

# **Grey Seal Breeding Census Skomer Island 2023**

NRW Evidence Report No 750

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# Crynodeb Gweithredol

Mae'r Morlo Llwyd (*Halichoerus grypus*) yn rhywogaeth Atodiad II y gellir dynodi Ardal Cadwraeth Arbennig (ACA) ar sail ei phresenoldeb ac mae'n un o'r prif resymau dros ddewis ACA Forol Sir Benfro. Mae morloi llwyd hefyd yn cael eu cydnabod fel un o nodweddion Parth Cadwraeth Morol Sgomer.

Ym 1983, sefydlwyd dull systematig o fonitro morloi ar Sgomer a pharhaodd hwn i gael ei ddilyn, gan ddefnyddio'r un fethodoleg neu o leiaf methodoleg debyg, er bod hynny ar lefelau amrywiol o ddwysedd, tan 1996 pan safonodd Jim Poole y broses o fonitro morloi ar Sgomer ymhellach drwy gyflwyno'r Seal Monitoring Handbook. (Alexander, 2015). Yn 2023, fel mewn blynyddoedd blaenorol, arsylwyd gweithgarwch bridio'r morloi llwyd ar Ynys Sgomer a'i gofnodi gan ddefnyddio'r fethodoleg hon.

Ganwyd 250 o loi bach ar Sgomer yn 2023, sy'n bump yn llai nag yn 2022. Ar Benrhyn Marloes cafodd 175 o loi bach eu geni, gan roi cyfanswm o 425 o loi ar gyfer Parth Cadwraeth Morol Sgomer i gyd, sef 22 morlo bach yn llai na'r flwyddyn flaenorol.

Roedd 2023 yn dymor geni cynnar, a chafodd y lloi bach cyntaf eu geni ar draeth Gogledd Haven ac ym Mae Driftwood ar 28/7/23. Roedd y cyfnod geni prysuraf yn ystod wythnosau 36 a 37. Y traethau mwyaf cynhyrchiol oedd North Haven (50 o loi bach) a Matthew's Wick (50 o loi bach).

Gwyddom, neu tybir, fod 172 o loi bach wedi goroesi ar Sgomer, nid yw tynged 15 ohonynt yn hysbys, sy'n rhoi cyfradd oroesi o 73%. Ar y tir mawr rydym yn gwybod, neu'n tybio fod 155 o loi wedi goroesi, sy'n rhoi cyfradd oroesi o 89%. Y gyfradd oroesi gyffredinol ar gyfer Parth Cadwraeth Morol Sgomer i gyd yw 80%.

Yn 2023 y nifer fwyaf o forloi a ddaeth i'r tir (yn y prif safleoedd sy'n nodedig am hynny) oedd 504 o forloi. Yn North Haven gwelwyd y cyfnod prysuraf o forloi yn dod i'r tir, sef 198 o forloi, ar 14/11/23. Roedd 89 o forloi ym Mae Driftwood ar 7/11/23, roedd 123 morlo yn Matthews Wick ar 3/11/23 ac roedd 146 o forloi yn Castle Bay ar 7/10/23.

Tynnwyd lluniau 135 o forloi gyda chreithiau neu dagiau yn 2023, ac o'r rhain cafodd 61 (52 buwch, 1 morlo nad oedd ei ryw yn hysbys ac 8 tarw) eu hail-adnabod o luniau blaenorol.

Y fuwch hynaf oedd wedi dychwelyd oedd HD-014. Cafodd yr anifail hwn ei achub o Penberth, Cernyw a chafodd driniaeth oherwydd briw ar ei lygad chwith ym mis Chwefror 2002. Y teirw hynaf i dychwelyd i Sgomer yn 2023 oedd 12.NHV.B06, NK.065 a NK.068. Gwelwyd y tri anifail am y tro cyntaf ar Sgomer yn 2012.

Yn 2023 gwelwyd 10 morlo wedi'u tagio ac roedd 5 ohonynt yn hysbys o flynyddoedd blaenorol. Nodwyd un fuwch ifanc a welwyd fel y mae'n digwydd yn 2022 yn 2023. Roedd hi wedi dod o dde Ffrainc.

O'r 250 buwch a roddodd enedigaeth ar Sgomer yn 2023, roedd gan 40 greithiau ac roedd 48% ohonynt yn fuchod bridio adnabyddadwy oedd wedi dychwelyd. Y fuwch fridio hynaf oedd LS.017. Fe'i gwelwyd ar Sgomer yn 2009 am y tro cyntaf.

Tynnwyd lluniau 29 o forloi unigol, a oedd ag arwyddion amlwg eu bod wedi cael eu dal mewn rhwydi ar ryw adeg yn ystod eu bywyd. Rhwng mis Awst a Tachwedd 2023, roedd canran y morloi a ddaeth i'r tir ac a oedd yn dangos arwyddion o fod yn sownd mewn rhwydi yn amrywio o ddydd i ddydd, a'r cyfartaledd ar gyfer y tymor oedd 2.1%.

## Executive summary

The Grey Seal (*Halichoerus grypus*) is an Annex II species for which a Special Area of Conservation (SAC) can be designated and a primary reason for the selection of the Pembrokeshire Marine SAC. They are also recognised as a feature of the Skomer Marine Conservation Zone (MCZ).

In 1983, a systematic approach to seal monitoring on Skomer was established and continued, using the same or at least similar methodology, albeit at varying levels of intensity, until 1996 when Jim Poole standardised the seal monitoring on Skomer further by introducing the Seal Monitoring Handbook (Alexander, 2015). In 2023, as in previous years, the breeding activities of the grey seals on Skomer Island were observed and recorded using this methodology.

250 pups were born on Skomer in 2023, which is five less than in 2022. On the Marloes Peninsula 175 pups were born, giving a total of 425 pups for the Skomer MCZ as a whole, which is 22 pups less than in the previous year.

2023 was an early pupping season, with the first pups born on North Haven beach and at Driftwood Bay on 28/7/23. The peak of pupping was in weeks 36 and 37. The most productive beaches were North Haven (50 pups) and Matthew's Wick (50 pups).

172 pups are known, or assumed, to have survived on Skomer, the fate of 15 pups is unknown, giving a survival rate 73%. On the mainland 155 pups are known, or assumed to have survived, giving a survival rate of 89%. The overall survival rate for the whole of the Skomer MCZ is 80%.

In 2023 the maximum haul-out (on the main haul-out sites) was 504 seals. North Haven had its peak haul-out count of 198 seals on 14/11/23. Driftwood Bay had 89 seals on 7/11/23, Matthews Wick had 123 seals on 3/11/23 and Castle Bay had 146 seals on 7/10/23.

135 seals with scars or tags were photographed in 2023, of which 61 (52 cows, one seal with unknown sex and eight bulls) were re-identified from previous photos.

The oldest returning cow was HD-014. This animal was rescued from Penberth, Cornwall and treated for an ulcerated left eye in February 2002. The oldest bulls to have returned to Skomer in 2023 were 12.NHV.B06, NK.065 and NK.068. All three animals were seen for the first time on Skomer in 2012.

In 2023 ten tagged seals were observed of which five were known from previous years. One immature cow which was actually seen in 2022 was identified in 2023. She came from southern France.

Of the 250 cows which pupped on Skomer in 2023, 40 had scars and 48% of identifiable breeding cows were returning cows. The oldest breeding female was LS.017. She was seen on Skomer in 2009 for the first time.

29 individual seals were photographed with obvious signs of being entangled in nets at some time in their lives. Between August and November 2023, the percentage of hauled-out seals with entanglement fluctuated day to day, the average for the season was 2.1%.

# 1. Introduction

Between 08/08/23 and 16/11/23, the breeding activities of the Grey Seals (*Halichoerus grypus*) on Skomer Island were systematically observed and recorded, using the methods employed in previous years. These methods are detailed in the Skomer MCZ & Skomer Island NNR Grey Seal Management Plan (Alexander, 2015), with revisions made regarding access to some sites (Nathan, 2015), and are also mentioned in the individual site sections of this report. Casual observations were conducted by island staff and volunteers outside the seal project.

## 2. Objectives

1. To record the number of Grey Seal pups born at all known pupping sites around Skomer Island throughout the pupping season.
2. To determine the survival rate of seal pups up to their first moult and to record the probable cause of any fatalities.
4. To monitor the behaviour of all seals during site visits.
5. To maintain a daily record of the number of Grey Seals using the main haul-out sites, particularly Castle Bay and North Haven, including details of the age and sex of hauled out animals.
6. To record and document all observed cases of seal disturbance, their cause and outcome, including entanglement with man-made materials (fishing lines and nets, etc.).
7. To record and document individual adult and immature Grey Seals with distinctive scars/markings to compare with previous years.
8. To make comparisons of objectives 1 and 2 with previous years.

### 3. Census methods

All the main Grey Seal pupping sites on Skomer Island were checked regularly and individual records were kept on each pup's progress, from birth to completion of moult, as laid out in the Skomer MCZ & Skomer Island NNR Grey Seal Management Plan (Alexander, 2015).

During the main pupping season, the most productive beaches; North Haven, South Haven, Driftwood Bay, Castle Bay, Matthew's Wick and Amy's Reach were checked from the cliff tops on a daily basis, weather permitting. Most of these sites (apart from North Haven and South Haven) are located on an area known as The Neck which is separated from the main island by a narrow isthmus. The main island sites (South Stream, High Cliff Boulders, The Wick, The Basin, Pig Stone Bay and the Garland Stone were also checked regularly, approximately every two to four days.

Figure 1 Skomer Island overview

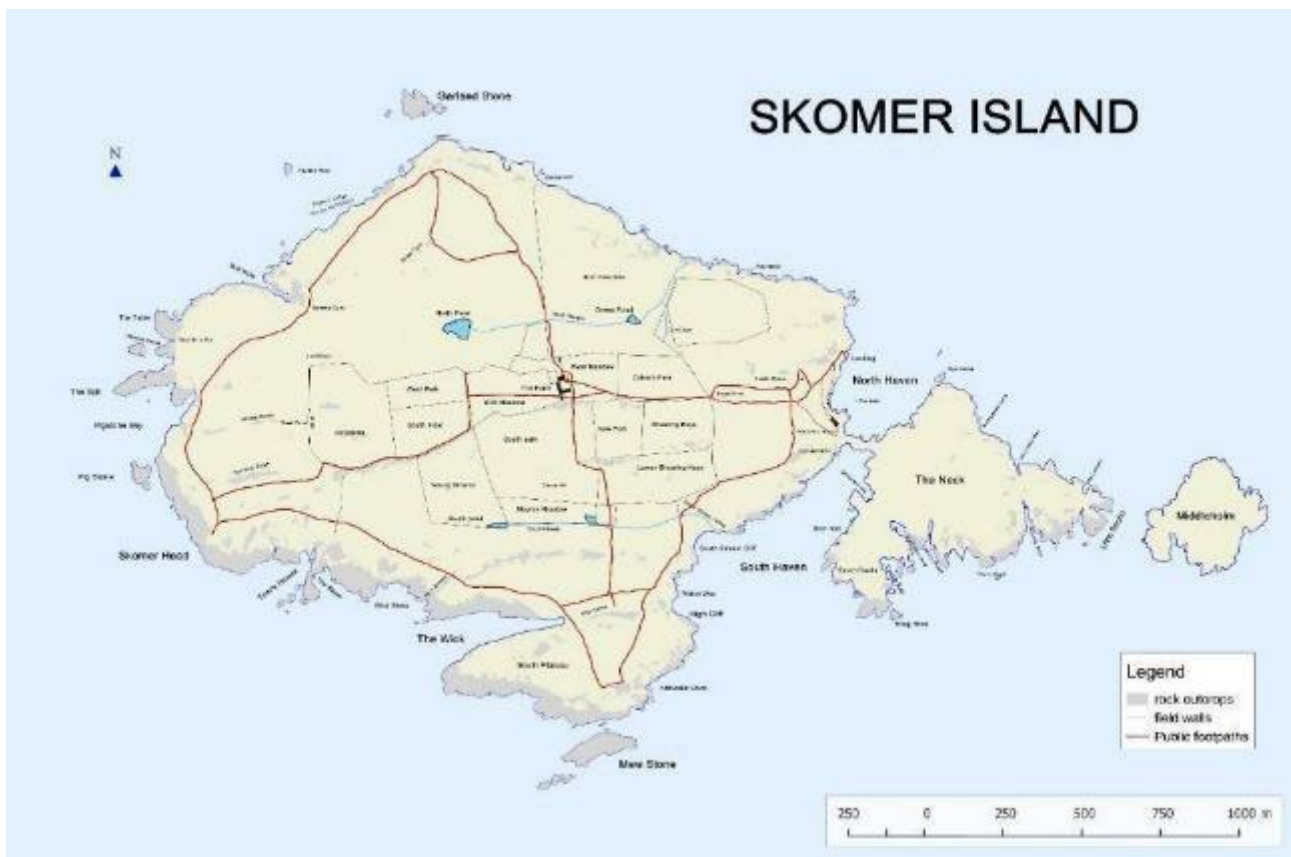


Figure 2 Skomer Island Grey Seal pupping sites east



Figure 3 Skomer Island Grey Seal pupping sites west



Beaches with difficult access (e.g., High Cliff Boulders) were only visited after having observed breeding behaviour by females in the vicinity, to avoid unnecessary disturbance.

The caves (The Lantern, Seal Hole and South Castle Beach Cave) and Protheroe's Dock were checked whenever conditions allowed. Entry to these sites is dependent on tides, weather and adult seal activity. To avoid causing more disturbance than absolutely necessary, no cave was ever entered if a cow remained inside guarding her pup.

Beaches and caves were accessed no more than once a week to minimise disturbance.

Pups at the main sites are usually found within 24 hours of being born on Skomer and therefore their date of birth is generally very accurate. When pups are born in the less frequently visited sites their date of birth was approximated, based on the date of the previous visit and the pup's size and appearance using the SMRU five-stage age classification system (see [Appendix 1](#)).

Sites were visited, when necessary, to mark pups. This was done in accordance with the Skomer MCZ & Skomer Island NNR Grey Seal Management Plan (Alexander, 2015), unless otherwise stated due to recent safety recommendations (Nathan, 2015).

In most instances seal pups were individually marked using coloured aerosol sheep-fleece marker sprays. New-born pups were not routinely marked because of concerns that marking may interfere with the parent/pup bond. Younger pups were occasionally given a very small mark, usually near the tail, if the beach was being visited anyway. This allowed an individual to be monitored over the following days before being marked properly (when the pup was old enough).

During site visits and inspections every effort was made to keep disturbance to a minimum.

An assessment was made of the condition of each pup when last seen, classified on a five-point scale:

- |                      |   |
|----------------------|---|
| 1. Very small        | Assumed not to have survived long after moult                 |
| 2. Small but healthy | In good condition, would have a reasonable chance of survival |
| 3. Good size         | Most should survive   |
| 4. Very good size    | All should survive  |
| 5. Super-moulter     | An exceptional sized pup                                      |

Seal pups were considered successful if they survived until the beginning of moult, unless they were in poor condition (Hewer, 1974). If a pup disappeared before the beginning of moult an individual assessment was made on its likelihood to have survived based on the above criteria. Pups  $\geq$  size 3 were assumed successful, whereas pups smaller than size 3 were assumed unsuccessful.

If the fate of a pup couldn't be determined, for example it was seen only once at a young age in a cave that could not be visited again before the pup either died or weaned, it was classified as a pup with unknown fate and excluded from the survival rate calculation.

Near daily counts were done of the main haul-out sites (Castle Bay (including Shag Rock), North Haven (including Rye Rocks), Driftwood Bay, Matthew's Wick and the Garland Stone). Counts of haul-outs were conducted synchronously, as far as possible, during the same low tide period (two hours either side of low tide). If there were insufficient staff available, the Garland Stone was omitted. All animals at the haul-out were counted and if time permitted the age and sex of the animal present was noted.

## **4. Census results**

### **4.1 Pup numbers**

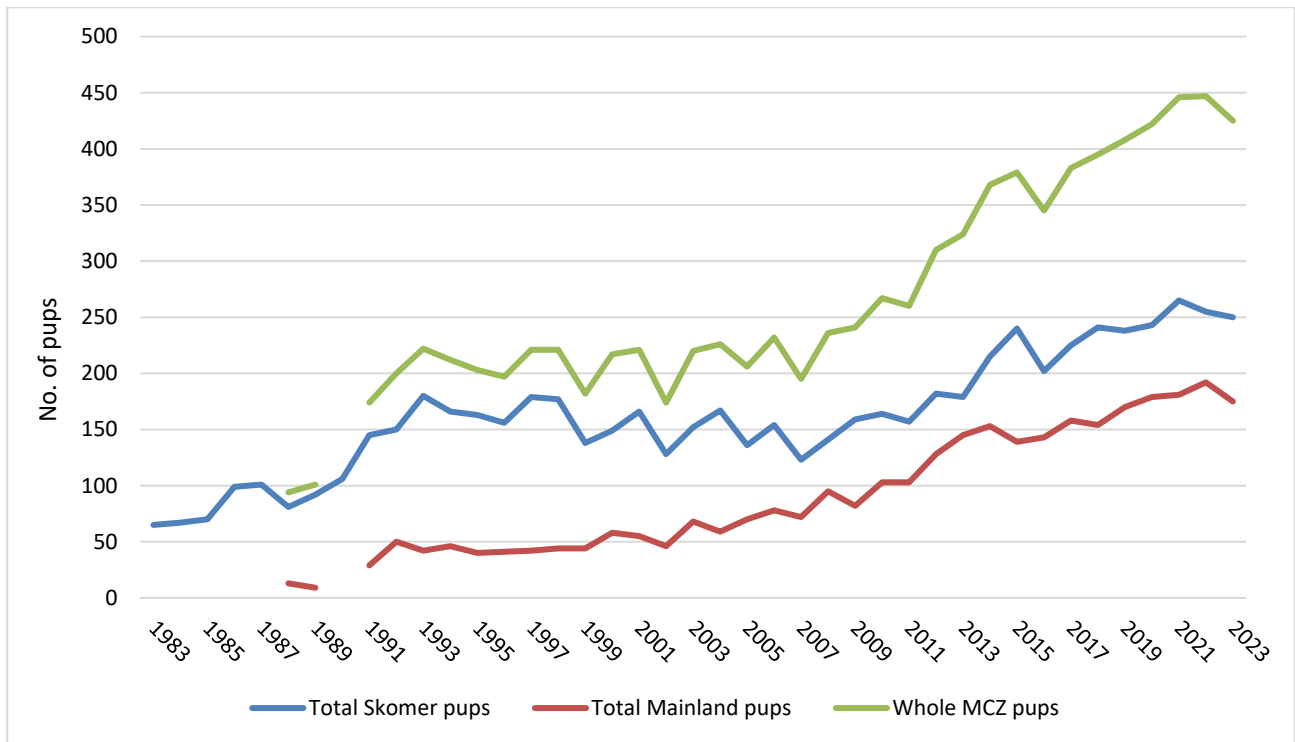
425 pups were born within the Skomer MCZ in 2023. Although this is less than in the previous (record) years of 2021 and 2022 it was a decent breeding season and the figures are still in line with 2020 (422 births). Of the 425 pups born, 157 were born on the Marloes Peninsula.

259 pups were monitored on Skomer in 2023. 250 of them were definitely born on Skomer and nine pups (wanderers) turned up either just before the start of moult, or moulting. These pups could have been born within the Skomer MCZ but in a location hidden from view and thus cannot be included in this report.

In 2016 the number of seal pups born on Skomer dipped slightly after two years of exceptional pup numbers. In 2017 the numbers went up again to 225 and in 2018 they reached 241 pups. This increase was not experienced in 2019 but 2020 saw a new record with 243 pups born which was once again topped by the 2021 breeding season (265 pups). In 2022 and 2023 there were less pups born on Skomer than in the record year of 2021.



Figure 4 Number of seal pups born in Skomer MCZ 1983-2023



In 2023 the first pups of the season were born on North Haven beach and at Driftwood Bay on 28/7/23. Timing of breeding has shown a slight shift in the last three years. Before 2021 most pups were born in week 38 or 39. In the last three years the peak of pupping has shifted to weeks 36 and 37, see figure 5, table 1 and [Appendix 5](#) for dates of weeks.

Figure 5 Weekly seal pup births on Skomer Island 2017-2023

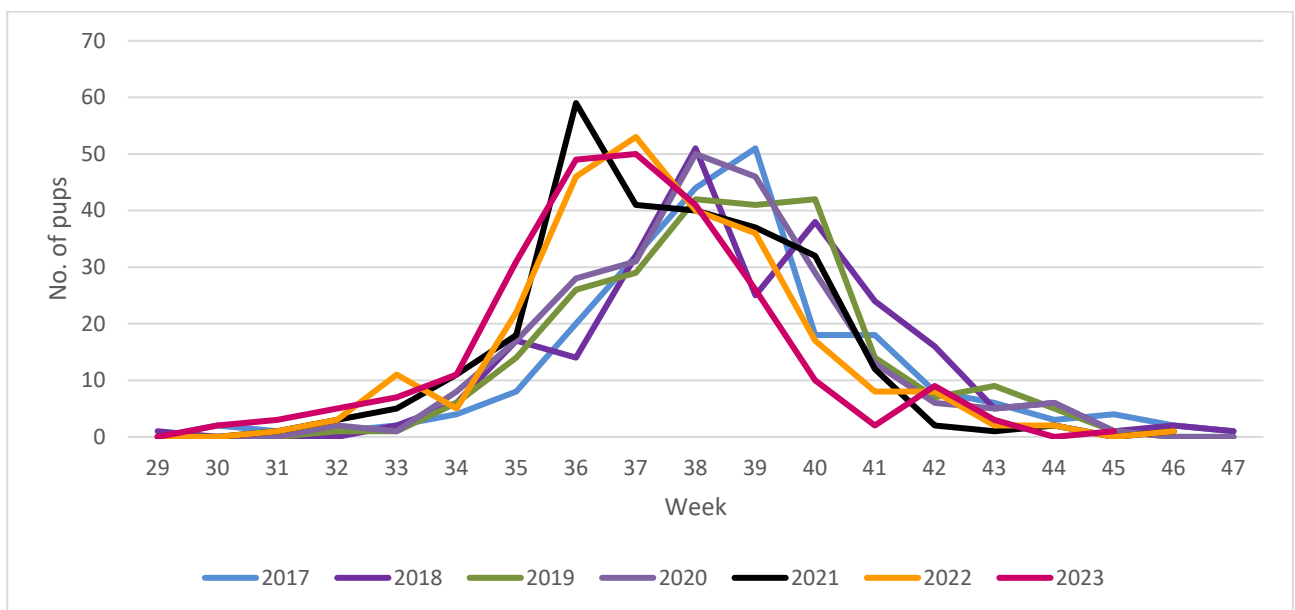
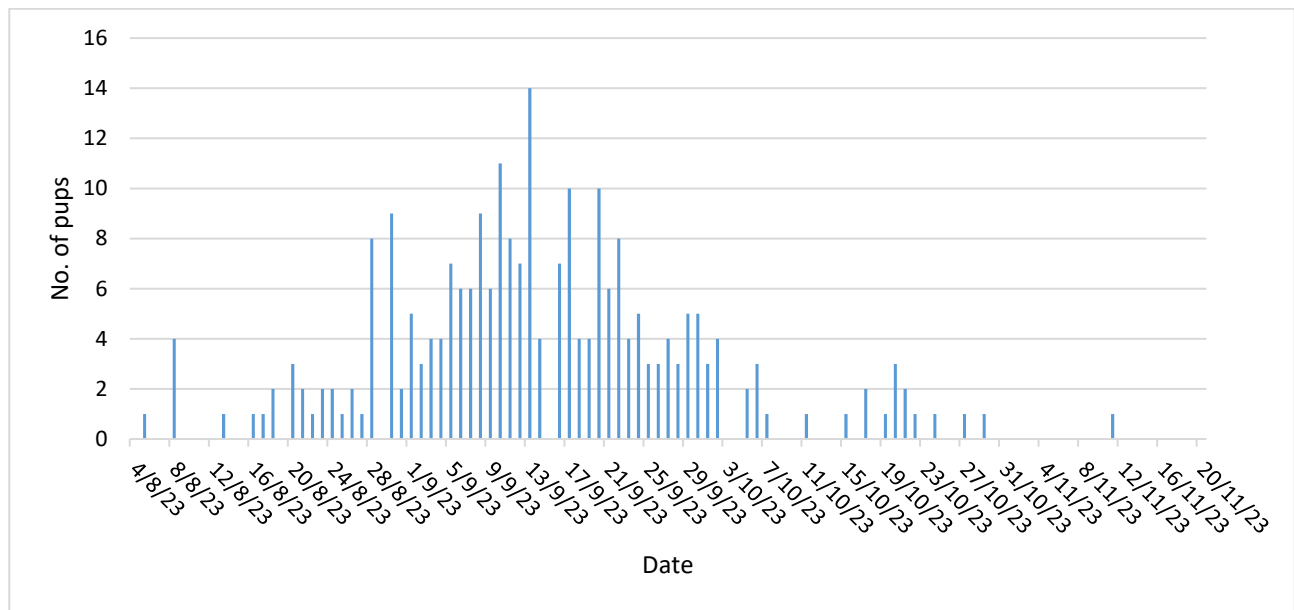


Table 1 Monthly number & percentage of seal pup births on Skomer Island 1983-2023

<b>Year</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>	<b>November</b>
2023	2 (0.8%)	45 (18%)	175 (70%)	27 (11%)	1 (0.4)
2022	0	28 (11%)	174 (68%)	50 (20%)	3 (1%)
2021	0	22 (8.3%)	184 (69.4%)	56 (21.1%)	3 (1.1%)
2020	0	25 (10.3%)	158 (65.0%)	55 (22.6%)	5 (2.1%)
2019	0	16 (6.7%)	144 (60.5%)	73 (30.7%)	5 (2.1%)
2018	1 (0.4%)	22 (9.1%)	125 (51.9%)	87 (36.1%)	6 (2.5%)
2017	2 (0.9%)	12 (5.3%)	146 (64.9%)	57 (25.3%)	8 (3.5%)
2016	0	16 (7.9%)	96 (47.5%)	84 (41.58%)	6 (3.0%)
2015	0	12 (5%)	91 (37.9%)	114 (47.5%)	23 (9.6%)
2014	0	8 (3.7%)	77 (35.8%)	107 (49.8%)	23 (10.7%)
2013	0	8 (4.5%)	60 (33.5%)	92 (51%)	19 (11%)
2012	0	19 (10%)	65 (36%)	77 (42%)	21 (12%)
2011	0	11 (7%)	55 (35%)	56 (36%)	35 (22%)
2010	0	11 (7%)	75 (46%)	50 (30%)	28 (17%)
2009	0	13 (8%)	62 (39%)	47 (30%)	36 (23%)
2008	0	11 (8%)	79 (57%)	37 (27%)	11 (8%)
2007	0	10 (8.5%)	63 (53%)	35 (30%)	10 (8.5%)
2006	0	11 (7%)	78 (52%)	47 (31%)	15 (10%)
2005	0	12 (9%)	79 (58.5%)	35 (26%)	9 (6.5%)
2004	0	24 (14%)	98 (59%)	37 (22%)	8 (5%)
<b>Year</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>	<b>November</b>
2003	1 (1%)	17 (11%)	92 (60%)	38 (25%)	6 (4%)
2002	0	21 (16.5%)	62 (48.5%)	42 (33%)	3 (2%)
2001	0	17 (10%)	90 (54.5%)	57 (34.5%)	1 (1%)
<b>Year</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>	<b>November</b>
2000	2 (1%)	14 (9%)	102 (65%)	40 (25%)	No survey
1999	0	6 (4%)	91 (65%)	44 (31%)	No survey
1998	0	7 (4%)	96 (54%)	70 (39%)	5 (3%)
1997	0	3 (2%)	75 (43%)	85 (49%)	10 (6%)
1996	0	0	61 (39%)	75 (48%)	20 (13%)
1995	0	2 (1%)	49 (30%)	99 (61%)	13 (8%)
1994	0	2 (1%)	51 (31%)	96 (58%)	16 (10%)
1993	0	6 (3%)	67 (38%)	87 (49%)	18 (10%)
1992	1 (0.5%)	4 (3%)	40 (28%)	73 (50%)	27 (18.5%)
1991	1 (1%)	0	20 (14%)	75 (54%)	43 (31%)
1990	0	3 (3%)	17 (16%)	69 (64%)	18 (17%)
1989	0	2 (2%)	18 (19%)	45 (46%)	32 (33%)
1987	0	0	11 (11%)	41 (41%)	32 (32%)
1986	0	4 (4%)	22 (25%)	32 (36%)	34 (39%)
1985	0	0	18 (24%)	20 (27%)	20 (27%)
1984	0	0	9 (13%)	28 (41%)	18 (26%)
1983	0	0	24 (33%)	31 (42%)	15 (20%)

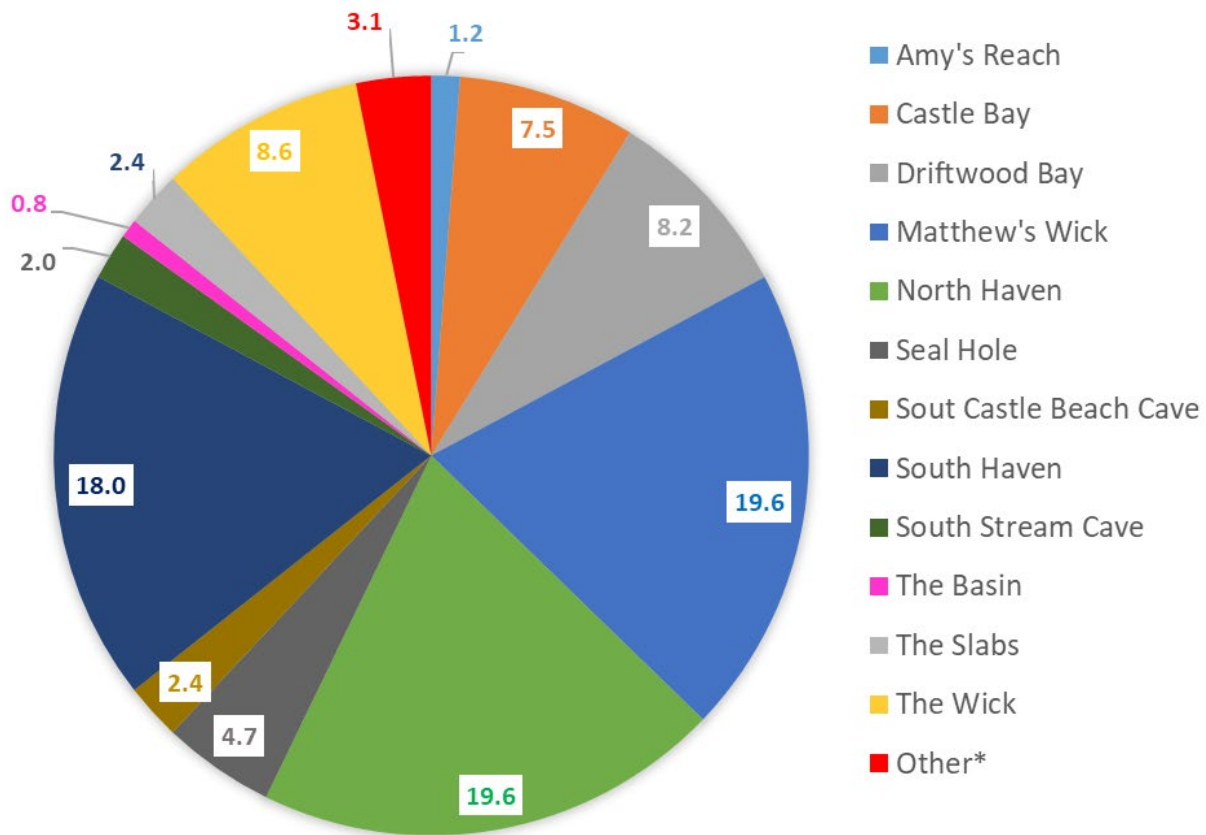
Seal observations continued to mid-December in 1983, 1985 and 1986 and to the end of January in 1984 and 1987. The following data (number of pups) was recorded in these survey years: 1983 Dec: 3 (4%), 1984 Dec: 6 (9%), Jan: 6 (9%). 1985 Dec: 14 (19%), 1986 Dec: 5 (5%), 1987 Dec: 15 (15%), Jan: 5 (5%). From 1989 onwards the survey has only continued up to the end of November, when the island is vacated by staff. The table above also excludes 1988 as it was not possible to extract the data for that year. There are occasional records of seal pups in July and these are included in the table, however the full survey, with routine site visits, does not commence until August.

Figure 6 Daily totals of seal pups born on Skomer Island in 2023



The most productive beaches were North Haven (50 pups) and Matthew's Wick (50 pups).

Figure 7 Percentage of seal pups born at each site on Skomer Island in 2023



\*Other: High Cliff Boulders (0.8%), Pigstone Bay (0.8%), Protheroe's Dock (0.4%), The Lantern (1.2%)

### 4.3 Survival rate

The fate of 235 pups (of 250 born) is known with relative certainty. The fate of 15 pups is unknown and thus excluded from the survival rate calculation. The survival rate is calculated as the total number of pups:

- a) assumed to have survived (disappeared before beginning of moult (class III, size  $\geq 3$ )
- b) survived to beginning of moult (started moult (class IV) but disappeared before completion, in a healthy state)
- c) survived and were weaned (finished moult (class V), in a healthy state)

divided by the total number of pups born (where fate is known).

172 pups are known, or assumed, to have survived on Skomer, the fate of 15 pups is unknown, giving a survival rate of 73% which is 5% lower than the average of 78% since records began. On the mainland 155 pups are known, or assumed to have survived, giving a survival rate of 89%. The overall survival rate for the whole of the Skomer MCZ is 80%.

Figure 8 Percentage of seal pups surviving in Skomer/MCZ 1983-2023

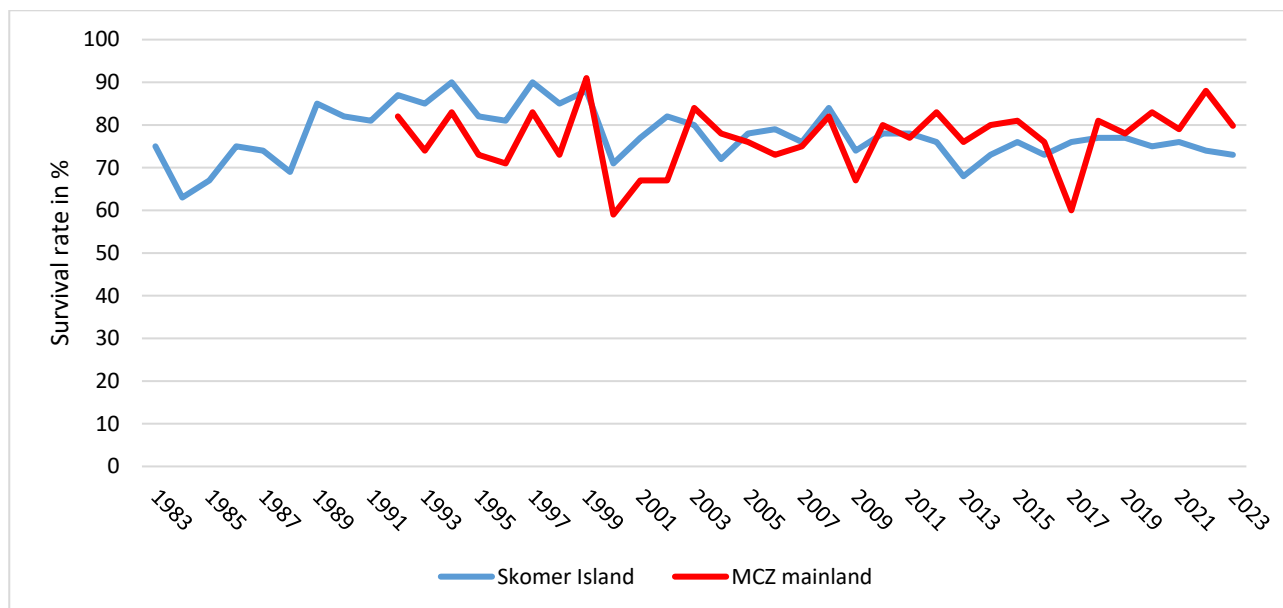


Table 2 Survival rates per site on Skomer Island 2023

Site	Total number of pups raised	Number of pups survived	Number of pups with fate unknown	% Survival of pups with known fate
Amy's Reach	3	2	0	67
Castle Bay	19	15	0	79
Driftwood Bay	33	23	1	72
High Cliff Boulders	2	2	0	100
Matthew's Wick	50	34	1	69
North Haven	50	37	1	76
Pigstone Bay	2	0	0	0
Protheroe's Dock	1	1	0	100
Seal Hole	11	7	0	64
South Castle Beach Cave	6	2	4	100
South Haven	35	24	2	73
South Stream	5	4	1	100
The Basin	2	2	0	100
The Lantern	3	UN	3	UN
The Slabs	6	2	0	33
The Wick	22	17	2	85

Pups that moved from their natal beach to a new location and spent the majority of their time there were added to that beach's total to establish the survival rate for that location. Pups for which fates were unknown were not taken into account when calculating site survival rates.

Figure 9 Weekly seal pup deaths 2020-2023

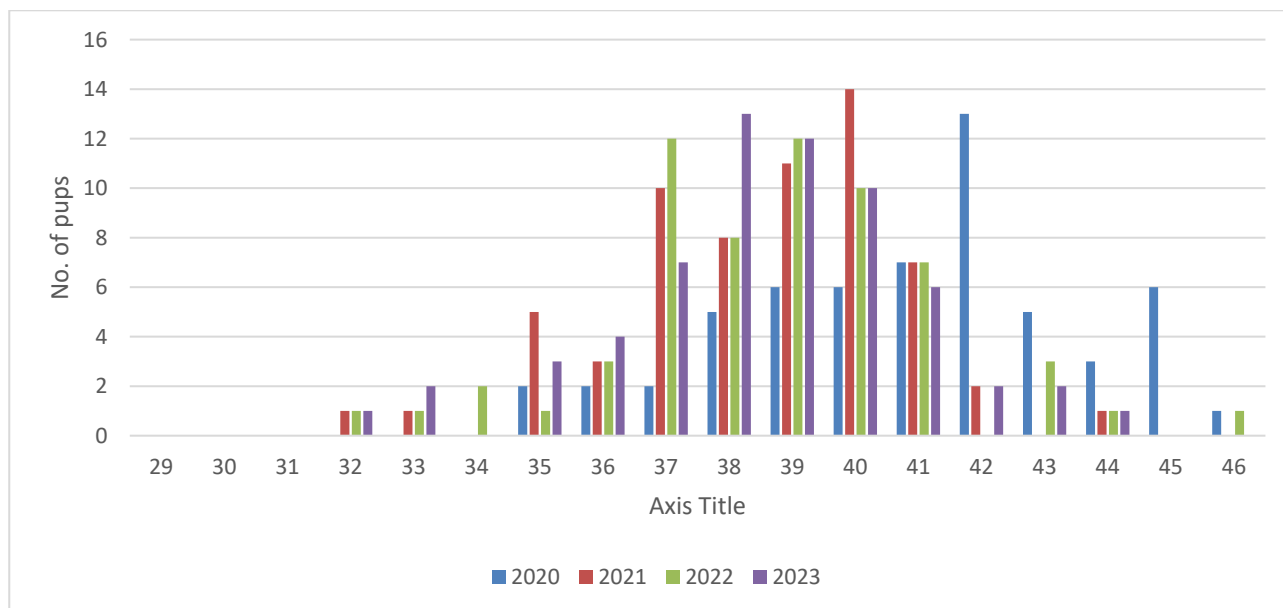


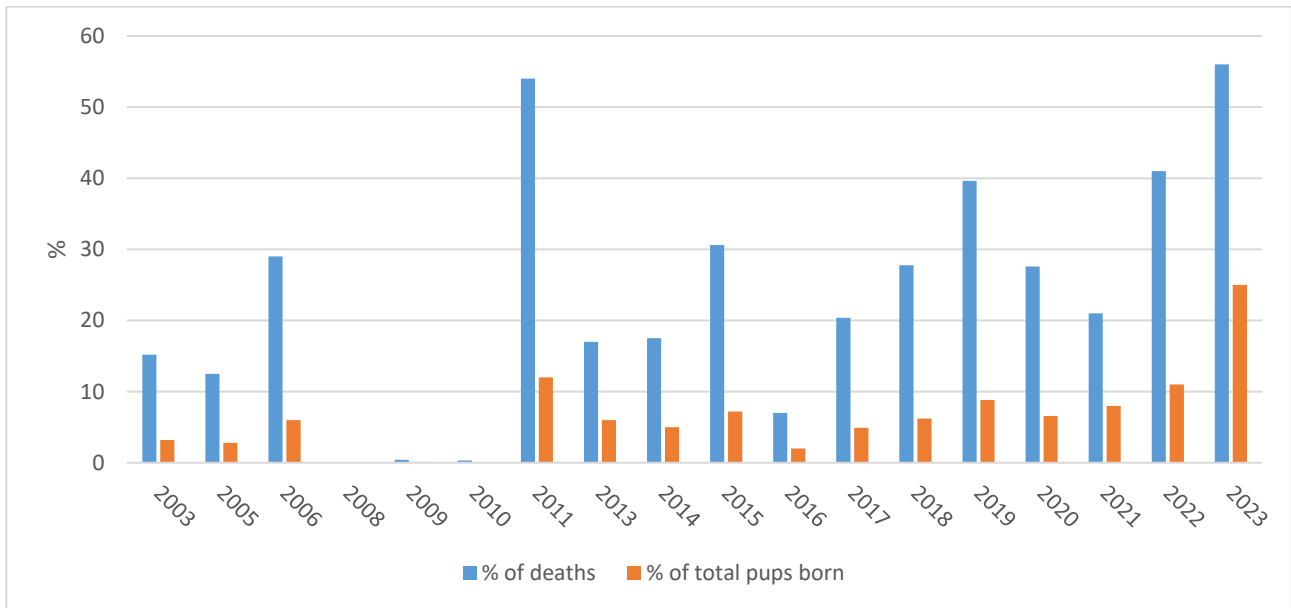
Table 3 Causes of seal pup deaths on Skomer Island in 2023

Cause of death	No. of pups	% deaths	% total pups born with fate known
Abandoned/separated/starved	35	56	14.9
Accident/injured/killed	0	0	0.0
Disappeared ≤ stage 3	12	19	5.1
Diseased	3	5	1.3
Drowned	1	2	0.4
Stillborn	2	3	0.9
Unknown	10	16	4.3
Other	0	0	0.0
Total	63		

In 2023 35 pups were abandoned/separated from their parent which is an increase on the previous year’s figure (26 pups). Between 2003 and 2021 an average of 20% of deaths were caused by abandonment/separation. In 2022 41% of all deaths were caused by abandonment/separation and in 2023 this figure was 56%, hence the number of abandoned pups has nearly tripled since 2021.

It is not known with certainty why in some years more females abandon or are separated from their pups than in others. Thus, it will be important to keep monitoring this as it may be triggered by increased disturbance due to more leisure activities during the main pupping season (for more information see chapter 4.9) and/or more severe storms due to climate change.

Figure 10 Seal pups abandoned 2003-2023



## 4.4 Site summaries

### 4.4.1 North Haven

Pups on the main North Haven beach can be very difficult to monitor as there are several caves and overhangs at the back of the beach where pups often disappear from view, especially during rough weather and on spring tides. The beach is a popular haul-out site, and it can become near impossible to try and see pups hidden at the back of the beach without disturbing hauled out animals. The North Haven site as a whole also includes North Haven Slip and three other caves.

A total of 50 pups were born in North Haven in 2023, two less than in the previous year. The fate of 49 pups is known, of which 37 are considered successful, giving a survival rate of 76% which is 3% lower than in the previous year.

Figure 11 Number of seal pups born on North Haven 1983–2023

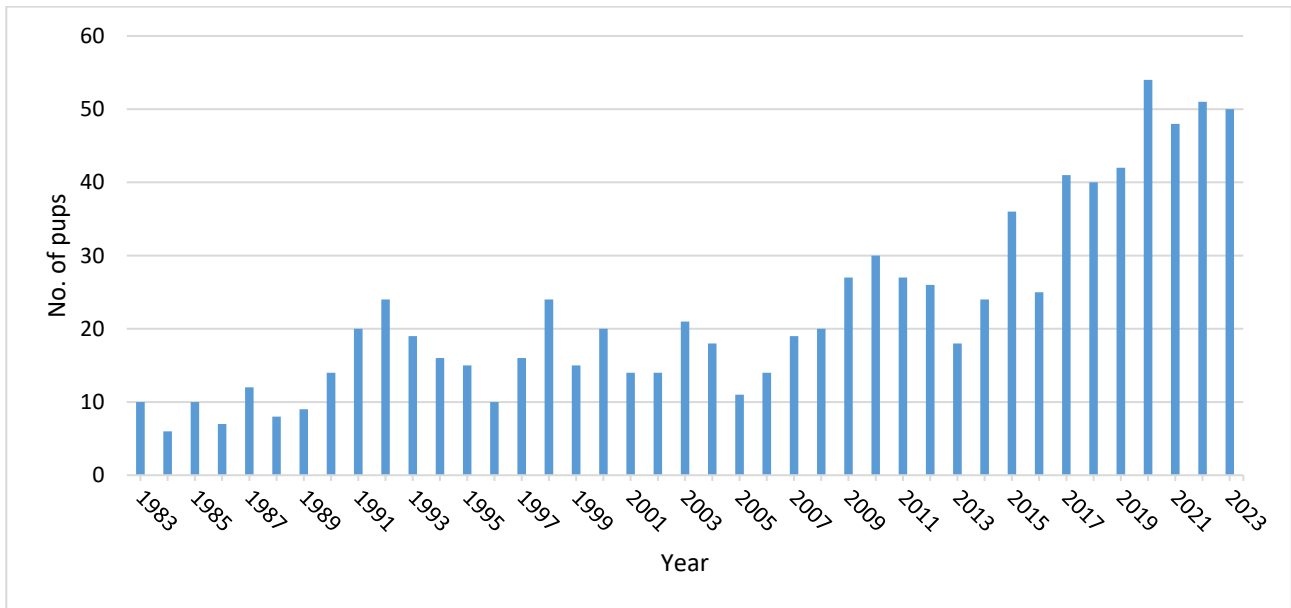


Figure 12 Weekly seal pup births on North Haven in 2023

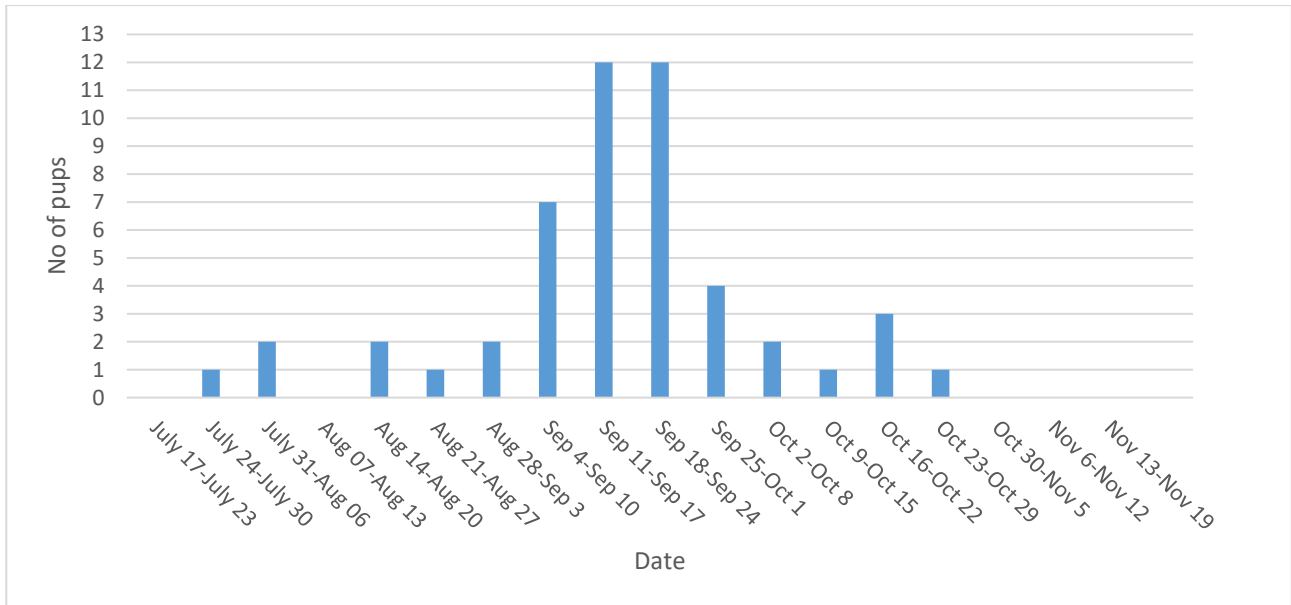




Table 4 Fate of pups on North Haven in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	6
Survived to beginning of moult	4
Survived to weaning	27
Assumed dead	6
Dead	6
Unknown	1
<b>Total</b>	<b>50</b>

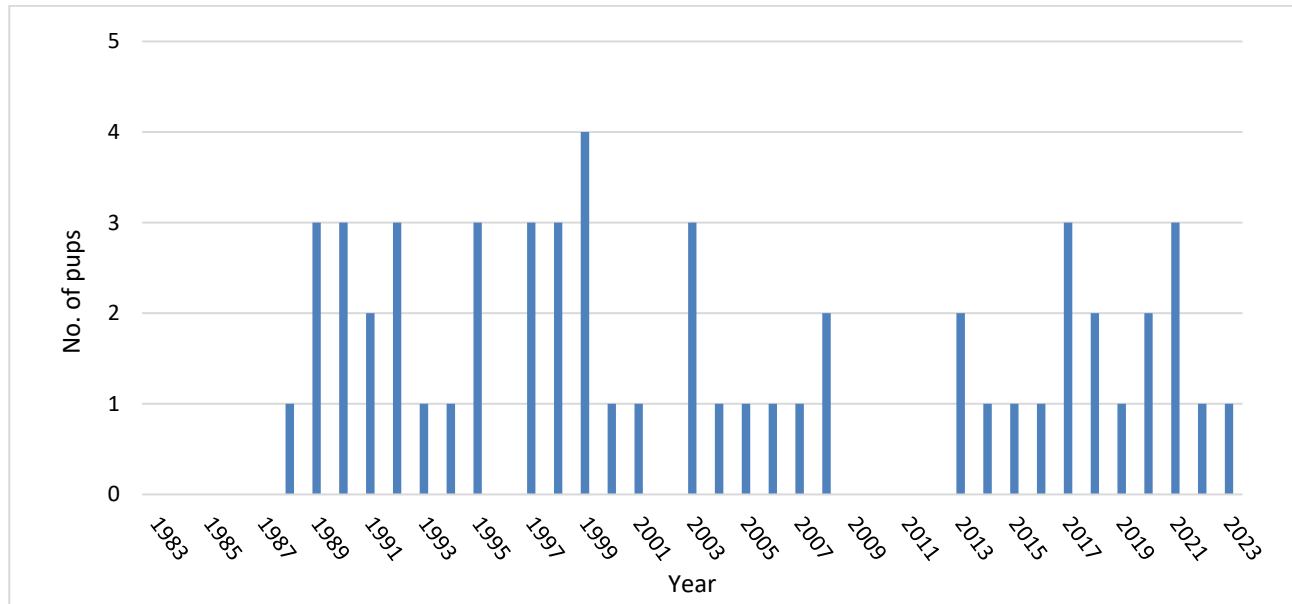
Table 5 Causes of seal pup deaths on North Haven beach in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	6
Accident/injured/killed	0
Disappeared ≤ stage 3	3
Diseased	0
Drowned	0
Stillborn	1
Unknown	2
Other	0
<b>Total</b>	<b>12</b>

## 4.4.2 Protheroe's Dock

In 2023 one pup was born on Protheroe's Dock in week 36. It is assumed to have survived. Six site visits were conducted on 2/9, 14/9, 4/10, 15/10, 25/10 and 11/11/23. As access is weather and tide dependant some pups may have been missed.

Figure 13 Number of seal pups born on Protheroe's Dock 1983-2023



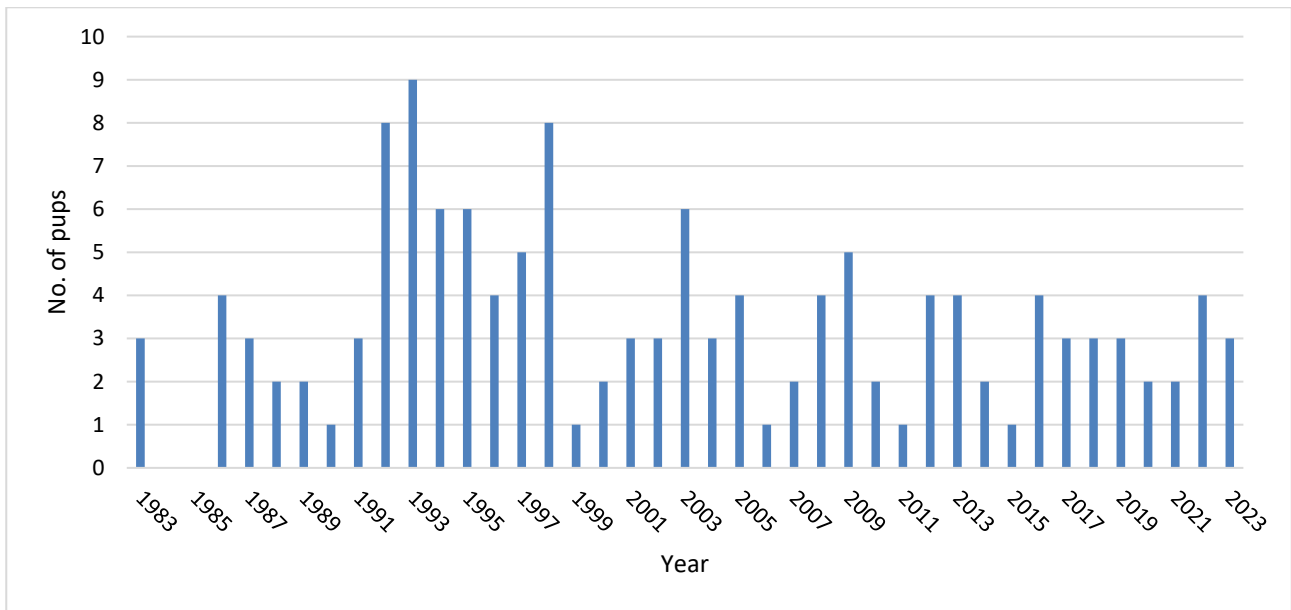
## 4.4.3 The Lantern

Access to the Lantern is only possible on spring low tides. All access routes into the Lantern are hazardous in wet weather or when there is a big swell. Even if access is possible cows often remain deep inside the cave making marking pups impossible and accurately assessing their progress very difficult.

Since 2014 access has been gained by abseiling from a rocky outcrop into the eastern entrance which enables access on low tides of less than 2.0m. In 2015 this route was risk assessed by Leo Nathan (mountain instructor) and was deemed to be the best and safest way of entering the Lantern. A semi-permanent rope (which is removed in winter) is installed around a rocky outcrop. When conducting a site visit the abseil rope is clipped on to this one via a carabiner; this setup reduces risk and speeds up the site visit.

In 2023 three pups were born in the Lantern in weeks 36, 37, 38. As access is weather and tide dependant some pups may have been missed. Seven site visits were conducted on 16/8, 4/9/ 16/9, 29/9, 14/10, 25/10 and 11/11/23. The fate of none of the pups is known.

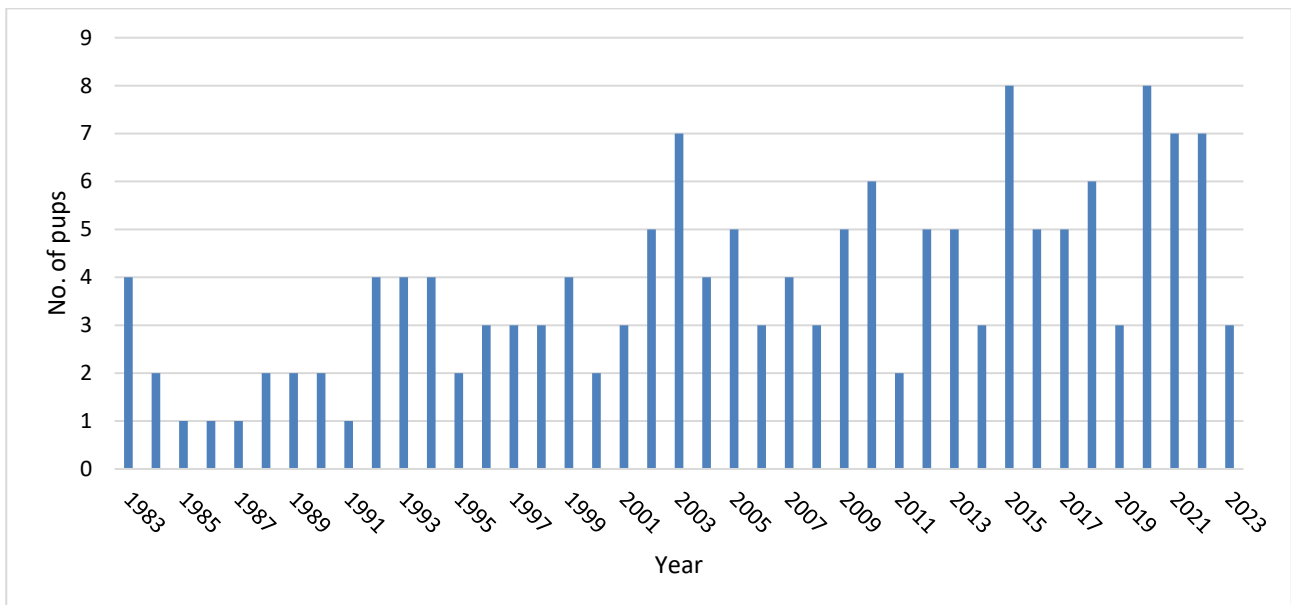
Figure 14 Number of seal pups born in The Lantern 1984-2023



#### 4.4.4 Amy's Reach

Three pups were born in week 36 on Amy's Reach of which two are considered successful, one is considered dead, resulting in a survival rate of 67%. One pup died of unknown causes.

Figure 15 Number of seal pups born on Amy's Reach 1984-2023



### 4.4.5 Matthew's Wick

In 2023 50 pups were born on Matthew's Wick, which is ten more than in 2022. 34 pups are considered successful, 15 are considered dead and the fate of one pup is unknown, giving a survival rate of 66%, which is 4% higher than in the previous year.

Figure 16 Number of seal pups born on Matthew's Wick 1984-2023

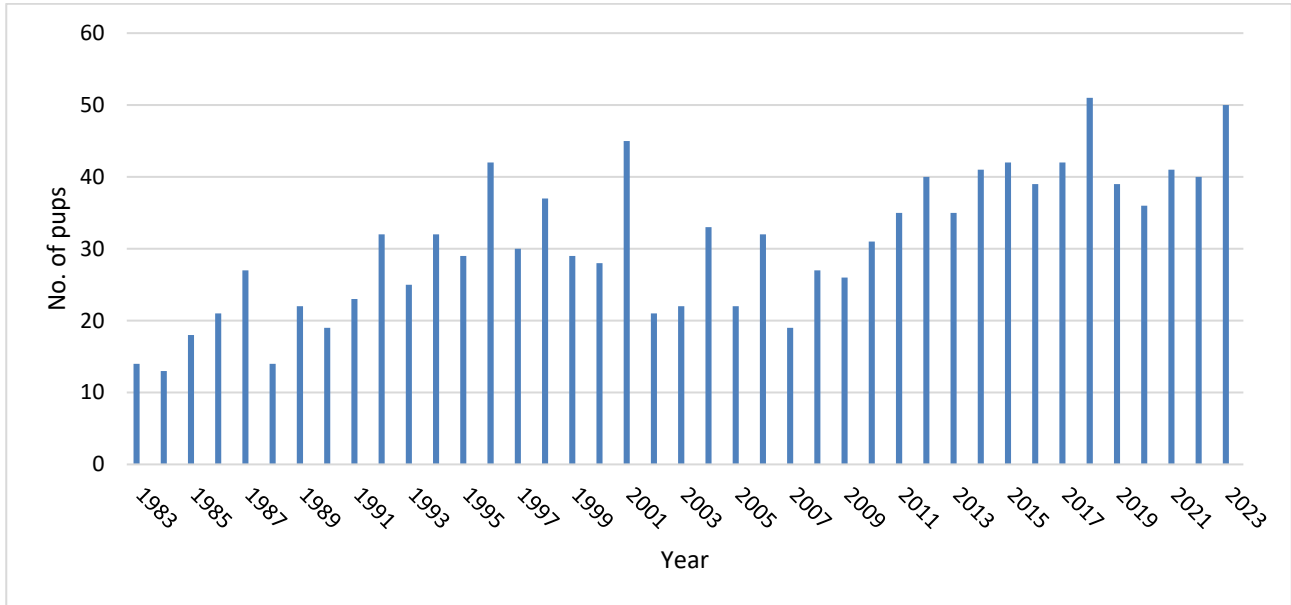


Figure 17 Weekly seal pup births on Matthew's Wick in 2023

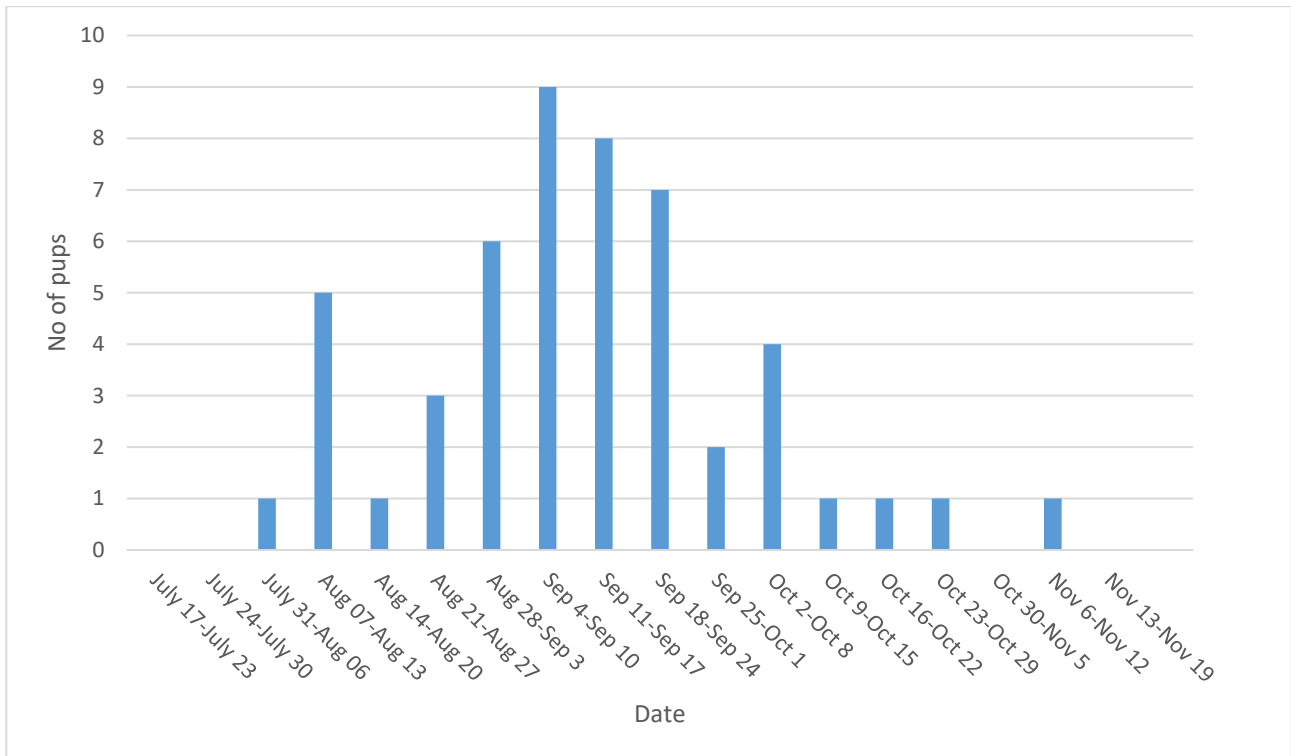


Table 6 Fate of pups on Matthew's Wick in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	3
Survived to beginning of moult	5
Survived to weaning	26
Assumed dead	9
Dead	6
Unknown	1
<b>Total</b>	<b>50</b>

Table 7 Causes of seal pup deaths on Matthew's Wick in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	10
Accident/injured/killed	0
Disappeared ≤ stage 3	2
Diseased	1
Drowned	0
Stillborn	0
Unknown	2
Other	0
<b>Total</b>	<b>15</b>

#### 4.4.6 Castle Bay

The castle Bay pupping site is not accessed, as this would cause too much disturbance, and pups born there do not get marked. Hence monitoring is more challenging than on other beaches and as a result potentially less accurate.

19 pups were born on Castle Bay in 2023. 15 pups are considered successful, four are considered dead, giving a survival rate of 79% which is 17% higher than in the previous year and above the 2023 whole island survival rate (68.8%). In most years the survival rate at Castle Bay is lower than the whole island rate as it is facing directly into the prevailing wind direction and gets fully flooded during storm tides. Büche and Stubbings (2015) speculated that as Castle Bay is the beach with the largest and most permanent haul-out, the presence of other seals could unsettle cows and pups and lead to abandonment of pups, from the site.

Figure 18 Number of sea pups born on Castle Bay 1984-2023

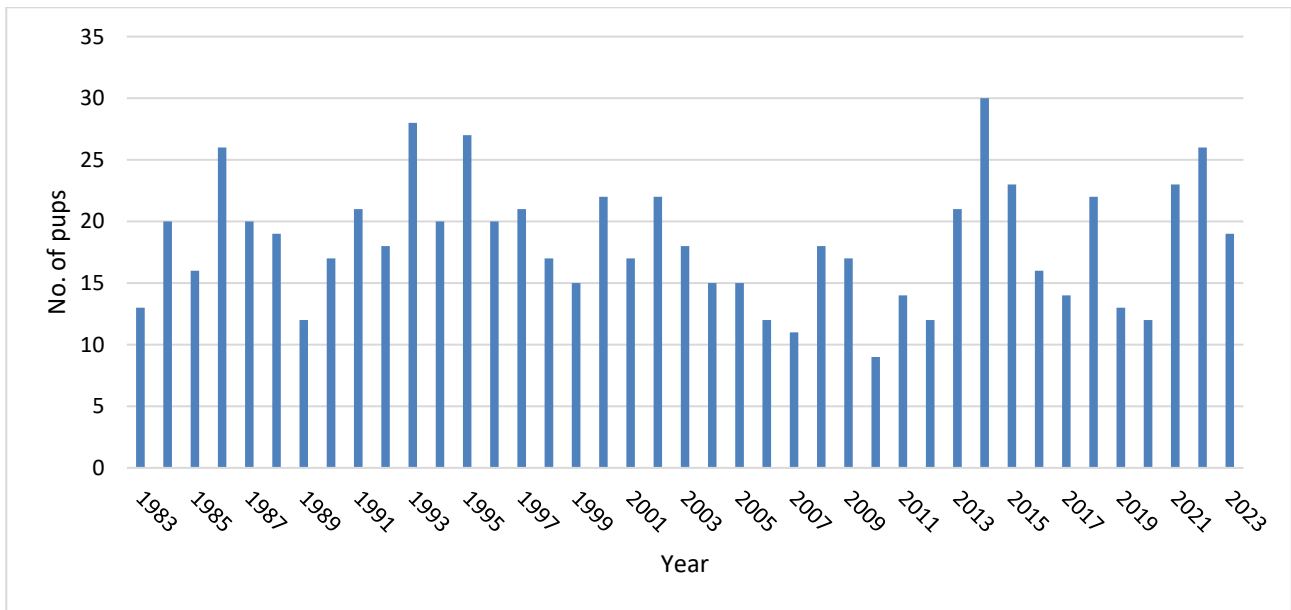


Figure 19 Weekly seal pup births on Castle Bay in 2023

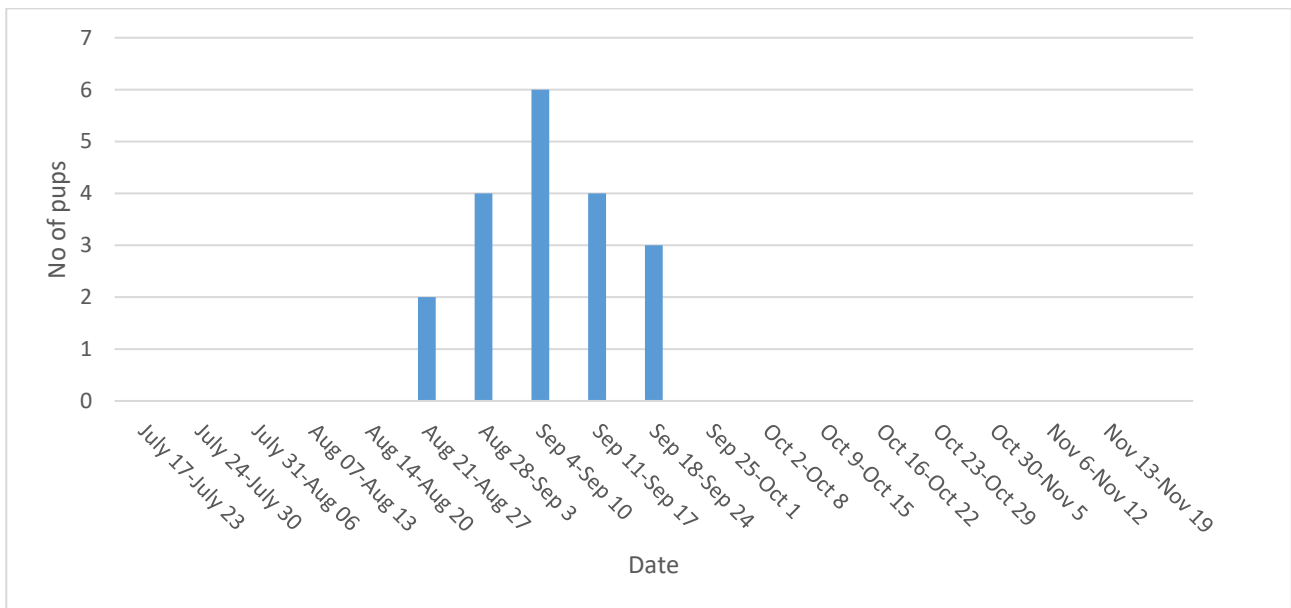


Table 8 Fate of pups on Castle Bay in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	5
Survived to beginning of moult	2
Survived to weaning	8
Assumed dead	1
Dead	3
Unknown	0
<b>Total</b>	<b>19</b>

Table 9 Causes of seal pup deaths on Castle Bay in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	1
Accident/injured/killed	0
Disappeared ≤ stage 3	1
Diseased	0
Drowned	1
Stillborn	0
Unknown	1
Other	0
<b>Total</b>	<b>4</b>

#### 4.4.7 South Castle Beach Cave

South Castle Beach Cave was overlooked as a pupping site prior to 1990, and between 1999-2001 access was severely limited as the unstable nature of the rock above was deemed unsafe for the rope access recommended in the Handbook (Poole, 1996a), and boat access was (and remains) virtually impossible due to the almost constant swell. Following a re-assessment in 2002 it was considered that a scramble route without rope was a reasonable option in dry conditions (Hughes, 2002). However, in 2015 the route was reassessed by Leo Nathan and an abseil route installed, making access easier and safer. The cave is only accessible from land at low tide and because of the long and rocky route from the cave to the water it was decided not to enter the cave when cows were present to avoid excessive disturbance and injury to breeding seals.

Six pups were born in South Castle Beach Cave in 2023. Two pups are considered successful. The fate of four pups is unknown.

Figure 20 Number of seal pups born in South Castle Beach Cave 1984-2023

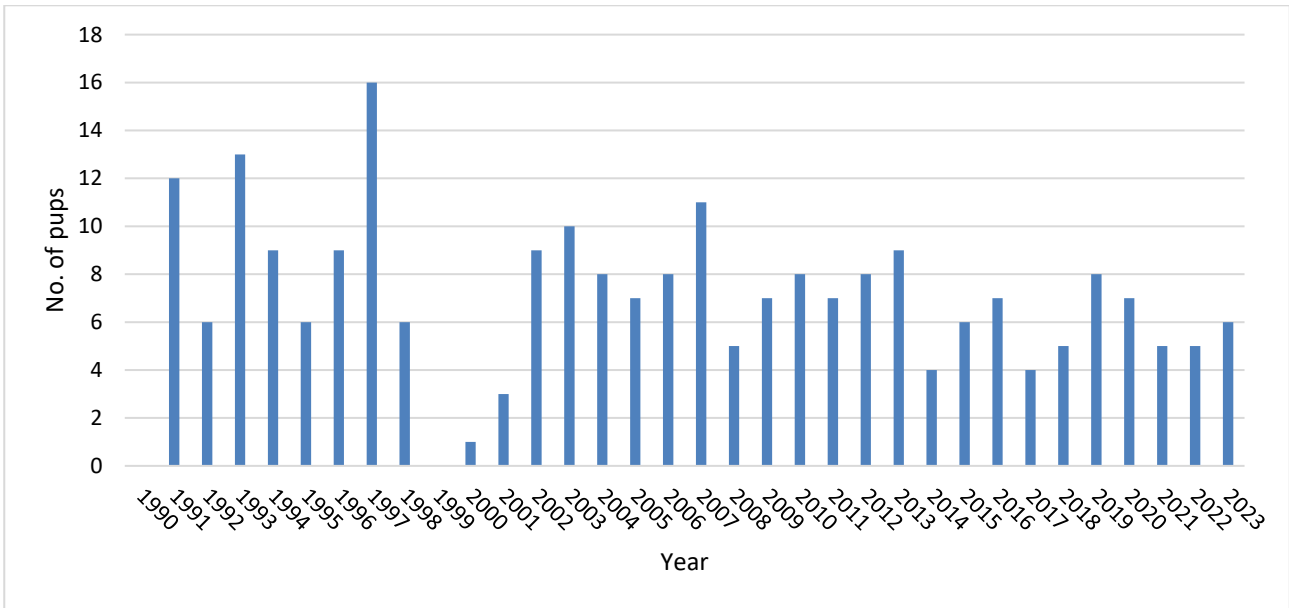
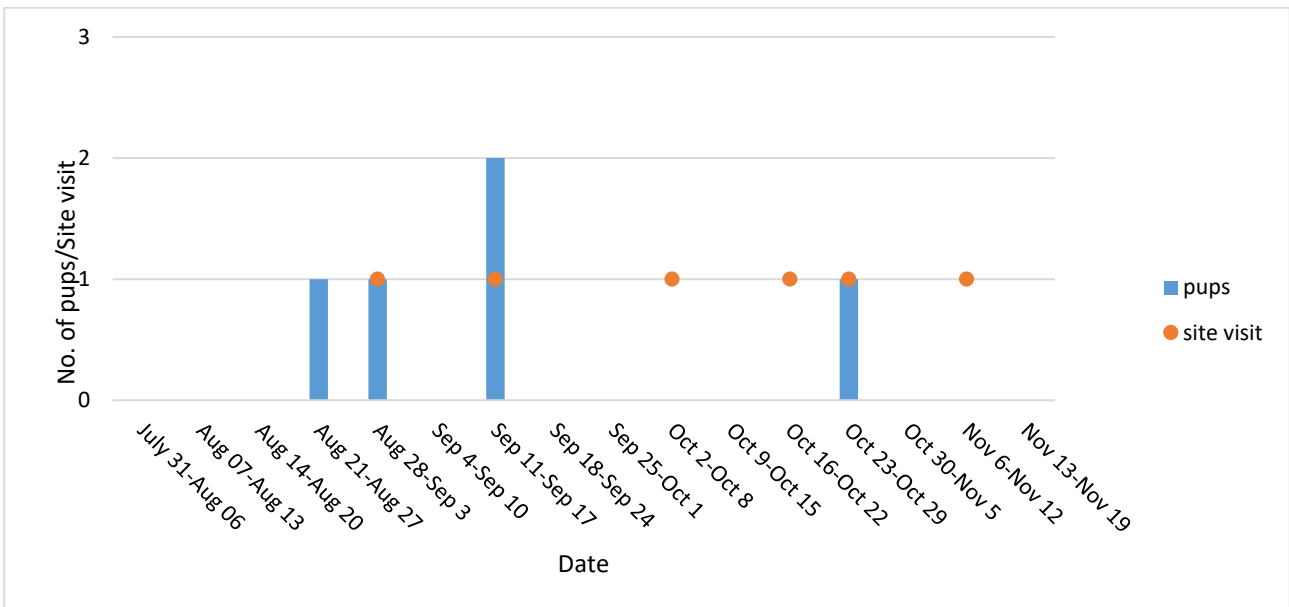


Figure 21 Weekly seal pup births in South Castle Beach Cave in 2023





### 4.4.8 Seal Hole

Eleven pups were born in Seal Hole in 2023. Seven pups are considered successful, four pups are considered dead, giving a survival rate of 64% which is 36% lower than in the previous year.

Figure 22 Number of seal pups born in Seal Hole 1984-2023

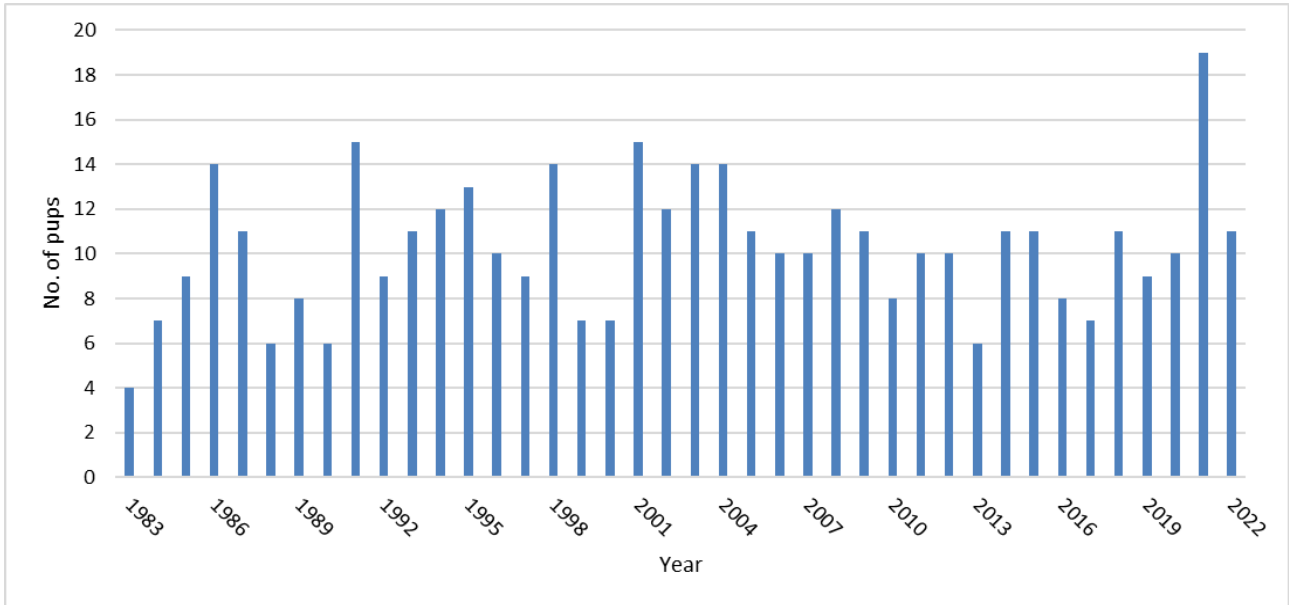


Figure 23 Weekly seal pup births in Seal Hole in 2023

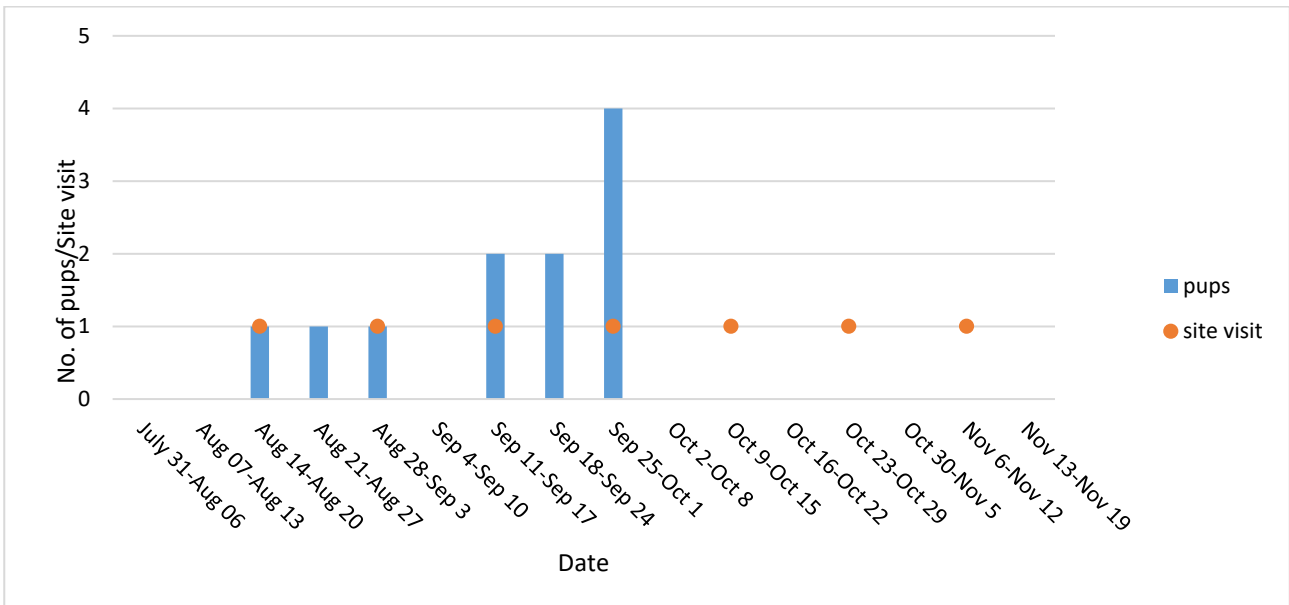


Table 10 Fate of pups in Seal Hole in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	4
Survived to beginning of moult	0
Survived to weaning	3
Assumed dead	3
Dead	1
Unknown	0
<b>Total</b>	<b>11</b>

Table 11 Causes of seal pup deaths in Seal Hole in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	3
Accident/injured/killed	0
Disappeared ≤ stage 3	0
Diseased	1
Drowned	0
Stillborn	0
Unknown	0
Other	0
<b>Total</b>	<b>4</b>

### 4.4.9 The Slabs

Six pups were born on The Slabs in 2023. Two pups are considered successful, four pups are considered dead, giving a survival rate of 33% which is 34% lower than in the previous year.

Figure 24 Number of seal pups born on The Slabs 1984-2023

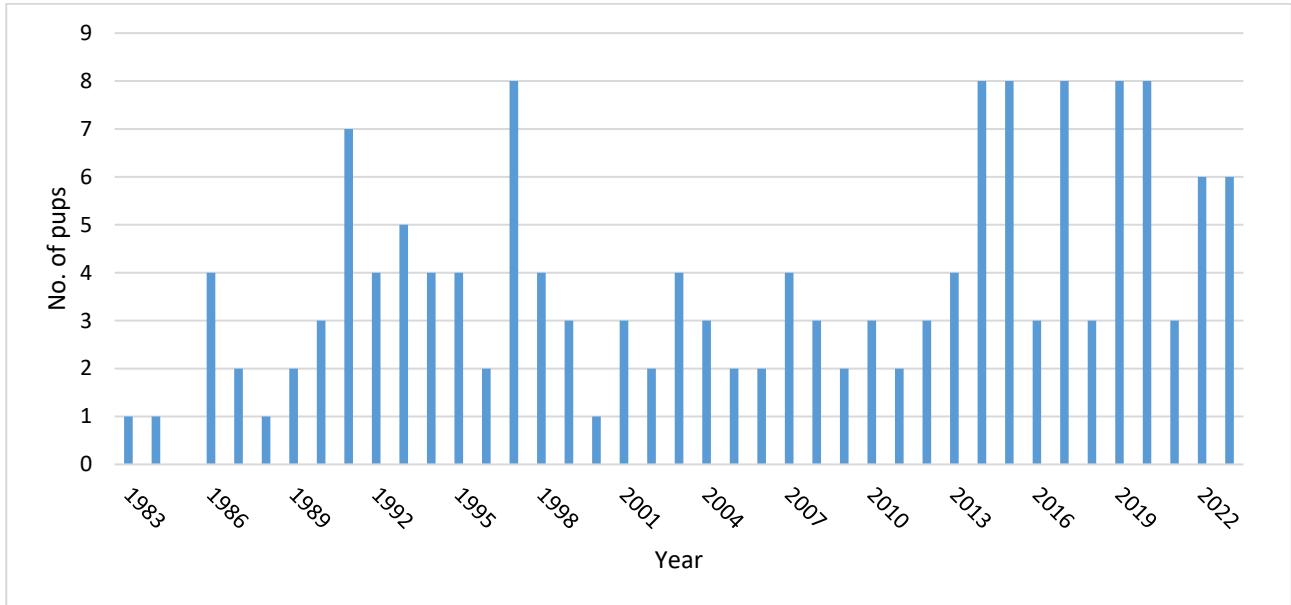


Figure 25 Weekly seal pup births on The Slabs in 2023

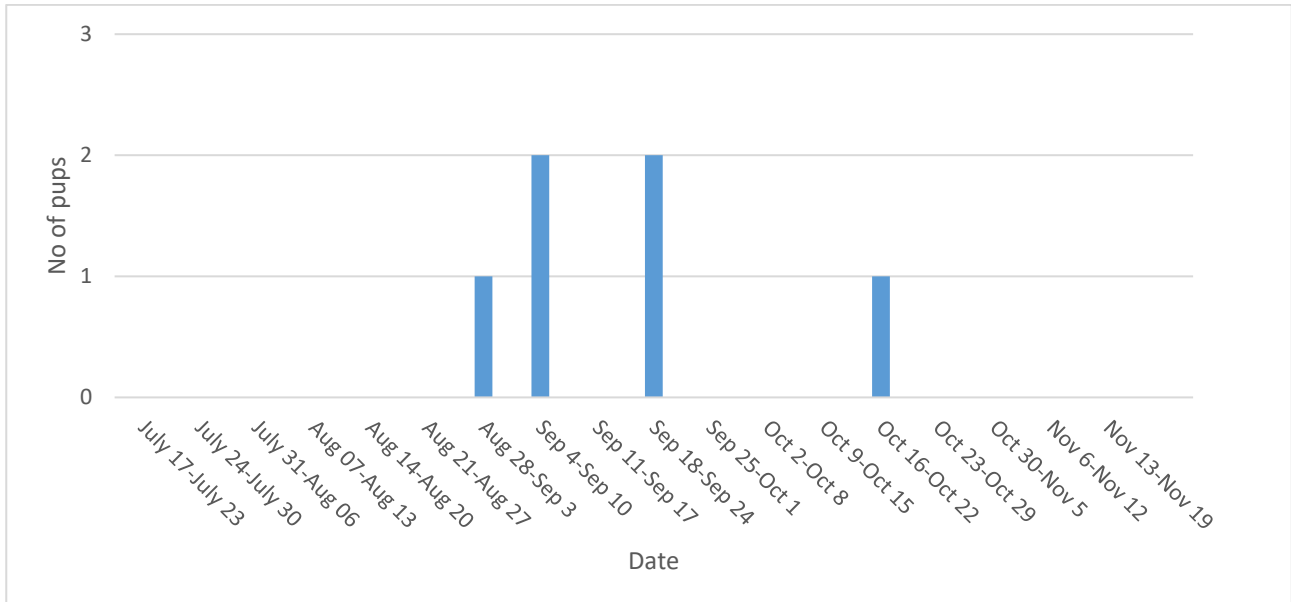


Table 12 Fate of pups on The Slabs in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	0
Survived to beginning of moult	0
Survived to weaning	2
Assumed dead	4
Dead	0
Unknown	0
<b>Total</b>	<b>6</b>

Table 13 Causes of seal pup deaths on The Slabs in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	1
Accident/injured/killed	0
Disappeared ≤ stage 3	3
Diseased	0
Drowned	0
Stillborn	0
Unknown	0
Other	0
<b>Total</b>	<b>4</b>

#### 4.4.10 Driftwood Bay

21 pups were born on Driftwood Bay in 2023. A further 13 were born on South Haven (12) and The Slabs (1) before moving to Driftwood Bay (mostly during the storm on 19/9/23) and weaning on this beach. One pup moved in the other direction, from Driftwood Bay to South Haven. 33 pups are considered successful, nine pups are considered dead, the fate of one pup is unknown, giving a survival rate of 72%, which is 6% higher than the previous year.

Figure 26 Number of seal pups born on Driftwood Bay 1984-2023

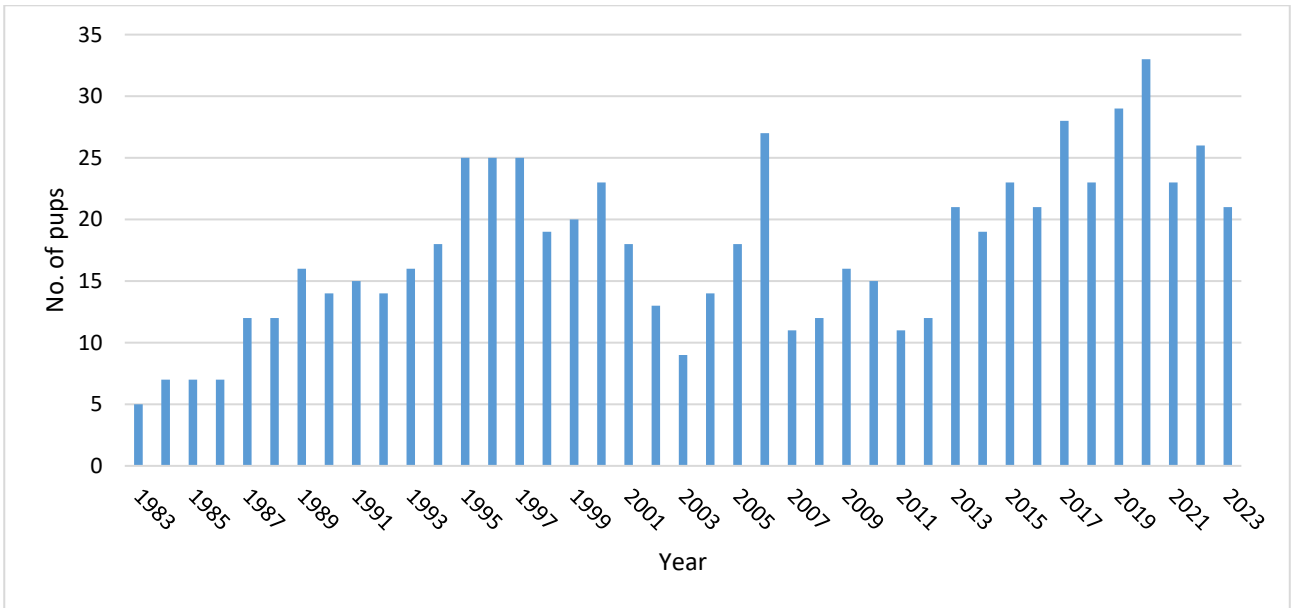


Figure 27 Weekly seal pup births on Driftwood Bay in 2023

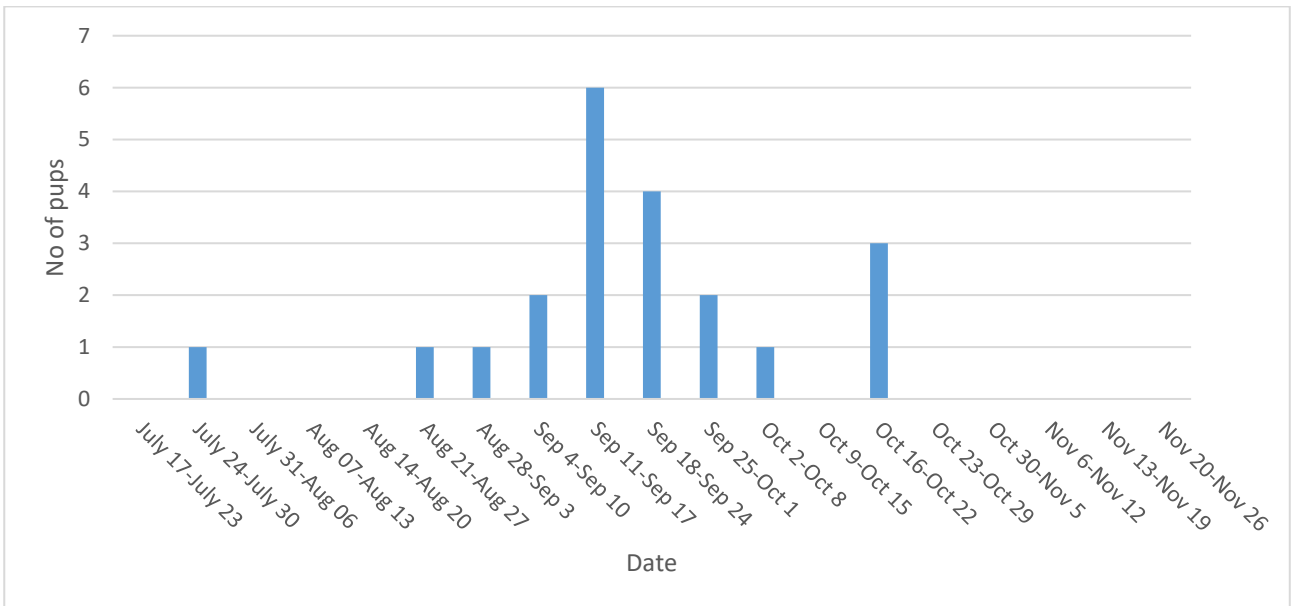


Table 14 Fate of pups on Driftwood Bay in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	
Survived to beginning of moult	1
Survived to weaning	22
Assumed dead	5
Dead	4
Unknown	1
<b>Total</b>	<b>33</b>

Table 15 Causes of seal pup deaths on Driftwood Bay in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	7
Accident/injured/killed	0
Disappeared ≤ stage 3	0
Diseased	1
Drowned	0
Stillborn	0
Unknown	1
Other	0
<b>Total</b>	<b>9</b>

#### 4.4.11 South Haven

This site is made up of South Haven main beach and the two caves between the beach and Driftwood Bay. The caves were only visited when pups were marked on the main beach as accessing the caves inevitably disturbs all seals on the intervening beach. The entrances to the caves can be monitored from across the bay and, moreover, pups tend to move out of the caves within their first week and can be observed from above thereafter. None the less South Haven beach is a challenging site to monitor as not all pups can be viewed every day and some stay in caves for longer than others.

In 2023 46 pups were born on South Haven, two less than in the previous year. Twelve pups moved from South Haven to Driftwood Bay and spent the majority of their life there before being weaned. One pup moved from Driftwood Bay to South Haven and spent the majority of its life there.

The fate of 33 pups is known. The fate of two pups is unknown. 24 are considered successful, 9 are considered dead, giving a survival rate of 73% which is 6% lower than in the previous year.

Figure 28 Number of seal pups born on South Haven 1984-2023

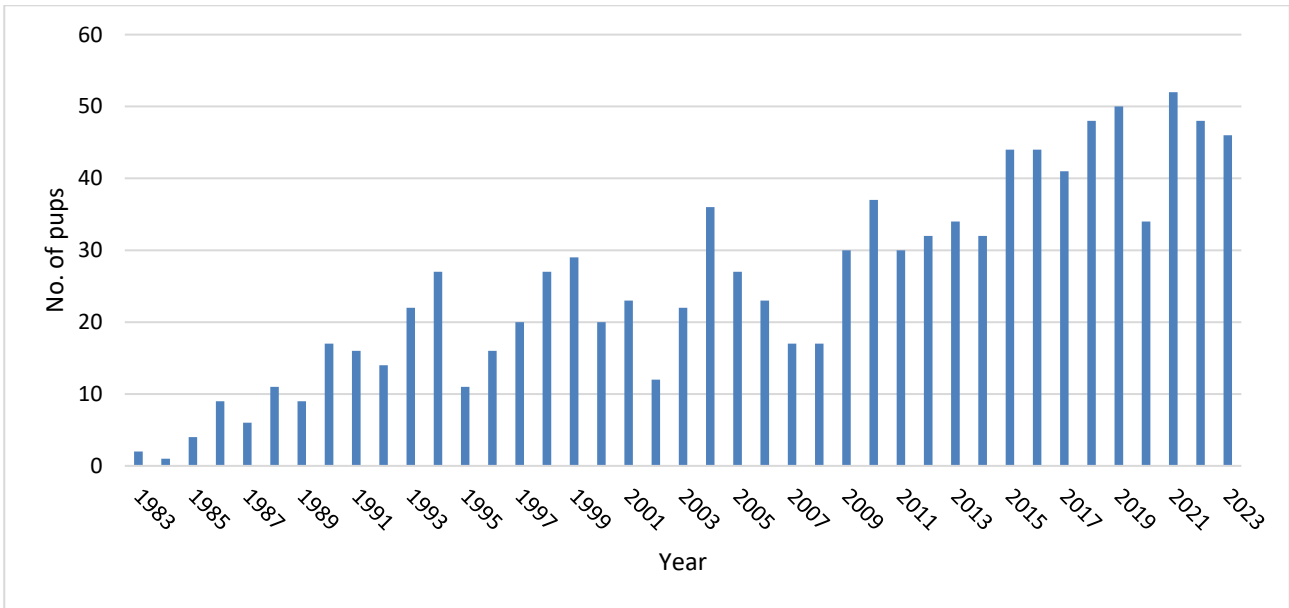


Figure 29 Weekly seal pup births on South Haven in 2023

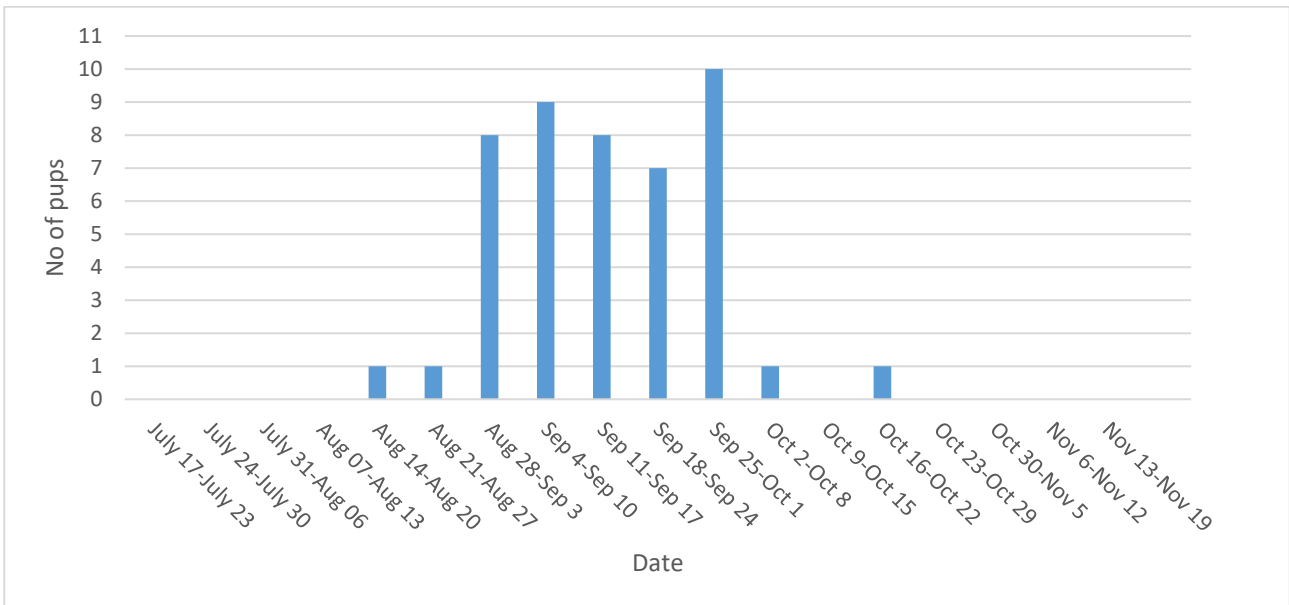


Table 16 Fate of pups on South Haven in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	0
Survived to beginning of moult	6
Survived to weaning	18
Assumed dead	6
Dead	3
Unknown	2
<b>Total</b>	<b>35</b>

Table 17 Causes of seal pup deaths on South Haven in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	5
Accident/injured/killed	0
Disappeared ≤ stage 3	1
Diseased	0
Drowned	0
Stillborn	1
Unknown	2
Other	0
<b>Total</b>	<b>9</b>

#### 4.4.12 South Stream Cave

South Stream Cave and Boulders (hereafter South Stream) is a hard site to monitor well. Access to the cave is only possible at low tide and is very treacherous in wet weather. Pups are usually hidden in the cave or behind boulders and the only sign that they are present is when cows are seen swimming offshore and looking towards the cave, or coming ashore. Before 2014 it was customary to check the site daily from The Neck and then follow up any activity with a visit to the cave. However, in August 2014 it was deemed that pups could easily be missed when inspecting from such a distance. South Stream has since been monitored approximately every two to four days from the bottom of the South Stream research path, when weather allows, during the main pupping period. Five pups were born at South Stream in 2023, of which four are considered successful. The fate of one pup is unknown.



Figure 30 Number of seal pups born in South Stream Cave 1984-2023

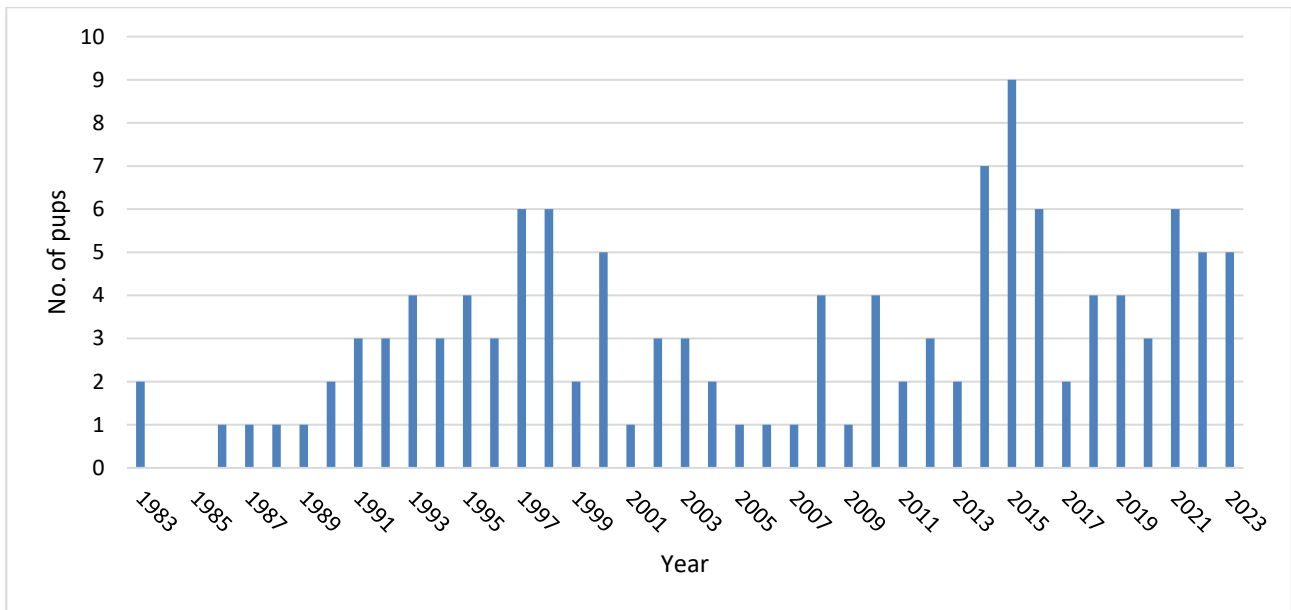


Figure 31 Weekly seal pup births in South Stream Cave in 2023

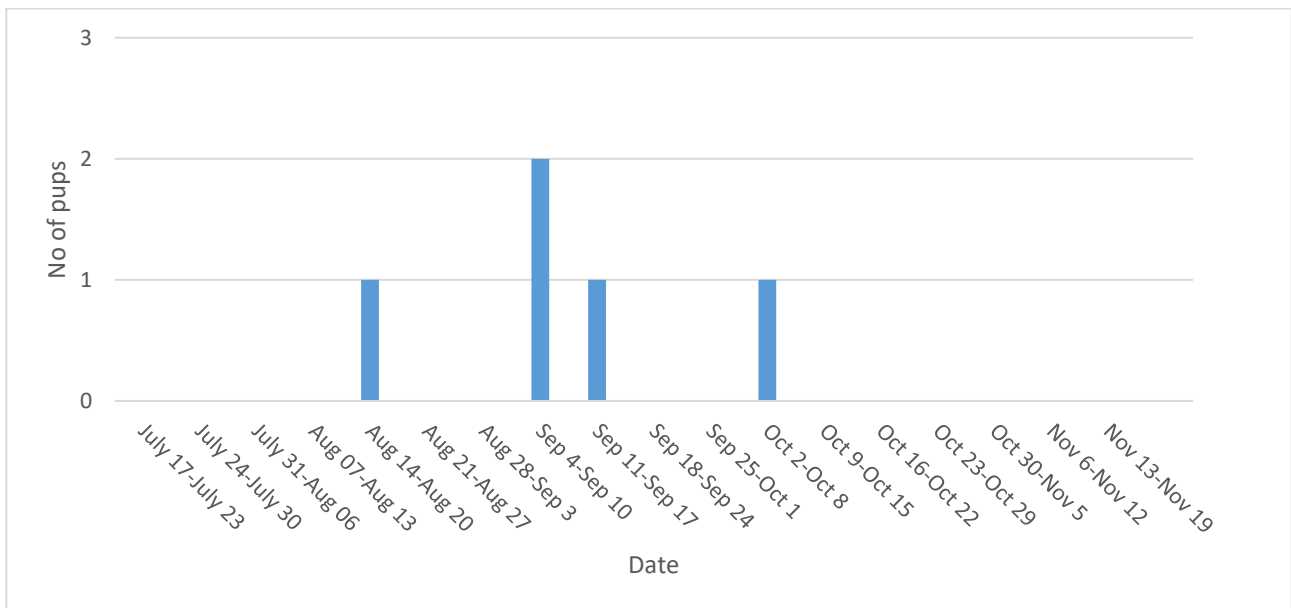


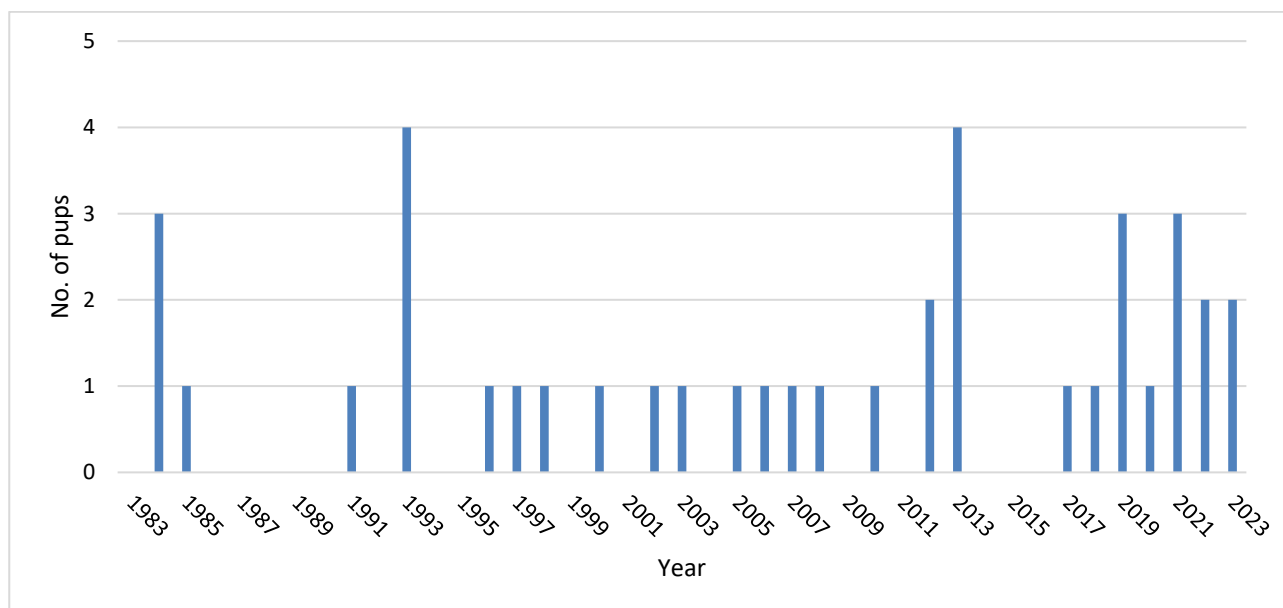
Table 18 Fate of pups in South Stream Cave in 2023

Fate	No. of pups
Assumed survived	2
Survived to beginning of moult	2
Survived to weaning	0
Assumed dead	0
Dead	0
Unknown	1
<b>Total</b>	<b>5</b>

### 4.4.13 High Cliff Boulders

High Cliff Boulders is a site which is difficult to monitor as the boulders can shield the pups from view. The only way to check the beach fully is to scramble to the bottom and search within the rocks. High Cliff Boulders was monitored from Welsh Way approximately every two to four days, when the weather allowed, during the main pupping period. Two pups were found, born in week 36 and 38, both are considered successful.

Figure 32 Number of seal pups born at High Cliff Boulders 1984-2023



### 4.4.14 The Wick

22 pups were born at The Wick in 2023. 17 pups are considered successful, three are considered dead and the fate of two pups is unknown resulting in a survival rate of 85% which is 2% higher than the previous year.

Figure 33 Number of seal pups born on The Wick 1984-2023

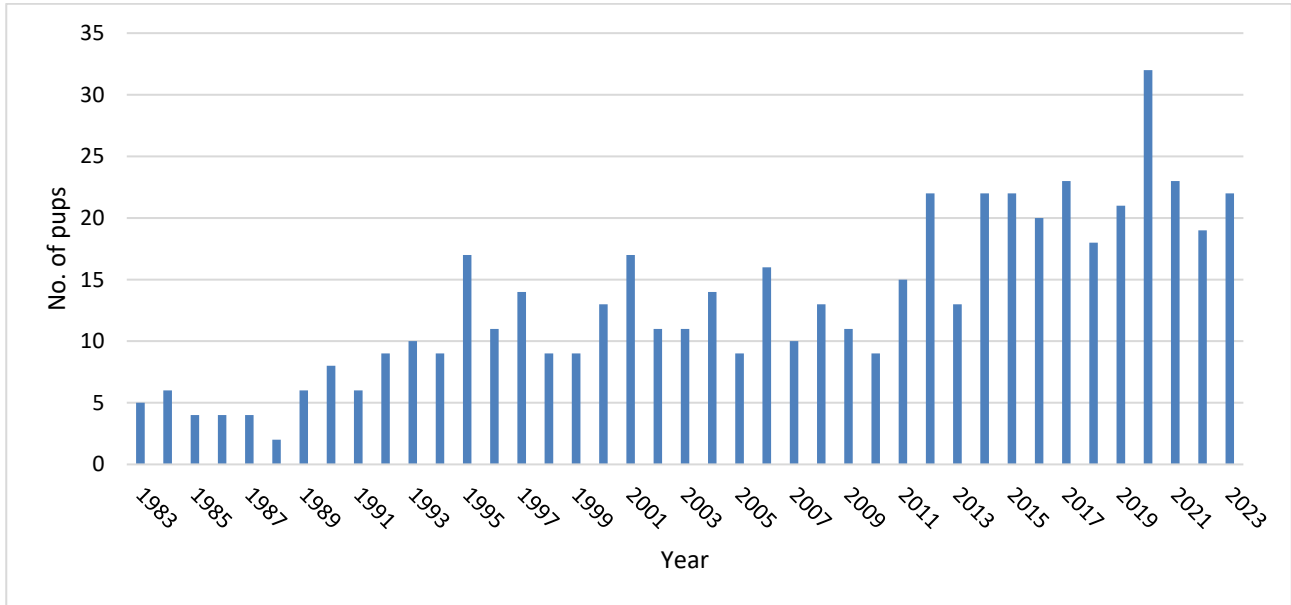


Figure 34 Weekly seal pup births on The Wick in 2023

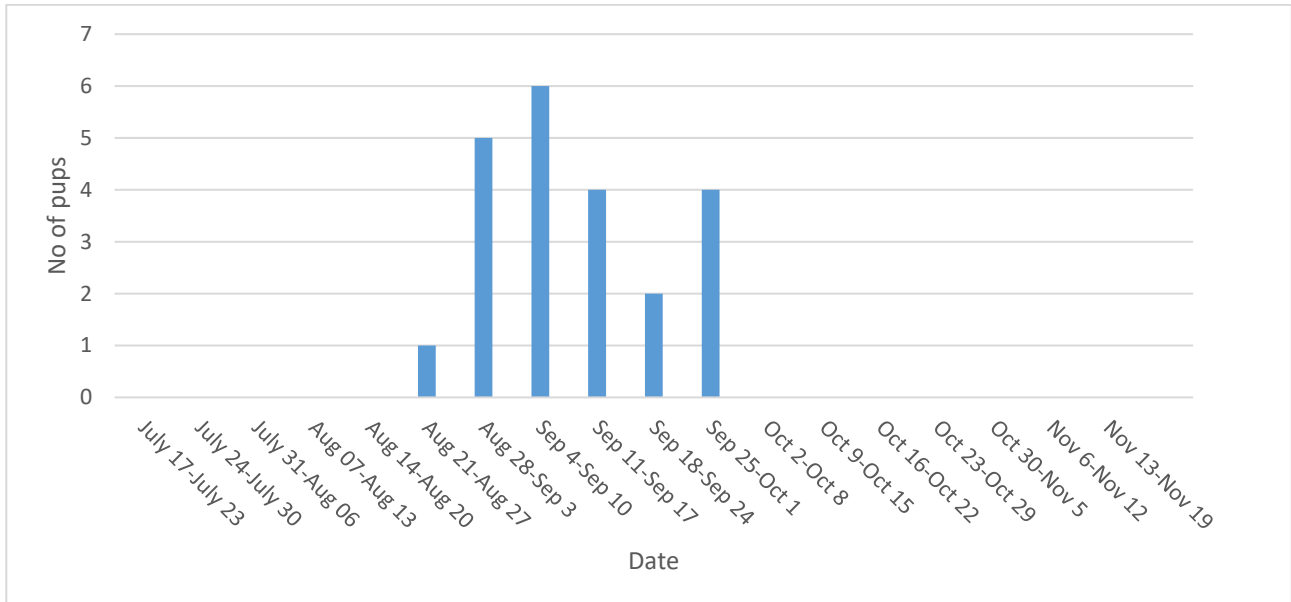


Table 19 Fate of pups on The Wick in 2023

<b>Fate</b>	<b>No. of pups</b>
Assumed survived	3
Survived to beginning of moult	5
Survived to weaning	9
Assumed dead	3
Dead	0
Unknown	2
<b>Total</b>	<b>22</b>

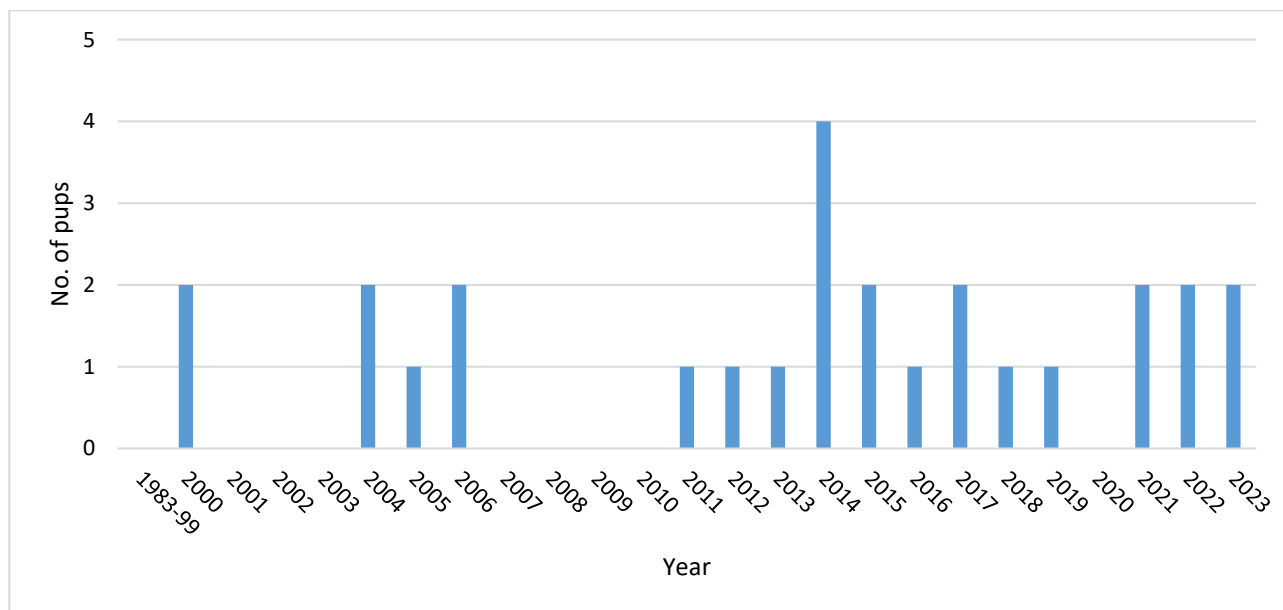
Table 20 Causes of seal pup deaths on The Wick in 2023

<b>Cause of death</b>	<b>No. of pups</b>
Abandoned/separated/starved	2
Accident/injured/killed	0
Disappeared ≤ stage 3	1
Diseased	0
Drowned	0
Stillborn	0
Unknown	0
Other	0
<b>Total</b>	<b>3</b>

#### **4.4.15 The Basin**

Two pups were born at the Basin in 2023 in weeks 33 and 35. Both pups are considered successful.

Figure 35 Number of seal pups born at The Basin 1984-2023



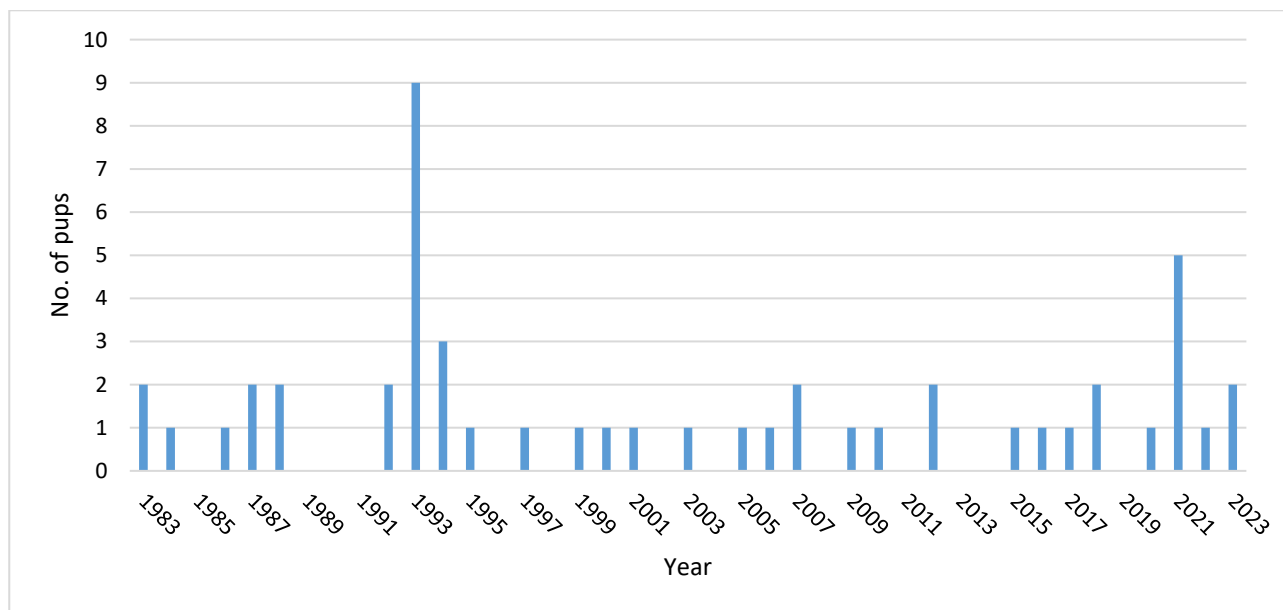
#### 4.4.16 Pigstone Bay

Pigstone Bay is a difficult site to monitor as there is a sea cave, which is impossible to access from land. The cave was entered by boat in 1985 and found to end in a shingle beach which held about a dozen hauled out seals and it was considered that the cave could be a pupping site (Alexander & Alexander, 1987). Any pups that are found at Pigstone Bay are rarely seen again and are usually assumed to have died, although it is equally possible that they could swim back into the cave or to some other spot around the island.

The Pigstone Bay site comprises not only a cave but also a beach where it has been thought that pups were occasionally born or washed onto when displaced from the cave. Up until 2016 Pigstone Bay was monitored solely from the cliff top but, as only half the beach is visible from above, a route down to the beach was sought and is now used on occasions. It is possible to walk down to the beach by following the edge of the bay and making one's way along a grassy slope to the start of the rocky slabs.

In 2023 two pups were born at Pigstone Bay in week 35 and 37. One pup died (reason unknown) and the other was assumed dead.

Figure 36 Number of seal pups born at Pigstone Bay 1984-2023



#### 4.4.17 Garland Stone

No pups were born at the Garland Stone in 2023. Single pups were born at this site in 2015, 2007 and in 2001.

#### 4.4.18 Mew Stone

No pups were born at the Mew Stone in 2023. This site was possibly used once in 2015 when a freshly dead pup was found floating at the base of the Mew Stone.

#### 4.4.19 Robert’s Wick

No pups were born at Robert’s Wick in 2023. Robert’s Wick was possibly used once as a pupping site in 2001 and one pup was born on rocks behind Thorn Rock, west of Robert’s Wick in 2021.

#### 4.4.20 Tom’s House

No pups were observed at Tom’s House in 2023. The site has only been used once, in 1997, when a single pup was born.

#### 4.4.21 Rye Rocks

No pups were observed at Rye Rocks in 2023. The last time the site was used was in 2018.

## **4.5 Movements**

22 pups were observed moving between adjacent beaches, for example from North Haven main beach to North Haven slip beach or South Haven beach to Drifwood Bay. Most of these pups, moved during the storm on 19/9/23, which also resulted in some pups getting separated from their parent. Although most females will follow and find their pup again, not all pups were attended after they had moved to another site, resulting in starvation of the pup.

The longest movement was by pup 176, which was marked purple and blue. On 4/10/23 it disappeared from North Haven main beach aged 14 days and turned up on Ramsey Island, 14 kilometers to the north, the next day.

According to Boyle (2012) movements of pups between beaches usually occur during periods of strong winds and spring tides and are presumably a result of pups running out of dry land on their natal beach and then swimming to the nearest available dry site. This is certainly true; however, in addition to this, pups seem to move frequently between Seal Hole, Driftwood Bay and South Haven and between North Haven main beach and North Haven Slip, irrespective of wind and tides.

## **4.6 Wanderers**

Nine pups were recorded as wanderers. Wanderers are pups which turn up unaccompanied by a cow, either moulting or just before the start of moult, and where their natal beach is unknown. Large wandering pups usually finish moult once they have established themselves on a beach, whereas the smaller ones (presumably abandoned or separated) usually disappear within days.

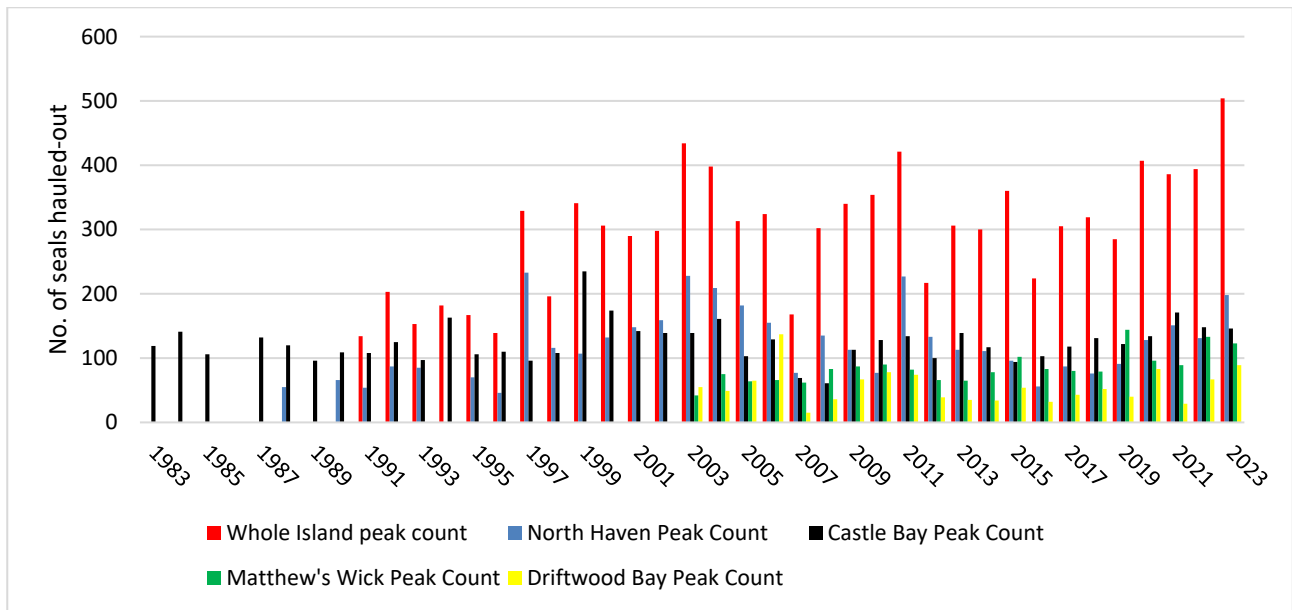
The appearance of wandering (unknown) pups is most likely linked with storm and spring tide events.

## **4.7 Haul-outs**

In 2023 the maximum haul-out (on the main haul-out sites of North Haven, Driftwood Bay, Castle Bay and Matthew's Wick) of 504 seals was observed on 7/11/23. The average maximum haul-out for the previous ten years (2012-2022) is 329, therefore the peak number of seals using Skomer to haul-out in 2023 was well above the ten-year average and a new record since monitoring began. The previous record count of 434 seals dates from the year 2003.

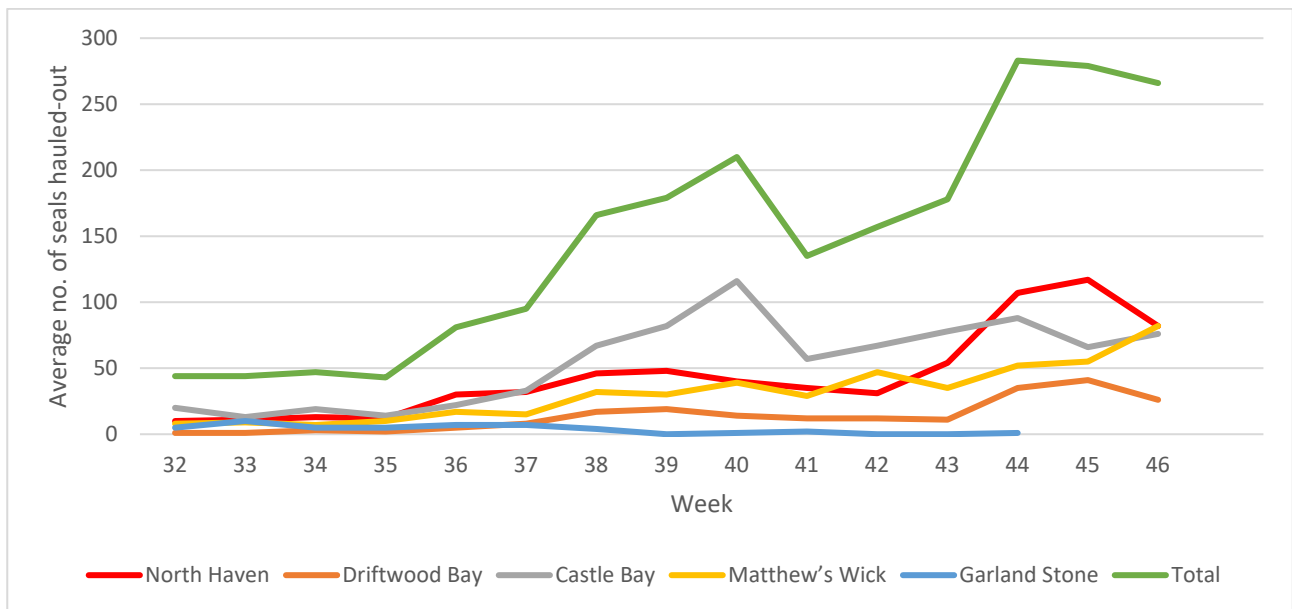
North Haven had its peak haul-out count of 198 seals on 14/11/23. Driftwood Bay had 89 seals on 7/11/23, Matthews Wick had 123 seals on 3/11/23 and Castle Bay had 146 seals on 7/10/23.

Figure 37 Peak haul-out counts on Skomer Island 1983-2023



As in previous years, attempts were made to cover all beaches suitable for hauling-out simultaneously during low tide in order to establish how many seals were using Skomer on a daily basis.

Figure 38 Average number of seals hauled-out on Skomer per week in 2023





When looking at the average number of seals hauled-out per site in 2023, Castle Bay was again the most popular haul-out site with an average daily haul-out of 54 seals. Also, as with the previous year, the second most popular site was North Haven (including Rye Rocks and North Haven Slip) with an average daily haul-out of 31 individuals; and the third most important, Matthew’s Wick with a daily average of 30 seals.

The number of seals hauled-out per site varies significantly from day to day and is most likely determined by weather conditions. How weather and sea conditions impact the haul-outs was especially visible when looking at the numbers at the Garland Stone and Rye Rocks (which are very exposed). When strong winds and swell impacted either site haul outs would essentially disappear. Conversely, it has been observed that on some calm days the number of hauled-out seals drops significantly, one possible explanation for this is that the animals use the calm spells to go foraging.

Figure 39 North Haven haul-out in 2023

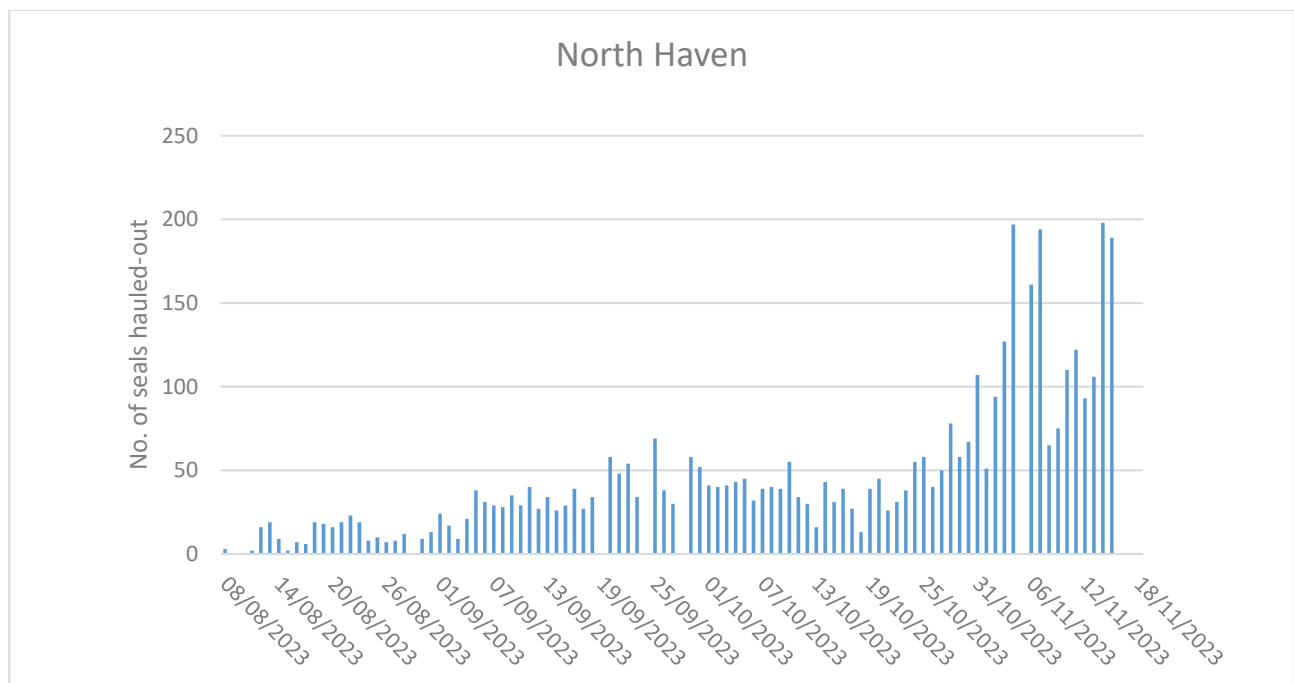


Figure 40 Castle Bay haul-out in 2023

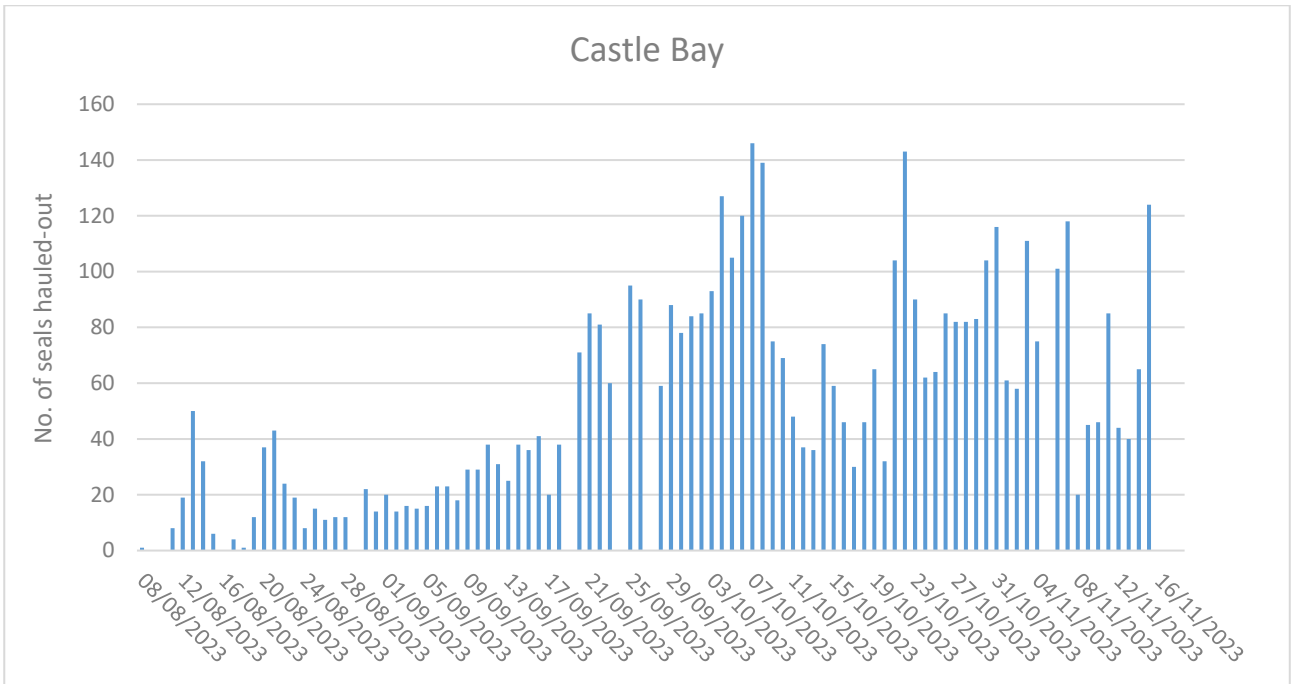


Figure 41 Driftwood Bay haul-out in 2023

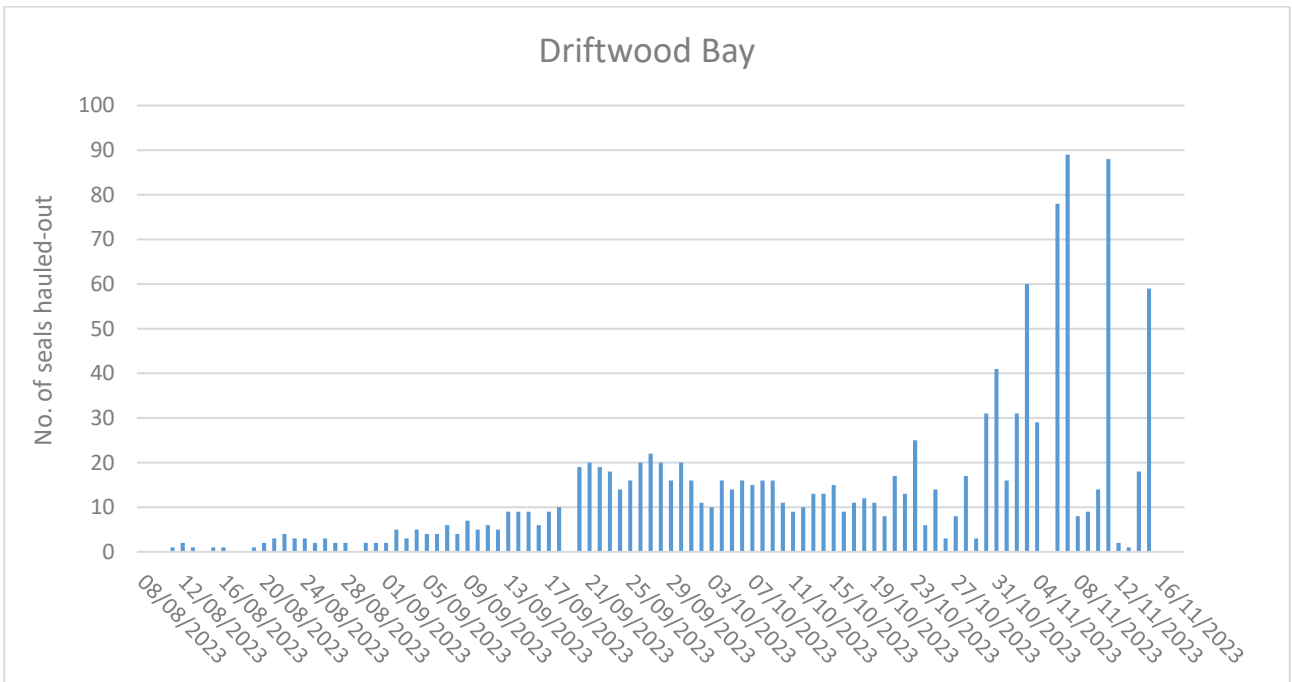


Figure 42 Matthew's Wick haul-out in 2023

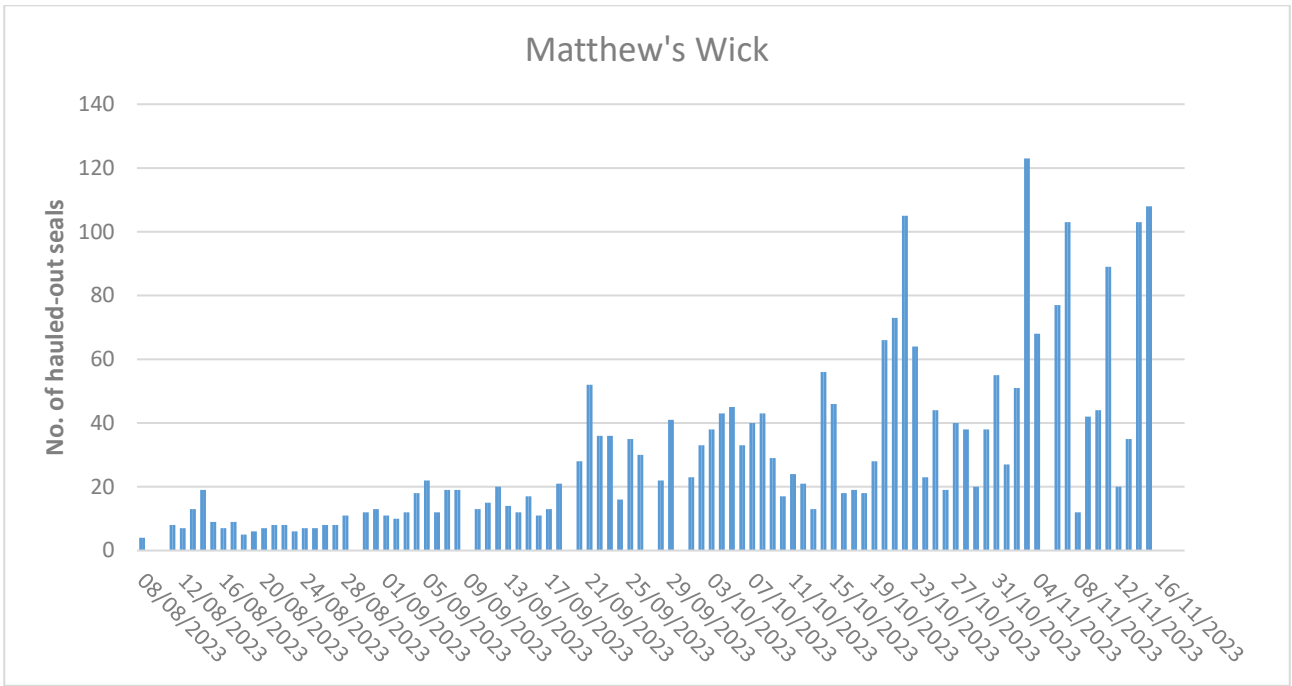


Figure 43 Garland Stone haul-out in 2023

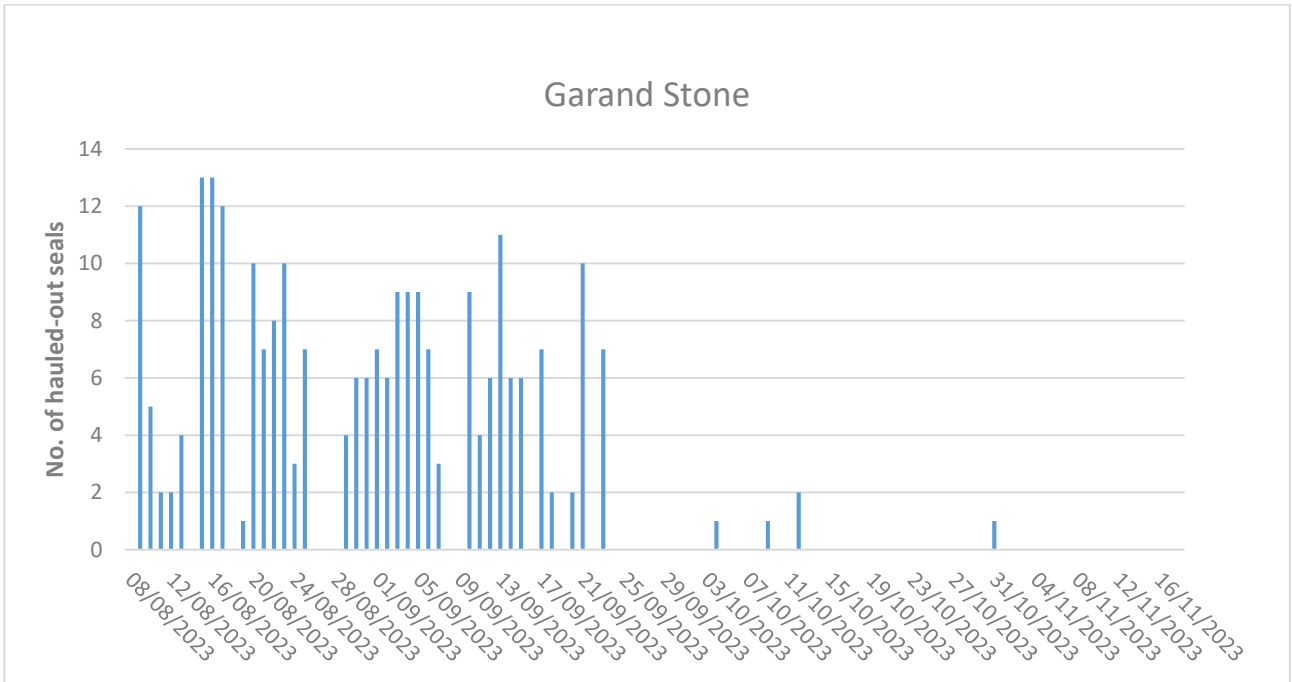
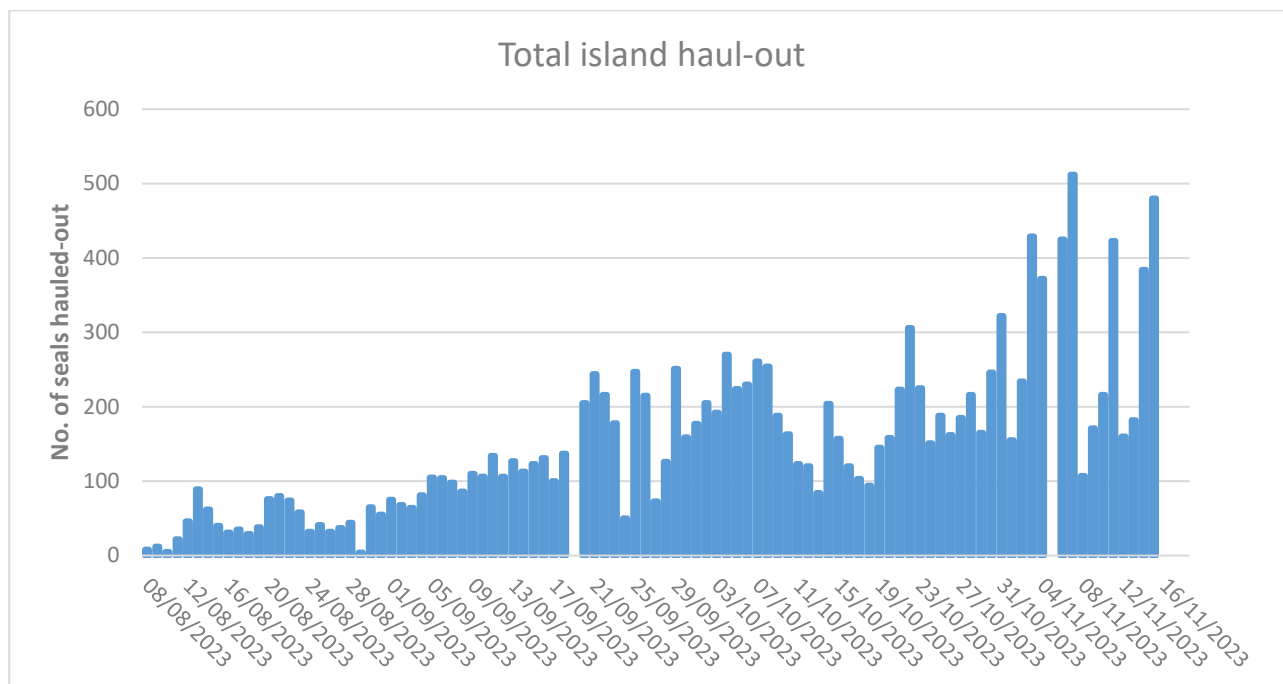


Figure 44 Total island haul-out counts in 2023



## 4.8 Pollution

### 4.8.1 Netting

Monofilament line and netting were the most obvious pollutants affecting seals in 2023. 29 individual seals were photographed with obvious signs of being entangled in nets at some time in their lives, most commonly a deep scar around their necks, often with netting still embedded. In the previous two years, the number of seals photographed with scars from netting was higher (2021:40; 2022:41). This apparent reduction of entangled seals is probably a by-product of the new methodology applied this year.

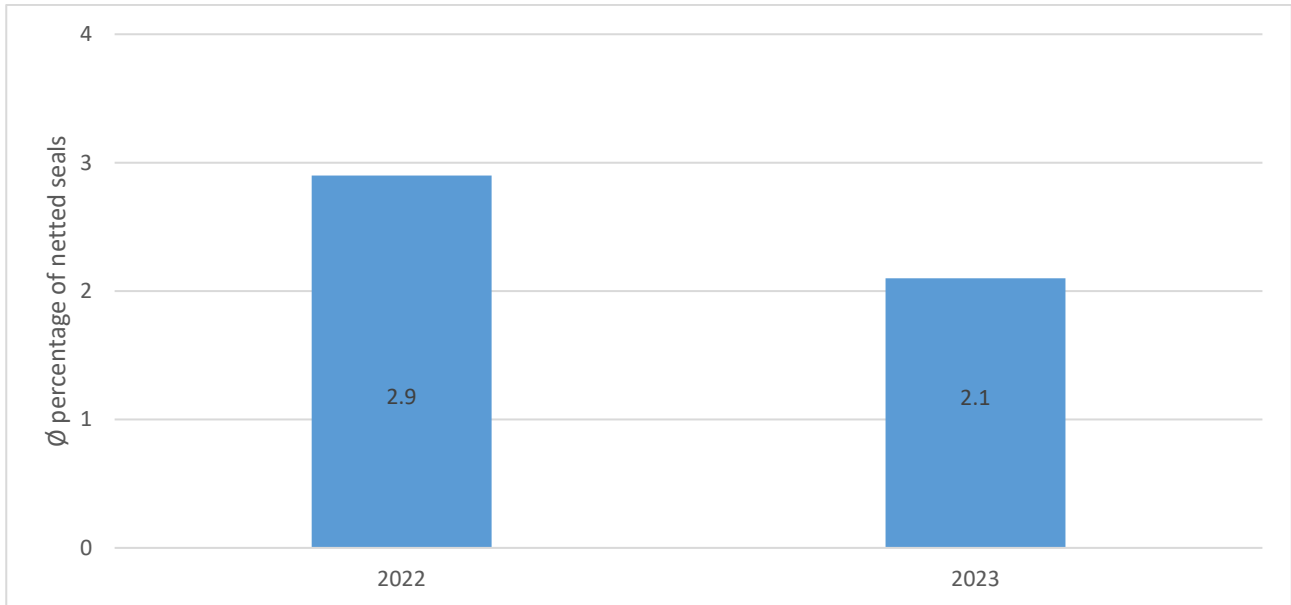
It is believed that the accuracy of monitoring and identifying netted seals depends heavily on observer effort, available time and experience. Photographing netted seals also relies very much on good weather so will vary from year to year. Additionally, some seals might get counted twice as it is not always possible to photograph both sides of a seal during one session. If the same seal gets photographed the next day from the other side it might not be possible to match the animal, hence the seal will be counted again.

To increase accuracy and comparability a more systematic approach to monitoring netted seals was trialled in 2022 and applied in 2023. When time allowed, all seals hauled-out on the main haul-out sites, which were fully visible, were counted and a second count done, for netted animals only. This way a percentage of netted seals was calculated which does not rely on identifying individual animals.

However, photographing seals with scars from entanglement and comparing/adding them to the seal identification catalogue was continued in 2023.

Between August and November 2023, the percentage of entangled seals fluctuated between a minimum of 0.4% to a maximum of 4.1%. The average for the whole period was 2.1%.

Figure 45 Average percentage of netted seals 2022-2023



In 2023, three known 'netted' bulls, 20 'netted' cows and one animal with unknown sex were known from previous years, the oldest being BK-054 which was first seen in 2009.

#### 4.8.2 Oil/Tar

Skomer's beaches remain relatively clean, no pollution by oil or tar was observed in 2023.

### 4.8.3 Plastic

A beach clean was conducted on South Haven beach by The Wildlife Trust's Skomer Island staff and volunteers on 7/8/23 supported by NRW's Skomer MCZ team who hauled the rubbish by boat back to Martins Haven. Additionally, a large net was removed from North Haven beach.

Figure 46 Beach clean on South Haven



Photo: Ceris Astins

Figure 47 Beach clean on North Haven



Photo: MCZ staff

The beach clean was a complete success and a large amount of litter was removed including over 200 plastic bottles, buoys, large plastic containers, fishing line, and netting.



## 4.9 Disturbance

Concerns have been raised that, due to the earlier pupping season, disturbance to breeding seals will increase. Seals breeding during August and early September are more likely to be disturbed by boaters as there is more boat traffic during these months. Once the weather is too rough for boating the disturbance is greatly reduced (except from lobster potters). There is also an increase in boat traffic in South Haven to watch seals which inevitably means boats enter the agreed no access zone.

It has been noticed that some users of the sea around Skomer are not aware of the agreed no access zones. When boats enter these zones and field workers are nearby, attempts will be made to communicate these zones, and the reasoning behind them, to boat users.

Overall, disturbance to seals on Skomer is limited (comparing it to sites like Horsey in Norfolk), not taking into consideration any incidents unseen by island staff. Every year there are one or two incidents where kayakers or dinghies enter Mathew's Wick or Castle Bay. This causes a lot of disturbance as animals are essentially 'trapped', and this, again, is only the incidents that are seen by staff. Anchoring boats can be a problem if they lay anchor too close and too noisily to pupping beaches but are not such a problem if they don't launch paddle boards or dinghies, shout or have loud music playing. Divers and snorkelers could be less disruptive if they made sure to keep the noise down. Another source of disturbance are boats, often lobster potters and dive boats, being too close, too fast or too noisy and disturbing hauled-out animals on North Haven beach and Rye Rocks. This could result in injury when the seals stampede off the rocks and prevents seals from leading normal haul out behaviour.

In 2023 14 incidents of disturbance were recorded which is a 50% increase compared to 2022. Disturbance is assessed using 4 levels of severity, level 1 and 2 are minor and level 3 and 4 major. Of the 14 incidents recorded, 7 were level 1 and 7 were level 2, no major incidents were observed. All incidents and other boats observed within the voluntary no access zone are detailed in [Appendix 3](#).

Table 21 Number of disturbance incidents to seals 2020-2023

<b>Activity</b>	<b>2023</b>	<b>2022</b>	<b>2021</b>	<b>2020</b>
Lobster Potter	5	1	0	2
Kayak	4	0	2	0
Motorboat/RIB/diver boat	3	2	2	3
Inflatable	1	2	0	0
Microlite/helicopter/airplane	1	1	1	0
Yacht	0	1	0	0
Snorkelers/diver	0	0	1	0
<b>Total</b>	<b>14</b>	<b>7</b>	<b>6</b>	<b>5</b>

One potentially very disruptive event was narrowly avoided on 10/9/23. The seal worker was conducting the seal monitoring when five kayakers came very close to the mouth of Matthew’s Wick and were heard saying that they should go into the bay to see the seals. They were told not to enter, which they obeyed, but unfortunately as they were passing Castle Bay, they disturbed the seals there.

Another disturbance to seals, which could have been easily avoided, was observed on 8/9/23 when an inflatable (launched by a yacht) retrieved a lobster pot which had been placed adjacent to Rye Rocks.



## 4.10 Behaviour

In 2023, as in most years, allo-suckling (females nursing others' young) was observed. Arso Civil *et al.* states that this is widespread in pinnipeds, particularly among true seals. Given the high costs of lactation in pinnipeds, allo-suckling is a puzzling behaviour. Females were observed fighting over pups and suckling not only their own pups but others at the same time.

## 4.11 Disease

In 2023, as in previous years, the usual amount of small and ill-looking weaners was observed, it was especially evident around the middle and towards the end of the pupping season. As the survival rate of weaners born on Skomer is unknown, no assumption to the extent of mortality in weaners can be made. Observations suggest that a large number of young seals die within weeks of being weaned.

Some eye infections were noted in 2023. It seems to mostly affect pups on Matthew's Wick and, to some extent, at the Wick. A possible explanation for this is the fact that Matthew's Wick only gets flooded during spring tides and rotting seaweed, seal excrement, dead pups etc. accumulate on the beach, possibly spreading diseases. This is similar at the Wick but not to quite the same extent as at Matthew's Wick, only a small part of the beach does not get submerged at the rate other beaches do. Matthew's Wick, being a busy pupping and haul-out site, could also lead to a higher rate of disease transmission as seals lie closely bunched up on the shore.

Highly Pathogenic Avian Influenza (HPAI) H5N1 was a great concern in 2023. Avian Influenza Viruses (AIVs) have long been recognised in Europe, where there is longstanding annual surveillance for poultry and wild bird infections. Whilst there is no routine surveillance for diseases, including AIV, specifically in marine mammals in the UK, sporadic findings of AIV jumping in to seals has been reported (UK Health Security Agency, 2022). Furthermore, in July 2022 seal strandings were recorded along the coasts of Maine, USA and samples from both Harbour and Grey Seals tested positive for HPAI (NOOA, 2022).

On 25/10/23 the Argentina government veterinary service confirmed HPAI H5N1 in elephant seal pups at sites of mass mortalities. The loss of new-borns was estimated to be near total, and the fate of reproductive females is unknown because they abandoned the beaches prematurely (Uhart M. "HPAI H5N1 in elephant seal pups." received by Bueche B. 01/11/23).

Although one dead adult seal was found on North Haven slip in September and one well grown pup died unexpectedly on Mathew's Wick there was no indication of an HPAI outbreak among the seals pupping or hauling-out on Skomer in 2023.

## 4.12 Identification of individual seals

For the 18th consecutive year photographic monitoring of adult seals was conducted in 2023. The old method of making sketches is now completely replaced with photographs. In 2007 David Boyle developed a catalogue of seal ID photos which has been updated annually and now comprises over 850 individual seals and ca. 3000 photos. Identifying seals by matching pictures with the existing catalogue became more and more laborious and a new

way of identifying seals was needed, especially as the photo work was expanded to other Pembrokeshire sites: Marloes Peninsula and Ramsey Island in 2010.

NRW consequently developed the Wales Seal Photo ID database called EIRPHOT. Photos of seals were entered using head and neck profiles and standardised patches of pelage patterns were extracted and matched within the database. In 2014 NRW workers and trained volunteers were contracted to enter seal photos into this database and by March 2015 all existing Pembrokeshire photos (2007 to 2014) had been uploaded. Photos in the following years were stored ready for entering, but in 2019 the decision was made not to continue with the Wales Seal Photo ID database.

Identifying scarred male and female seals continued in 2023 and distinctively marked/scarred seals were photographed and checked against the Skomer seal catalogue. 135 seals with scars or tags were photographed in 2023, of which 61 (52 cows, one seal with unknown sex and eight bulls) were re-identified from previous photos.

As in 2022, the oldest returning cow was HD-014. This animal was rescued from Penberth, Cornwall and treated for an ulcerated left eye in February 2002. From 2010 until 2012 she was seen annually (once pregnant), but was never observed actually pupping on Skomer. She was observed in the last three years hauled-out on Matthew's Wick.

The oldest bulls to have returned to Skomer in 2023 were 12.NHV.B06, NK.065 and NK.068 (which is most likely a male). All three animals were seen for the first time on Skomer in 2012.

Table 22 Year of first sighting of seals seen on Skomer Island in 2023

<b>Year first recorded</b>	<b>No. of seals seen in 2023 known from previous years</b>
2002	1
2004	1
2006	1
2008	
2009	3
2010	3
2011	1
2012	4
2013	1
2014	4
2015	3
2016	1
2017	4
2018	3
2019	4
2020	6
2021	7
2022	14
<b>TOTAL</b>	<b>61</b>

#### 4.12.1 Seals from elsewhere seen on Skomer

Each year, some tagged seals, usually around three to four, are recorded on Skomer. In 2022 eight different individuals were seen and in 2023 eleven were observed. The cause of this increase in sightings of tagged seals is unknown, but is possibly a combination of more seals getting rehabilitated and tagged and observer effort.

In 2023 ten tagged seals were observed of which five were known from previous years. The cow HD.014 is not included in these totals as her yellow tag with the number 50 has not been noticed in recent years – most likely the tag has fallen off.

One tagged seal (BK-066 alias Bagshot), is a regular on Skomer's beaches. This cow has a blue flipper tag which is very worn and the number is not visible any more. However, the seal's scars from netting are so distinctive that this cow can easily be identified. On 11/2/10, as a yearling, she was taken in to care by the National Seal Sanctuary, Gweek, Cornwall due to entanglement in netting. Since then, she has been observed around Skomer in most years and pupped on North Haven beach in 2017. In 2023 she was regularly observed on Skomer beaches in October and November. Unfortunately, the injuries from entanglement are still not fully healed and she is often seen with gaping gashes where the scars have burst open again.

Figure 48 Bagshot on Castle Bay on MWK 30/10/22



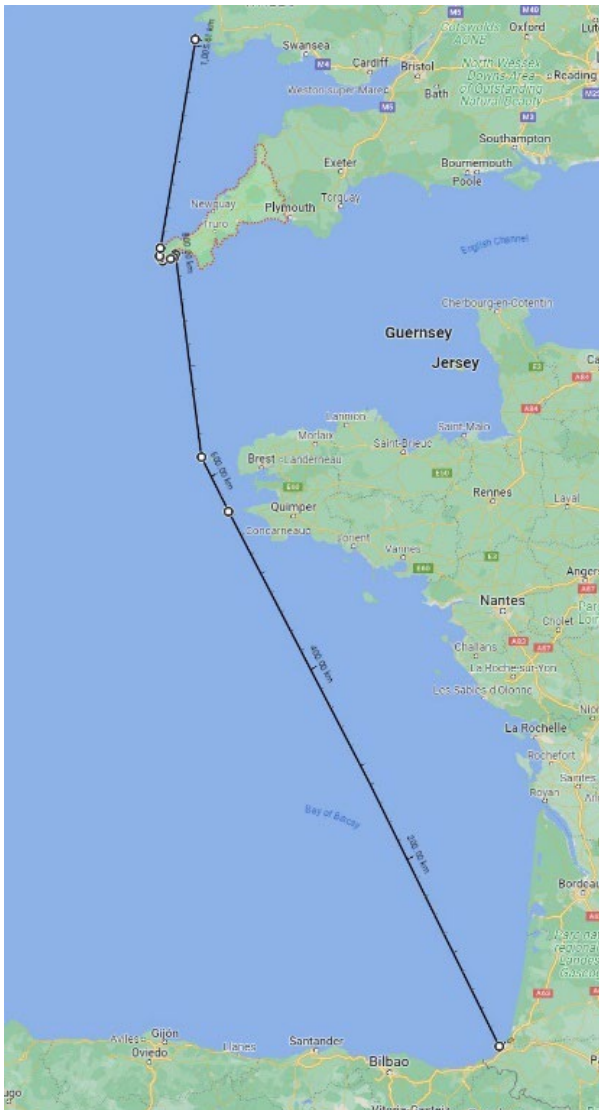
In 2022 a seal with a white tag with the number 75 was seen hauled out on Driftwood Bay, Skomer. Although several rehabilitation centres were contacted it was impossible to find out where this seal had been tagged. However, in autumn 2023 it was discovered that this immature cow was tagged in southern France.

She was collected and put into care at the Biarritz Aquarium, France on 16/01/22. When she arrived, she weighed 16kg and had a small wound on the head. On 12/05/22, she was released at the village of Vielle Saint Girons weighing 37.6 kg, with the tag number 75 on the left hind flipper. After her return to the sea, she swam 750km in less than a month to Mousehole in Cornwall where she was observed by a diver on 08/06/22. She then travelled a further 200km to Skomer where she was seen in October 2022.

Figure 49 Immature cow white 75 on Driftwood Bay on 22/10/22



Figure 50 Journey made by seal white 75



Graphic: S. Sayer

One tagged seal remains unidentified as it was not possible to read the writing. Another seal with a red tag 80588 has not yet been identified by any of the rehabilitation centres and it seems that the seal tagging projects would benefit from an international platform similar to the bird colour ringing page <https://cr-birding.org> to coordinate marking schemes and to allow observers to report and trace animals.

For further information about tagged seals see [Appendix 4](#).

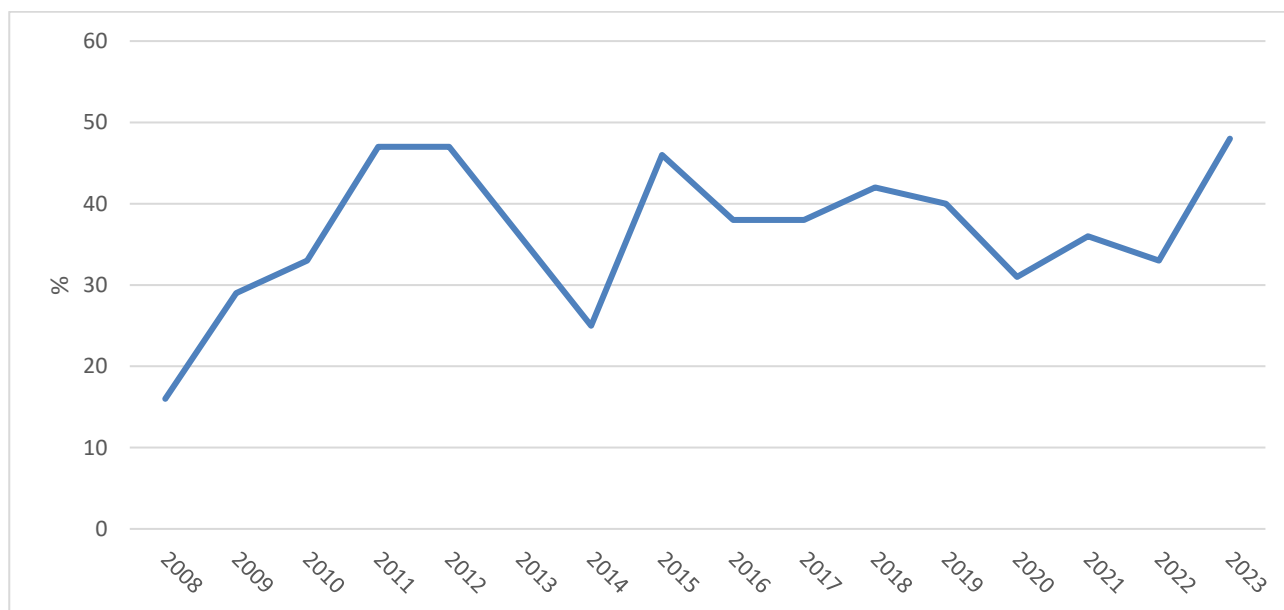


## 4.12.2 Breeding Cows Returning in 2023

Boyle (2012) says that the main reason for expanding the seal identification work was to try and learn more about the pupping cows on Skomer Island. He had assumed there was going to be a 'resident' Skomer population which could be largely identified in a few years. In his report for 2012 he stated that 32% of the breeding cows had bred the previous year and that over a five-year period, when the majority of breeding cows were photographed, only 47% of the cows had given birth to pups sometime during the previous five years. Alexander (2015) suggests that the Skomer MCZ animals are part of a much larger, but ill-defined, mobile population, which can use a range of different areas for breeding and hauling out. It is possible that any or all of the individuals which are part of the Irish Sea and southwest British population could, for certain periods in their lives, spend time in the Skomer MCZ.

Of the 250 cows which pupped on Skomer in 2023, 40 had scars. 19 of the scarred cows were identified, hence 48% of identifiable breeding cows were returning cows. The average percentage of returning cows from the previous ten years (2012-2022) is 37% and annual variation is possibly the result of a combination of factors such as unknown dynamics in the seal population, different photographic equipment and weather conditions. Furthermore, observer skill and time availability will affect the result. At the peak of pupping, with most pups born within a two-week period, it can be very difficult for the observer to take time to photograph seals, therefore the sample size might not be big enough for accurate calculation of the return rate of breeding seals.

Figure 51 Percentage of returning and new pupping cows on Skomer Island 2008-2023



Note: Change in methodology, only scarred seals identified by eye since 2014

The oldest breeding female was LS.017. She was seen for the first time on Skomer in 2009. For more details see table 24.

Table 23 Skomer records of LS.017

Name	2009	2010	2011	2014	2021	2023
LS.017	parent of pup 123, The Wick, born 30/10/2009, assumed survived	6 Feb & 11 March 2010 Godrevy, Cornwall	19 October 2011, pregnant cow swimming in Matthew's Wick, parent of pup 104, North Haven, born 20/10/2011, survived to beginning of moult	parent of pup 167, born 19/10/2014, Castle Bay, survived	parent of pup 259, born 16/10/2021, Castle Bay, died, storm casualty	parent of pup 257, born 20/10/2023, Drifwood Bay, survived and weaned

### 4.12.3 Site fidelity

Six identified cows bred in 2023 and in 2022. Of these, four bred on the same beaches as in 2022.

21.SC.LBK.012.MWK and 13.SC.BK.178.MWK pupped on Matthew's Wick for the third consecutive year. 22.SC.US.247.DWB and 22.SC.EYE.039.MWK bred on the same beach in two consecutive years, on Driftwood Bay and Matthew's Wick respectively.

Four females bred on Skomer in 2023 which were seen hauled out, but not breeding, in 2022.

Matthew's Wick seems to be a popular site with females choosing to breed there repeatedly. There are some cows which show preferences for certain beaches whereas some animals are less site faithful and switch between sites, possibly influenced by weather conditions, competition and experience. Some breeding cows use different sites on Skomer but also migrate to other beaches within the Skomer MCZ or travel even further afield.

### 4.12.4 Pupping Date

Due to the small sample size and the fact that only four returning cows pupped in consecutive years it is difficult to make an accurate statement about the general timing of breeding by looking at the pupping data of these four seals. Furthermore, recording the exact day of birth for each pup becomes more and more difficult the busier the pupping season gets, hence some of the dates are estimates.

However, when looking at all pupping seals and not at the individual it is clear that 2023 was an early pupping season, albeit not as early as in 2021, see figure 5.

Table 24 Pupping date of returning cows which were seen in the years 2020-2023

Name	2020	2021	2022	2023	pupping date change 2020/2021	pupping date change 2022/2023
LBK.074	not seen	25/09/21	25/09/21	24/09/23	0	-1
13.SC.BK.178.MWK	not seen	not seen	24/10/22	29/10/23	n/a	5
21.SC.LBK.012.MWK	not seen	25/08/21	18/08/23	18/08/23	n/a	0
22.SC.US.247.DWB	not seen	not seen	20/10/22	19/10/23	n/a	-1
22.SC.EYE.039.MWK	not seen	not seen	04/09/23	30/08/23	n/a	5
22.SC.US.237.SHV	not seen	not seen	16/10/23	10/10/23	n/a	-6
LS.017	not seen	16/10/21	not seen	20/10/23	n/a	n/a
17.SC.LBK.025.SBS	04/09/17	02/09/17	not seen	21/08/23	n/a	n/a
21.SC.LBK.058.CBY	not seen	10/09/21	not seen	beginning to mid 09/23	n/a	n/a
20.SC.NET.400.NHV	07/09/20	not seen	not seen	08/08/23	n/a	n/a

## 4.13 Further Research

There was no additional research conducted on the island in 2023.

## Acknowledgements

Many thanks to Natural Resources Wales who funded this project in 2023.

A big thank you goes the Skomer team: Leighton Newman, Ceris Aston, Rob Knot, Madeline Davis and Eleanor Biggs for helping with the seal monitoring. A big thank you also goes to Eddie Stubbings for proof-reading the report and assisting with seal monitoring during the busiest time. Lisa Morgan, Kate Lock and Mark Burton for project support and advice. Also, everyone from the seal rescue centres in the UK and abroad ( e.g RSPCA, BDMLR, Seal Rescue Ireland, the Cornwall Seal Group Research Trust) and especially Sue Sayer, Paul Oaten and Alison Shearer, Tamara Cooper, Dan Jarvis, Kate Williams and Cécile Vincent for helping to trace and identify tagged seals.



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# Appendices

## Appendix 1 SMRU Age classification of pups

I –first day or two after birth, fresh pink umbilicus, poor coordination, ribs visible, white coat stained yellow

II- usually days 3-9, white coat, ribs less prominent early on, good coordination

III- usually days 10+, white coat (although dark marks around head/flips may be visible), noticeably fat – abdomen rounded out

IV- usually days 14+, some white coat, but moulting

V- anytime from day 16+, no white coat left, fully moulted.

## Appendix 2 Key

### Fate:

SBM Known to have survived to the beginning of moult

SW Known to have survived and weaned

D Known to have died

ASM Assumed to have survived to the beginning of moult

AD Assumed to have died

### Sites:

AMR Amy's Reach

BAS The Basin

CBY Castle Bay

DWB Driftwood Bay

GST Garland Stone

HCB High Cliff Boulders

LAN The Lantern (former LTN)

MWK Matthew's Wick

NHV North Haven

NHV(S) North Haven Slip

NHV(SC) North Haven Slip Cave

MST Mew Stone

PSB Pigstone Bay

SBS The Slabs

SCBC South Castle Beach Cave

SHO Seal Hole

SHV South Haven

SHV(C) South Haven Cave

SHV (CKI) South Haven (Captain Kites Inlet)

SSC South Stream Cave

WCK The Wick

**Condition at Beginning of Moul:**

1	Very Small	Assumed not to have survived long after moult
2	Small, but healthy	In good condition, should have a reasonable chance of survival
3	Good Size	Most should survive
4	Very good size	All should survive
5	Super-moulter	An exceptionally sized pup

**Appendix 3 Disturbance by vessels/entering no access zone**

<b>Disturbance Level</b>	<b>Seal behaviour</b>
1	Unaware of human presence
2	Alert/aware of human presence but stay on beach
3	Panic and rush into the water, stay near shore
4	Panic rush into water and swim away from shore

Date	Time	Location	Type of boat	Level of disturbance	Inside agreed no access zone	Notes
15/8/23	12:02:00	MWK/CBY	Lobster Potter	1	yes	Putting pots right into mouth of MWK and CBY
16/8/23	12:45:00	SHV	Motorboat	0	yes	n/a
16/8/23	12:45:00	SHV	Yacht	0	yes	n/a
16/8/23	12:45:00	SHV	Yacht	0	yes	Had a Zodiac and went diving
16/8/23	12:45:00	SHV	Yacht	0	yes	n/a
16/8/23	12:45:00	SHV	Yacht	0	yes	n/a
16/8/23	12:45:00	SHV	Motorboat	0	yes	n/a
16/8/23	13:40:00	SHV	RIB	0	yes	n/a
16/8/23	13:40:00	SHV	Motorboat	0	yes	n/a
16/8/23	13:45:00	SHV	RIB	0	yes	n/a
16/8/23	14:15:00	NHV	RIB	2	yes	Cruised very close to cliffs and beach, made hauled-out seals on RR look up and one entered the water
17/8/23	12:44:00	SHV	Yacht	0	yes	n/a
17/8/23	14:00:00	SHV	Motorboat	0	yes	n/a
20/8/23	13:00:00	NHV	Lobster Potter	1	no	Went close to seals on RR
27/8/23	8:00:00	SHV	Yacht	0	yes	Anchored overnight, had a small inflatable
28/8/23	8:00:00	SHV	Yacht	0	yes	Anchored overnight, had a small inflatable
28/8/23	11:30:00	CBY	Zodiac	0	yes	Divers
28/8/23	12:05:00	SHV	Zodiac	1	yes	Divers
29/8/23	11:19:00	SCBC	Lobster Potter	0	yes	n/a
30/8/23	11:30:00	SHV	Yacht	0	yes	Anchored
30/8/23	11:30:00	SHV	Motorboat	0	yes	n/a
1/9/23	13:00:00	NHV	Dale Queen	1	yes	One seal hauled-out lifted head
1/9/23	18:00:00	NHV	RIB	0	yes	Cruising around
1/9/23	14:30:00:00	SHV	Yacht	0	yes	n/a
2/9/23	14:28:00	SHV	Yacht	0	yes	Anchored
2/9/23	16:00:00	NHV	Inflatable	0	yes	Cruising around
2/9/23	17:00:00	GST	Kayak	2	no	Disturbed haul-out on GST
2/9/23	21:00:00	SHV	Motorboat	0	yes	Anchored

Date	Time	Location	Type of boat	Level of disturbance	Inside agreed no access zone	Notes
4/9/23	16:00:00	SHV	2 Paddleboards	0	yes	Paddled east side of bay
4/9/23	16:50:00	SHV	Yacht	0	yes	Anchored
5/9/23	13:00:00	SHV	Yacht	0	yes	Anchored
6/9/23	14:30:00	SHV	Motorboat	0	yes	Very close to shore
8/9/23	8:33:00	NHV	Lobster Potter	2	yes	All seals on NHV beach went into water, were too fast, too close and talked too loud
8/9/23	8:38:00	NHV	Lobster Potter	1	no	Disturbed haul-out on RR
8/9/23	8:38:00	NHV	Inflatable	0	no	Disturbed seals off RR when retrieving Lobster Pot
9/9/23	7:00:00	SHV	Yacht	0	yes	Anchored overnight
10/9/23	9:30:00	MWK	5 Kayaks	0	yes	Wanted to enter MWK to look at seals, were told to leave
10/9/23	9:33:00	CBY	5 Kayaks	2	yes	Disturbed seals on CBY, went past close to mouth of bay, 10+ seals entered water
10/9/23	13:00:00	PSB	4 Kayaks	2	no	Kayaks disturbed seals at Pigstone Bay
12/9/23	14:00:00	SHV	Yacht	0	yes	Pembrokeshire Sailing yacht
15/9/23	14:30:00	NHV	Motorboat	1	no	Divers inside no access zone, talking and whooping, seals on NHV beach looking at them
15/9/23	14:50:00	SHV	RIB	0	yes	n/a
15/9/23	15:05:00	NHV/SHV	Microlite	1	yes	n/a
16/9/23	14:00:00	SHV	Yacht	0	yes	n/a
10/10/23	11:10:00	SHV	Yacht	0	yes	Anchored
10/10/23	11:45:00	SHV	Yacht	0	yes	Anchored
15/10/23	13:00:00	NHV	9 Kayaks	2	yes	Were too noisy, disturbed haul-out on NHV main beach, later pulled kayak onto rocks at landing steps
15/10/23	13:00:00	SHV	Motorboat	0	yes	n/a
22/10/23	11:00:00	NHV	19 Snorklers	0	yes	Some inside no access zone, very noisy, whooping
25/10/23	8:30:00	NHV	Lobster Potter	2	yes	Went up to RR too fast and seals panicked into water

## Appendix 4 Tagged seal records

Table 25 Records of tagged seals

CODE	NOTES	SEX	2010	2011	2012	2013	2015	2017	2018	2019	2020	2021	2022	2023
BK.066	Bagshot, blue 39	F	11/2/10, Perranporth, Cornwall, about 12 weeks old, taken in to care by National Seal Sanctuary, Gweek & netting removed 21 May, released at Gwithian, Cornwall	7-11/9 & 13-15/11/11 hauled out in North Haven	12/4-1/5/12 hauled out in North Haven	11/4/13 hauled out in North Haven	15/3/15 in NHV	parent of pup 128, NHV	hauled-out on NHV beach 15/4/18	21/10/19 hauled out CBY	01/04/20 hauled out NHV	hauled-out on CBY, MWK, NHV in Oct. and Nov. 21	hauled-out on CBY, MWK, NHV in Oct. and Nov. 22	hauled out on MWK 23/10/20 23

CODE	NOTES	SEX	2019	2022	2023
22.SB.TAG.SRI-J-087.MWK	Spruce, blue SRI-0-087	M	rescued by Seal Rescue Ireland December 2019, released February 2020	on MWK 16 and 20/10/22	on MWK 14, 26/8/2023, 21/10/2023, on NHV 11/11/2023

CODE	NOTES	SEX	2022
22.SI.TAG.75.DWB	white 75	F	Put into care at the Biarritz Aquarium, France on 16/01/2022. When she arrived, she weighed 16 kg and had a small wound on the head. On 12/05/2022, she was released at the village of Vielle Saint Giron weighing 37,6 kg. She swam 800km to Mousehole in Cornwall where she was observed by a diver on 08/06/2022. She then swam a further 200km to Skomer where she was seen on 22/10/22 on DWB

CODE	NOTES	SEX	2021	2022	2023
22.SC.TAG.SL142.CBY	Falafel, green SL142	F	rescued by BDMLR from Polzeath on 11/3/21 and released by Cornish Seal Sanctuary on 26/5/21 from Dollar.	14/10/22 on CBY	on NHV 27/10/2023

CODE	NOTES	SEX	2020	2021	2022	2023
21.SI.TAG.80494.AMR	Oregano red tag 80494	M	80494 - Oregano -male. Also found at Perranporth and admitted to West Hatch, via Bdmlr, on 02/12/2020. He was also underweight with minor wounds, 16.33kg on admission	Released at Combe Martin on 06/04/2021 weighing 40kg. On AMR on 22/10/21	on MWK on 2/11/22 and 3/11/23	on CBY 23/10/2023 and 28/10/2023

CODE	NOTES	SEX	2022	2023
22.SI.TAG.SL140.NHV	Moon Jelly, white tag SL140	F	Female rescued from Carbis Bay by BDMLR on 1/3/22. Rehabilitated by Cornish Seal Sanctuary (Sea Life). She was released on 13/4/22 at Porthtowan. 12/10/22 NHV, 19/10/22 on Martin's Haven beach	14/8/2023, 22/8/2023, 9/9/2023 on CBY

## Appendix 5      Dates of weeks in 2023

<b>Week</b>	<b>Date</b>
29	July 17-July 23
30	July 31-Aug 06
31	Aug 07-Aug 13
32	Aug 14-Aug 20
33	Aug 21-Aug 27
34	Aug 28-Sep 3
35	Sep 4-Sep 10
36	Sep 11-Sep 17
37	Sep 18-Sep 24
38	Sep 25-Oct 1
39	Oct 2-Oct 8
40	Oct 9-Oct 15
41	Oct 16-Oct 22
42	Oct 23-Oct 29
43	Oct 30-Nov 5
44	Nov 6-Nov 12
45	Nov 13-Nov 19
46	Nov 20-Nov 26



## Data Archive Appendix

Data outputs associated with this project are archived in [NRW to enter relevant corporate store and / or reference numbers] on server-based storage at Natural Resources Wales.

Or

No data outputs were produced as part of this project.

The data archive contains: [Delete and / or add to A-E as appropriate. A full list of data layers can be documented if required]

[A] The final report in Microsoft Word and Adobe PDF formats.

[B] A full set of maps produced in JPEG format.

[C] A series of GIS layers on which the maps in the report are based with a series of word documents detailing the data processing and structure of the GIS layers

[D] A set of raster files in ESRI and ASCII grid formats.

[E] A database named [name] in Microsoft Access 2000 format with metadata described in a Microsoft Word document [name.doc].

[F] A full set of images produced in [jpg/tiff] format.

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