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Saltmarsh Redshank Recovery Plan Framework for England

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Cover photo: Common Redshank *Tringa totanus*, adult male calling, Norfolk – Ben Andrew (rspb-images.com)

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1. Introduction

The **Saltmarsh Redshank Recovery Plan Framework for England** aims to address the alarming decline in Redshank (*Tringa totanus*) populations within saltmarsh habitats. With a population decline of over 50% since the 1980s, this species faces ongoing threats from habitat loss, nest trampling, predation, climate change, and recreational disturbance. The recovery plan framework consolidates current knowledge, identifies critical issues, and proposes targeted strategies to slow the rate of decline and support the conservation of Redshank populations.

1.1. Purpose and audience

Designed as a practical resource, this document is tailored for conservation officers, land management advisors, area managers, and other stakeholders. It sets out strategic recovery approaches and key actions at national, regional, and site-specific levels, offering evidence-based solutions to address the main challenges affecting Redshank and their saltmarsh habitats. As Redshank rely on saltmarsh swards with a high degree of structural heterogeneity, alongside wet features (both freshwater and saline) that support high invertebrate biomass, they serve as a strong indicator of healthy, biodiverse saltmarsh ecosystems. Saltmarshes that sustain good Redshank populations are also likely to support a wide range of other species, reinforcing the need for targeted conservation efforts. By combining habitat management, mitigation of recreational disturbance issues and considering other factors that may act in combination with the above (e.g. predation), this plan framework aims to guide effective conservation interventions.

1.2. Structure

The document is organised to provide a comprehensive understanding of the ecology, population trends, and threats faced by Redshank, as well as the broader significance of saltmarsh ecosystems. It includes:

- A summary of Redshank ecology, their population status, and conservation needs.
- An exploration of saltmarsh habitat dynamics, including threats such as climate change and habitat degradation.
- Recovery approaches, detailing strategies for habitat management, reducing human impacts, and predation control.
- Key actions for priority areas, ensuring tailored interventions for the most critical populations.

By aligning conservation efforts across different stakeholders, this recovery plan framework seeks to protect the remaining Redshank populations and safeguard the integrity of saltmarsh ecosystems in England.

2. Redshank conservation status

The Redshank is a widespread breeding bird across Eurasia, and according to the last IUCN Red List assessment in 2025, is a species of 'Least Concern' on a global scale (BirdLife International, 2025). However, since 1980, European breeding Redshank populations have undergone moderate declines (Figure 1), resulting in their conservation status being updated to 'Vulnerable' in both Europe and the United Kingdom (BirdLife International, 2021). In the UK, the species is also 'Amber' listed under the Birds of Conservation Concern 5: The Red List for Birds (Stanbury et al., 2021). The UK breeding population is currently considered to be at risk due to both long-term and rapid short-term declines (AEWA, 2022). In 2016, the population was estimated at around 22,000 pairs (Woodward et al., 2020), accounting for approximately 7% of the most recent European population estimate (BirdLife International, 2021). In England, the latest available figures using population data extrapolated to 2016 estimate the Redshank breeding population as between 12,132–13,722 pairs (Mason, 2019).

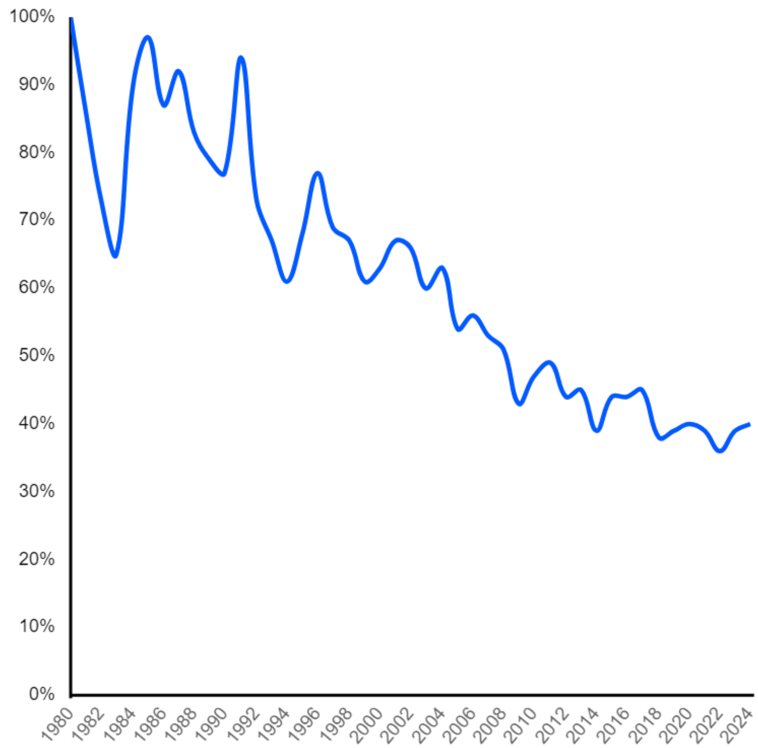


Figure 1. Collated annual population trend for breeding Redshank across Europe between 1980–2024 with index set at 100 in 1980 (PECBMS, 2025). Data source: EBCC/BirdLife/RSPB/CSO.

The UK wintering population consists of short-distance migrants arriving from Europe, Iceland, and Scandinavia: 100,000 individuals (2012/13–2016/17; Woodward et al., 2020). Wintering numbers have generally been considered more stable, though latest estimates from the Wetland Bird Survey indicate a 21% decline in numbers (1996/97–2022/23; WeBS; Calbrade et al., 2025).

Key facts, breeding and survival of Redshank	
Redshank status in UK	Migrant/resident breeder, passage/winter visitor.
Redshank conservation status	UK – Amber Europe – Vulnerable Global – Least Concern Annex II, EU Birds Directive
Typical lifespan	Average lifespan is around four years, although the oldest known bird from ringing is 20 years 8 months (BTO ringing data in 2020).
Breeding age	1 year.
Pre-breeding season intake of food	Insects, spiders and polychaete worms, with more molluscs and crustaceans (especially amphipods).
Choice of prey during breeding season	Mainly insects, spiders and marine worms as well as smaller numbers of molluscs (*Hydrobia* snails) and crustaceans (small *Carcinus* crabs, *Corophium* shrimps), hunted by plucking prey from vegetation, and probing their bills into soil and mud.
Nest site selection	From February, semi-colonially.
Site fidelity	Both male and female birds show high site fidelity.
Nest description	Shallow, cup-shaped nest scrape on ground within plant tussock. Vegetation pulled over top to conceal nest.
Nesting period	Anytime between mid-April to late June (the nesting period lasts up to 15 days longer than on coastal grasslands).
Clutch size	4
Egg description	Olive/stone-coloured, pear-shaped egg with black and brown speckles.
Number of broods	Females can re-lay up to three times if are eggs are lost through predation, flooding, trampling etc, but do not usually attempt to lay again if the brood fails after chicks hatch.
Incubation period	24 days (variation between 22 and 36 days).
Period to fledging	25–35 days.
Juvenile survival rate	43% in first year.
Reaction to disturbance or predators	Incubating adult sits tight. When not incubating, adults call loudly and young chicks crouch low, older chicks will run for cover to hide in dense vegetation. Chicks are remarkably well camouflaged.
Associated habitats	As well as coastal saltmarshes, the species breeds on inland wet grasslands (including cultivated meadows), machair, grassy marshes, wet places in heathlands and moors, including upland in-bye. On migration in the spring and autumn, the species visits inland grasslands, rivers and lakes. During the winter, it is largely coastal, found on beaches, saltmarshes, tidal mudflats, saline and freshwater coastal lagoons, and tidal estuaries.

3. Saltmarsh habitat and its importance for breeding Redshank

After a national survey in 1996, it was estimated that roughly 50% of British Redshank pairs nested on saltmarshes (Brindley et al., 1998). More recent figures using population data extrapolated to 2016 estimate that between 66 and 75% (9,117 pairs) breed on saltmarsh habitats in England (Mason, 2019). This highlights the importance of saltmarsh as a key breeding habitat for Redshank in Great Britain and England in particular.

Redshank on saltmarsh – Gillian Fisher.

Saltmarshes are intertidal zones formed by fine sediments transported by water and stabilised by vegetation (Boorman, 1995). They develop at specific tidal levels, with the lowest marsh forming around Mean High Water Neap (MHWN) level and transitioning to terrestrial grasslands near the Highest Astronomical Tide (HAT). True saltmarshes depend on saline water to support salt-tolerant plant species, but in the upper reaches of estuaries, tidal water is often predominantly fresh (backed-up river water floating above denser saline seawater), creating a transition zone of freshwater tidal inundation. These dynamic environments respond to factors like sediment supply, wind, wave climate, tidal regimes, and climate change-related sea level rise.

They provide essential ecosystem services, including flood and coastal protection, carbon sequestration and storage, and pollutant remediation, while also serving as vital habitats for breeding, wintering and migratory birds, and nurseries for fish.

Saltmarsh development begins when bare mud is colonised by vegetation, which traps sediment and gradually raises the marsh elevation relative to sea level. This natural process, known as accretion, occurs over time. The development of mature saltmarshes (i.e. well-established marsh at the highest tidal levels) is heavily reliant on both sediment supply and the rate of sedimentation, with the process typically taking between 40 and 80 years (Boorman, 2003).

Landscape drone shot of saltmarsh at RSPB Dee Estuary Burton Mere Wetlands Nature Reserve, September 2023 – Sam Turley (rspb-images.com).

In the UK, saltmarshes are typically divided into four main zones – pioneer, low marsh, middle marsh, and high or upper marsh – along with an upper transition zone to terrestrial or freshwater grasslands. These divisions are shaped by tidal regimes and align with distinct plant communities as regulated by inundation frequency and salinity (see Appendix). These zones are not always clearly defined. JNCC's Common Standards Monitoring Guidance for Saltmarsh Habitats categorises the zones as 'pioneer', 'low-mid marsh' and 'mid-upper marsh' (JNCC, 2004).

Upper saltmarshes can form transitional mosaics with terrestrial vegetation types, but these are often limited or absent due to physical barriers such as hard sea defences.

Redshank usually nest from April to June (the peak of the nesting period being mid-April to the end of May) in mid and upper saltmarsh zones (Figure 2) where the vegetation structure is variable. They typically lay four eggs in a single clutch, nesting at high tidal levels (mostly around Mean High Water Spring (MHWS) level). Females will relay up to 3 times if nests are lost at the egg stage. Incubation is done by both parents and lasts approximately four weeks (average of 23-24 days), and chicks take 25-35 days to fledge (Grosskopf, 1958; Thyen & Exo, 2005).

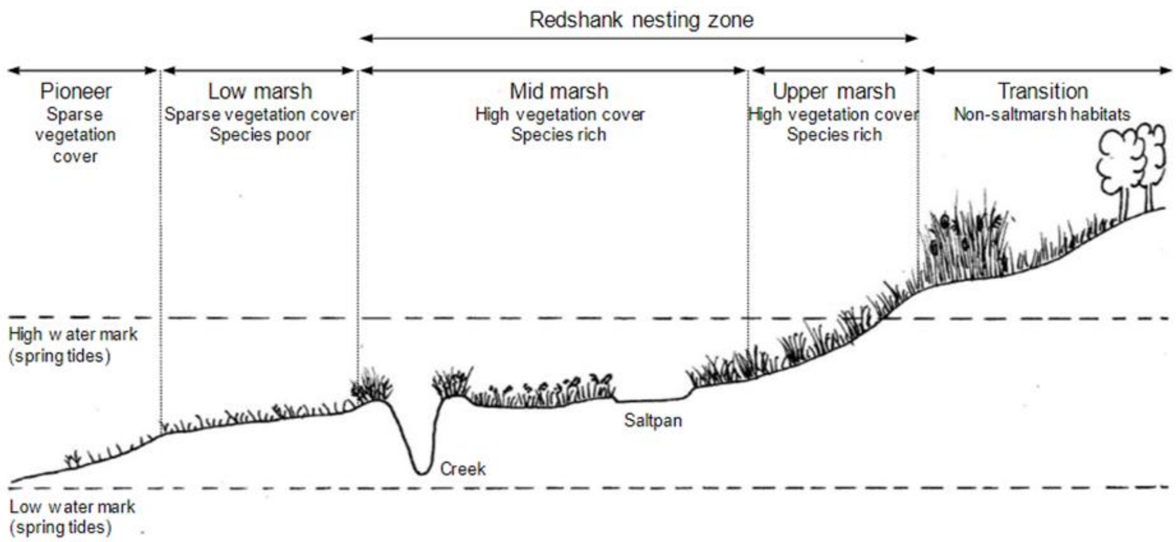


Figure 2. Typical zones of saltmarsh along with zones used by breeding Redshank (taken from Mason, 2019 and Burd, 1989).

Nests are usually placed in tussocks or small patches of taller vegetation, often in grasses like Common Saltmarsh-Grass (*Puccinellia maritima*), Red Fescue (*Festuca rubra*), and Couch Grass (*Elymus* spp.) or other saltmarsh plants including sedges and Sea Purslane (*Atriplex portulacoides*) (Norris et al., 1997; Thyen & Exo, 2003). The vegetation canopy above the nest is shaped in a dome by the birds, providing protection for nests, concealing them and helping to prevent eggs from being washed away during high tides. Eggs can survive periodic flooding (e.g. from high tides) as long as they remain in the nest, though adults will typically abandon nests if eggs are displaced. Channel edges are a favoured nesting site because they tend to be drier and slightly elevated due to increased sediment deposition. These conditions support different vegetation types, allow plants to grow faster, providing early cover for nests. However, this advantage can be offset by heavy grazing and trampling, as these areas are frequently used as walkways by livestock, reducing vegetation cover and increasing the risk of nest disturbance.

Above: Redshank nest (Wolferton, The Wash) – Lucy Mason.
Below: Close-up of Redshank eggs – Bart Donato.

Redshank chicks are precocial, meaning they can walk and feed almost immediately after hatching, typically within the first day. They rely on the saltmarsh for food, shelter, and mobility during their early development. In the first three weeks, they stay close to their nest, usually within a 0.4-hectare area, moving 100–200 meters as they grow. They remain in the saltmarsh until they are ready to fledge, with only occasional travels to nearby mudflats (Thyen & Exo, 2005; Thyen et al., 2008). With their cryptic plumage and behaviour, the chicks are well camouflaged against the mud and use the surrounding vegetation for cover. On livestock grazed marshes, they often seek refuge in hoofprints for added protection from predators (Donato & Maclauchlan, 2022). Both adults and chicks feed by gleaning invertebrates from the surfaces of shallow water, wet soil, or vegetation. They depend on damp soils and networks of shallow pools where they forage in the mud along the edges, which provide vital feeding areas rich in invertebrates. Adult Redshank feed across both tidal areas and upper shore zones, with a diet including insects, small crabs *Carcinus maenas*, ragworms *Hediste diversicolor* and mud shrimps *Corophium volutator* (Goss-Custard & Jones, 1976).

Redshank chicks – Bart Donato.

4. Breeding Redshank declines and drivers of population change

Redshank breeding densities are generally higher on saltmarsh than on any other habitat apart from machair (Davidson, 1991; Smart, 2005); however, national breeding surveys indicate a significant decline in this population. Between 1985 and 2011, Redshank breeding pairs on British saltmarshes fell by 53%, from 21,431 pairs to 11,946 pairs (Malpas et al., 2013b).

4.1. Grazing management

Changes in livestock grazing intensity and timing have been identified as a key driver of this decline (Norris et al., 1998; Norris & Atkinson, 2000; Malpas et al., 2013b), largely due to agricultural intensification that has altered traditional grazing practices. Economic pressures have either increased grazing or led to grazing abandonment, both of which negatively impacted the saltmarsh vegetation structure, crucial for Redshank nesting suitability. Additionally, changes in agricultural practices, such as the shift from hay to silage, have resulted in inland fields being protected from grazing earlier in the year, causing livestock to be moved to summer grazing (including saltmarshes) sooner, resulting in a higher risk of nest trampling. Saltmarsh livestock grazing is also frequently managed in the absence of reference to background levels of grazing by migratory wildfowl, which when added to pressures exerted by livestock in spring and summer, result in overall grazing levels which are higher than is optimal (Mason et al., 2019; Hartman, 2024).

Heavy grazing creates a short, uniform sward that fails to provide sufficient cover, making nests more vulnerable to predation and tidal flooding (Sharps et al., 2015). Short swards will also trap less sediment, potentially restricting saltmarsh accretion rates. In contrast, abandonment of formerly grazed areas tends to lead to dense, rank vegetation, which limits both nesting sites and foraging opportunities (Yates, 1982). Livestock grazing, particularly by cattle, at both high and low intensity during the early spring and summer (April-June) can also result in considerable Redshank nest losses to trampling (Sharps et al., 2017).

In the UK, saltmarsh grazing generally involves young cattle raised for beef production or sheep raised for saltmarsh lamb (Adnitt et al., 2007). Grazing with cattle tends to create a more diverse sward structure due to their feeding style of tearing large mouthfuls of grass, unlike sheep, which crop grass closely. Grazing pressure on saltmarshes often varies across different parts of the saltmarsh, as livestock don’t use the habitat uniformly. In many marshes grazed by cattle, the intensity of grazing is greater in the upper zones and within 500m of the sea wall, likely due to the abundance of more palatable grasses (Pehrsson, 1988; Esselink et al., 2002) and the proximity to freshwater sources (Arias & Mader, 2011; Sharps et al., 2017). On other saltmarshes often grazed by sheep, undergrazing in the very upper and transitional zones can lead to the dominance of unpalatable, silica-rich grasses like *Deschampsia cespitosa*, causing the vegetation to become rank and eventually colonised by gorse. As a result, livestock may shift their grazing to the young, fresh grass along the marsh edge, which is more attractive due to its higher salt content.

In 2013, a survey of saltmarsh grazing in England found that, although most saltmarshes suitable for livestock grazing were grazed, the level, type and timing of grazing needed to meet conservation aims on saltmarsh were not being achieved (Mason et al., 2019). Overall, sites receiving payments for saltmarsh-specific agri-environment management were no more likely to be grazed at optimal conservation levels than sites without this management. This was likely due to low specificity of the prescribed management, which was found to be either too vague, or specifying suboptimal or detrimental management objectives, particularly for grazing intensity, timing and stock type (Mason et al., 2019).

Cattle grazing on the saltmarsh. Freiston Shore RSPB reserve, Lincolnshire, England. July 2006 – Andy Hay (rspb-images.com).

An unknown potential threat to Redshank related to livestock grazing of saltmarsh is the increased use of Ivermectin, a widely and regularly used veterinary antiparasitic drug for livestock, which represents a possible environmental risk due to its high excretion in faeces and transfer to the soil. Although the effects on plants were once not well understood, recent research suggests that plants can be harmed by this chemical (Iglesias et al., 2022). Additionally, invertebrate species such as *Corophium volutator* and *Hediste diversicolor* have been shown to be negatively affected by Ivermectin (Collier & Pinn, 1998), meaning that Redshank prey availability could be reduced.

4.2. Recreational disturbance and habitat accessibility

There is evidence that recreational use of coastal and inland wetlands is becoming more common and widespread. Saltmarshes with flat, easily accessible terrain are especially vulnerable to recreational disturbance, particularly when located near population centres or where high grazing intensity causes them to resemble easily accessible lawns. At Portbury Wharf Nature Reserve for example, the creation of new unofficial tracks during the COVID-19 lockdown caused severe path erosion and the loss of significant areas of saltmarsh vegetation (FPWNR, 2022). On the Lune estuary, fences have been deliberately cut by the public to allow easier access to the saltmarsh (LDBWS, 2023). Over time, unofficial footpaths have developed, further encouraging people to walk in sensitive areas. A lack of clear signage and interpretation along these routes adds to the problem, as visitors are often unaware of the saltmarsh's ecological importance and the need to minimise disturbance. In areas where dog walking, both by individuals and commercial dog-walking businesses, is common, easy access to the saltmarsh is particularly problematic as some dogs roam freely across the marsh and into creeks, disturbing wildlife.

Trampled vegetation due to footfall (Morecambe Bay, May 2024) – Audrey Jost.

Similar patterns have been documented in studies from Australia and New Zealand, where vehicle use on saltmarshes has led to vegetation loss, the expansion of naturally bare areas, and the prevention of recolonisation (Kelleway, 2005; Blakely et al., 2022).

Redshank are considered to have medium sensitivity to recreational disturbance (Goodship & Furness, 2022). Davidson and Rothwell (1993) identified Redshank as among the more nervous wader species compared to relatively tolerant species like Eurasian Oystercatcher (*Haematopus ostralegus*). Fitzpatrick and Bouchez (1998) observed that Redshank, along with Eurasian Curlew (*Numenius arquata*) and Oystercatcher, exhibit heightened vigilance in response to faster-moving activities such as jogging and cycling, compared to slower activities like walking or remaining stationary. While the impact of human and dog disturbance on breeding Redshank remains unquantified, documented effects during breeding season on the similarly coastal-nesting Oystercatcher include reduced breeding density, changes in nest distribution, and decreased parental care, leading to lower reproductive success (Verhulst et al., 2001; Tratalos et al., 2021).

There is anecdotal evidence that Redshank that traditionally nested in the upper marsh are being pushed out and, in some cases, attempt to nest in unsuitable adjacent habitat as a result of human disturbance. For instance, at Stodday Marsh in north-west England, some Redshank pairs that lost their primary clutches on the saltmarsh relocated to nearby drier farmland, where they faced risks from land management practices like silage cutting and drainage (LDBWS, 2023).

4.3. Habitat loss and degradation

Redshank exhibit strong site fidelity and high loyalty to where they hatched, with both males and females showing a tendency to return to previous breeding grounds, typically moving an average of only 615 metres from their birth site to their first breeding site (Thompson & Hale, 1989). However, site fidelity varies based on breeding success: successful pairs are more likely to remain together and return to the same nesting grounds, while unsuccessful pairs are more likely to separate, with females dispersing further than males (as is typical in waders). Older birds tend to return to breeding sites even after unsuccessful nesting attempts, while younger, less experienced individuals are more likely to disperse. Ensuring the continuity of availability of suitable habitat with high probability of nest and chick survival is therefore critical for maintaining Redshank populations.

In the UK, saltmarsh habitat (all zones included) is currently estimated to cover between 40,000 and 45,000 hectares (Burden & Clilverd, 2022), with 79–89% located in England (Environment Agency, 2022) (Figure 3).

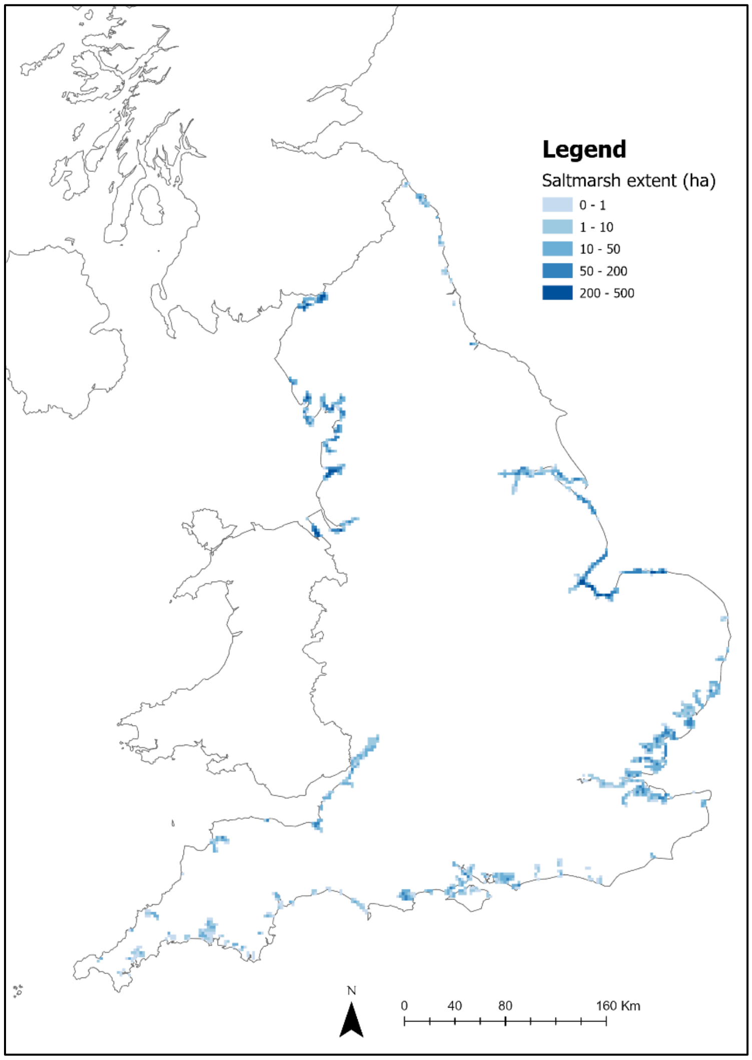


Figure 3. Saltmarsh extent across England within 5 km² cells. Adapted from Ladd (2021) using data from Environment Agency, 2022.

Saltmarsh reclamation has been a primary driver of habitat reduction, starting from Roman times and accelerating through the Middle Ages due to agriculture, port development, and infrastructure expansion. It has typically involved constructing sea walls to prevent tidal flooding and allow continued land drainage (Allen, 1997). Reclamation has primarily impacted the upper saltmarsh levels, where soil loss over time has caused these areas to subside, while the marshes and the sea outside flood banks have continued to rise. Additionally, the drainage of saltmarsh wet features and the conversion of natural creeks into artificial drainage channels have significantly altered the character of these habitats.

Saltmarshes are increasingly threatened by environmental pressures, particularly climate change. The increase of storm frequency and intensity often leads to more frequent tidal inundation, further shrinking the flood-free window for ground-nesting birds. As a result, eggs and chicks become more vulnerable, leading to higher nest failure rates and more instances of chicks drowning (e.g. Koivula et al., 2025).

Increased storminess and wave action may also accelerate erosion along the edges of saltmarshes, shrinking their lateral extent and causing more frequent inundation. These marshes struggle to recover between events, making them more vulnerable to long-term degradation. While storms can deposit beneficial sediment, they can also displace seedlings, which require disturbance-free periods to establish. Rising sea levels shorten these intervals, preventing plant establishment in lower intertidal zones (Haigh et al., 2019). These shifts may alter the habitat structure by causing high marsh vegetation to be replaced by lower marsh communities, which are less suitable for breeding Redshank (Huiskes, 1990). In undisturbed systems, this can lead to a natural migration of saltmarshes landward. However, hard coastal defences like sea walls often prevent this shift, resulting in habitat loss (this is also known as 'coastal squeeze'; Boorman et al., 1989).

Eroded saltmarsh at Morecambe Bay, May 2024 – Audrey Jost.

Saltmarshes can adapt to rising sea levels through vertical accretion, building elevation if there is sufficient sediment. However, this adaptation has limits. If the rate of marsh sediment accumulation is outpaced by rising tidal flooding due to sea level rise, the marsh gradually loses elevation relative to the tides and may eventually transition into open water (Orson et al., 1985). In south-east England, marshes are also gradually sinking due to isostatic rebound, the process by which land compressed under the weight of glaciers during the last Ice Age slowly readjusts.

As the northern parts of the UK rise, the south-east subsides, intensifying the effects of sea level rise (Hughes & Paramor, 2004). Existing creeks may also widen, leading to further fragmentation of saltmarshes as they become increasingly dissected by expanding waterways (Pethick, 1992). This reduces the extent of suitable nesting and chick-rearing habitat for Redshank, making it more difficult for them to breed successfully.

Seasonal shifts also affect saltmarshes: hotter and drier summers add additional strain, as increased evaporation and drought lead to vegetation dieback, particularly in the upper zones (McKee et al., 2004; Ewanchuk & Bertness, 2004). These impacts are amplified on marshes where historic drainage work has been carried out to facilitate grazing or turf cutting, which allow water to escape from natural depressions. Similarly, colder, drier springs in regions such as north-west England limit plant diversity, reducing nesting cover for Redshank during the breeding months. Drier conditions also reduce the available of standing water and mud, which are key foraging habitats for Redshank adults and chicks.

The colonisation of saltmarshes by Spartina species, particularly *Spartina anglica*, has been shown to stabilise sediments and promote accretion of mudflat to pioneer marsh in some areas (Granse et al., 2021). Spartina also grows on upper marshes where there is some freshwater influence, but its dense monoculture often lacks the structural diversity needed to support breeding Redshank. This homogeneity increases the vulnerability of Redshank nests to predation and flooding, making Spartina-dominated saltmarshes less suitable as breeding habitats. Therefore, while Spartina contributes to saltmarsh expansion, it does not provide high-quality nesting habitats for Redshank.

Spartina anglica sward at RSPB Morecambe Bay, April 2024 – Neil Forbes.

Herbicide levels found in aquatic environments can reduce the growth and photosynthesis efficiency of plants, including microscopic algae and upper saltmarsh plants. Reduced photosynthesis not only hampers plant productivity but also limits root growth, possibly reducing the overwinter survival of perennial species and compromising sediment stability. As a result, sublethal herbicide concentrations are believed to have contributed to the increased erosion of saltmarshes and likely loss of Redshank breeding habitat in eastern England since the late 1950s (Mason et al., 2003).

4.4. Predation challenges

Predation on Redshank nests on saltmarshes comes from both mammalian and avian species, including corvids (*Corvus* spp.), gulls (*Larus* spp.), Red Fox (*Vulpes vulpes*), Stoat (*Mustela erminea*) and non-native American Mink (*Neovison vison*) (Thyen & Exo, 2004; Smart, 2005). Badger (*Meles meles*), a known predator of waders in wet grasslands (Malpas et al., 2013a) may also be present on some saltmarshes. On Eastern saltmarshes, Smart (2005) reported very low chick survival rates, with Kestrel (*Falco tinnunculus*) and gulls preying on Redshank chicks on the sites studied. Redshank chicks on lowland wet grassland in the UK are subject primarily to predation by Red Fox and multiple raptor species (Mason et al., 2018), and relative predator contributions on saltmarshes are likely to be similar.

In the UK, the eradication or severe depletion of apex predators, the hyper-availability of anthropogenic food sources and land management providing further food sources, has led to an increase in mesopredator populations, especially in comparison to other European countries. With these higher numbers, they are now a major threat to ground-nesting birds like Redshank, limiting their population growth (Roos et al., 2018).

Predation is a contributing factor to nest losses on saltmarsh, but its impact is comparable to other threats such as trampling and flooding. Long-term monitoring on Banks Marsh in the Ribble Estuary (1969–2018) found that 10% of Redshank nests were lost to predation, while similar proportions were lost to trampling (11%) and flooding (17%), with abandonment accounting for 18% (Harmer, 2023). However, other data suggest that predation rates may have increased. In 2012, across six saltmarshes in the Ribble Estuary, 45 Redshank nests were monitored over 323 exposure days. Of the 34 nests that failed, 41% were predated, 38% were lost to tidal flooding, and 21% were trampled by livestock (Sharps et al., 2015). These findings indicate that predation still plays an important role in nest failure.

Adult Redshank are also at risk from predation. On Banks Marsh, foxes were responsible for the deaths of adult birds at 20% of nests lost between 2016 and 2018 (Harmer, 2023), further adding to the pressures on the species.

5. Recovery approaches

The recovery of Redshank populations on saltmarsh habitats requires a strategic, evidence-based approach that addresses both immediate threats and long-term challenges. This section outlines key approaches designed to improve habitat quality, reduce recreational disturbance, and mitigate predation risks, ensuring a sustainable environment for breeding Redshank. In the short term, prioritising the quality of existing habitat over its extent is crucial to supporting Redshank populations effectively.

5.1. Improvement of grazing practices

Grazing is important to promote vegetation structure that benefit Redshank by creating patchy habitats ideal for nesting, but it also results in nest trampling, so balancing the benefits with the risks is important. Studies have shown that Redshank breeding densities are highest on lightly grazed saltmarshes and lowest where grazing intensity is heavy (Norris et al., 1997; Malpas et al., 2013b).

The optimal intensity, timing and type of livestock grazing suitable for conservation management of saltmarshes for the benefit of breeding Redshank is detailed in Table 1 reproduced from Mason et al. (2019). This optimal conservation grazing is characterised by the use of cattle at very low densities, ideally avoiding grazing during the peak Redshank nesting period (April-June) to reduce nest trampling.

Table 1. The optimal intensity, timing and type of grazing suitable for conservation management of saltmarshes for the benefit of breeding Redshank and other saltmarsh biodiversity, reproduced and adapted with permission from Mason et al., 2019. Shown are the optimal, suboptimal and detrimental levels of five aspects of saltmarsh conservation grazing, along with the rationalisation and evidence sources.

	Conservation grazing level		
Aspect	Optimal		Detrimental
(1) Presence/ Absence of grazing	Site SUITABLE for grazing are GRAZED or Site UNSUITABLE for grazing are UNGRAZED		Site SUITABLE for grazing are UNGRAZED or Site UNSUITABLE for grazing are GRAZED
Rationalisation/Source: 'Sites suitable for grazing' are defined as directly accessible from land, with infrastructure to contain livestock and drinking water. 'Historically-grazed' sites should continue to be grazed at conservation levels (abandonment being detrimental to saltmarsh biodiversity) while 'historically-ungrazed' sites should remain ungrazed (Adnitt et al., 2007). The true grazing history of a site in the UK is difficult to determine however, particularly if sites were abandoned outside of living or documented memory. We consider that all sites suitable for grazing (i.e. accessible to livestock and agricultural workers from the sea wall and surrounded by agricultural land) will most likely have been utilised for grazing historically (Chatters, 2004).			
Aspect	Optimal	Suboptimal	Detrimental
(2) Stock type	CATTLE GRAZING ONLY	SOME CATTLE GRAZING WITH OTHER STOCK TYPES PRESENT	NO CATTLE GRAZING or NO STOCK PRESENT
Rationalisation/Source: Cattle produce more structurally diverse vegetation than sheep or horses (e.g. Adnitt et al., 2007).			
(3) Grazing intensity	LOW 0 < LUs/ha ≤ 0.3	LOW-MODERATE 0.3 < LUs/ha ≤ 0.7	HIGH or NONE LUs/ha > 0.7 or LUs/ha = 0
Rationalisation/Source: Livestock Unit (LU) ranges are based on mean maximum LUs/ha values classed as low, low-moderate or high by 26 sources where this information was quantified and accompanied by an assessment of suitability for conservation grazing (see Mason et al., 2019 supplementary materials for a summary of these sources).			
(4) Timing of grazing	Starting after June (avoiding nesting season) Finishing at the end of October (avoiding Autumn/Winter)	Starting after June (avoiding nesting season) Finishing after the end of October (grazing in Autumn/Winter) or Starting in April or May (grazing in nesting season) Finishing at the end of October (avoiding Autumn/Winter)	Starting in April or May (grazing in nesting season) Finishing after the end of October (grazing in Autumn/Winter)
Rationalisation/Source: Optimal grazing timing for nesting redshank starts after June to avoid the risk of nest trampling in the peak nesting season (April-May). Grazing in the peak nesting period causes considerable bird nest losses to trampling (Sharps et al., 2017). Optimal grazing timing for good habitat condition avoids grazing after the end of October, as late Autumn/Winter grazing prevents optimal sward regrowth and is likely to cause soil compaction, poaching and erosion (e.g. Adnitt et al., 2007; Doody, 2008).			
(5) Habitat impact score	Grazing index = 1	Grazing index = 0 or Grazing index = 2	Grazing index = 3
Rationalisation/Source: Grazing index indicates grazing impact on habitat where essentially 0 = no grazing, matted vegetation, no standing crop removed; 1 = light grazing, majority of standing crop not removed; 2 = moderate grazing, majority of standing crop removed; 3 = heavy grazing, all standing crop removed, sward height < 10cm (JNCC 2004). Breeding bird densities and habitat diversity highest where index = 1, intermediate where index = 0 or 2, lowest where index = 3 (Malpas et al., 2013b).			

The UK Environment Agency's guidelines for light grazing are 0.42–0.7 livestock units (LU) per hectare (based on a conversion from 0.7–1 young cattle per hectare, see Table 2) from April to October (Adnitt et al., 2007). However, Sharps et al. (2016) found that, even when adhering to these guidelines, the resulting sward height may be too short, potentially making Redshank nests more exposed to predators and flooding. A review of published literature from western Europe reporting livestock stocking rates alongside an assessment of grazing effects also indicated that stocking rates of less than 0.3 LU/ha were most likely to benefit saltmarsh biodiversity (Mason et al., 2019 Supplementary materials Table S1). The Environment Agency's existing guidelines of 0.42–0.7 LU/ha are therefore too high for optimal saltmarsh conservation grazing. To compound this, Sharps et al. (2017) also found that even at very low grazing intensities (< 0.1 LU/ha), the losses of Redshank nests to livestock trampling were considerable and the main cause of nest loss on the sites studied, so timing and distribution of grazing is also very important in addition to stocking rate.

Animal numbers are converted into livestock units as follows:	**LUs**
Cattle over 2 years	1
Cattle over 6 months to 2 years	0.6
Lowland ewe and lamb; ram	0.12
Store lamb, hill ewe and lamb; hogg; teg	0.08
Horse	1
Pony / Donkey	0.8
Goat	0.12

Table 2. Conversions between livestock numbers and Livestock Units (Rural Payments Agency, 2023).

It is important to remember that saltmarshes are more economically challenging to manage than fields. The presence of tides and creeks creates additional obstacles, such as the need to carefully manage livestock, as they can get stuck in creeks and require extraction. It is also essential to account for other factors that impact on and influence vegetation growth and sward structure when considering changes to grazing. For example, rising sea levels are likely to change vegetation communities on some marshes due to increased tidal inundation and changes in wintering wildfowl populations can also have a significant impact on swards and contribute an additive grazing pressure.

To maximise benefits for Redshank, the following grazing management options are listed in order of their likely positive impact, from highest to lowest. However, the effectiveness of each approach may vary depending on local site conditions.

5.1.1. Delayed grazing

The best solution to the issue of nest trampling by livestock would be to delay grazing until after the peak Redshank nesting season (April–June), typically starting grazing in July. Delayed grazing would remove the risk of nest trampling (Sharps et al., 2017; Mason, 2019), and would also allow vegetation to grow taller, providing better cover for nests, while still enabling the necessary management of vegetation structure through grazing later in the season.

It is essential to consider the size of the grazing unit and ensure that the right number of livestock is available within the narrow grazing window to achieve effective sward management. In some cases, delaying the onset of grazing across the marsh may lead to too much vegetation growth and loss of structural diversity over time.

In situations where this is not feasible, one of the alternative strategies listed below may be more appropriate.

5.1.2. Rotational grazing

An alternative to delayed grazing is rotational grazing, where parts of or whole saltmarshes are grazed in alternate years. This approach would remove the risk of nest trampling in non-grazing years (Sharps et al., 2017), while also allowing vegetation to grow taller during non-grazing years, improving habitat quality and providing better nesting cover for Redshank. Studies on the Wadden Sea have found that rotational grazing does develop beneficial sward structures for Redshank (Mandema et al., 2013; Lagendijk et al., 2017). Tools like temporary electric fencing, natural barriers such as creeks, or livestock GPS collars (e.g. Nofence https://www.nofence.no/en-gb/) can help manage livestock movement without permanent physical barriers.

5.1.3. Reduced grazing intensity

If delaying grazing until late summer or rotational grazing are not feasible, an alternative approach involves low-intensity cattle grazing (< 0.1 LU/ha) during the spring and early summer (April–June) (i.e. during nesting and early chick rearing), followed by moderate grazing intensities (up to 0.7 LU/ha) from July to October. This strategy balances the needs of breeding Redshank while maintaining or restoring overall saltmarsh biodiversity.

For sheep-grazed saltmarsh, light grazing in early spring/summer is likely to produce suitable sward and vegetation community characteristics for Redshank (Kiehl et al., 1996; Bakker et al., 2020; Mason et al., 2019). However, sheep may also contribute to predation, and are responsible for considerable wader egg losses in inland habitats (Noyes et al., 2024; Barton et al, 2025). Additionally, trampling rates are higher for sheep compared to equivalent stocking densities of cattle as it ‘requires about ten sheep (i.e. a total of 40 hooves which might tread on nests) to remove the same quantity of vegetation as one cow’ (Ausden & Bolton, 2012).

Therefore, reduced grazing pressures of sheep are unlikely to be successful for Redshank conservation, and delayed grazing or rotational grazing are to be preferred as options on sheep-grazed saltmarsh.

5.1.4. Preservation of ungrazed saltmarsh and influence of goose grazing

Some sites are not currently grazed by livestock but still support high floristic diversity and invertebrate diversity, including large populations of detritivores and predatory beetles (Adam, 1990). These areas are also preferred feeding grounds for passerine species due to the availability of invertebrate and seed resources (Dierschke & Bairlein, 2004) and provide ideal habitats for bee populations (Davidson et al., 2020).

Research on the Wash saltmarshes found that introducing cattle grazing to areas that had been ungrazed for a long time did not significantly alter Redshank breeding densities (Ausden et al., 2005). However, in areas where dense monocultures – such as Sea Purslane or Couch grasses – reduce habitat quality for breeding Redshank, targeted interventions after nesting and chick-rearing season like intermittent, very light grazing would be beneficial for creating structural diversity. Such measures should be implemented with extreme sensitivity to avoid overgrazing, and their impacts should be closely monitored and reviewed.

Saltmarshes are also essential feeding grounds for wintering wildfowl, such as Pink-footed Goose (*Anser brachyrhynchus*), Brent Goose (*Branta bernicla*) and Eurasian Wigeon (*Mareca penelope*). Light grazing by livestock can benefit these species by encouraging their preferred grasses and creating open sightlines to spot potential predators. In contrast, saltmarshes that are not currently grazed by livestock typically have taller vegetation and a higher proportion of less palatable plants, making them less attractive to wildfowl. Although this is not always the case: research by Bos et al. (2005) found that, while overall goose-dropping densities are significantly lower in ungrazed marshes compared to grazed ones, some ungrazed marshes still experience relatively high grazing pressure from geese. As increased combined grazing pressure from both livestock and wintering wildfowl may contribute to declines in breeding Redshank densities (Norris et al., 1998), it is essential to carefully manage livestock grazing annually to balance the impact of wildfowl grazing and thus ensure an appropriate sward height that supports breeding Redshank is maintained.

5.2. Addressing saltmarsh decline

5.2.1. Creation and enhancement of habitat

To counter habitat loss, the UK increasingly employs managed realignment, a strategy that re-creates saltmarsh areas by breaching the sea wall, allowing tidal flow to reclaim previously embanked land. However, restored saltmarshes are often flat and low-lying.
Seaward of the enclosing wall, material has continued to accrete, while landward, there has been little to no accretion, and the land is typically lowered by agricultural practices.
As a result, these areas are comparably more waterlogged than natural marshes, leading to vegetation that is characteristic of lower saltmarshes and not very diverse (Mossman et al., 2012). Saltmarsh creeks, which naturally help dissipate tidal energy (Pethick, 1992), are often overlooked in such restoration projects, despite their importance for achieving a more complex marsh structure (Brooks et al., 2015).

Managed realignments can often be made more attractive for breeding Redshank and biodiversity in general by creating features such as creeks, lagoons and other wet areas.

Using the excavated spoil to introduce topographic variation – including raised areas for safer nesting – can further enhance habitat quality. When carefully planned and implemented, such measures can help to overcome the issues described above. Recent examples include Hesketh Out Marsh East in north-west England, where features like hillocks and small creeks have promoted vegetation and habitat diversity (Lawrence et al., 2018). A network of saline lagoon features has also significantly increased the value of Hesketh Out Marsh for a wide range of biodiversity and ensures that saline invertebrate communities have refuges during prolonged heatwaves. Similarly, new topographic features added to RSPB Freiston Shore 12 years post-restoration significantly increased Redshank breeding densities (Pontee et al., 2023).

Saltmarsh within the managed retreat / realignment area: looking towards the breaches in the outer sea wall. Freiston Shore RSPB reserve. Lincolnshire, England. March 2007 – Andy Hay (rspb-images.com).

Another restoration strategy, regulated tidal exchange (RTE), involves the use of pipes and sluices to allow controlled saline flooding of previously defended land while keeping sea walls intact. This approach can provide a cost-effective option in areas unsuitable for managed realignments. RTE enables better control of water levels, preventing flooding in areas below the MHWS mark, and promotes net sediment accretion. Additionally, predator-exclusion fencing can be implemented to further protect the area (Ausden et al., 2025).

However, although sites with restored tidal exchange can support shorebirds, smaller sites may never achieve the full biodiversity found in larger natural areas, with the highest species diversity occurring in sites over 100 hectares (Wolters et al., 2005).

Saltmarshes form in sheltered areas with gentle waves and currents where calm conditions allow mud to settle and seedlings to establish. In locations where hydrodynamic forces are too strong for natural saltmarsh formation, engineered structures have been used to create favourable conditions for marsh development. Notable examples include brushwood groynes and artificial drainage systems which reduce wave energy and enhance drainage, creating an environment where vegetation can thrive (Thorenz, 2008).

5.2.2. Restoration of existing habitat

Intertidal recharge involves artificially raising intertidal and subtidal areas by adding imported sediment, which helps lift sinking marsh plains and enables saltmarshes to act as essential storm buffers and flood defences. Sediment for this process can often be sourced from nearby maintenance dredging operations as an alternative to offshore disposal, a practice known as the 'Beneficial Use of Dredged Sediment' (BUDS). Saltmarshes require fine mud and silt particles, while sediment with higher sand or gravel content is generally less suitable. In the US, dredged material has been effectively used to establish new mudflats and saltmarshes, offering valuable new habitats for birds (Streever, 2000). In the UK, the use of dredged material for restoration purposes has typically been limited to small-scale projects so far (Manning et al., 2021).

Recharge of sediment (deposited strip can be seen in the foreground) on Loder's Cut Island in the Deben Estuary – Jim Pullen.

Some saltmarshes can also sometimes lack sufficient topography to support breeding Redshank effectively. In such cases, the existing network of creeks and salt pans may fail to provide adequate habitat, particularly during drought conditions when water is lost over the summer months. To address this, selectively blocking modified creeks and drains with dams made of saltmarsh sediment can help retain water within the saltmarsh throughout the breeding season, even during periods of drought. Where drainage blocking is impractical, creating artificial flashes offers an alternative solution for water retention. Using LiDAR data and aerial imagery, low-lying areas can be identified and excavated to form shallow depressions. Along the edges of these artificial channels, low berms are constructed to act as natural creek-side levees, preventing rapid water loss while still allowing tidal refilling. While some maintenance may be needed, these features rapidly integrate into the marsh ecosystem, benefitting not only Redshank but also other waders, wildfowl, and invertebrate communities. Additionally, they promote greater vegetation diversity and enhance structural complexity within the marsh, further improving habitat quality (Donato & Maclauchlan, 2022).

Wet flash in Rockcliffe Marsh retaining water, May 2024 – Audrey Jost.

5.2.3. Coastal grasslands

While managed realignments schemes are becoming more common along the UK coast, their number and extent remain limited and they can be costly to implement. The development of species diversity and structural complexity suitable for breeding Redshank also largely depends on the site's initial elevation. For example, at Hesketh Out Marsh, restoration completed in 2008 (West) and 2017 (East) has already provided suitable breeding habitat, with 15 Redshank pairs recorded in 2023 and 12 in 2024 across the 90-ha network of monitoring plots. In contrast, some other saltmarshes may require 80–100 years to reach the ideal conditions for breeding Redshank (Wolters et al., 2005; Mossman et al., 2012). Given the different limitations of managed realignment schemes, it is crucial to also focus on maintaining and enhancing coastal grazing marshes over the sea wall. These marshes offer valuable habitat for birds that may be displaced from saltmarshes, providing an alternative breeding ground during the transitional period when saltmarshes are still developing or deteriorating.

Alongside preserving existing marshes, creating new marshland or re-wetting coastal grasslands can help ensure that suitable habitats remain available.

Inland grassland habitats, which face fewer spatial constraints than coastal areas, could also offer immediate support for breeding Redshank, potentially serving as source populations for newly established saltmarshes once these mature sufficiently (Smart, 2005). Data from the 2024 RSPB Annual Reserves Monitoring show that average Redshank productivity (Crude Territory Success) is broadly similar on sites with saltmarsh (0.49 ± 0.19) and on those with primarily wet grassland (0.55 ± 0.15), suggesting comparable breeding performance across both habitat types. Additionally, wet grasslands provide important feeding and roosting areas for wintering waders and wildfowl.

Drone landscape photo of RSPB Frampton Marsh Nature Reserve, with coastal grazing marsh and lagoons in the foreground, and saltmarsh in the background, July 2023 – Sam Turley (rspb-images.com).

Integrating inland grasslands and newly created saltmarshes into a broader habitat network may provide a more resilient approach to Redshank conservation, ensuring that populations have access to a diverse range of breeding sites. This strategy not only supports Redshank but also enhances habitat connectivity and biodiversity across coastal and inland ecosystems.

5.3. Mitigation of recreational disturbance

To mitigate recreational disturbance impacts, targeted conservation measures are essential. Since the challenge primarily stems from human behaviour, solutions are often rooted in social science, focusing on understanding and influencing how people interact with these environments. While strategies such as fencing or ditch creation can effectively limit access to sensitive areas, these barriers should be paired with clear explanations of their purpose, emphasising the importance of protecting nesting species like Redshank. Well-placed, simple signage along paths bordering saltmarshes can reinforce this message, reminding visitors to stay on designated routes and keep dogs on short leads. In addition, providing designated alternative spaces for dog walkers away from the most sensitive areas can help reduce disturbance and balance conservation with public access. Visitor education and awareness play a crucial role in the success of these measures, and seasonal wardening at key sites could further strengthen conservation efforts. Complementing this approach, the LIFE on the Edge project (https://www.projectlote.life/) is developing a guidance toolkit to manage recreational disturbance on beach-nesting birds, with recommendations that will also be applicable to saltmarsh habitats.

Sign near Hurst saltmarsh 'Wildlife only beyond this point' – Wez Smith.

Acquiring land for conservation purposes may prove beneficial, particularly in high-traffic locations or areas with easy access to saltmarsh habitats (Lafferty et al., 2006; LDBWS, 2023). Securing key sites allows for targeted management, such as restricting access to sensitive breeding areas, improving habitat quality, and creating buffer zones to minimise human impact. It also supports long-term conservation efforts, including habitat restoration and the establishment of wildlife corridors, enhancing the resilience of saltmarsh ecosystems in the face of ongoing environmental pressures.

5.4. Predation management strategies

Effective predation management should focus on reducing overall predation risks not only by managing predators but also by altering conditions to reduce predator use and access to the habitat. Habitat restoration and the strategic design of exclusion measures are vital to achieving long-term success in protecting breeding birds. On saltmarshes with a high degree of structural complexity within the vegetation and extensive feeding habitat for both adults and chicks, natural predation pressures will often be low. The issue becomes more pronounced in saltmarshes with limited vegetation cover or structural diversity, or when disturbances from people, dogs, or livestock cause adult Redshank to be displaced from their nests.

5.4.1. Predator-exclusion fencing

Predator-exclusion fencing is one of the most effective strategies for managing mammalian predators like foxes and badgers. On wet grasslands, it has significantly increased wader nest survival (e.g. Malpas et al., 2013a; Verhoeven et al., 2022; Rickenbach et al., 2011). However, achieving robust and secure fencing in intertidal habitats is challenging due to ground variation and the constant risk of damage from tidal forces and storm debris.

Additionally, installing posts and gateways may damage sensitive saltmarsh habitat, and use of machinery may not be consented. One potential solution is to place fences on or just inland of sea walls, where they are protected from tidal surges and storm damage, ensuring they remain intact and functional despite harsh weather conditions. To be effective, such fences must be sufficiently long or designed in a way to reduce the chances of predators breaching around the ends of the fence (e.g. by placing the ends in a water barrier to provide an adequate deterrent to incursion). An alternative approach involves installing permanent fence posts on the saltmarsh to which temporary electric fencing wires can be attached during the Redshank breeding season only. These could be removed prior to any major tides and after the breeding period, reducing the risk of damage over winter. Examples of predator-exclusion fencing on saltmarsh are relatively few in the UK, although they are often used in other tidal environments such as around saline lagoons and beaches to protect gull, tern and wader colonies (Babcock & Booth, 2020). There are also some examples of them being used on saltmarshes around the Wadden Sea (e.g. Leyrer et al., 2019) from which guidance could be sought.

The RSPB has published an advisory report on the use and design of predator-exclusion fences on many of its nature reserves, available on request (Ausden et al., 2025).

5.4.2. *Lethal control*

Lethal control of foxes has been shown to improve wader nest and chick survival when done at a sufficient scale and intensity, and where the background density of foxes is high (Bolton et al., 2007; Baines et al., 2023), though we are not aware of any examples of the efficacy of lethal predator control being tested on saltmarsh. Lethal control should only be considered where the seriousness of the problem has been established, non-lethal measures have been assessed and found not practicable, killing or taking is an effective way of addressing the problem and killing or taking will not have an adverse impact on the conservation status of the target or other non-target species. The success of these measures also often depends on site-specific factors, including the level of management effort put into control activities and the density of predators in the surrounding landscape (Bolton et al., 2007; Bodey et al., 2011). Additionally, implementing predator control on saltmarshes can be challenging due to difficult terrain, restricted access, and the dynamic nature of tidal systems.

5.4.3. *Diversion and deterrence*

Emerging methods for deterring or diverting predators (e.g. laser hazing, diversionary feeding) could potentially be applied in the future to manage predation on saltmarshes, but they have yet to be tested in this habitat. Diversionary feeding can be an effective strategy for mitigating the impact of specific predators on prey species of conservation concern and has been successfully used in the UK to reduce predation by Kestrel on Little Tern (*Sternula albifrons*) (Smart & Amar, 2018), Hen Harrier (*Circus cyaneus*) on Red Grouse (*Lagopus lagopus*) (e.g. Ludwig et al., 2019), mammalian predators on Capercaillie (*Tetrao urogallus*) (Bamber et al., 2024), and Red Kite (*Milvus milvus*) on wader chicks (Mason et al., 2021). The methods and approach required differ between predator species and site situations, so wider application of these methods will likely require careful site-specific tailoring of approaches. In contrast, laser hazing, which targets predators with a laser beam to dissuade them, has yielded mixed results. For instance, trials at tern colonies have struggled to deter a large enough proportion of predators, and the overall impact on predation success remains unclear (Babcock & Booth, 2020).

5.4.4. *Encouraging natural defence*

In addition to direct predator control measures, natural defence mechanisms within wader populations can also help mitigate predation risks. Waders nesting at higher densities are more successful at deterring predators and livestock through group mobbing behaviours, leading to lower predation rates (Elliot, 1985). Additionally, the presence of more apparent chicks of other species of wildfowl (such as geese) could serve as diversionary prey, thereby reducing predation pressure on Redshank nests. Managing saltmarsh habitat to ensure it is in good condition, as outlined elsewhere in this document, is the main method through which high breeding densities and breeding populations of multiple other species can be best encouraged.

6. Planning for recovery

6.1. Context and rationale for action planning

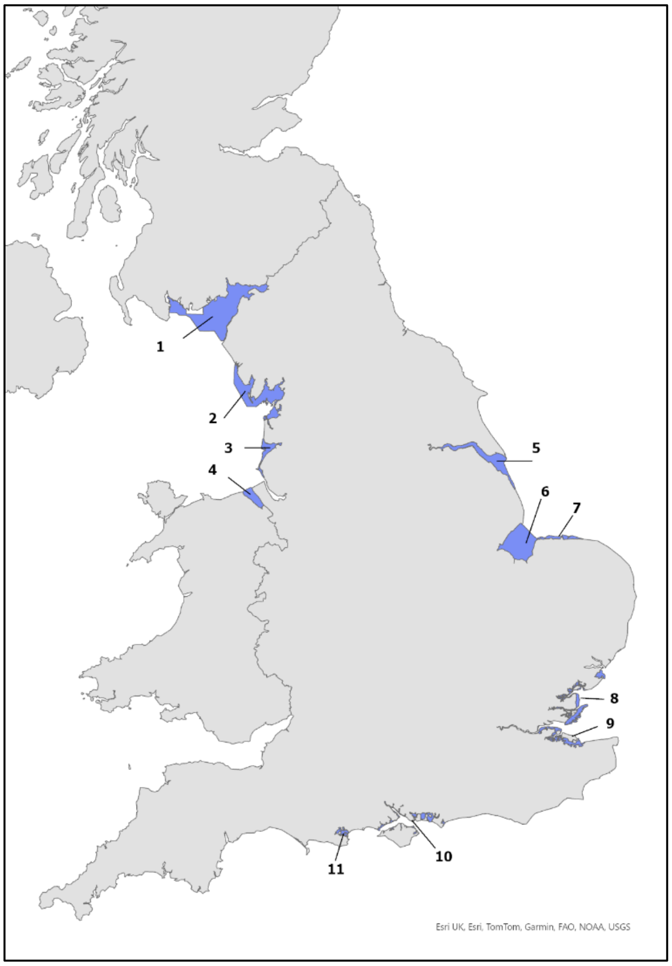
Recent estimates indicate that the majority of England's Redshank population breeds in saltmarsh habitats, highlighting their importance for the species' conservation. Key saltmarsh areas in England were selected based on the extent of available saltmarsh habitat and evidence of breeding activity from previous Redshank surveys. These areas, delineated by the SPA (Special Protection Area) boundaries as shown in Figure 4, differ significantly in their historic and current management approaches. Each site faces distinct challenges (e.g. varying pressures from grazing, flooding, recreational disturbance, and predation), which require locally tailored solutions. A key objective of this document is to compile robust evidence to inform a suite of estuary- or site-specific action plans. These plans will assess the impacts of major threats and recommend bespoke, location-specific conservation responses and inform local initiatives such as Local Nature Recovery Strategies (LNRS). The next phase of the Saltmarsh Redshank Recovery Plan Framework will involve developing these localised plans.

There is also a critical need to integrate action planning for Redshank across habitat types, particularly with Lowland Wet Grassland (LWG) areas. Findings from the Breeding Waders of Wet Meadows (BWWM) survey conducted in 2021/2022 are expected to confirm a further significant decline in Redshank distribution and abundance on LWG. Once available, these data will enable an updated estimate of the breeding population in England and a more accurate assessment of the saltmarsh population's relative importance.

The BWWM survey will also help identify the most important remaining areas of LWG habitat. Outside of The Fens, many of these key sites are expected to lie on coastal plains, placing them in close proximity to existing or former saltmarsh breeding areas. In these areas, Redshank recovery will require a more integrated approach that addresses both saltmarsh and LWG habitats.

As saltmarsh becomes increasingly constrained as a safe nesting habitat, LWG and other brackish grassland environments are likely to play an increasingly vital role in supporting the species.

This context also underscores a broader challenge: the limited understanding of national and local Redshank populations. The lack of robust, site-specific data hinders our ability to set meaningful conservation targets. Addressing this knowledge gap is therefore central to this recovery plan framework and essential for guiding effective long-term recovery strategies.



Number	Key area name
1	Solway Firth
2	Morecambe Bay
3	Ribble Estuary
4	Dee Estuary
5	Humber Estuary
6	The Wash
7	North Norfolk Coast
8	Essex
9	North Kent
10	The Solent
11	Poole Harbour

Figure 4. Overview of the key saltmarsh areas (delineated by SPA boundaries) for breeding Redshank in England.

6.2. Link to the Threatened Species Recovery Actions (TSRA) framework

The following priority actions have been agreed under the TSRA framework for the conservation of Redshank with a focus on saltmarsh habitats. These actions, developed with input from partners and informed by national evidence and policy, are all wholly or partly relevant to the development of this recovery plan framework:

Trial management interventions
Trial potential management interventions for Redshank on saltmarshes, including grazing management, saltmarsh rewetting and mitigating recreational disturbance.

Strengthen saltmarsh protection
Ensure the designated site network reflects the importance of saltmarsh for Redshank. This includes reviewing and, where appropriate, implementing both outstanding recommendations from the 2001 SPA Review (Stroud et al., 2001) and additional measures from the 2016 and 2025 Reviews (Stroud et al., 2016; Grady et al., 2025).

Up-to-date evidence is essential to ensure informed decision-making. Protected area condition assessments should account for the state of the saltmarsh Redshank population where this is a designated feature.

Secure alternative habitat
Secure suitable lowland habitat (behind the sea wall) to accommodate saltmarsh-nesting birds at risk of loss due to sea-level rise and/or inundation due to spring flooding.

6.3. Aim and objectives

The aim of this document is to improve the conservation status of saltmarsh breeding Redshank by 2050. The objectives are to:

1. Understand national and area-based issues

Enhance understanding of national and local factors affecting saltmarsh Redshank populations to inform targeted action planning. Use this information to develop England-wide and area specific recovery plans.

2. Improve breeding success

Trial methods to improve productivity at priority sites and then seek to replicate these measures across all sites.

3. Expand and enhance habitat

Support population recovery by increasing the availability and quality of suitable breeding habitat (saltmarsh, brackish, and low-lying wet grassland) through restoration, management and habitat creation schemes.

4. Strengthen statutory protection

Establish robust statutory protection for Redshank and their key breeding habitats through mechanisms such as Site of Special Scientific Interest (SSSI) designations, the SPA review process, and integration into relevant conservation and land-use planning frameworks, and ensure that protected area condition assessments accurately reflect the status of breeding Redshank populations.

5. Monitor and review progress

Monitor and evaluate the implementation and effectiveness of the recovery plan framework.

6.4. Targets

Measures, baselines and targets are presented in Table 3.

Measure	Baseline	Target
Population	Declining.	Stable or increasing.
Extent of occurrence	Limited to areas identified on the map. Range decreasing.	Current distribution range maintained and consolidated in relative strongholds.
Natural England Species Recovery Curve	Some pressures and remedial action identified. Some recovery solutions trialled in The Wash.	Pressures and remedial action identified for each area on map. Recovery solutions being trialled at top 5 areas – The Wash, North Norfolk, Humber, Ribble, Solway.
RSPB Species Recovery Curve	TS2: Testing solutions is well advanced but has not produced clear outcomes that can be rolled out (2024).	R2: Solutions have been implemented at a scale to allow recovery to be measured at least at a local scale.
Agri-Environment Schemes (AES)	Existing AES saltmarsh management options not delivering optimal conditions for Redshank due to management prescriptions of insufficient detail and specificity.	New AES in place (Environment Land Management (ELM) schemes) suitably specifying optimal management for Redshank. Strong uptake of these new options, particularly in mapped stronghold areas.

Table 3. Current baseline and proposed recovery targets for saltmarsh breeding Redshank in England.

6.5. Key actions

The key actions associated with each recovery objective are outlined in Table 4.

Objective	Action
1. Understand national and area-based issues	Reassess England's breeding Redshank population (all habitats) and reevaluate the importance of saltmarsh breeders.
	Draw on Breeding Waders of Wet Meadows results and recent saltmarsh survey data to identify priority coastal areas where both saltmarsh and low-lying wet grassland are important.
	Develop and implement a saltmarsh audit methodology to assess all key saltmarsh breeding areas.
	Conduct audits of key saltmarsh areas (as identified in Figure 4).
	Update population estimates of breeding Redshank numbers and productivity for all key areas as identified in Figure 4.
	Collate flood management data for all key areas as identified in Figure 4.
	Use these datasets to develop detailed estuary- and area-level Redshank action plans, including site-specific management recommendations.
2. Improve breeding success	Ensure all key areas are implementing annual productivity monitoring using Crude Territory Success (Gross Territorial Success) methods.
	Trial site-specific management interventions at key locations, such as changes to grazing regimes, rewetting, predator control, and disturbance mitigation (guided by insights from Objective 1).
3. Expand and enhance habitat	Influence the design and targeting of agri-environment schemes to deliver more and better managed Redshank breeding habitats.
	Support the design of suitable new nesting habitats for Redshank through active involvement in large-scale coastal adaptation and management projects (e.g. Environment Agency Coastal Management).
	Finalise and distribute a practical habitat management toolkit for saltmarsh managers.
	Provide expert advisory support in priority areas as identified under Objective 1 and advocate for Redshank-friendly management.
4. Strengthen statutory protection	Ensure Redshank breeding areas are fully recognised and protected through the SPA network review, and fill gaps for data deficient key sites such as the Solway.
	Review and revise SSSI condition assessments as necessary, including the addition of Redshank as a qualifying feature where justified.
5. Monitor and review	Formalise a working group and conduct annual progress reviews to track delivery and adapt the recovery plan framework as needed.

Table 4. Recovery objectives for saltmarsh breeding Redshank and their associated actions.

7. Conclusion

This Saltmarsh Redshank Recovery Plan Framework provides a strategic roadmap for addressing the challenges faced by breeding Redshank populations on England's saltmarshes. These habitats are vital not only for the survival of Redshank but also for maintaining the broader ecological integrity and the essential ecosystem services saltmarshes provide. While efforts on nature reserves are crucial for boosting local breeding numbers, achieving large-scale impact necessitates collaboration with private landowners and managers. Expanding and enhancing suitable habitats beyond reserve boundaries is essential in ensuring the resilience of Redshank populations and the ecosystems they inhabit. Such actions help create a network of interconnected, high-quality habitats that can sustain viable populations and support biodiversity at larger scales. This approach also reduces the risks posed by localised threats, such as predation or recreational disturbance, and enhances the ability of Redshank to adapt to changing environmental conditions, including those driven by climate change. Collaborating with landowners and fostering partnerships will be essential to achieving these goals, underlining that the conservation of Redshank and their habitats is a shared responsibility that benefits both nature and people.

8. Further sources of information and advice

Saltmarsh Management Toolkit – overview of key recovery approaches and supporting case studies https://www.projectlote.life/saltmarsh-redshank-recovery.html.

Biodiversity Action Plan (BAP) habitats – for information on Coastal Saltmarsh Priority Habitat https://jncc.gov.uk/our-work/uk-bap-priority-habitats/.

BTO Wetland Bird Survey (WeBS) – for annual non-breeding bird data in the UK. Access to data via WeBS Report Online https://app.bto.org/webs-reporting.

BTO Breeding Bird Survey (BBS) – for survey methods for breeding birds and bird count data. https://www.bto.org/get-involved/volunteer/projects/bbs.

Environment Agency Saltmarsh Restoration Handbook UK and Ireland – manual aimed at providing practical guidance on restoring and creating saltmarsh habitat. Contains advice on planning and implementation with case studies. https://catchmentbasedapproach.org/wp-content/uploads/2021/10/ZSL00333_Saltmarsh_Restoration_Handbook__UPDATED_082023.pdf.

Natural England Designated Sites Viewer – detailed information about sites designated for their wildlife or geological interest, including Conservation Advice and operational impacts to Special Protection Areas (SPA) and Special Areas of Conservation (SAC). https://designatedsites.naturalengland.org.uk/.

Joint DEFRA/Environment Agency Flood and Coastal Erosion Risk Management R&D Programme - Saltmarsh management manual – manual aimed at assisting coastal and estuarine managers to identify problems and possible solutions for the management of saltmarsh. Includes general saltmarsh management techniques, surveys and monitoring. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/290974/scho0307bmkh-e-e.pdf.

Working for Waders – guidance for farmers and landowners about monitoring waders and managing grassland for waders. Specific to Scotland and inland/upland grassland, but many of the habitat management and monitoring methods are relevant and applicable for saltmarsh management. https://www.workingforwaders.com/resources.

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Appendix

Description of the UK saltmarsh vegetation zones, from Boorman, 2003.

1. Pioneer	Open communities with one or more of the following – *Spartina* spp., *Salicornia* spp., *Aster tripolium*. Zone covered by all tides except the lowest neap tides.
2. Low marsh	Generally closed communities with at least *Puccinellia maritima* and *Atriplex portulacoides* as well as the previous species. Zone covered by most tides.
3. Middle marsh	Generally closed communities with *Limonium* spp. and/or *Plantago*, as well as the previous species. Zone covered only by spring tides.
4. High marsh	Generally closed communities with one or more of the following – *Festuca rubra*, *Armeria maritima*, *Elytrigia* spp., as well as the previous species. Zone covered only by highest spring tides.
5. Transition zone	Vegetation intermediate between the high marsh and adjoining non-halophytic areas. Zone covered only occasionally by tidal surges during extreme storm events.