

WESPAS 2021 Bird Survey Mini Report

Materials and Methods

The seabird survey was conducted from the 10/06/21 to the 19/07/21 using a single seabird surveyor on each survey leg. The seabird observer conducted visual survey effort, while also collecting and recording all survey data. The seabird observer conducted visual survey effort while simultaneously recording all data. The observer's survey effort was maximized and optimized during periods of sea state less than or equal to sea state 6 and with visibility of greater than 300m. Additional visual point sampling (e.g., at oceanographic sampling stations or fishing stations) and incidental recording were also employed; however line transect survey effort was prioritised by the observer. Seabird watches were conducted using a standard single platform line transect survey design while the vessel was travelling at a consistent speed and heading. All observations for seabirds were conducted from the monkey island (deck height 12 m above sea level).

The data collection methodology was based on that originally proposed by Tasker *et al.* (1984) with later adaptations applied to allow correction factors to be applied for missed birds (Camphuysen *et al.*, 2004). The method employed used a single platform line transect survey design with sub-bands to survey birds associated with the water, while flying birds were surveyed using a 'snapshot' technique. Observer effort was concentrated in a bow-beam arc of 90° to one side (i.e., to port or starboard) of the vessel's track-line, however, all seabirds observed outside this area were also recorded.

Survey effort for seabirds associating with the water were concentrated within a survey strip of 300m running parallel and adjacent to the vessels track-line and extending to the horizon. All birds surveyed within this region were recorded as 'in-transect' and assigned to one of four distance sub-bands (A: 0-50m, B: 50-100m, C: 100-200m, D: 200-300m) according to their perpendicular distance from the track-line. This approach allows for the evaluation of biases caused by specific differences in detection probability with increasing distance from the trackline (Camphuysen *et al.* 2004). Seabirds occurring outside of this survey strip were recorded as 'off-transect' and assigned to a separate sub-band (E: >300m). The perpendicular distance to an animal was estimated using a fixed interval range finder (Heinemann, 1981), ensuring each animal is allocated to the correct distance sub-band.

Flying birds were surveyed using 'snapshots', where instantaneous counts of flying birds within a survey quadrant of 300m x 300m were conducted. The periodicity of these 'snapshots' was vessel speed dependent but timed to allow counts to occur as the vessel passes from one survey quadrant to the next. This method minimises biases in counts of flying birds relative to the movement of the vessel (Pollock *et al.*, 2000, Camphuysen *et al.* 2004).

Seabirds remaining with the vessel for more than 2 minutes were deemed to be associating with the vessel (Camphuysen *et al.* 2004) and were recorded as such. Seabirds seen associating with other vessels (i.e. fishing vessels) were also recorded as such.

Searching for seabirds was done with the naked eye, however, Leika Ultravid 8x42 HD binoculars were used to confirm parameters such as species identification, age, moult, group size and behaviour (Mackey *et al.* 2004). A Canon EOS 7D Mark II DSLR camera with a Canon EF 100-400mm F4.5-5.6 IS II USM telephoto lens was used to visually document other information of scientific interest. Data was also collected on all migratory/ transient waterfowl and terrestrial birds encountered.

The Cybertracker (<http://www.cybertracker.org/>) data collection software package (Version 3.514) was used to collect all positional, environmental and sightings data, and save it to a Microsoft Access database. Positional data was collected using a portable GPS receiver with a USB connection and recorded every 5 seconds.

Each line transect was assigned a unique transect number, and a new transect was started anytime the vessel activity changed (i.e. changing from on-transect to inter-transect). Each subsequent bird observation was also assigned to this unique transect number.

Environmental data was timestamped and recorded with GPS data at the beginning and end of each line transect and also as soon as any change in environmental conditions occurred. Environmental data recorded included; wind speed, wind direction, sea state, swell, visibility, cloud cover and precipitation.

Each observation was timestamped and recorded with GPS data using Cybertracker. Sighting data such as; species identification, distance band, group size, composition, heading, age, moult, behaviour and any associations with cetaceans or other vessels were also recorded on the time stamped Cybertracker sighting record page. Where species identification could not be confirmed, sightings were recorded at an appropriate taxonomic level (i.e. large gull sp., *Larus* sp., Commic tern, etc.).

Ancillary data such as line changes, changes in survey activity (e.g. fishing/CTD cast) and fishing vessel activity were also recorded.

Results

In total, 274 hours and 33 minutes of survey effort were conducted over the course of WESPAS 2021. In total, 218 hours and 48 minutes of survey effort were conducted using a line transect methodology, while 54 hours and 13 minutes of effort were conducted using the point sampling methodology. A further 1 hour and 32 minutes of effort were conducted as a casual watch.

A total of 7392 seabird observations were recorded throughout the survey, totalling 35422 individuals (*Table 1*). In total, 12391 seabirds were recorded as “in transect”, while 23031 were recorded “off transect”. The species encountered included 33 species, subspecies or species groups from eight families. A further 22 sightings of terrestrial/migratory birds were also recorded, comprising of 80 individuals (*Table 2*).

Gannet (*Morus bassanus*) were the most frequently encountered species, recorded on 2236 separate occasions, accounting for 30.2% of all encounters. Gannet records comprised of a total of 6213 individuals (17.6% of all individuals) making gannet the second most abundant species recorded on the survey. However, of these, only 1059 individuals were recorded as ‘in transect’.

Manx shearwater (*Puffinus puffinus*) were the most abundant species recorded on the survey with 14714 individuals recorded. These individuals accounted for 41.7% of all individuals recorded, and were recorded during 983 separate encounters (13.3% of encounters), making them the fourth most frequently encountered species. Of the 14714 individuals recorded, 7368 individuals were recorded as ‘in transect’.

Fulmar (*Fulmarus glacialis*) were the second most frequently encountered and the third most abundant species accounting for 1704 records (23.1% of all encounters) and comprising of 5667 individuals in total (16.1% of all encountered individuals.) Of these, 800 individuals were recorded as 'in transect'.

European storm petrel (*Hydrobates pelagicus*) were the third most frequently sighted and the fourth most abundant species accounting for 578 sightings (7.8% of all sightings) and comprising of 2258 individuals in total (6.4% of all encountered individuals.) Of these, 692 individuals were recorded as 'in transect'.

A number of terrestrial/ migratory birds were encountered during the survey. A total of 22 sightings of terrestrial/ migratory bird species were recorded during the survey (*Table 2*). These sightings comprised of 80 individuals from 12 species' or species groups. Species recorded included a ringed plover (*Charadrius hiaticula*), a quail (*Coturnix coturnix*), a collared dove (*Streptopelia decaocto*) and a flock of 45 whimbrel (*Numenius phaeopus*).

Table 1. Summary of seabird sightings during the survey.

<i>Common Name</i>	<i>Species name</i>	<i>No. of Sightings</i>	<i>No. of Seabirds</i>	<i>In Transect</i>	<i>Off Transect</i>
Fulmar	<i>Fulmarus glacialis</i>	1704	5667	800	4867
Great Shearwater	<i>Puffinus graves</i>	1	1	1	0
Sooty Shearwater	<i>Puffinus griseus</i>	20	26	2	24
Manx Shearwater	<i>Puffinus puffinus</i>	983	14714	7368	7346
Wilson's Petrel	<i>Oceanites oceanicus</i>	9	9	3	6
Storm Petrel	<i>Hydrobates pelagicus</i>	578	2258	692	1566
Leach's Petrel	<i>Oceanodroma leucorhoa</i>	1	1	0	1
Petrel sp.	<i>Hydrobatidae sp.</i>	1	1	0	1
Gannet	<i>Morus bassanus</i>	2236	6213	1059	5154
Pomarine Skua	<i>Stercorarius pomarinus</i>	4	4	2	2
Arctic Skua	<i>Stercorarius parasiticus</i>	3	3	0	3
Long-tailed Skua	<i>Stercorarius longicaudus</i>	5	5	0	5
Great Skua	<i>Stercorarius skua</i>	123	187	38	149
Small skua sp.	<i>Stercorarius parasiticus / longicaudus</i>	4	9	0	9
Skua sp.	<i>Stercorarius sp.</i>	1	1	0	1
Common Gull	<i>Larus canus</i>	1	1	0	1
Sabine's gull	<i>Larus sabini</i>	1	1	0	1
Black-headed Gull	<i>Larus ridibundus</i>	1	3	0	3
Lesser Black-backed Gull	<i>Larus fuscus</i>	232	1464	102	1362
'Scandinavian' LBB Gull	<i>Larus fuscus intermedius</i>	1	1	0	1
Herring Gull	<i>Larus argentatus</i>	23	46	9	37
Yellow-legged gull	<i>Larus michahellis</i>	1	1	0	1
Great Black-backed Gull	<i>Larus marinus</i>	35	73	2	71
Kittiwake	<i>Rissa tridactyla</i>	288	548	188	360
Common Tern	<i>Sterna hirundo</i>	1	2	2	0
Arctic Tern	<i>Sterna paradisaea</i>	12	18	10	8
Guillemot	<i>Uria aalge</i>	470	1897	1322	575
Black guillemot	<i>Cepphus grylle</i>	1	2	0	2
Razorbill	<i>Alea torda</i>	195	541	376	165
Razorbill / Guillemot	<i>Alea torda / Uria aalge</i>	28	886	92	794
Puffin	<i>Fratercula arctica</i>	422	822	306	516
Shag	<i>Phalacrocorax aristotelis</i>	6	21	17	4
Cormorant	<i>Phalacrocorax carbo</i>	1	1	0	1
	Total	7392	35422	12391	23031

Table 2. Summary of terrestrial bird sightings during the survey.

Common Name	Species name	No. of Sightings	No. of Individuals
Collared Dove	<i>Streptopelia decaocto</i>	1	1
Curlew/Whimbrel	#N/A	1	1
Dunlin	<i>Calidris alpina</i>	2	3
Feral/ racing pigeon	<i>Columba livia domestica</i>	5	8
House Martin	<i>Delichon urbica</i>	1	1
Quail	<i>Coturnix coturnix</i>	1	1
Ringed Plover	<i>Charadrius hiaticula</i>	1	1
Small waders sp	#N/A	1	10
Swallow	<i>Hirundo rustica</i>	4	5
Swift	<i>Apus apus</i>	2	2
Turnstone	<i>Arenaria interpres</i>	1	1
Whimbrel	<i>Numenius phaeopus</i>	2	46
	Total	22	80