 NPWS Waterbird Survey Programme counts. Indeed, this peak count of over 3,000 waterbirds was higher than any combined count of the inner and outer bay during the winter of 2010/11. But it is clear that waterbird numbers within Poulnasherry Bay can vary widely between months, perhaps simply because some species range widely across the wider Shannon system and are therefore not frequently present within Poulnasherry Bay. Dunlin and Ringed Plover are examples here, these waders were recorded in relatively high numbers on one survey occasion only, and in low numbers or absent thereafter. This great variability in waterbird numbers between months, and between winter seasons therefore makes assessing trends in waterbird numbers difficult.

A comparison of recent data with I-WeBS data for the baseline period (95/96-99/00) revealed that most of the waterbird special conservation interest (SCI) species have decreased in number in Poulnasherry Bay since the baseline period. However, the total numbers of waterbirds wintering in Ireland has declined by almost 40% since the mid 1990's (Burke *et al.* 2019), and such a large decline nationally, obviously has implications for numbers at individual sites. A comparison of recent data with data from the NPWS surveys of winter 2010/11 was more encouraging with seven species occurring in greater number recently, one species considered stable (Greenshank) and three species showing such variation in number that no trend was possible to discern.

Poulnasherry inner bay (0H519) is clearly the most important subsite for waterbirds across the survey area. The inner parts of the subsite that are sheltered, close to freshwater flows and have expanses of saltmarsh habitat, appeared to be favoured to a large extent. Results are consistent with the recent surveys undertaken during winter 2017/18 (MKOS, 2019) where the inner bay was found to be most important (based on total numbers at low tide) for Light-bellied Brent Goose, Shelduck, Ringed Plover, Grey Plover, Knot, Dunlin, Bar-tailed Godwit and Curlew.

While the current study at Poulnasherry Bay recorded low levels of disturbance overall, the standard low tide survey methodology is not best suited to assessing the effects of for example, aquaculture activities on waterbirds, where bespoke studies (e.g. Gittings & O'Donoghue, 2012) would provide better detail.

Most pertinent to Poulnasherry Bay and its management going forwards, is the lack of a time series of waterbird count data. The site has received little coverage by I-WeBS in recent years (last counted in winter 2010/11). The continuation of a bespoke annual waterbird monitoring programme is therefore recommended, because without the continued collection of count data, discerning trends in waterbird numbers at this site will remain difficult.

REFERENCES

AEWA (2018) *AEWA Conservation Status Review 7 (CSR7) Report on the conservation status of migratory waterbirds in the agreement area. Seventh Edition. Agreement on the Conservation of African- Eurasian Migratory Waterbirds.* May 2018.

Bibby, C. J., Burgess, N. D., Hill, D. A. & Mustoe, S. H. (2000). *Bird Census Techniques.* Academic Press.

BirdLife International (2001) Important Bird Areas and potential Ramsar Sites in Europe. BirdLife International, Wageningen, the Netherlands.

Burke, B., Lewis, L. J., Fitzgerald, N., Frost, T., Austin, G. & Tierney, T. D. (2019) Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16. *Irish Birds* 11, 1-12.

Colhoun, K. & Cummins, S. (2013) Birds of conservation concern in Ireland 2014-2019. *Irish Birds* 9, 523-544.

Crowe, O. (2005) *Ireland's Wetlands and their waterbirds:* Status and Distribution. BirdWatch Ireland. Newcastle, Co Wicklow.

Crowe, O. & Holt, C. (2013) Estimates of waterbird numbers wintering in Ireland 2006/07 – 2010/11. *Irish Birds* 9, 545-552.

Crowe, O., Austin, G, E., Colhoun, K., Cranswick, P., Kershaw, M. & Musgrove, A. J. (2008) Estimates and trends of waterbird numbers wintering in Ireland, 1994/95-2003/04. *Bird Study* 55, 66-77.

Gittings, T. & O'Donoghue, P. (2012) The effects of intertidal oyster culture on the spatial distribution of waterbirds. Report to the Marine Institute. 2012.

Hickey K.R. & Healy M.G. (2005) The reclamation of the Shannon Estuary inter-tidal flats: A case study of the Clare Slobland Reclamation Company. *Irish Geography* 38, 96-106.

Inis Environmental (2019) Poulnasherry Bay Waterbird Survey – Winter 2019-20 Bird Survey Report. Report for the Marine Institute. July 2019.

Lewis, L. J., Burke, B. & Crowe, O. (2016) *Review and assessment of waterbird data from the Shannon-Fergus Estuary.* A report commissioned by Clare County Council and prepared by BirdWatch Ireland. February 2016.

Lewis L. J. & Tierney, T. D. (2014) Low tide waterbird surveys: survey methods and guidance notes. *Irish Wildlife Manuals* No. 80. National Parks & Wildlife Service, Department of the Arts, Heritage and Gaeltacht.

MKOS (McCarthy Keville O'Sullivan) (2019) *Waterfowl numbers, usage and distribution on the River Shannon & River Fergus Estuaries.* Volume 1. Final report. Report to Clare County Council.

NPWS (2012a) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012b) River Shannon & River Fergus Estuaries Special Protection Area. Site Code 4077. Conservation Objectives Supporting Document. Version 1. September 2012. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Wetlands International (2012) *Waterfowl Population Estimates – Fifth Edition*. Wetlands International, Wageningen, The Netherlands.

APPENDIX I: RIVER SHANNON AND RIVER FERGUS ESTUARIES SPA SITE SYNOPSIS

Site Name: River Shannon and River Fergus Estuaries SPA

Site Code: 004077

The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry.

The site has vast expanses of intertidal flats which contain a diverse macro-invertebrate community, e.g. Macoma-Scrobicularia-Nereis, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Scaup, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank and Black-headed Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl (57,133 - five year mean for the period 1995/96 to 1999/2000), a concentration easily of international importance. The site has internationally important populations of Light-bellied Brent Goose (494), Dunlin (15,131) and Black-tailed Godwit (2,035). A further 18 species have populations of national importance, i.e. Cormorant (245), Whooper Swan (118), Shelduck (1,025), Wigeon (3,761), Teal (2,260), Pintail (62), Shoveler (107), Scaup (102), Ringed Plover (223), Golden Plover (5,664), Grey Plover (558), Lapwing (15,126), Knot (2,015), Bar-tailed Godwit (460), Redshank (2,645), Curlew (2,396), Greenshank (61) and Black-headed Gull (2,681) - figures are five year mean peak counts for the period 1995/96 to 1999/2000. The site is among the most important in the country for several of these species, notably Dunlin (13 % of national total), Lapwing (6% of national total) and Redshank (9% of national total).

The site also supports a nationally important breeding population of Cormorant (93 pairs in 2010).

Other species that occur include Mute Swan (103), Mallard (441), Red-breasted Merganser (20), Great Crested Grebe (50), Grey Heron (38), Oystercatcher (551), Turnstone (124) and Common Gull (445) - figures are five year mean peak counts for the period 1995/96 to 1999/2000.

Apart from the wintering birds, large numbers of some species also pass through the site whilst on migration in spring and/or autumn.

The River Shannon and River Fergus Estuaries SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of three species, i.e. Light-bellied Brent Goose, Dunlin and Black-tailed Godwit. In addition, there are 18 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which

occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit.

APPENDIX 2: MONTHLY SUBSITE COUNT DATA

*Subsite counts for waterbirds recorded within Poulnasherry Bay winter 2019/20. * indicates numbers of national importance.*

Species name	Subsite	LT1	LT2	LT3	LT4	HT1
Canada Goose	0H519				2	
	0N027				1	
Light-bellied Brent Goose	0H517		1			4
	0H519		104	92	125	93
	0H520		75	39		
	0N025					64
Shelduck	0H517					2
	0H519		45	48	19	
	0N026		1			
Wigeon	0H517	37				13
	0H519	506	763*	310		113
	0N027			13		
Teal	0H517		125		7	31
	0H519		158	110	51	274
	0N025		39		2	
	0N028		31		16	
Mallard	0H517					2
	0H519	25	42		3	50
	0N025			2	3	
	0N027					4
Pintail	0H519	10	51*		2	20*
Shoveler	0H519	4	3			13
Red-breasted Merganser	0H519					4
Red-throated Diver	0H519				1	
Great Northern Diver	0H519		8	2		23*
	0H520		1			5
	0N025		1			4
	0N026		1	2		2
	0N027			2		
Little Grebe	0H519					4
Great Crested Grebe	0H519	5	2		6	5
	0H520					1
	0N025					1
	0N026	1	2			3
	0N027	1	1	1	1	4
Cormorant	0H519	3		3		3
	0H520	1				2
	0N025	4	1	3	1	9
	0N026	1		5		
	0N027			3		2
	0N028					2
Shag	0H519				7	69
Little Egret	0H517	2	2			1
	0H519	27*	25*	8	24*	21*
	0H520	2	1	1		

Species name	Subsite	LT1	LT2	LT3	LT4	HT1
Species name	**Subsite**	**LT1**	**LT2**	**LT3**	**LT4**	**HT1**
Little Egret	0N026	1				
	0N027	1	2			
Grey Heron	0H517		1			
	0H519	2		2		
	0H520	1	1			
	0N025		2	1		
	0N026	1	1			
Oystercatcher	0H517	1			1	7
	0H519	19	15	6	16	56
	0H520	13	23	3	3	10
	0N025	5	1	10	1	16
	0N026	5	4			4
	0N027	6	2		5	
	0N028	13			3	15
Ringed Plover	0H519		213*		11	
	0H520	3				
	0N025				5	
Golden Plover	0H519	1	31			102
	0H520				47	
Grey Plover	0H519	2			10	
Lapwing	0H517		91			
	0H519	99	238		37	94
	0N026			4		
	0N027			46		
	0N028	11	88			
Knot	0H519	26	17		1	
Dunlin	0H517		15			
	0H519	72	921*	60	108	100
	0H520				1	
	0N027			10		
Snipe	0H519		18		6	8
	0H520					3
	0N027				1	
Black-tailed Godwit	0H519		4			
Bar-tailed Godwit	0H517					1
	0H519	33	4		4	10
	0N027		2			
Curlew	0H517	57	20		30	51
	0H519	222	260	60	139	149
	0H520	7	9	2	8	1
	0N025	3	15	3	9	3
	0N026	6	2	2	1	
	0N027	1	4	3		

Species name	Subsite	LT1	LT2	LT3	LT4	HT1
	0N028		2			
Species name	**Subsite**	**LT1**	**LT2**	**LT3**	**LT4**	**HT1**
Greenshank	0H517	2	2			1
	0H519	7	8	6	10	10
Greenshank	0N025		1		1	4
	0N027		1	3		
	0N028		4		2	
Redshank	0H517	36	23		12	2
	0H519	46	94	8	95	12
	0H520			8	1	
	0N025		4		13	
	0N027		2			
	0N028	16	10		5	
Turnstone	0H519	216*	38		22	42
	0N026		2			12
	0N027			8		
Unidentified wader sp.	0H519				31	
Black-headed Gull	0H517	1	4			1
	0H519	109	16		28	19
	0H520	9	3	20		
	0N025	6	15	4	7	75
	0N027		3		1	
	0N028		6		4	5
Common Gull	0H517	2				
	0H519	31	12		44	14
	0H520	4	4		3	
	0N025				1	
	0N026	10	1			
	0N028	3	3			
Lesser Black-backed Gull	0H517				1	
	0H519	5	1		5	
	0H520	1			38	
	0N025				115	
	0N026	1				
	0N028	1				
Herring Gull	0H517	1			1	
	0H519	7	7		10	6
	0H520	1	1			
	0N025		1			6
	0N028	1			2	1
Great Black-backed Gull	0H519		1			1
	0N025			2		1
	0N026		1			
Kingfisher	0N028					1

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