



# Condition assessments for the designated features of Ardal Gwarchodaeth Arbennig Morwenoliaid Ynys Môn / Anglesey Terns Special Protection Area.

Report No: 917

Author Name: M. Hatton-Ellis, M. Murphy, S. Cuthbertson, M. Jackson- Bué & E. Wynter.



Tern feeding chick. © Tracey Dunford (NRW).

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# **Crynodeb Gweithredol**

Er mwyn rheoli ein hardaloedd morol gwarchodedig yn effeithiol ac yn gynaliadwy, mae'n hanfodol deall cyflwr eu cynefinoedd a'u rhywogaethau gwarchodedig. Mae gwybod cyflwr nodweddion dynodedig yn caniatáu i ni dargedu rheolaeth ac adnoddau lle mae eu hangen i wella ac adfer cyflwr.

Mae'r adroddiad tystiolaeth hwn, a gyflwynwyd fel rhan o brosiect gwella cyngor cadwraeth forol (IMCA) a ariannwyd gan Lywodraeth Cymru, yn cyflwyno canfyddiadau asesiadau cyflwr Cyfoeth Naturiol Cymru ar gyfer ardal gwarchodaeth arbennig (AGA) Morwenoliaid Ynys Môn. Mae adran un yn rhoi trosolwg o'r broses asesu ac mae adran dau yn rhoi disgrifiad o'r AGA a'i nodweddion.

Mae'r asesiadau'n seiliedig ar y dystiolaeth orau a oedd ar gael ar y pryd (e.e. 2024). Adroddir canlyniadau asesiadau gyda hyder cysylltiedig yn y casgliad. Gellir dod o hyd i esboniadau manwl o'r rhesymeg y tu ôl i gasgliadau, ac unrhyw resymau dros fethu, yn yr asesiad cyflwr llawn yn Adran 3. Gellir dod o hyd i adroddiad ar y broses asesu a ddefnyddiwyd yn adroddiad terfynol IMCA.

#### Crynodeb o asesiadau cyflwr ar gyfer nodweddion dynodedig ACA Morwenoliaid Ynys Môn.

Nodweddion Dynodedig	Asesiad cyflwr	Hyder yn yr asesiad
Môr-wennol y Gogledd Sterna paradisaea	Anffafriol	Canolig
Môr-wennol gyffredin Sterna hirundo	Anffafriol	Canolig
Môr-wennol wridog Sterna dougallii	Anffafriol	Canolig
Môr-wennol bigddu <i>Thalasseus</i> sandvicensis	Ffafriol	Canolig

## **Executive summary**

To manage our marine protected areas effectively and sustainably it is vital to understand the condition of their protected habitats and species. Knowing the condition of designated features allows management and resources to be targeted where it is needed to improve and restore condition.

This evidence report, which was delivered as part of the Welsh Government funded improving marine conservation advice (IMCA) project, presents the findings of NRW's condition assessments for the features of Anglesey Terns special protection area (SPA). Section 1 gives an overview of the assessment process and Section 2 provides a description of the features.

The assessments are based on the best evidence available at the time of assessment (late 2024). Assessment outcomes are reported with an associated confidence in the conclusion. Detailed explanations of the rationale behind conclusions, and any reasons for failure, can be found in the full condition assessment in Section 3. A report on the assessment process used can be found in the IMCA final report.

# Summary of condition assessments for the designated features of Anglesey Terns SPA.

Designated Features	Condition assessment	Confidence in assessment	
Arctic tern Sterna paradisaea	Unfavourable	Medium	
Common tern Sterna hirundo	Unfavourable	Medium	
Roseate tern Sterna dougallii	Unfavourable	Medium	
Sandwich tern <i>Thalasseus</i> sandvicensis	Favourable	Medium	

# 1. Introduction

It is important for NRW to understand the condition of designated features in marine protected areas (MPAs) to allow NRW to prioritise management actions and advise on activity in the marine environment.

Having robust, evidence-based assessments of feature condition will ultimately lead to better protection through better management. The improvements in condition brought about by implementing targeted management will ultimately improve the resilience of Wales' marine ecosystems. As MPAs in Wales cover extensive areas of sea and coast, it can be challenging and resource intensive to monitor them. This can make thorough assessments of feature condition difficult. The process used for these condition assessments builds on work undertaken to produce <u>indicative condition assessments</u> published in 2018.

The 2018 indicative assessments used all available data and expert judgement to assess features using a workshop approach with internal NRW specialist. The new full assessment process, which has been delivered through the Welsh Government funded improving marine conservation advice (IMCA) project, has been improved by using carefully chosen performance indicators judged to be the most appropriate to assess condition (see Section 3). The best available evidence has been used to conduct the assessments. Due to the differences in assessment methods between these full assessments and the indicative condition assessments, the results are not directly comparable.

### 1.1. Assessment process

Marine feature condition assessments in NRW consist of selecting performance indicators for the feature, gathering the best available evidence to assess those indicators and conducting the assessment.

Performance indicators have targets which have a primary, secondary or tertiary weighting. Failure of a primary target will mean the feature is classified as unfavourable, on a 'one out all out' basis. If all primary targets pass but two secondary targets fail, the feature would also be classified as unfavourable. Likewise, if all primary and secondary targets pass but three tertiary targets fail, the feature will also be unfavourable. Condition assessment outcomes are not strictly determined by target weightings and are also subject to expert judgement.

Each indicator result has an associated confidence which is determined by the quality and age of the evidence along with the confidence in the indicator itself and what it is telling us about condition of the feature. The confidence in the overall assessment is derived from the confidence in each target pass or failure, as well as expert judgment/ assessor consensus.

Each feature condition assessment will also identify reasons for indicator failure where known and any known threats to feature condition.

Table 1 summarises the steps taken in marine feature condition assessments. Details on the full condition assessment process, including indicator selection and target weighting can be found in the <u>IMCA final report</u>.

Assessment Step	Process
Step 1: Preparation and evidence gathering.	Prepare site information. Source relevant evidence and any previous assessments. Evaluate quality of evidence according to suitability for use in assessments and carry out any analysis required.
Step 2: Indicator assessment.	A range of NRW specialists use all available evidence to assess the performance indicators and targets using a pass, fail or unknown. Record findings in the condition assessment form. Provide a confidence score for each target conclusion.
Step 3: Feature level assessments.	Combining the results from the assessment of feature indicators to provide an overall assessment of condition at the feature level.
Step 3.5. Complex features.	If the feature is a complex feature (i.e., estuaries or large shallow inlets and bays) consider the results of any nested feature assessments within the overall complex feature assessment.
Step 4: Condition pressures and threats.	Use the evidence gathered and information on management and activities to determine threats and pressures on feature condition.
Step 5: Finalise the assessments.	Ensure all required fields in the assessment have been completed and all assessed targets have an associated confidence. Circulate the reports to the relevant NRW specialists for review and comment. After issues have been resolved, the assessments will be signed off by the project task and finish group.
Step 6: Publish the assessments.	After signing off, the assessments will be published on the NRW website, and stakeholders and internal staff notified. Assessments are then ready to use by internal and external parties.

**Table 1.** The main steps of the marine feature condition assessment process.

# 2. Site description

The ardal gwarchodaeth arbennig Morwenoliaid Ynys Môn / Anglesey Terns special protection area (SPA) is in Northwest Wales on and around the isle of Anglesey. The SPA comprises three separate colonies. Ynys Feurig lies on Anglesey's west coast close to Valley Airfield, with Cemlyn Bay situated on the north coast about 20 km away. The Skerries island lies 3 km off Carmel Head to the north of Anglesey.

The site was first designated in 1992 and then extended and redesignated in 2017. The redesignation was to include a marine foraging area used by the terns. The name of the site was also changed from 'Ynys Feurig, Cemlyn Bay and The Skerries' to 'Anglesey Terns / Morwenoliaid Ynys Môn'.

The site is designated for the following features:

- Arctic tern *Sterna paradisaea*, 1,290 pairs representing 2.9% of the GB breeding population (5-year peak mean 1992 to 1996).
- Common tern *Sterna hirundo*, 189 pairs representing 1.5% of the GB breeding population (5-year peak mean 1992 to 1996).
- Roseate tern *Sterna dougallii*, 18 pairs representing 5% of the GB breeding population (5-year peak mean 1992 to 1996).
- Sandwich tern *Sterna sandvicencis*, 460 pairs representing 3.3% of the GB breeding population (5-year peak mean 1993 to 1997).

The breeding colonies of the four species of tern for which the SPA is classified are situated at three different sites: Ynys Feurig, Cemlyn Bay and The Skerries.

- Ynys Feurig is a series of small islets off the west coast of Anglesey which are joined to the Anglesey mainland at mid to low tide. The majority of tern species nesting at this part of the SPA are Arctic terns with a smaller breeding population of common terns.
- The Skerries is a group of sparsely vegetated rocky islets, approximately 17 ha in extent lying 3 km off the northwestern coast of Anglesey. The vast majority of terns breeding on The Skerries are Arctic terns with a much smaller population of common terns.
- The other colony which makes up this SPA is at Cemlyn Bay on the north coast of Anglesey, which comprises a saline lagoon separated from the sea by a shingle ridge. At this site, the terns (mainly Sandwich terns with much smaller numbers of common and Arctic terns) breed on two small islands within the lagoon.

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## **3. Feature condition assessments**

Information used in the condition assessments for this site are based on counts collected at the three colonies and reported to the BTO's <u>Seabird Monitoring Programme</u>. For terns the database records the counts as apparently occupied nests (AONs) this is equivalent to pairs of terns. Other information used included wardens reports for the colonies, where available, and expert judgement.

Figure 1 is a map of the location of Anglesey Terns SPA, showing the three colonies.

More information on the SPA and its features can be found in NRW's conservation advice for the site on our <u>website</u>.



Figure 1. Map of the Anglesey Terns SPA.

## 3.1. Condition assessment for Arctic tern Sterna paradisaea

Arctic tern *Sterna paradisaea* in Anglesey Terns SPA has been assessed in Table 2. The table has a summary of the assessment outcome against each performance indicator. This outcome and reasons of failure are discussed in more detail in the sections below.

**Table 2.** Condition assessment of Arctic tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting (see Section 1.1).

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population	Maintain the breeding population of Arctic tern at, or above 1,290 pairs. (P)	• The five-year peak mean count from 2020 to 2024 for Arctic terns over the whole SPA was 2,592 apparantly occupied nests (AONs) well above the target for the SPA.	Pass	Medium
		• This five-year peak mean was an underestimate as it includes a partial count in 2020 as there was no count at the largest colony for this feature, the Skerries, in that year.		
		<ul> <li>The Skerries colony accounts for nearly 90% of the breeding Arctic terns in the SPA.</li> </ul>		
		• Highly pathogenic avian influenza (HPAI), commonly called avian flu, affected the Skerries colony in late 2023 so the numbers must be kept under review. Latest figures from 2024 for the Skerries show a large decrease, due to avian flu mortality, compared to 2023 but the numbers (1,873 AON) are still above the target for the whole SPA.		
		<ul> <li>The target population levels have been reached but concerns over the effect of avian flu means that the confidence has been reduced to medium.</li> </ul>		

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding and productivity	The breeding productivity of Arctic tern on the largest of colony, the Skerries, should be no lower than a 5-year mean of 0.72. (0.72 based on the mean productivity 2010 – 2023). (P)	<ul> <li>The five-year peak mean in productivity on the Skerries is 0.55 (2020-24).</li> <li>This is affected by very low productivity on the Skerries over the last two years.</li> <li>The reasons for the very low productivity over the last two years are not fully known which has reduced the confidence to medium, but it is likely to have been affected by avian flu and avian predation.</li> </ul>	Fail	Medium
Breeding population distribution	The distribution of the breeding Arctic tern population should not be significantly impacted by anthropogenic activity. (P)	<ul> <li>Terns need to be able to fly into and out of the SPA and between the three colonies that make up Anglesey Terns SPA.</li> <li>It is important that there are no anthropogenic activities that prevent this from happening.</li> <li>It is also important that the three different colony sites remain to provide resilience for the whole SPA. If one colony is affected by an issue the other colonies may not be affected by the same issue at the same time therefore potentially providing alternative breeding areas.</li> <li>There is currently no anthropogenic activity known to impact their distribution on this SPA.</li> <li>Confidence is medium as the assessment is based on expert judgement.</li> </ul>	Pass	Medium

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population disturbance (by human activity)	Aggregations of roosting or feeding Arctic terns are not subject to significant anthropogenic disturbance. (P)	<ul> <li>All three SPA breeding colonies have wardens present throughout the breeding season which helps control human disturbance.</li> <li>No significant human disturbance events reported on the Skerries in 2024 or on Ynys Feurig in 2023, or in previous reports.</li> <li>Confidence is high as the wardens report on any human disturbance issues.</li> </ul>	Pass	High
Breeding population disturbance (by predation activity)	Aggregations of roosting or feeding Arctic terns are not subject to significant disturbance by predators. (P)	<ul> <li>The unmanaged presence of predators in this SPA can cause significant disturbance leading to reduced breeding success and in some cases complete breeding failure.</li> <li>There is evidence of disturbance by avian predators on Arctic terns in the Anglesey Terns SPA which has had a significant effect on productivity. However the full effect is unknown which has reduced the confidence.</li> </ul>	Fail	Medium
Supporting habitat	Maintain sufficient extent, distribution, function and quality of supporting habitat to support an Arctic tern population of 1,290 breeding pairs. (S)	<ul> <li>There are no known issues with the supporting habitat on this SPA and the latest five year mean peak count of 2,592 AON means that there are unlikely to be any issues with the supporting habitat.</li> <li>Although there has been some reduction in the numbers in 2024 which has reduced the confidence, the supporting habitat has been sufficient to support large numbers of Arctic tern in recent years.</li> </ul>	Pass	Medium

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Food availability	Maintain the distribution and abundance of food supply at levels sufficient to support an Arctic tern population of 1,290 breeding pairs. (S)	<ul> <li>There are no known issues with the food availability on this SPA and the latest count of 2,592 AON means that it is likely that there are no issues with food availability for Arctic tern at this SPA.</li> <li>There are targeted surveys for food types and sizes collected at the colonies but not for total food availability, so the confidence has been reduced to medium.</li> </ul>	Pass	Medium
Invasive mammals	No invasive mammals should be present on the Skerries Islands colonies. (P)	<ul> <li>It is important that biosecurity measures are in place to prevent rats and other predatory mammals not native to the Skerries reaching the islands.</li> </ul>	Pass	High
		• There are strict biosecurity measures in place at the offshore island of the Skerries within Anglesey Tern SPA which gives a high confidence in the pass for this target.		

### **Assessment conclusions**

Arctic terns in Anglesey Terns SPA have been assessed as being in unfavourable condition (medium confidence). This was due to very low productivity on the Skerries over the last two years and evidence of disturbance by avian predators on Arctic terns. All other indicators passed (Table 3). The main threats to the Arctic tern colony at Anglesey Terns SPA come from further outbreaks of avian flu as well as predation by invasive mammals, disturbance and climate change. Further information on the assessment outcome and threats to condition can be seen in the detailed assessment information below.

**Table 3.** Summary of the condition assessment for Arctic tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting.

SPA Feature	Overall Condition Assessment	Indicator failures	Reason for indicator failure	Threats to condition
Arctic tern Sterna paradisaea	Unfavourable (medium confidence)	<ul> <li>Productivity (P)</li> <li>Predation disturbance (P)</li> </ul>	<ul> <li>Thought to be linked to HPAI virus and avian predation.</li> <li>Predatory disturbance affecting bird productivity.</li> </ul>	<ul> <li>Disease</li> <li>Invasive mammals</li> <li>Disturbance</li> <li>Climate change</li> </ul>

## **Detailed assessment information**

### **Breeding population**

Arctic terns breed at higher latitudes than any other tern species, which is reflected in their UK distribution. The species nests in colonies on sand and shingle beaches along the coast. The breeding colonies in North Wales are at the southern limit of their breeding distribution (Mitchell et al., 2004, Brown and Grice, 2005).

The five-year peak mean count from 2020 to 2024 for Arctic terns over the whole SPA was 2,592 apparantly occupied nests (AONs), well above the target of 1,920 breeding pairs for the SPA. This five-year peak mean was an underestimate as it includes a partial count in 2020 as there was no count at the Skerries, the largest colony for this feature, in that year. This was due to no warden being present on the SPA due to Covid 19 restrictions.

Highly pathogenic avian influenza (HPAI), commonly called avian flu, affected the Skerries colony in late 2023. Latest figures from 2024 for the Skerries show a large decrease compared to 2023 but the numbers (1,873 pairs) are still above the target for the whole SPA (Jarzyński and Higgins, 2024).

The target population levels have been reached but concerns over the effect of HPAI means that the confidence has been reduced to medium.

### **Breeding productivity**

Arctic terns arrive in the UK around the middle of April to breed. They will usually lay 1-2 eggs, typically brooding once in a season (<u>BTO bird facts</u>). Storm events and predator attacks can impact productivity within a breeding year due to the low-lying coastal nature of nesting sites.

The majority (nearly 90%) of Arctic terns breed on the Skerries. Therefore, the productivity levels for this island were used for this indicator. The target was set using the mean productivity from 2010 until 2023, which is 0.72. This time period was chosen as there was good data from these ten years across all colonies within the SPA. The latest five-year mean of productivity was calculated from 2020 until 2024 and was calculated as 0.55 causing this indicator to fail when compared to the long term target.

This figure was influenced by the productivity levels over the last two years of 0.18 (2023) and 0.19 (2024). The reasons for the very low productivity over the last two years are not fully known, which reduced the confidence to medium, but it has been attributed to avian flu on the Skerries (Jarzyński and Higgins, 2024). Fewer nesting pairs in the colony left more gaps for avian predation and high predation levels of both eggs and chicks were noted at the Skerries in 2024. Egg predation was noted by herring gulls, great black backed gulls, oystercatchers and turnstones which were all caught on camera. Herring gulls appeared to be the main predators of newly hatched chicks with both herring gulls and great black backed gulls taking older chicks and great black backed were seen taking fledglings (Jarzyński and Higgins, 2024).

### **Breeding population distribution**

The distribution of the breeding population can be impacted by activities that would affect the ability of the birds to move freely between feeding and breeding sites, which is critical to their fitness and survival. This can be through physical structures or more likely though anthropogenic disturbance.

There is no evidence that the tern populations are unable to utilise the areas that they need for feeding or breeding within or outside the SPA. All three sites are inhabited by breeding terns and NRW knows of no anthropogenic activities which could have affected their distribution or foraging out at sea, resulting in this indicator to meet its target. Confidence in the pass was reduced to medium as the assessment was based on expert judgment.

#### Disturbance

Disturbance occurs when an activity is sufficient to disrupt normal behaviours, for example, changes to feeding or breeding behaviour, increased energy expenditure due to time spent moving to avoid stressors, desertion of supporting habitats (both within and outside the protected area where appropriate). If the activity occurs at a level that substantially impacts behaviour for long enough it can lead to changes in distribution, displacement through reduction of available habitat and consequently could affect the long-term viability of the population.

Disturbance associated with human activity may take a variety of forms including, light, sound, vibration, trampling, presence of people, animals and structures.

Terns are sensitive to human disturbance. The nesting sites within the SPA rely heavily on wardening by the RSPB (Ynys Feurig and the Skerries) and the North Wales Wildlife Trust (Cemlyn). Public access is controlled or restricted during the breeding season, depending on the nest site, to prevent abandonment of nesting sites and reduction in breeding success. No significant human disturbance events were reported on the Skerries (Jarzyński and Higgins, 2024) or on Ynys Feurig in 2023 (Owen et al, 2023), the two sites where the artic terns mainly breed. There is no other anthropogenic activity known to cause significant disturbance within the SPA. It is important that the wardening at the three colonies in this SPA continues.

There is no evidence that the Arctic terns in Anglesey Terns SPA are experiencing levels of anthropogenic disturbance that would affect their breeding distribution, resulting in this indicator to meet its target. Confidence in the target assessment is high as the wardens report on any human disturbance issues.

Terns are sensitive to predator disturbance. All three breeding sites have been affected in the past by native predators such as corvids, gulls, raptors, herons and otters. Different means have been used to address these issues by wardens. At the moment, both Ynys Feurig and the Skerries have lower productivity, due to predation by gulls, which, in turn, is partly due to reduced population density as a result of avian flu mortality, which makes the colony less defendable to predation.

Although no counts were taken in 2020 due to covid restrictions, there were observations of a peregrine falcon nesting at the Skerries, which appeared to lead to reduced numbers of Arctic terns. There were no wardens on the islands in this year, which demonstrates their importance in reducing predator activity.

This target failed due to increased predation disturbance which has affected the productivity rates at the Skerries and Ynys Feurig. The target has received a medium confidence as the full effect of these disturbances on the Artic tern productivity is unknown.

### Supporting habitat

The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature for all necessary stages of the breeding period (displaying, nesting, roosting, rafting and feeding) is important to the condition of the Arctic terns using the SPA.

The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature over the breeding period are important to maintain the population at 1,290 pairs. There are no known issues with the supporting habitat on this SPA and the latest five year mean peak count of 2,592 AON means that there are unlikely to be any issues with the supporting habitat.

Although there has been some reduction in the numbers in 2024 as well as a reduction in productivity due to avian flu, the supporting habitat has been sufficient to support large numbers of Arctic tern in the recent past and to the best of current knowledge, this has not altered. Therefore, the indicator met its target with a medium confidence.

### Prey availability

While Arctic terns are capable of feeding on a variety of prey items from fish to benthic worms and crustaceans, at these colonies their diet consists predominately of sandeels and clupeids such as sprat and herring. In the Skerries in 2024 chick and courtship feeding surveys showed that fish from *Clupeidae* family (sprat and herring) was the most common prey species, followed by sand eels (*Ammodytida*) (Eglington and Perrow, 2014).

As a specialist feeder within the UK, Arctic tern is vulnerable to declines in the abundance of its prey species, which may be driven by commercial fisheries and climate change, although the links between both remain poorly understood (Eglington and Perrow, 2014).

Arctic terns were commonly thought to only travel fairly short distances from their nests to forage, in the range of 10-20 km. However, recent research has demonstrated they are capable of foraging further with some terns traveling between 30-40 km in a single trip (Eglington and Perrow, 2014; Morten et at., 2022). Morten et al. (2022) recorded one individual in Iceland travelling 114 km in a single foraging trip.

The large numbers of Arctic tern using the SPA allows to conclude that the prey availability is highly likely to be sufficient to support the population target, resulting in this indicator to meet its target. The confidence was reduced to medium due to the lack of dedicated prey availability surveys.

#### Invasive mammals

Terns are sensitive to predation and require freedom from predation to thrive. Terns nest on the ground so are particularly vulnerable to ground mammals such as the rat. Every effort should be made to control ground predators present, and the introduction of mammalian predators not native to the Skerries Islands must be avoided. Should such predators be introduced they could severely threaten the tern population of the Skerries.

The Skerries islands are currently free of invasive mammals, and it was one of the islands that was covered in the <u>biosecurity for LIFE</u> project which aimed to plan and implement biosecurity measures to safeguard seabird islands against the threat of invasive non-native mammalian predators arriving and becoming established. Therefore, the indicator met its target with high confidence.

### **Reasons for target failure**

The assessment of the Artic tern in Anglesey Terns SPA failed two primary targets for this feature on this site. This resulted in the feature to be assessed as being in unfavourable condition. The failing indicators and reasons for failure, if known, are stated below.

#### **Breeding productivity**

The productivity indicator failed due to very low productivity rates over the last two years likely linked to the HPAI virus and avian predators which affected the colony in 2023.

#### Breeding population disturbance (by predation activity)

Activity by predators, including predatory gulls have had a significant effect on the Arctic tern breeding population. This effect may have been heightened by reduced wardening and gaps in the colony caused by avian flu.

### Threats to condition

Part of the condition assessment is to identify threats to the condition of the Arctic tern. A threat is defined as an activity that is currently not impacting condition but has the potential to do so over the next reporting cycle, if activity levels increase or are unmanaged. It is important to identify these threats to be able to put pre-emptive management in place to prevent declines in condition.

Activities that go through licencing and permission process whereby the impact of the activity on the feature would be assessed have not been included. The threats to the Anglesey Terns SPA for Arctic tern are stated below.

#### Disease

Further outbreaks of avian flu were identified as one of the biggest threat to Arctic tern numbers on Anglesey Terns SPA. However, this threat cannot be managed at a SPA level due to free movement of wild birds.

#### Disturbance

Although current anthropogenic disturbance levels are not affecting condition, Arctic terns are sensitive to disturbance pressure so any increases in human or predation derived disturbance need to be carefully assessed. Wardening is the major tool in coping with both of these potential disturbance pathways.

#### **Invasive mammals**

Any introduction of predatory mammals (particularly rats) to the Skerries could have a devastating impact on the terns present.

#### **Climate change**

It is not yet clear what pressures we will see from climate change at the SPA level or how different pressures will counteract each other. However, threats from climate change that could impact the species may include:

- Increasing sea surface temperature.
- Increased storminess
- Sea level rise
- Changes to prey availability and abundance.

## 3.2. Condition assessment for common tern Sterna hirundo

Common tern *Sterna hirundo* in Anglesey Terns SPA has been assessed in Table 4. The table has a summary of the assessment outcome against each performance indicator. This outcome and reasons of failure are discussed in more detail in the sections below.

**Table 4.** Condition assessment of Common tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting (see Section 1.1).

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population	Maintain the breeding population of common tern at, or above, 189	• The five-year peak mean count from 2019 to 2024 for common terns over the whole SPA was 558 apparently occupied nests (AONs), well above the target for the SPA.	Pass	Medium
	pairs. (P)	<ul> <li>This five-year peak mean was an underestimate as it includes a partial count in 2020 as there was no count at the Skerries in that year.</li> </ul>		
		• Highly pathogenic avian influenza (HPAI), commonly called avian flu, affected the SPA in late 2023 so the numbers must be kept under review. Latest figures from 2024 for the Skerries show lower numbers compared to 2023 but the numbers (209 AON) are still above the target for the whole SPA.		
		<ul> <li>The target population levels have been reached but concerns over the effect of avian flu means that the confidence has been reduced to medium.</li> </ul>		

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding and productivity	The breeding productivity of common tern across the SPA should be no longer than a 5-year mean of 0.67 (0.67 based on the mean productivity 2010 – 2023). (P)	<ul> <li>The long-term productivity level (based on mean productivity 2010 - 2023) for common tern from Anglesey tern SPA breeding colonies is 0.67.</li> <li>The five-year mean productivity level for common tern across the colonies of the Anglesey Terns SPA is 0.59 (mean productivity 2019-2023).</li> <li>Common terns have failed to breed at Ynys Feurig over the last three years due to summer storms in Ynys Feruig in 2021 and 2022, when the island was overtopped by waves. This impact made predatory attacks by black backed gulls, which was already an issue, much worse.</li> <li>The confidence is medium due to the unknown number of terns that may have successfully bred elsewhere.</li> </ul>	Fail	Medium
Breeding population distribution	The distribution of the breeding common tern population should not be significantly impacted by anthropogenic activity. (P)	<ul> <li>Terns need to be able to fly into and out of the SPA and between the three colonies that make up Anglesey Terns SPA.</li> <li>It is important that there are no anthropogenic activities that prevent this from happening.</li> <li>There is currently no anthropogenic activity known to impact their distribution on this SPA.</li> <li>Confidence is medium as the assessment is based on expert judgement.</li> </ul>	Pass	Medium

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population	Aggregations of roosting or feeding	<ul> <li>No significant human disturbance events reported in Anglesey terns SPA over the last 5 years.</li> </ul>	Pass	High
disturbance (by human activity)	common terns are not subject to significant anthropogenic	<ul> <li>All three SPA breeding colonies normally have wardens present throughout the breeding season which helps control human disturbance.</li> </ul>		
disturbance. (S)	disturbance. (5)	<ul> <li>There is no other anthropogenic activity known to cause disturbance on this SPA.</li> </ul>		
		<ul> <li>Confidence is high as the wardens report on any human disturbance issues.</li> </ul>		
Breeding population disturbance (by predation activity)	Aggregations of roosting or feeding Common terns are not subject to significant	<ul> <li>The presence of predators in this SPA can have a significant effect on bird disturbance leading to reduced breeding success and in some cases complete breeding failure.</li> </ul>	r	Medium
	disturbance by predators. (P)	• There is evidence of significant disturbance by predators on common terns in the Anglesey Terns SPA, particularly at Ynys Feurig where attacks by predatory gulls prevented any successful breeding over the last three years. However the full effect on common terns is unknown which has reduced the confidence to medium.		

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Supporting habitat	Maintain sufficient extent, distribution, function and quality of supporting habitat to support a common tern population of 189 breeding pairs. (S)	<ul> <li>The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature over the breeding period are important to maintain the population at 189 breeding pairs.</li> <li>There are no known issues with the supporting habitat on this SPA and the latest five year mean peak count of 558 AON means that there are unlikely to be any issues with the supporting habitat.</li> <li>Although the has been some reduction in the numbers in 2024 for the two colonies which has reduced confidence, the supporting habitat has been sufficient to support large numbers of common tern in recent years.</li> </ul>	Pass	Medium
Food availability	Maintain the distribution and abundance of food supply at levels sufficient to support a common tern population of 189 breeding pairs. (S)	<ul> <li>There are no known issues with the food availability on this SPA and the latest count of 558 common tern pairs means that there are unlikely to be any issues with food availability.</li> <li>There are targeted surveys for food types and sizes collected at the colonies but not for total food availability, so the confidence has been reduced to medium.</li> </ul>	Pass	Medium
Invasive mammals	No invasive mammals should be present on the Skerries Islands colonies. (P)	<ul> <li>It is important that biosecurity measures are in place to prevent rats and other predatory mammals not native to the Skerries reaching the islands.</li> <li>There are strict biosecurity measures in place at the offshore island of the Skerries within Anglesey Tern SPA which gives a high confidence in the pass for this target.</li> </ul>	Pass	High

### **Assessment conclusions**

Common terns in Anglesey Terns SPA have been assessed as being in unfavourable condition (medium confidence). This was due to common terns failing to breed at Ynys Feurig over the last three years and evidence of disturbance by avian predators on common terns. All other indicators passed (Table 5). The main threats to the common tern colony at Anglesey Terns SPA come from further outbreaks of avian flu as well as predation by invasive mammals, disturbance and climate change. Further information on the assessment outcome and threats to condition can be seen in the detailed assessment information below.

**Table 5.** Summary of the condition assessment for common tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting.

SPA Feature	Overall Condition Assessment	Indicator failures	Reason for indicator failure	Threats to condition
Common tern Sterna hirundo	Unfavourable (medium confidence)	<ul> <li>Productivity (P)</li> <li>Predation disturbance (P)</li> </ul>	<ul> <li>Uncertain but liekly a combination of the avian flu and predatory disturbance affecting bird productivity.</li> <li>Activity by avian predators has had a significant effect on the common tern breeding population.</li> </ul>	<ul><li>Disease</li><li>Disturbance</li><li>Invasive mammals</li><li>Climate change</li></ul>

## **Detailed assessment information**

#### **Breeding population**

Common terns are the most widely distributed across the UK of all the tern species, although they are largely absent from Wales, only breeding on Anglesey and in the Dee estuary (Mitchell et al., 2004). Common terns breed on shingle beaches, rocky islands and inland on the gravelly shores of lakes and rivers.

The five-year peak mean count from 2019 to 2024 for common terns over the whole SPA was 544 apparently occupied nests (AONs), well above the target for the SPA. This five-year peak mean was an underestimate as it includes a partial count in 2020 (which was used in the assessment) as there was no count at the largest colony for this feature, the Skerries, in that year. Although no counts were taken in 2020 due to covid restrictions, there were observations of a peregrine falcon nesting at the Skerries, which appeared to lead to reduced numbers of common terns. There were no wardens on the islands in this year, which demonstrates their importance in reducing predator activity. Some birds did move to Cemlyn lagoon and successfully breed that year, but others moved to sites outside the SPA.

Highly pathogenic avian influenza (HPAI), commonly called avian flu, affected the Skerries colony in late 2023. The latest figures from 2024 for the Skerries show lower numbers compared to 2023 but the numbers (209 AON) are still above the target for the whole SPA (Jarzyński and Higgins, 2024). The target population levels have been reached but concerns over the effect of HPAI means that the confidence has been reduced to medium.

### **Breeding productivity**

Common terns arrive in the UK around the middle of April to breed. They will usually lay 1-2 eggs, typically brooding once in a season (<u>BTO bird facts</u>). Storm events and predator attacks can impact productivity within a breeding year due to the low-lying coastal nature of nesting sites.

The long-term productivity level (based on mean productivity 2010 - 2023) for common tern colonies from the Anglesey Terns SPA is 0.68 (based on figures from Cemlyn and the Skerries). The most recent five year peak mean for productivity levels for common tern across the Anglesey tern SPA colonies is 0.5973 (mean productivity 2019-2023), causing this indicator to fail when compared to the long term target.

Ynys Feurig generally contains approximately one quarter of the breeding common terns for the Anglesey Tern SPA. Over the last few breeding seasons there have been increased storm events during the summer meaning the whole island is over topped by waves causing mass failure and a decrease in the colony over time, this occurred in 2021 and 2022 (I. Hawkins, pers. comm., 2025). This decrease in the colony has been exacerbated by attacks by great black backed gulls. Attacks by great black backed gulls is already an issue at Ynys Feurig but gaps in the colony by the storm events means that they are able to predate more successfully. These pressures have meant that the colony of common terns at Ynys Feurig has failed to breed over the last few years.

On top of these problems at Ynys Feurig, there has been a reduction of productivity on the Skerries due to avian flu mortality decreasing the density of birds leading, to increased predation by herring gulls and great black backed gulls (Jarzyński and Higgins, 2024).

The confidence attributed to the fail was reduced to medium as the number of terns that may have successfully bred elsewhere is unknown.

#### **Breeding population distribution**

The distribution of the breeding population can be impacted by activities that would affect the ability of the birds to move freely between feeding and breeding sites, which is critical to their fitness and survival. This can be through physical structures or more likely though anthropogenic disturbance.

There is no evidence that the tern populations are unable to utilise the areas that they feed at and breed at within and outside the SPA due to anthropogenic disturbance. All three sites are inhabited by breeding common terns and NRW knows of no plan or project which could have affected their breeding distribution or their foraging out at sea, resulting in this indicator to meet its target. Confidence in the pass was reduced to medium as the assessment was based on expert judgment.

#### Disturbance

Disturbance occurs when an activity is sufficient to disrupt normal behaviours, for example, changes to feeding or breeding behaviour, increased energy expenditure due to time spent moving to avoid stressors, desertion of supporting habitats (both within and outside the protected area where appropriate). If the activity occurs at a level that substantially impacts behaviour for long enough it can lead to changes in distribution, displacement through reduction of available habitat and consequently could affect the long-term viability of the population.

Disturbance associated with human activity may take a variety of forms including, light, sound, vibration, trampling, presence of people, animals and structures.

Terns are sensitive to human disturbance. The nesting sites within the SPA rely heavily on wardening by the RSPB (Ynys Feurig and Skerries) and the North Wales Wildlife Trust (Cemlyn). Public access is controlled or prevented during the breeding season, depending on the nest site, to prevent abandonment of nesting sites and reduction in breeding success. There have been no significant human disturbance events reported at Anglesey Terns SPA in the last five years (Owen et al, 2023, Jarzyński and Higgins, 2024). It is important that the wardening at the three colonies in this SPA continue.

There is no evidence that the common terns in Anglesey Terns SPA are experiencing levels of anthropogenic disturbance that would affect their breeding distribution, meaning this indicator met its target. Confidence is high as the wardens report on any human disturbance issues.

Terns are sensitive to predator disturbance. All three breeding sites have been affected in the past by native predators such as corvids, gulls, raptors, herons and otters. Different means have been used to address these issues by wardens. At the moment, both Ynys Feurig and the Skerries have lower productivity, due to predation by gulls, which, in turn, is partly due to reduced population density as a result of avian flu mortality, which makes the colony less defendable to predation.

Although no counts were taken in 2020 due to covid restrictions, there were observations of a peregrine falcon nesting at the Skerries, which appeared to lead to reduced numbers of arctic terns. There were no wardens on the islands in this year, which demonstrates their importance in reducing predator activity.

This target failed due to increased predation disturbance which has affected the productivity rates at the Skerries and particularly at Ynys Feurig. The target has received a medium confidence as the full effect of these disturbances on the common tern productivity is unknown.

### Supporting habitat

The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature for all necessary stages of the breeding period (displaying, nesting, roosting, rafting and feeding) is important to maintain the population at 189 breeding pairs. There are no known issues with the supporting habitat on this SPA and the latest five year mean peak count of 544 AON means that there are unlikely to be any issues with the supporting habitat. Although there has been some reduction in the numbers in 2024, the supporting habitat has not been altered and this has been sufficient to support large numbers of common tern in the recent past. Therefore, the indicator met its target with a medium confidence.

### **Prey availability**

While adult common terns are capable of feeding on a wide range of prey including fish, crustaceans, squid, marine worms and insects, (Eglington and Perrow, 2014). It is known that the common terns at the three nesting sites that make up the SPA mainly forage for small fish such as sandeels and clupeids such as sprat and herring. Common tern range between 20-30 km during foraging trips (Eglington and Perrow, 2014).

In the Skerries in 2024 chick and courtship feeding surveys, for all species showed that fish from *Clupeidae* family was the most common prey species (69.9%) especially later in the breeding season, followed by sand eels (*Ammodytidae*) (22.7%) (Jarzyński and Higgins, 2024).

As a specialist feeder within the UK common tern is vulnerable to declines in the abundance of its prey species, potentially driven by commercial fisheries and climate change, although the links between both remain poorly understood (Eglington and Perrow, 2014).

The large numbers of common tern using the SPA allows to conclude that the prey availability is sufficient to support the population target, causing this indicator to meet its target. The confidence was reduced to medium due to the lack of dedicated prey availability surveys.

#### Invasive mammals

Terns are sensitive to predation and require freedom from predation to thrive. Terns nest on the ground so are particularly vulnerable to ground mammals such as rats. Every effort should be made to control ground predators present, and the introduction of mammalian predators must be avoided. Should such predators be introduced they could severely threaten the tern population.

The Skerries islands are currently free of invasive mammals, and it was one of the islands that was covered in the biosecurity for LIFE project which aimed to plan and implement biosecurity measures to safeguard seabird islands against the threat of invasive non-native mammalian predators arriving and becoming established. No rat infestations were detected at Ynys Feurig in 2023 (Owens et al, 2023). Therefore, the indicator met its target with high confidence.

### **Reasons for target failure**

The assessment of the common tern in Anglesey Terns SPA failed two primary targets for this feature on this site. This resulted in the feature to be assessed as being in unfavourable condition. The failing indicators and reasons for failure, if known, are stated below.

#### **Breeding productivity**

The productivity indicator failed due to very low productivity rates over the last two years likely linked to the HPAI virus which affected the colony in 2023 and to predation by gulls particularly at the Ynys Feurig colony.

#### Breeding population disturbance (by predation activity)

Activity by avian predators, including predatory gulls has had a significant effect on the common tern breeding population. This effect may have been heightened by reduced wardening and gaps in the colony caused by avian flu as well as by storm events causing overtopping at the Ynys Feurig colony.

### **Threats to condition**

Part of the condition assessment is to identify threats to the condition of the common tern. A threat is defined as an activity that is currently not impacting condition but has the potential to do so over the next reporting cycle, if activity levels increase or are unmanaged. It is important to identify these threats to be able to put pre-emptive management in place to prevent declines in condition.

Activities that go through licencing and permission process whereby the impact of the activity on the feature would be assessed have not been included. The threats to the Anglesey Terns SPA for common tern are stated below.

#### Disease

Further outbreaks of avian flu were identified as one of the biggest threat to common tern numbers on Anglesey Terns SPA. However, this threat cannot be managed at a SPA level due to free movement of wild birds.

#### Disturbance

Although current disturbance levels are not affecting condition, common terns are sensitive to disturbance pressure so any increases in human or predation derived disturbance need to be carefully assessed. Wardening is the major tool in dealing with both of these potential disturbance pathways.

#### Invasive mammals

Any introduction of predatory mammals (particularly rats) to the Skerries could have a devastating impact on the terns present.

#### **Climate change**

It is not yet clear what pressures we will see from climate change at the SPA level or how different pressures will counter act each other. However, threats from climate change that could impact the species may include:

- Increasing sea surface temperature.
- Increased storminess.
- Sea level rise.
- Changes to prey availability and abundance.

## 3.3. Condition assessment for Roseate tern Sterna dougallii

Roseate tern *Sterna dougallii* in Anglesey Terns SPA has been assessed in Table 6. The table has a summary of the assessment outcome against each performance indicator. This outcome and reasons of failure are discussed in more detail in the sections below.

**Table 6.** Condition assessment of roseate tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting (see Section 1.1).

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population	Restore the breeding population of roseate tern at, or above 18 pairs. (P)	<ul> <li>One to two pairs of roseate terns each year breed or attempt to breed at the Anglesey Terns SPA. Sometimes roseate terns and common terns breed producing hybrids.</li> <li>Two pairs of roseate terns successfully bred on the Skerries in 2024, laying one egg each. Neither chick fledged.</li> <li>There was also one pairing of roseate tern and common tern, but they did not breed successfully.</li> <li>This was under the target of 18 pairs of breeding birds, so the target failed.</li> <li>The confidence is high as the roseate tern breeding is closely monitored at the SPA.</li> </ul>	Fail	High
Breeding and productivity	The breeding and productivity of roseate tern should be stable or increasing in the long term, allowing for natural variability. (P)	<ul> <li>Only one to two pairs of roseate terns each year breed or attempt to breed at the Anglesey Terns SPA.</li> <li>In 2024 only one of the two breeding pairs successfully produced a fledgling. The chick of the second pair died shortly after hatching.</li> <li>Breeding productivity is not stable or increasing so this target failed with high confidence.</li> </ul>	Fail	High

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population distribution	The distribution of the breeding roseate tern population should not be significantly impacted by anthropogenic activity. (P)	<ul> <li>Terns need to be able to fly into and out of the SPA and between the three colonies that make up Anglesey Terns SPA.</li> <li>It is important that there are no anthropogenic activities that prevent this from happening.</li> <li>There are currently no anthropogenic activities known to significantly impact their distribution on this SPA.</li> <li>Confidence is medium as the assessment is based on expert judgement.</li> </ul>	Pass	Medium
Breeding population disturbance (by human activity)	Aggregations of roosting or feeding roseate terns are not subject to significant anthropogenic disturbance. (S)	<ul> <li>All three SPA breeding colonies have wardens present throughout the breeding season which helps control human disturbance.</li> <li>No significant human disturbance events reported on the latest reports from the colonies including none on both the Skerries in 2024 and Ynys Feurig in 2023.</li> <li>Confidence is high as the wardens report on any human disturbance issues.</li> </ul>	Pass	High
Breeding population disturbance (by predation activity)	Aggregations of roosting or feeding roseate terns are not subject to significant disturbance by predators. (P)	<ul> <li>The presence of predators in this SPA can have a significant effect on disturbance leading to reduced breeding success and in some cases complete breeding failure.</li> <li>Although there is no direct evidence in the last few years of predation directly affecting roseate terns, wider colony predation disturbance is likely to affect them.</li> <li>Confidence is low as this is not directly studied.</li> </ul>	Fail	Low

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Supporting habitat	Maintain sufficient extent, distribution, function and quality of supporting habitat to support a roseate tern population of 18 breeding pairs (S)	<ul> <li>The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature over the breeding period are important to maintain the population at 18 breeding pairs.</li> <li>Although nest boxes are set up at the different breeding sites to entice breeding roseate terns back to the colonies</li> </ul>	Unknown	N/A
		<ul> <li>Since the roseate terns did not meet the population target and it is not know whether supporting habitat is a factor in their failure to return to the Anglesey Terns SPA this target has been assessed as unknown.</li> </ul>		
Food availability	Maintain the distribution and abundance of food supply at levels sufficient to support a roseate tern population of 18 breeding pairs. (S)	<ul> <li>There are no known issues with the food availability for terns in general on this SPA.</li> <li>Although the numbers of roseate tern did not reach their population target there are other tern species with similar food requirements reaching their targets on this SPA which means that that there are no issues with food availability.</li> <li>There are targeted surveys for food types and sizes collected at the colonies but not for total food availability.</li> <li>Since the roseate terns did not meet the population target the confidence in this indicator has been reduced to low.</li> </ul>	Pass	Low
Invasive mammals	No invasive mammals should be present on the Skerries Islands colonies. (P)	<ul> <li>It is important that biosecurity measures are in place to prevent rats and other predatory mammals not native to the Skerries reaching the islands.</li> <li>There are strict biosecurity measures in place at the offshore island of the Skerries within Anglesey Tern SPA which gives a high confidence in the pass for this target.</li> </ul>	Pass	High

### **Assessment conclusions**

Roseate tern in Anglesey Terns SPA have been assessed as being in unfavourable condition (high confidence). The failing indicators were breeding population, productivity and predation disturbance (Table 7). The main reason for these failures were colony abandonment in the late 80s. Numbers started to drop rapidly after 1987. The main threats to the roseate tern colony at Anglesey Terns SPA come from further outbreaks of avian flu, disturbance as well as predation by invasive mammals. Further information on the assessment outcome and threats to condition can be seen in the detailed assessment information below.

**Table 7.** Summary of the condition assessment for roseate tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting.

SPA Feature	Overall Condition Assessment	Indicator failures	Reason for indicator failure	Threats to condition
Roseate tern <i>Sterna dougallii</i>	Unfavourable (high confidence)	<ul> <li>Breeding population (P)</li> <li>Productivity (P)</li> <li>Predation disturbance (P)</li> </ul>	<ul> <li>The population and productivity failed due to colony abandonment.</li> <li>Activity by predators has had a significant effect on the other terns on the SPA.</li> </ul>	<ul> <li>Disease</li> <li>Disturbance</li> <li>Invasive mammals</li> <li>Climate change</li> </ul>

## **Detailed assessment information**

#### **Breeding population**

Roseate terns have the smallest range of all the breeding tern species in Britain and Ireland and the second smallest population (Newton, 2023). There was a steep decline in roseate terns from the 1960s to 2000 in the UK but the most recent census has shown a significant increase over the last 20 years of 150% (Newton, 2023). Numbers on Ynys Feurig held fairly steady until 1987 when numbers started to drop sharply and by 1991 no roseate terns were breeding on Ynys Feurig. Numbers improved slightly in the mid 90's when up to 18 pairs bred on the island but these numbers dropped off again. It is believed that the Ynys Feurig roseate terns moved to Rockabill Island on the east coast of Ireland. The cause of the colony abandonment is not known, but it would appear that they continue to prefer Rockabill Island to the sites on Anglesey.

One to two pairs of roseate terns each year breed or attempt to breed at the Anglesey Terns SPA. In 2024 two pure Roseate tern pairs were observed at the SPA and one hybrid pair of roseate and common tern was observed to attempt to breed (Jarzyński and Higgins, 2024). This was well under the target of a five-year peak mean of 18 pairs of breeding birds, so the target failed. The confidence in the target failure is high as a lot of effort is put into recording roseate terns at the SPA.

#### **Breeding productivity**

Roseate terns differ in nesting habitat compared to other tern species, choosing to nest in dense vegetation, amongst large rocks and even burrows, likely as a defence against aerial predation (Cabot and Nisbit, 2013).

Roseate terns arrive in the UK around the end of April to breed. They are monogamous within a breeding season and lay 1-2 eggs, typically brooding once in a season (<u>BTO bird facts</u>). There is no specific target for roseate tern productivity as the numbers of breeding birds are so low and intermittent.

One to two pairs of roseate terns each year breed or attempt to breed at the Anglesey Terns SPA. In 2024 two pure Roseate tern pairs were observed to lay one egg each. It is noteworthy that both pairs were observed to be laying their eggs inside a tern box. The first pair successfully produced one fledgling, while the second pair lost their chick due to a natural causes soon after hatching. One hybrid pair of roseate and common tern was observed to attempt to breed, yet their egg did not hatch (Jarzyński and Higgins, 2024). This did not justify passing the productivity target as the productivity could not be shown to be stable or increasing in the long term. Confidence in the target failure was high as the roseate tern breeding is closely monitored at the SPA.

#### **Breeding population distribution**

The distribution of the breeding population can be impacted by activities that would affect the ability of the birds to move freely between feeding and breeding sites, which is critical to their fitness and survival. This can be through physical structures or more likely though anthropogenic disturbance. There is no evidence that the roseate terns are unable to utilise the areas that they feed at and breed at within and outside the SPA due to anthropogenic disturbance. NRW knows of no plan or project which could have affected their breeding distribution or their foraging out at sea, causing this indicator to meet its target. Confidence in the pass was reduced to medium as the assessment was based on expert judgment.

### Disturbance

Disturbance occurs when an activity is sufficient to disrupt normal behaviours, for example, changes to feeding or breeding behaviour, increased energy expenditure due to time spent moving to avoid stressors, desertion of supporting habitats (both within and outside the protected area where appropriate). If the activity occurs at a level that substantially impacts behaviour for long enough it can lead to changes in distribution, displacement through reduction of habitat available and consequently could affect the long-term viability of the population.

Disturbance associated with human activity may take a variety of forms including, light, sound, vibration, trampling, presence of people, animals and structures.

Terns are sensitive to human and predator disturbance. The nesting sites within the SPA rely heavily on wardening by the RSPB (Ynys Feurig and Skerries) and the North Wales Wildlife Trust (Cemlyn). Public access is controlled or prevented during the breeding season, depending on the nest site, to prevent abandonment of nesting sites and reduction in breeding success. No significant human disturbance events reported on the Skerries (Jarzyński and Higgins, 2024) or on Ynys Feurig in 2023 (Owen et al, 2023). There is no other anthropogenic activity known to cause disturbance on this SPA, causing this indicator to meet its target. Confidence in the pass was high as the wardens report on any human disturbance issues.

As predator disturbance is an issue at two of the breeding sites in the SPA, it is likely that this is affecting the breeding success of roseate terns as it is with common and Arctic terns at the SPA. Even if the roseate terns are not being attacked directly (which there is no evidence of) it is likely that the attacks on other tern species would disturb the roseate terns. Therefore, the indicator failed to meet its target. Confidence was reduced to low as in the last few years there have been no direct evidence of predation directly affecting roseate terns.

### Supporting habitat

The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature for all necessary stages of the breeding period (displaying, nesting, roosting, rafting and feeding) is important to the condition of the roseate terns using the SPA and needs to restore the population to at least 18 breeding pairs.

Roseate Terns usually hide their nests under some sort of protective cover such as rocks, vegetation, or when provided nest boxes. Tern nest boxes are provided at the colony and in 2024 the two pairs of roseate tern who did breed used them.

The reasons why roseate terns have not returned to Anglesey Terns SPA is not fully understood. The cause may be outwith this SPA (e.g. the current site at Rockabill may just be more attractive to them) but this cannot be verified and therefore this indicator has been assessed as unknown.

### **Prey availability**

While adult roseate terns are capable of feeding on a wide range of prey including fish, crustaceans, squid, marine worms and insects, (Eglington and Perrow, 2014). It is thought that the roseate terns at the three nesting sites that make up the SPA mainly forage for small fish such as sandeels and clupeids such as sprat and herring.

In the Skerries in 2024 chick and courtship feeding surveys, for all species, showed that fish from *Clupeidae* family was the most common prey species (69.9%) especially later in the breeding season, followed by *Ammodytidae* (22.7%) (Jarzyński and Higgins, 2024).

As a specialist feeder within the UK roseate tern is vulnerable to declines in the abundance of its prey species, which can potentially be driven by commercial fisheries and climate change, although the links between both remain poorly understood (Eglington and Perrow, 2014).

Although there are very few roseate terns using the Anglesey coast the large numbers of other terns using the SPA allows to conclude that the prey availability is sufficient to support the population target but confidence has been assessed as low as roseate terns did not meet their population target.

#### **Invasive mammals**

Terns are sensitive to predation and require freedom from predation to thrive. Even those roseate terns using nest boxes are vulnerable to predation by ground mammals such as the common rat. Every effort should be made to control ground predators present, and the introduction of mammalian predators must be avoided. Should such predators be introduced they could severely threaten the tern population.

The Skerries islands are currently free of invasive mammals, and it was one of the islands that was covered in the <u>biosecurity for LIFE</u> project which aimed to plan and implement biosecurity measures to safeguard seabird islands against the threat of invasive non-native mammalian predators arriving and becoming established. No rat infestations were detected at Ynys Feurig in 2023 (Owens et al, 2023). Therefore, the indicator met its target with high confidence.

## **Reasons for target failure**

The assessment of the Roseate terns in Anglesey Terns SPA failed three primary targets for this feature on this site. This resulted in the feature to be assessed as being in unfavourable condition. The failing indicators and reasons for failure, if known, are stated below.

#### **Breeding population**

The population indicator failed due to very low numbers of roseate tern using the SPA. This is linked to colony abandonment many years ago. Management is in place to make sure that the sites are suitable for roseate terns should they choose to return.

#### Breeding productivity

The productivity indicator failed for the same reason as the Arctic and common tern populations due to predation by avian predators, which as mentioned previously has increased due to reduced populations at the sites leaving them more vulnerable. Various management is in place to make sure that the SPA is suitable for more roseate terns to breed should they choose to return as well as dealing with disturbance by predation.

#### Breeding population disturbance (by predation activity)

Activity by predators, including predatory gulls has had a significant effect on the other terns on the SPA. This effect may have been heightened by reduced wardening and gaps in the colony caused by avian flu. This disturbance predation on other tern species could have an impact on the roseate tern.

### Threats to condition

Part of the condition assessment is to identify threats to the condition of the roseate tern. A threat is defined as an activity that is currently not impacting condition but has the potential to do so over the next reporting cycle, if activity levels increase or are unmanaged. It is important to identify these threats to be able to put pre-emptive management in place to prevent declines in condition.

Activities that go through licencing and permission process whereby the impact of the activity on the feature would be assessed have not been included. The threats to the Anglesey Terns SPA for roseate tern are stated below.

#### Disease

Further outbreaks of avian flu were identified as one of the biggest threat to tern numbers on Anglesey Terns SPAs. However, this threat cannot be managed at a SPA level due to free movement of wild birds.

#### Disturbance

Current low numbers of roseate terns are not thought to be affected by human disturbance, however disturbance by predators is likely to be affecting the productivity of the few birds that do return to breed. As the predation disturbance indicator is failing and roseate terns are sensitive to disturbance pressure any increases in human or predator derived disturbance need to be carefully assessed.

#### **Invasive mammals**

Any introduction of predatory mammals (particularly rats) to the Skerries could have a devastating impact on the terns present.

#### **Climate change**

It is not yet clear what pressures we will see from climate change at the SPA level or how different pressures will counteract each other. However, threats from climate change that could impact the species may include:

- Increasing sea surface temperature.
- Increased storminess.
- Changes to prey availability and abundance.

## 3.4. Condition assessment for Sandwich tern Thalasseus sandvicensis

Sandwich tern *Thalasseus sandvicensis* in Anglesey Terns SPA has been assessed in Table 8. The table has a summary of the assessment outcome against each performance indicator. This outcome and reasons of failure are discussed in more detail in the sections below.

**Table 8.** Condition assessment of Sandwich tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting (see Section 1.1).

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population	Maintain the breeding population of Sandwich tern at, or above 460 pairs. (P)	<ul> <li>The five-year peak mean count from 2020 to 2024 for Sandwich terns over the whole SPA was 1,877 apparently occupied nests (AONs) well above the target for the SPA.</li> <li>Although highly pathogenic avian influenza (HPAI), commonly called avian flu, affected the SPA in late 2023 there was no evidence of a decline at Cemlyn, which is the only breeding site for Sandwich tern, in the SPA.</li> <li>Confidence is high due to the availability of high quality monitoring data.</li> </ul>	Pass	High
Breeding and productivity	The breeding productivity of Sandwich tern at the Cemlyn Lagoon colony should no lower than a 5-year mean of 0.63. (0.63 based on the mean productivity 2010 – 2023). (P)	<ul> <li>The long-term productivity level (based on mean productivity from 2010 to 2023) for Sandwich tern from the Cemlyn breeding colony is 0.63.</li> <li>Productivity is measured yearly at the Cemlyn lagoon.</li> <li>The five-year mean productivity level for Sandwich tern at Cemlyn is 0.78 (mean productivity 2020-2024). This productivity is well above the target.</li> <li>Confidence is high due to the availability of high quality monitoring data.</li> </ul>	Pass	High

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Breeding population distribution	The distribution of the breeding Sandwich tern population should not be significantly impacted by anthropogenic activity. (P)	<ul> <li>Terns need to be able to fly into and out of the SPA and between the three colonies that make up Anglesey Terns SPA.</li> <li>It is important that there are no anthropogenic activities that prevent this from happening.</li> <li>There is currently no anthropogenic activity known to impact their distribution on this SPA.</li> <li>Confidence is medium as the assessment is based on expert judgement.</li> </ul>	Pass	Medium
Breeding population disturbance (by human activity)	Aggregations of roosting or feeding Sandwich terns are not subject to significant anthropogenic disturbance. (P)	<ul> <li>All three SPA breeding colonies have wardens present throughout the breeding season which helps control human disturbance.</li> <li>There are currently no anthropogenic activities known to significantly impact their distribution on this SPA.</li> <li>Confidence is medium as the assessment is based on expert judgement.</li> </ul>	Pass	Medium
Breeding population disturbance (by predation activity)	Aggregations of roosting or feeding Sandwich terns are not subject to significant disturbance by predators. (P)	<ul> <li>The presence of predators in this SPA can have a significant effect on disturbance leading to reduced breeding success and in some cases complete breeding failure.</li> <li>Wardens control predation at Cemlyn Lagoon.</li> <li>There is no evidence of significant disturbance by predators on Sandwich terns in the Anglesey Terns SPA as numbers and breeding productivity are both above the targets set.</li> <li>This target has passed with high confidence due to the high numbers of sandwich tern and the predation controls at the lagoon.</li> </ul>	Pass	High

Indicator	Target	Assessment rationale	Target assessment	Target confidence
Supporting habitat	Maintain sufficient extent, distribution, function and quality of supporting habitat to support a Sandwich tern population of 460 breeding pairs. (S)	<ul> <li>There are no known issues with the supporting habitat on this SPA and the latest five year mean peak count of 1,877 AON means that there are unlikely to be any issues with the supporting habitat.</li> <li>Information on supporting habitat is not directly studied so the confidence in the assessment has been reduced to medium.</li> </ul>	Pass	Medium
Food availability	Maintain the distribution and abundance of food supply at levels sufficient to support a Sandwich tern population of 460 breeding pairs. (S)	<ul> <li>There are no known issues with the food availability on this SPA and the latest count of 1,877 Sandwich terns means that there are no issues with food availability.</li> <li>There are targeted surveys for food types and sizes collected at the colonies but not for total food availability, so the confidence has been reduced to medium.</li> </ul>	Pass	Medium

### **Assessment conclusions**

Sandwich tern in Anglesey Terns SPA have been assessed as being in favourable condition (high confidence). All indicators passed (Table 9). The main threats to the Sandwich tern colony at Anglesey Terns SPA come from further outbreaks of avian flu as well as predation by invasive mammals. Further information on the assessment outcome and threats to condition can be seen in the detailed assessment information below.

**Table 9.** Summary of the condition assessment for Sandwich tern in Anglesey Terns SPA. Each indicator target has a primary (P), secondary (S) or tertiary (T) weighting.

SPA Feature	Overall Condition Assessment	Indicator failures	Reason for indicator failure	Threats to condition
Sandwich tern Thalasseus sandvicensis	Favourable (high confidence)	None	N/A	<ul><li>Disease</li><li>Disturbance</li><li>Climate change</li></ul>

## **Detailed assessment information**

#### **Breeding population**

Sandwich terns are the UK's largest breeding tern, breeding in a few, often large highdensity colonies in the UK (Mitchell et al., 2004). Cemlyn lagoon within the Anglesey terns SPA is the only Sandwich tern breeding colony in Wales (JNCC) and the third largest colony in the UK.

The five-year peak mean count from 2019 to 2024 for Sandwich terns over the whole SPA was 1,877 AON well above the target 460 breeding pairs target for the site.

The colony at Cemlyn was not affected by highly pathogenic avian influenza (HPAI), commonly called avian flu, in the breeding season of 2022, when it is thought that 27% of the European population died (Tremlett et al, 2024). However, it is likely that wintering birds died, as the population which returned in 2023 was almost 50% lower compared to 2022. In 2023 the colony was hit by avian flu which caused mass mortality in the juvenile birds. However, even with this reduction in numbers the colony still passed the population target for abundance of breeding pairs and has bounced back in the 2024 breeding season. The target population levels have been reached with high confidence.

### **Breeding productivity**

Sandwich terns begin to arrive in the UK in March ahead of the breeding season. They lay 1-2 eggs, typically brooding once in a season (<u>BTO bird facts</u>). Stochastic events such as storms, disease and predator attacks can impact productivity within a breeding year due to the nature of nesting sites.

The target was set using the long term mean productivity from the Cemlyn Lagoon breeding colony (2010 to 2023) which is 0.63. This time period was chosen as there was good data from these ten years across all colonies within the SPA. The five-year mean of productivity was calculated as 0.78 (2020 to 2024) causing this indicator to pass. Productivity is measured yearly at the Cemlyn lagoon, and a good data set is available. Even though the productivity levels are based on a sub-set of nests, this has not reduced the confidence.

### **Breeding population distribution**

The distribution of the breeding population can be impacted by activities that would affect the ability of the birds to move freely between feeding and breeding sites, which is critical to their fitness and survival. This can be through physical structures or more likely though anthropogenic disturbance.

There is no evidence that the Sandwich tern population is unable to utilise the areas that they feed at and breed at within and outside the SPA due to anthropogenic disturbance. NRW knows of no plan or project which could have affected their breeding distribution or their foraging out at sea causing this indicator to meet its target. Confidence in the pass was reduced to medium as the assessment was based on expert judgment.

### Disturbance

Disturbance occurs when an activity is sufficient to disrupt normal behaviours, for example, changes to feeding or breeding behaviour, increased energy expenditure due to time spent moving to avoid stressors, desertion of supporting habitats (both within and outside the protected area where appropriate). If the activity occurs at a level that substantially impacts behaviour for long enough it can lead to changes in distribution, displacement through reduction of habitat available and consequently could affect the long-term viability of the population.

Disturbance associated with human activity may take a variety of forms including, light, sound, vibration, trampling, presence of people, animals and new structures.

Terns are sensitive to human disturbance. The nesting sites within the SPA rely heavily on wardening by the RSPB (Ynys Feurig and Skerries) and the North Wales Wildlife Trust (Cemlyn). Public access is controlled or prevented during the breeding season, depending on the nest site, to prevent abandonment of nesting sites and reduction in breeding success. There is no other anthropogenic activity known to cause significant disturbance at the breeding sites, causing this indicator to meet its target. Confidence in the pass was reduced to medium as the assessment was based on expert judgement.

Sandwich terns are also sensitive to predator disturbance. Any significant effects by avian or other predators are managed by wardens with various techniques and no effects have been seen on the Sandwich tern population levels. This target has passed with high confidence due to the high numbers of sandwich tern and the predation controls at the lagoon.

### Supporting habitat

The extent, distribution and availability of suitable habitat (either within or outside the SPA boundary) which supports the feature for all necessary stages of the breeding period (displaying, nesting, roosting, rafting and feeding) is important to to maintain the population at 460 breeding pairs. There are no known issues with the supporting habitat on this SPA and the latest five year mean peak count of 1,877 AONs means that there are unlikely to be any issues with the supporting habitat. The indicator met its target with a medium confidence as the supporting habitat has not been directly studied.

### **Prey availability**

Sandwich terns are almost exclusively marine feeders and can forage in waters up to 18 m deep, though waters less than 15 m are more typical (Perrow et al., 2010; 2011). They appear to prefer sandy areas of seabed occasionally following the tide into estuaries (Cabot and Nisbit, 2013). Adult Sandwich tern diets are poorly understood compared to that of chicks. The chicks are fed a more specialised diet than that of Common and Arctic terns (Eglington and Perrow, 2014). It is dominated by a few fish species; namely clupeids (herring and sprat) and sandeels, gadoids and whiting (Perrow et al., 2010). At Cemlyn Bay Sandwich terns have also been observed feeding on more unusual species such as three bearded rockling (Perrow et al. 2010).

Sandwich terns forage further and deeper than other UK tern species (Cabot and Nisbit, 2013), often flying over 30 km in a single trip, though individuals have ranged further than this (Thaxter et al., 2012). Sandwich terns from Cemlyn Bay tend to forage to the northeast and east of Anglesey.

Feeding surveys carried out in 2019 found that 29.4% of prey items returned to the colony during May 2022 were Clupeidae while 64.7% were sand eel species (Morris and Prettyman, 2022). On the Skerries in 2024 chick and courtship feeding surveys for all species showed that fish from *Clupeidae* family was the most common prey species (69.9%) especially later in the breeding season, followed by sandeels (*Ammodytidae*) (22.7%) (Jarzyński and Higgins, 2024). Although in other breeding seasons the percentage of sand eels can be higher than clupeids, so this most probably changes due to availability of the different prey species at the time.

The large numbers of Sandwich tern using the SPA allows to conclude that the prey availability is sufficient to support the population target, but the lack of dedicated prey availability surveys reduced the confidence to medium.

### **Reasons for target failure**

Swandwich tern in Carmarthen Bay SPA has been assessed as being in favourable condition as none of the performance targets failed.

## Threats to condition

Part of the condition assessment is to identify threats to the condition of the Sandwich tern. A threat is defined as an activity that is currently not impacting condition but has the potential to do so over the next reporting cycle, if activity levels increase or are unmanaged. It is important to identify these threats to be able to put pre-emptive management in place to prevent declines in condition.

Activities that go through licencing and permission process whereby the impact of the activity on the feature would be assessed have not been included. The threats to the Anglesey Terns SPA for Sandwich tern are stated below.

#### Disease

Further outbreaks of avian flu were identified as one of the biggest threat to Sandwich tern numbers on Anglesey Terns SPAs. However, this threat cannot be managed at a SPA level due to free movement of wild birds.

#### Disturbance

Although current disturbance levels are not affecting condition, Sandwich terns are sensitive to disturbance pressure so any increases in human derived disturbance need to be carefully assessed.

#### **Climate change**

It is not yet clear what pressures we will see from climate change at the SPA level or how different pressures will counter act each other. However, threats from climate change that could impact the species may include:

- Increasing sea surface temperature.
- Increased storminess
- Changes to prey availability and abundance.

## 4. Evidence gaps

Although some of the performance indicators for different features were assessed using proxy data reducing confidence in the individual target assessments there were no major evidence gaps identified during the assessment although information on total food availability for terns could be usefully collected.

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