

# Dublin Bay Seal Census 2018

## Survey results and recommendations for future monitoring

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## SUMMARY

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- *A seal census using ground- and boat-based co-ordinated counts was carried out on 22 and 23<sup>rd</sup> September 2018 over the low tide periods on each day.*
  - *The population of Grey Seals is estimated as 91-111 animals (including 4 pups).*
  - *The population of Harbour Seals observed was estimated to be 7 animals.*
  - *Counts varied across the sites and gave rise to significant variation between sites and counts. The minimum numbers are provided with high confidence as direct coordinated counts while the upper range figure may have included some duplication.*
  - *Recommendations for improvements to future surveys are provided and include better timing of a Harbour Seal count, expansion of the count area and provision of training for survey participants to further develop the citizen science aspects.*
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## Background

Ireland regularly supports in 7000-9000 Grey Seals<sup>1</sup> *Halichoerus grypus* and 2000+ Harbour (Common) Seals<sup>2</sup> *Phoca vitulina*. Major strongholds are on the south and west coasts and islands but a number of sites on the East coast of Ireland, including Dublin Bay and its immediate environs, support smaller numbers of both species. These populations are in close proximity to significant urban areas and this means they come into contact with people regularly. This can be both a problem for the seals (e.g. through disturbance or persecution) and an opportunity for engaging people with these attractive, impressive and generally popular animals.

In order to assess the population and distribution of both species in the Dublin Bay area, the Irish Seal Sanctuary (ISS) carried out a co-ordinated count across Dublin Bay and Ireland's Eye in September 2018 using a network of citizen science land-based counters and boat-based surveys. The survey was given funding support by Dublin City Council and National Parks and Wildlife Service (NPWS). ALCnature was contracted by ISS to produce survey materials, advise on methods, compile and analyse data and produce this report documenting the approach, results and making recommendations for future surveys.

## Methods and approach

### Survey approach

Due to the varied nature of the shoreline and the presence of offshore islands, the survey was carried out both from land-based vantage points and from boats and kayaks where necessary. No aerial survey techniques were used. The aim being to achieve at least 1 high quality, co-ordinated, count of the full survey area during the survey period. Additional counts were then used to identify gaps, issues and to provide back up for poor count conditions where necessary.

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<sup>1</sup> Ó Cadhla, O., Keena, T., Strong, D., Duck, C. and Hiby, L. (2013) Monitoring of the breeding population of grey seals in Ireland, 2009 - 2012. Irish Wildlife Manuals, No. 74. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Dublin, Ireland.

<sup>2</sup> Cronin, M., Duck, C., Ó Cadhla, O., Nairn, R., Strong, D. & O'Keeffe, C. (2004). Harbour seal population assessment in the Republic of Ireland: August 2003. Irish Wildlife Manuals No. 11. National Parks & Wildlife Service, Department of Environment, Heritage and Local Government., 7 Ely Place, Dublin 2, Ireland. 34 pp.

## Field recording

Field methods were adapted from Ó Cadhla, (2017) *Harbour Seal Survey 2017 Guidelines* (NPWS, unpublished). These were felt to provide the best methods available for surveying both species of seals present and for the range of conditions likely to be encountered. A bespoke recording form was designed for use on this survey also derived from the 2017 guidelines. The adapted guidance and form used are contained at Annex 1.

Given the potential for identification challenges of seals at distance, assistance with identification was also provided in the form of an ID chart.

Field maps were provided of each count section on which surveyors could mark haul out sites and other pertinent details.

## Survey timing

The survey was carried out over the weekend of 22<sup>nd</sup> and 23<sup>rd</sup> September 2018.

The weather during the survey was largely favourable with winds only increasing to moderate on the second day and with a benign day of light winds on day 1. Count quality was highest on day 1 (22/09).

The survey was timed to coincide the window of 2 hours before and after with low tide. This provided the best opportunity for seals to be hauled out.

The autumn date meant that it was best timed for Grey Seals when their attendance at the colonies and haul outs would be close to its highest. While this was less optimal for Harbour Seal.

Results were returned quickly to the survey co-ordinator either on paper forms provided or by providing similar.

## Survey Area

The survey area extends from Irelands Eye in the north to Dalkey Island in the south and is split into 9 count sectors. Each was covered by a volunteer or volunteer team with both Irelands Eye and Dalkey Island requiring boat based surveyors to cover offshore areas. Annex 3 illustrates the survey area and count sectors.

# Results

## Count coverage and recording

Full and well-coordinated coverage was achieved on 2 out of the 6 counts. These were the optimum count times falling at or about the peak of low tide. These counts form the basis for calculating the population size encountered. With the peak count of adult population occurring on the 22<sup>nd</sup> September and the highest number of detectable pups on 23<sup>rd</sup> September.

It was not possible to accurately assess the age distribution given the variable range of expertise of the surveyors and as a result all well grown adults and 1st year + individuals were assigned as “adult/immature”, with only obvious pups being classed separately.

## Population size

The minimum population size estimated during the survey is **91 Grey Seals** and **5 Harbour Seals** (see Table 1). This is derived from the highest count total from single co-ordinated “full” counts with additional information from partial counts used where clearly identifiable separate/additional

individuals can determined. In the case of Grey Seals, this was limited to pups and a peak pup count of 4 animals was detected on 23rd September.

Table 1 Seal counts summary for Dublin Bay September 2018

Date	Count ID	Full or partial count	Harbour		Grey	
			Ad/imm	pup	Ad/imm	pup
22/09/2018	1	P	3	0	86	1
22/09/2018	2	F	3	0	88	1
22/09/2018	3	P	1	0	6	0
23/09/2018	1	P	3	0	27	0
23/09/2018	2	F	0	0	65	4
23/09/2018	3	P	5	0	26	0
	TOTAL		5	0	88	4

The potential maximum count observed (a sum of the maxima for each site over all counts) is **111 Grey Seals and 7 Harbour Seals**

The survey results tabulated in full are presented in Annex 2. Table 1 above provides summary results.

### Distribution

The relative abundance of all seals across the site across all counts is shown in Figure 1. This is based on % occurrence of all sightings.

The distribution of seals within the survey area is focussed around 3 key sites; Ireland’s Eye to the north, holding the highest proportion of all seals (all Grey), Sutton Creek holding the main concentration of Harbour Seals recorded (only one seen away from this area) and Dalkey Island in the south, holding another concentration of Grey Seals.

The relatively busy areas either for recreational use or for commercial traffic from Dollymount to Scotsman’s Bay had few seals present.

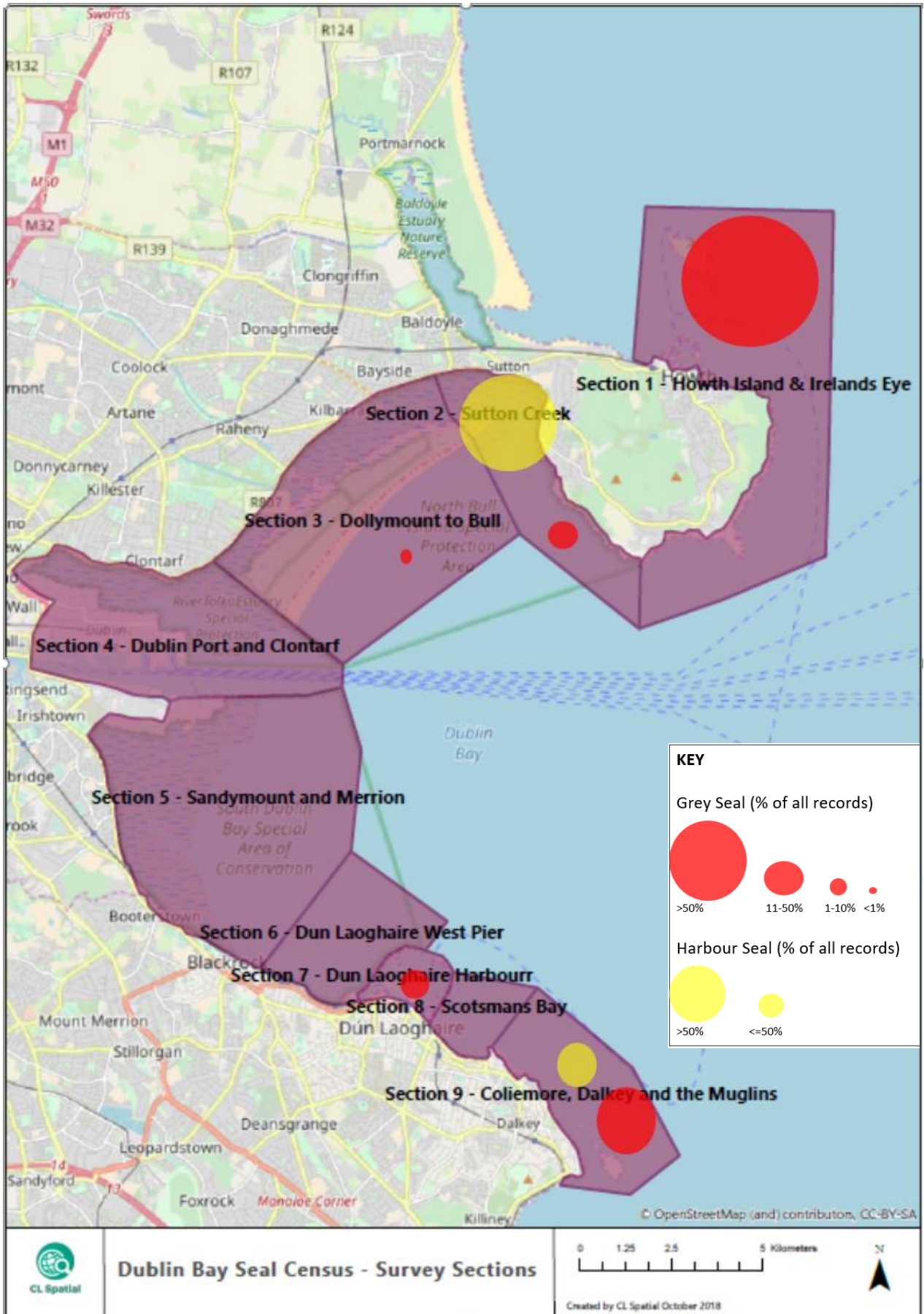


Figure 1 Seal relative abundance across survey area (from all counts)

## Discussion and recommendations

### Population estimate

The population may be best expressed for Grey Seals as a range of 92-111 as there may be some level of duplication if totalling site maxima across the counts period. The Harbour Seal minimum population estimate is 5 but it is likely given the widespread sightings of an additional 2 individuals well away from the 5 seen at Sutton creek that a minimum of 7 is reasonable and particularly given this is thought to be low due to count timing.

### Survey conditions & detectability

The survey conditions on both survey days were favourable albeit the lower light and higher winds of the later counts carried out on 23<sup>rd</sup> September may have compromised counts at some level and may explain the lower numbers of grey seals observed overall.

The coordinated low tide peak counts are thought to be relatively robust with good observer coverage at key sites.

The detectability of Grey Seal calves is likely to be low as they often occupy caves and as such the calf counts should be taken as a minimum.

The total population as determined at 90+ individuals of Grey seal may just exceed the 1% level of the national population. The 5 (possibly 7) Harbour Seals is not within the range of significance and falls well short of the expected population size for the survey area probably due to sub-optimal survey timing for this species.

Disturbance of the haul out site at Sutton Creek/Bull Island spit by dog walkers may have limited seal attendance there as dog walkers and dogs off-lead were noted at the spit during the count periods.

### Survey timing

The timing of the survey coincided with the weekend and this may have affected the presence of Harbour seals at key beach haul out sites, notably the Bull Island. The survey timing was not optimal for Harbour seal and the population detected was likely much lower than that which would be encountered during spring and summer months. The optimal census period for Harbour seals, being June/July, was missed and thus this estimate should not be used to assess the status of the Harbour Seal population in the survey area.

### Surveyor coverage and recording protocols

Surveyors managed to achieve good coverage across the survey area. The return of data was prompt, and in most cases utilised the survey sheets. Where survey sheets were not used it was harder to decipher the key information and this could be enhanced through enhancement of the recording forms and surveyor training.

There was some level of ambiguity in relation to adult and immature seal ages and only one case of questioned identification which was able to be resolved through examination of photographs. This could be enhanced through training and further clarity on ageing.

As is typical of surveys requiring a strong citizen science element, surveyor expertise was variable from very experienced to relative novice level and future surveys would benefit from provision of surveyor training and a briefing session in advance of the survey visit to ensure coordination is as smooth as possible.

The survey method appeared robust for Grey Seal but an additional survey for Harbour Seal should be carried out to gain population information for that species. Additionally, some work to examine the timing of peak pupping/occurrence of Grey Seals would assist in determining a more accurate survey window to determine peak population size. Consideration of aspects of timing such as utilising mid-week periods may also finesse the methodology further.

A means of collecting ad hoc records from the public throughout the year would be of value also and could be an excellent means of engagement of the public in seal conservation and welfare and further expansion of the strong citizen science element of the survey.

### Recommendations for future survey

Some key recommendations to take account of in future efforts to monitor the seals of Dublin Bay include:

1. Harbour Seal census should be carried out using similar methods in June/July
2. Methods should be refined to make recording simpler and more uniform.
3. Surveyor recruitment and training day prior to future surveys – ‘citizen science’ training
4. Enhanced form design and instructions to ensure more widespread use of standard forms for ease of data collation – consider an online submission form
5. Establishment of regular counts to gain more information and engage, upskill and retain surveyors effectively
6. Development of a means of ad hoc recording of sightings from the public to further build a strong citizen science element and to enhance awareness and engagement in seal conservation – potentially utilising the National Biodiversity Data Centre or other online platform
7. Expanding counts to a wider area of relevance to the Dublin Bay populations including Fingal and Wicklow – potentially taking in the area extending from Skerries to Wicklow Head and including Lambay Island
8. Establishment of a monthly counts regime at key sites would give rise to better information on optimal timing of counts



## ANNEX 1 Guidance and field recording sheet

## DUBLIN BAY SEAL CENSUS 2018 GUIDELINES (Please read carefully)

### Recording Forms:

Please complete recording forms provided and please take a photograph of your completed forms and maps immediately after the survey to ensure they are safe.

Return paper form, scan or image to: Alan Lauder ([alan@alcnature.com](mailto:alan@alcnature.com)) or by post to ALC, Unit D1, Wicklow Enterprise Centre, The Murrough, Wicklow Town)

### Date and time of surveys

2 count days (22<sup>nd</sup> & 23<sup>rd</sup> September) with 3 counts within a 4 hour period (2 hours before and after low tide). 22 Sep: c.1440h to 1840h (LT @ 1640) and 23 Sep 1500 – 1900 (low tide at c1715h)

### Locations, sites and mapping

Write your name and the date on the map. Use one map for all counts on your survey. You have been assigned a survey area marked on the map. Mark all “haul out” sites on the map with a **X** and a letter to identify it which corresponds with the count on the form provided. Please mark all vantage point(s) as “VP” on the map.

### Frequency of counts during each survey

At least 3 counts should be undertaken during each survey period: the first around 2 hours before low tide, the second at or around low tide and the third up to 2 hours after low tide.

### Equipment required

You should come prepared for the weather and equipped with binoculars (and a telescope if you have it) – please let us know if you need equipment to undertake the survey! A clipboard or similar will be useful for the forms. Feel free to take photographs for later identification if necessary.

### Weather

There is space and instruction on the form for recording key weather conditions. Record wind speed in Beaufort scale (see below)

Number	Description	Wind Speed		Sea Conditions	Land Conditions
		Kts	Km/h		
0	Calm	< 1	> 1	Flat	Smoke rises vertically
1	Light Air	1 – 2	1 - 5	Ripples without crests	Wind motion visible in smoke
2	Light breeze	3 – 6	6 – 11	Small wavelets	Wind felt on skin
3	Gentle breeze	7 – 10	12 – 19	Large wavelets	Leaves in constant motion
4	Moderate breeze	11 – 15	20 – 28	Small waves with breaking crests	Small branches begin to move
5	Fresh breeze	16 – 20	29 – 38	Moderate waves of some lengths	Bigger branches and small trees start to move
6	Strong breeze	21 – 26	39 – 49	Sea heads up	Large branches in motion
7	High wind	27 – 33	50 – 61	Moderate high waves	Whole trees in motion, effort needed to walk
8	Gale, Fresh gale	34 – 40	62 – 74	High and very high waves	Some branches break off trees
9	Strong gale	41 – 47	75 – 88		
10	Storm, whole gale	48 – 55	89 – 102	Huge waves, sea is completely white with foam and spray	Widespread damage to vegetation
11	Violent storm	56 – 63	103 – 117		
12	Hurricane	> 64	> 118		

### Identification and ageing of seals

Please record all seals seen - counts of adults and juveniles of both Harbour and Grey seals respectively. Use your best judgement to determine ages. If you cannot identify the seals count them anyway and record in the unidentified seals section.

Record any seals and their ID and ages that are seen in the water also – there is a row provided for recording seals in the water

### Disturbance

Record any disturbance observed in the correct column and indicate, using your judgement, whether the disturbance was high (significantly affected the count), moderate (affect part of the count) or low level (no significant effect)

### Contacts

For advice during the survey please contact Brendan Price on 087 324 5423 or Alan Lauder on 086 046 4297

## DUBLIN BAY SEAL CENSUS 2018

DATE:		LOCATION NAME:		Observer name:	
Start time:		End time:			
<b>Count 1</b>	Count time:		Wind:		
	Rain (X):	none	light	mod	heavy
	<b>Harbour Seal</b>		<b>Grey Seal</b>		<b>Unidentified seal</b>
<i>Please record wind as direction (N, NE, E, SE etc.) and wind strength (force) 1-10</i>					
<b>Disturbance:</b> None, Walker, Dog, Vehicle, Sailing, Fishing boat, Aircraft, Other (specify)					
Hault out site	Ad	juv	Ad	juv	No.
<b>Disturbance level:</b> H/M/L/none					
A					
B					
C					
D					
E					
F					
G					
in water					
<b>Count 2</b>	Count time:		Wind:		
	Rain (X):	none	light	mod	heavy
	<b>Harbour Seal</b>		<b>Grey Seal</b>		<b>Unidentified seal</b>
<b>Disturbance:</b> None, Walker, Dog, Vehicle, Sailing, Fishing boat, Aircraft, Other (specify)					
Hault out site	Ad	juv	Ad	juv	No.
<b>Disturbance level:</b> H/M/L/none					
A					
B					
C					
D					
E					
F					
G					
in water					
<b>Count 3</b>	Count time:		Wind:		
	Rain (X):	none	light	mod	heavy
	<b>Harbour Seal</b>		<b>Grey Seal</b>		<b>Unidentified seal</b>
<b>Disturbance:</b> None, Walker, Dog, Vehicle, Sailing, Fishing boat, Aircraft, Other (specify)					
Hault out site	Ad	juv	Ad	juv	No.
<b>Disturbance level:</b> H/M/L/none					
A					
B					
C					
D					
E					
F					
G					
in water					

**Other Notes/Comments**

ANNEX 2 Census results

<b>Dublin Bay Seal Census 2018</b>																							
		Haul outs										In water (or ill defined)											
	count		Count	sub			Harbour Seal		Grey Seal		Seal sp.	Harbour Seal		Grey Seal		Seal sp.	Total	Total	TOTAL	Total	Total	TOTAL	
Date	sector	Location name	time	#	wind	rain	Ad/imm	pup	Ad/imm	pup	No.	Ad/imm	pup	Ad/imm	pup	No.	ad	pup	GREY	Ad	pup	HARBOUR	
22/09/2018	1	Howth to Irelands Eye	c. 15:00	1	2	0	0	0	75	1	0	0	0	3	0	0	78	1	79	0	0	0	
22/09/2018	3	Dollymount/Bull	15:30	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	4	Dublin Port	14:40	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	5	Sandymount	15:15	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	6	DL West of pier	14:30	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	7	DL harbour	14:40	1	2	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	0	
22/09/2018	8	Scotsmans Bay	15:30	1	2	0	1	0	2	0	0	0	0	0	0	0	2	0	2	1	0	1	
22/09/2018	9	Dalkey	15:40	1	2	0	2	0	3	0	0	0	0	0	0	0	3	0	3	2	0	2	
22/09/2018	1	Howth to Irelands Eye	c. 17:00	2	2	0	0	0	69	1	0	0	0	3	0	0	72	1	73	0	0	0	
22/09/2018	3	Dollymount/Bull	17:00	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	4	Dublin Port	16:40	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	5	Sandymount	16:15	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	6	DL West of pier	16:30	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	7	DL harbour	16:40	2	3	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	0	
22/09/2018	8	Scotsmans Bay	17:00	2	2	0	1	0	1	0	0	0	0	0	0	0	1	0	1	1	0	1	
22/09/2018	9	Dalkey	17:00	2	3	0	1	0	9	0	0	0	0	2	0	0	11	0	11	1	0	1	
22/09/2018	2	Sutton Creek - Bull Is	addnl.	2			0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	0	
22/09/2018	3	Dollymount/Bull	18:30	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	4	Dublin Port	18:00	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	5	Sandymount	17:15	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	6	DL West of pier	18:30	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	7	DL harbour	18:40	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22/09/2018	8	Scotsmans Bay	18:30	3	2	0	1	0	2	0	0	0	0	0	0	0	2	0	2	1	0	1	
22/09/2018	9	Dalkey	18:30	3	3	0	0	0	2	0	0	0	0	0	0	0	2	0	2	0	0	0	
22/09/2018	2	Sutton Creek - Bull Is	addnl.	2			0		0	0	0	0	0	2	0	0	2	0	2	0	0	0	



Annex 3 Seal Census – survey sections

