

# Longis Reserve Annual Action Plan 2020

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**NOTE:**

**Due to the 2020 COVID-19 pandemic, the Alderney Wildlife Trust's offices shut on Saturday 21<sup>st</sup> March. As such, the computers on which the ArcGIS software package have been licensed have been rendered inaccessible to AWT staff. For this reason, many of the figures in the following document have not been updated for the current year. They have been included nonetheless for the purposes of visualisation, and will be updated when the current restrictions are lifted.**

## Contents

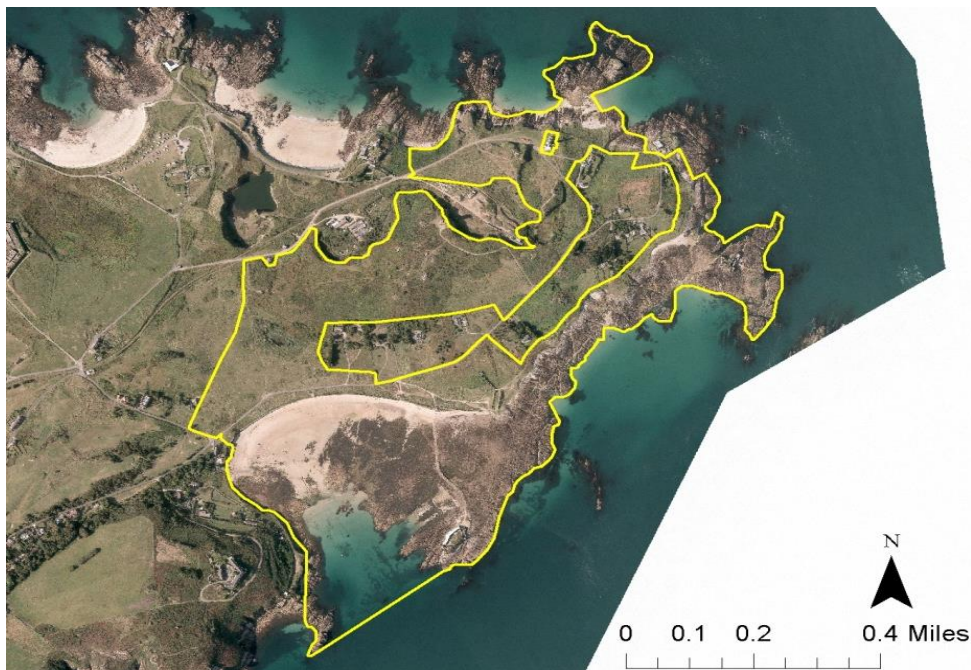
<b>1. Introduction.....</b>	<b>5</b>
<b>2. Background.....</b>	<b>5</b>
<b>3. Objectives .....</b>	<b>6</b>
<b>4. Actions .....</b>	<b>7</b>
<b>4.1 Grassland Management .....</b>	<b>7</b>
4.1.1 AGAP .....	7
4.1.2 Mechanical Cutting .....	8
<b>4.2 Longis pond and reedbed management.....</b>	<b>9</b>
4.2.1 Yellow-flag iris control.....	9
4.2.2 Reedbed Management.....	10
4.2.3 Tree aftercare.....	11
4.2.4 White poplar control .....	12
4.2.5 Floating island construction .....	12
<b>4.3 Mannez Pond .....</b>	<b>13</b>
4.3.1 Lesser reedmace control.....	13
4.3.2 Maintaining areas of open water.....	14
4.3.3 Surrounding wooded areas .....	14
<b>4.4 Control of undesirable species.....</b>	<b>14</b>
4.4.1 Ragwort control.....	14
4.4.2 Hottentot fig.....	14
4.4.3 Scrub control .....	15
4.4.4 Bracken control .....	15
4.4.5 <i>Crassula</i> and parrot's feather .....	15
4.4.6 Brown-tail moth .....	16
<b>4.5 Footpath and access .....</b>	<b>16</b>
4.5.1 Footpath cutting .....	16
4.5.2 Marker stones.....	16
<b>4.6 Amenity features.....</b>	<b>16</b>
4.6.1 Bird hides.....	16
4.6.2 Signage, information and important features .....	17
<b>4.7 Ecological surveying and monitoring.....</b>	<b>17</b>
4.7.1 Phase 1 and 2 surveys .....	17
4.7.2 Reedbed planning.....	18
4.7.3 Bat survey .....	18

<b>4.7.4 Butterflies</b> .....	<b>18</b>
<b>4.7.5 Bees</b> .....	<b>19</b>
<b>4.7.6 Dragonflies and damselflies</b> .....	<b>20</b>
<b>4.7.7 Breeding birds</b> .....	<b>20</b>
<b>4.7.8 Marine and intertidal survey</b> .....	<b>20</b>
<b>5. References</b> .....	<b>21</b>
<b>6. Appendices</b> .....	<b>21</b>

# 1. Introduction

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The Longis Reserve (Fig. 1) is the Alderney Wildlife Trust's (AWT's) oldest reserve and consists of a varied mosaic of habitats that provide for a wide range of plant, animal and insect-life. It is also a key recreational area for residents and visitors to Alderney, popular with dog-walkers, beach-goers and those drawn by the wildlife on offer. The purpose of this document is to outline the 2020 management actions required to deliver the objectives described in the Longis Reserve Management Plan 2017-2021 (Manzano-Rubio and Whyte, 2017). The Longis Reserve Management Plan 2017-2021 was ratified by the General Services Committee (GSC) of the States of Alderney (SoA) in February 2017 and represents the first formal Management Plan for the Reserve since the initial 3-year Management Plan expired in 2006. The commitment to produce an Annual Action Plan to be ratified by the GSC and subsequently an annual review to be presented to the GSC for each year of the Management Plan is laid out in the Management Plan document.



**Figure 1.** Boundaries of Longis Reserve

# 2. Background

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The Longis Reserve is Alderney's oldest Nature Reserve established in 2003 under a Memorandum of Understanding between the AWT, the SoA and several private landowners. The AWT manages the site for the purpose of wildlife conservation while ensuring that the established public use of the site is not affected.

The Reserve covers around 80ha at the eastern end of the island. It contains fifteen different terrestrial habitats and forty-nine marine biotopes. Two freshwater ponds provide key habitats for some of Alderney's flagship species and the coastal areas and common are important areas for Alderney Sea-Lavender, Sand Crocus, and the Glanville Fritillary. The reserve as a whole is a crucial refuge for breeding and wintering birds.

It also encompasses significant historical features including numerous bunkers and other German and Victorian fortifications. Longis Common is also the site of numerous Bronze Age and Roman artefacts which are part of the rich cultural history of Alderney's landscape. The Longis Reserve Management Plan (LRMP) (Manzano-Rubio and Whyte, 2017) is the primary management tool defining the main aims guiding the long-term management of the Longis Reserve. The specific guidance for 2020 will be further informed by the 2019 Action Plan and Review (Goddard, 2019a and Goddard, 2019b).

**AIM 1:** To increase the knowledge about the natural value of the Longis Reserve and its importance within both local and international context.

**AIM 2:** To conserve the natural value of the Longis Reserve by preserving the diverse range of habitats and species.

**AIM 3:** To advance the education of the public about the natural value of the Longis Reserve and promote a sustainable recreational use of it.

## 3. Objectives

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Within each of the main aims laid out in the LRMP, there are a series of key objectives. In order to work towards these objectives (listed below), a series of actions will be undertaken in 2020.

**Objective 1.1** To update existing data about the size and condition of the important habitats of the Longis Reserve.

**Objective 1.2** To update existing data about the breeding status and presence of the important species of the Longis Reserve.

**Objective 1.3** To promote scientific research into the Longis Reserve's ecological features, and ensure the results of this research are available to the wider community.

**Objective 2.1** To maintain the current size, plant communities and species richness of dune grasslands and coastal grasslands present within the Longis Reserve.

**Objective 2.2** To maintain an appropriate balance of tree and shrub cover in the area surrounding Longis Pond, whilst maintaining, and if possible increasing, the current size and species richness of open water and reedbed, allowing and encouraging their natural expansion into adjacent grasslands.

**Objective 2.3** To develop Mannez Pond's surrounding vegetation into a wet woodland whilst maintaining the current size and species richness of open water.

**Objective 2.4** To maintain the current size and species richness of Houmet-Herbe's heathland.

**Objective 2.5** To maintain existing Mannez scrub in a favourable status for breeding Dartford Warblers.

**Objective 2.6** To maintain the current size, plant community and species richness of Longis open dune.

**Objective 2.7** To maintain the current habitat and species richness of the Longis Reserve's marine environment.

**Objective 3.1** To maintain the current level of access and its condition.

**Objective 3.2** To increase on-site signage about boundaries, features and management of the Longis Reserve whilst maintaining visual impact to a minimum.

**Objective 3.3** To maintain, and if possible enhance, the existing infrastructure i.e. Longis and Mannez bird hide facilities.

**Objective 3.4** To involve the community in regular events and activities within the Longis Reserve.

## 4. Actions

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A Gantt chart detailing the timetable of works is presented in Appendix 1.

### 4.1 Grassland Management

Objective 2.1 aims to maintain the diversity of species rich grasslands; this will be achieved with a combination of mechanical cutting and the Alderney Grazing Animal Projects (AGAP) herd.

#### 4.1.1 AGAP

Figure 2 shows the areas where grazing has historically been undertaken by the AGAP herd. Following 2019's floral survey, it was agreed by surveyors that current grazing intensity was lower than it should be. Plots will be grazed in smaller areas than previously and steps will be taken to replenish the size of the herd in future.



**Figure 2.** AGAP grazing areas in light green

Actions for 2020:

- Conduct a floral survey, replicating both sampling method and timing, to compare with the baseline 2004 survey to assess the long-term impact of the AGAP on Longis Common
- Using these data to further inform the grazing practices going forward in order to maximise benefit to the environment

#### **4.1.2 Mechanical Cutting**

In areas where grazing is not undertaken it is important to mechanically cut back grasses to maintain species richness and avoid encroachment from bracken and scrub. Mechanical cutting is largely undertaken along footpaths and the Houmet-Herbe coastal path (Fig. 3).





**Figure 3.** The Homet-Herbe coastal path where grass is mechanically controlled

Actions for 2020:

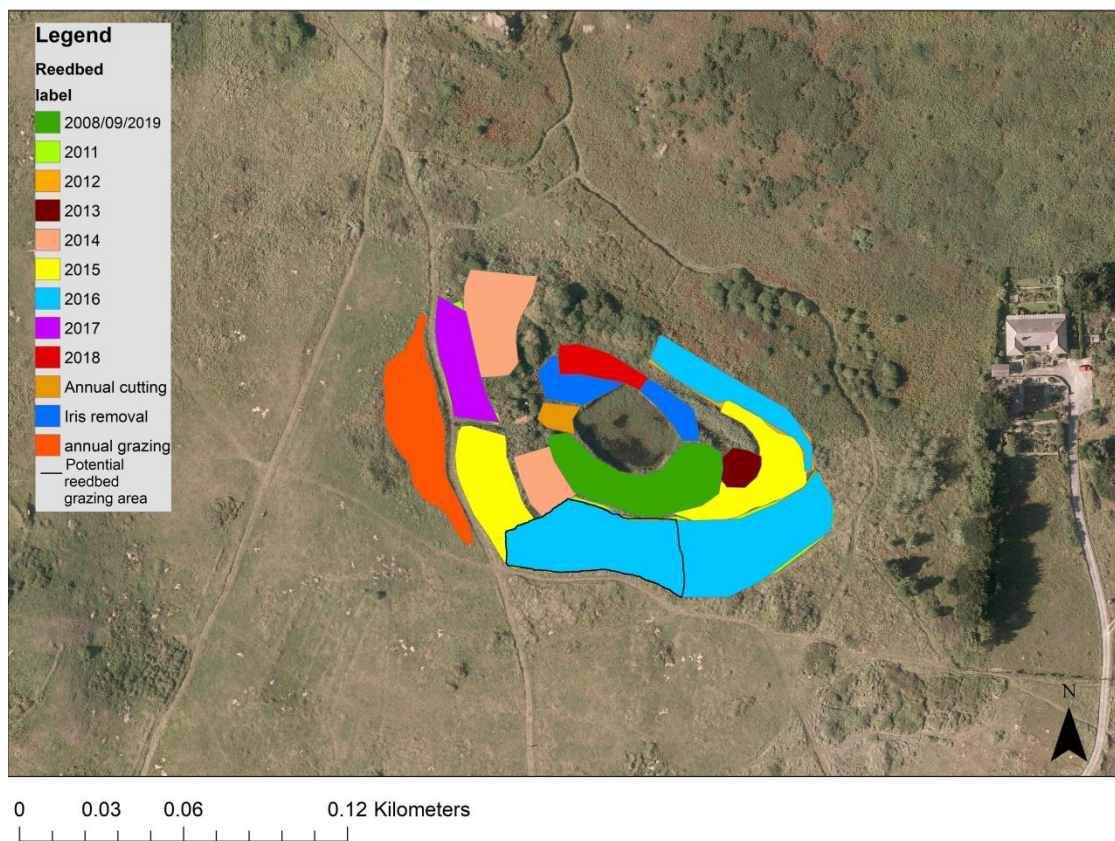
- Mechanical cutting of grasses will only be performed before March or after July to avoid sensitive areas and times for breeding birds.
- Avoid cutting during flowering season and take care to remove cuttings from site to avoid soil enrichment.

#### **4.2 Longis pond and reedbed management**

Longis Pond is the most important freshwater habitat on the island. On-going management is necessary to halt the spread of invasive species and arrest the succession of the ecologically important reedbeds into scrub.

##### **4.2.1 Yellow-flag iris control**

Yellow-flag iris (*Iris pseudacorus*) can spread prolifically through a pond if left unchecked. Control is undertaken to remove as much growth as possible to allow space for other aquatic plants and reeds.



**Figure 4.** Areas of Longis Pond where iris control and reedbed cutting are undertaken

Actions for 2020:

- Perform iris control and removal, using hand scythes and pulling, winter/early spring to avoid bird breeding times. A second removal session digging out the rhizomes should be attempted late autumn if breeding birds and water levels allow. Attention should also be paid to potential areas of iris not shown in Figure 4.

#### 4.2.2 Reedbed Management

The reedbed at Longis needs to be cut rotationally to create a varied age structure and prevent natural succession to woodland.

In 2019, following advice from the National Trust Jersey, Isles of Scilly Wildlife Trust and the BTO, an external area of reedbed was cut, lifted and then grazed during the autumn in an effort to try and limit the grass growth and improve reedbed health. To evaluate the success of this experiment a reedbed monitoring plan was implemented and a survey of the reedbed was undertaken in early October.

The reedbed was cut and grazed early November in the areas shown in Figure 5. The cut reeds and leaf litter were removed from site to limit sedimentation and nutrient enrichment.

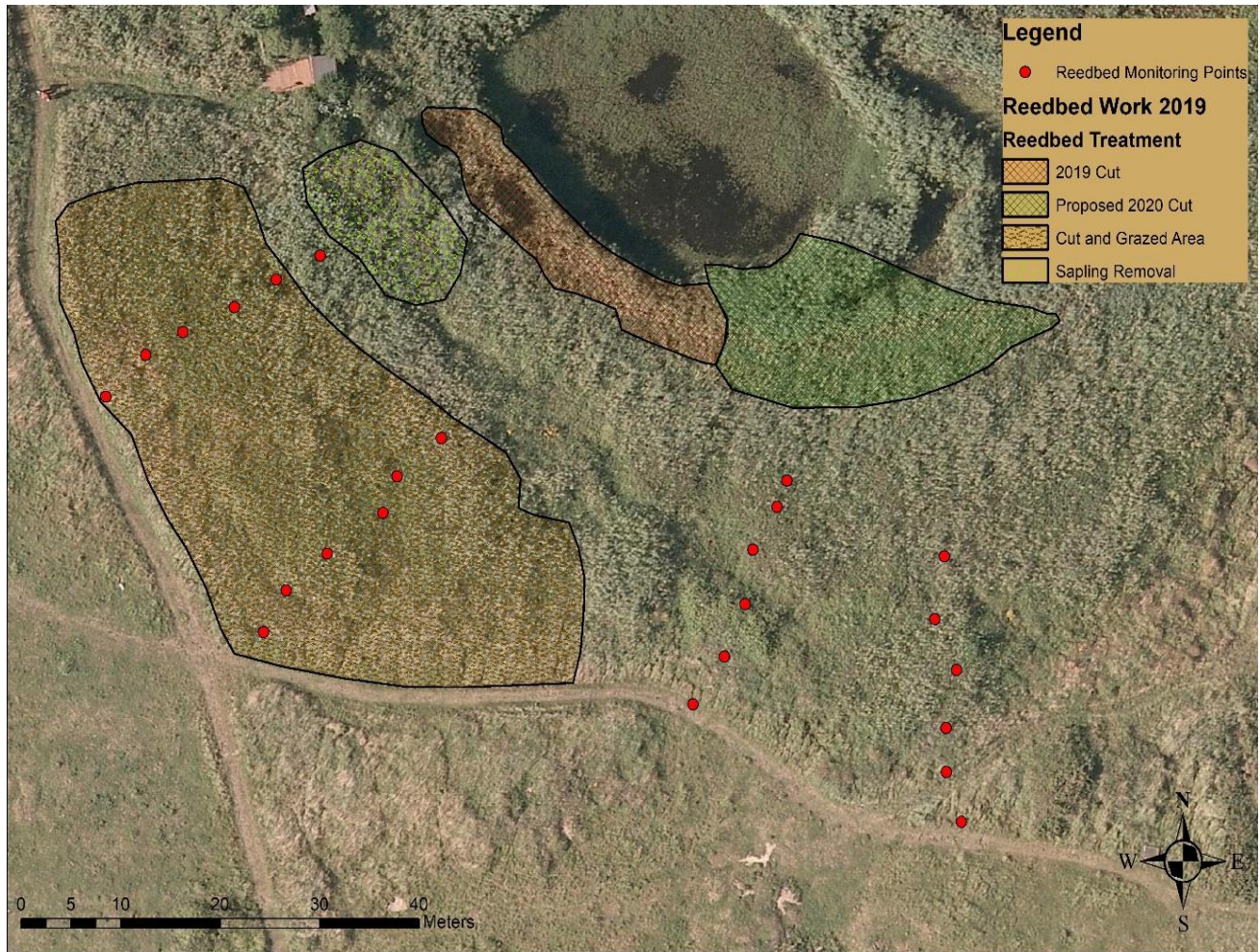


Figure 5. Work undertaken on Longis Pond in 2019

Actions for 2020:

- Monitor the effect of grazing on the reedbed using data collected in 2019 as a baseline of reedbed health. The cut and grazed area may require additional work before spring 2020 to limit the grass growth and encourage reed regeneration.
- Cut the reedbed in the area depicted in Figure 5 late summer/autumn 2020 as part of the 7-9 year cutting cycle.
- Monitor salinity and pH and other abiotic factors in the pond throughout the year
- Alter the path to the bird hide to avoid the current fragmentation of various patches of reed, this will need to be done with public consultation including conducted both with regular dog walkers on site and via local press

**4.2.3 Tree aftercare**

An elder (*Sambucus nigra*) hedge was planted along the northern side of the pond in 2016. However, due to the site conditions and competition with grasses the establishment appears to be quite poor. The trees are not as urgently needed for screening the pond as the northern

footpath will remain closed. Notwithstanding, an effort should be made to monitor these trees and clear grasses from around the tree guards.

A screen of willow species surrounds the perimeter of the pond and the entrance to the bird hide. Many of the trees that make up this screen are covered in sooty mould. This screen requires ongoing maintenance.

Actions for 2020:

- Remove unnecessary tree guards and, for those that remain, clear them of grasses in spring and then on a reactive basis over summer if necessary
- Should resources allow cut out turf from around the tree guards and remove
- Continue to monitor trees and assess the necessity of these trees, and develop a plan for what to do with this scrubby area
- Establish which pest may be causing the sooty mould, then identify and potentially remove affected trees from the screen
- Cut back the trees likely to be catching the wind

#### **4.2.4 White poplar control**

White poplars (*Populus alba*) are non-native and can quickly encroach onto an area of freshwater. They are also extremely thirsty trees; a 15m tree can consume 51 litres of water a day, whereas a beech (*Fagus sylvatica*) or birch (*Betula spp*) tree will consume a third of this.

Actions for 2020:

- Remove white poplar trees and saplings along the northern edge of Longis pond over the course of the next 3 years. The removal of these trees will be planned with the ABO Ltd. to allow the ringing effort in this area to continue
- Replant cleared areas with less water demanding native species such as beech or birch
- Treat stumps with appropriate herbicides/copper nails in collaboration with the State's Agricultural Team. Care needs to be taken in the application of chemicals to prevent leaching into the waterbody
- Continue to control any other areas of white poplar spread in, or adjacent to, the Longis reedbed

#### **4.2.5 Floating island construction**

Previously a floating island was maintained in the open water, providing a resting area for water birds. The island fell into disrepair and was removed from the pond in the hope that it would be replaced with a similar structure, constructed with more natural materials.

Sustainably sourced materials from the Alderney Community Woodland and the other AWT sites have been suggested.

Actions for 2020:

- Construct a new floating island using CVs to deploy alongside reed management work to reduce disturbance
- Use natural materials such as brushwood faggots for buoyancy and hazel weaving for structure

### 4.3 Mannez Pond

The pond at the bottom of Mannez quarry is the only area of lesser reedmace in Alderney. The areas within and around the pond are also an important breeding ground for several rare and important species.

Actions for 2020:

- As with Longis Pond, continue monitoring abiotic conditions (salinity, pH, etc.)

#### 4.3.1 Lesser reedmace control

The lesser reedmace (*Typhus angustifolia*) beds are an important habitat in Alderney, however without proper management it can dominate a pond causing it to eventually succeed into scrub. In 2019, the reedmace was cut in early November to maintain the visibility from the hide, as part of the rotational management of the reedmace (Figure 6).

Actions for 2020:

- As part of a management scheme cutting back  $\frac{1}{4}$  of the reedmace every two years, do not cut back in 2020 as cuts were made last year. Cutting should next be done in 2021.
- Despite this, minor clearance in order to maintain an open area in front of the hide should be carried out in 2020.
- Pile reedmace cuttings to provide a habitat for invertebrates and amphibians.

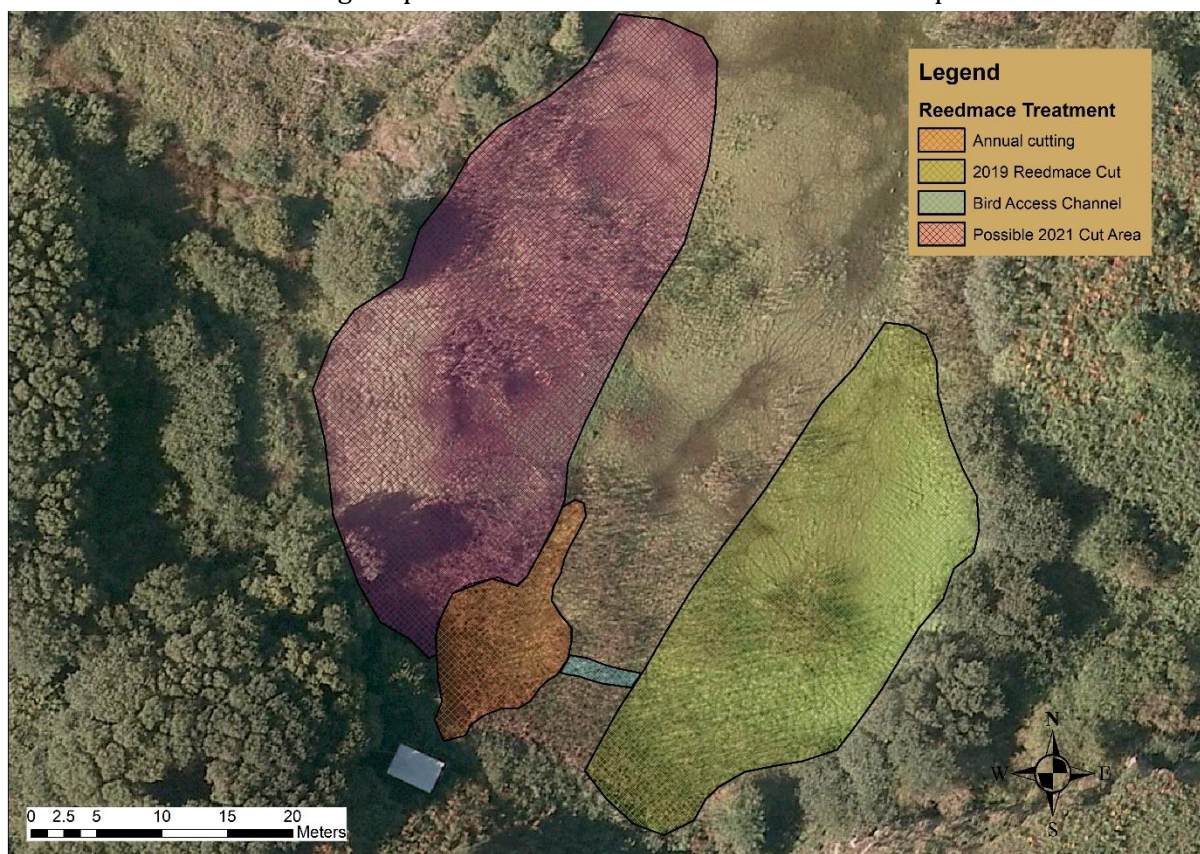


Figure 6. Work undertaken at the Mannez Pond 2019

#### **4.3.2 Maintaining areas of open water**

Whilst the reedbeds are crucial for breeding birds on Alderney it is important to maintain areas of open water for resting migratory birds and invertebrates.

Actions for 2020:

- During late summer when the pond is at its lowest, repair the dam and replace the drains at the North-Eastern end of the pond to limit water loss from this area. With the assistance of the States Agricultural Team and an excavator the site can be accessed by the railway cutting to the north and disturbance should be fairly minimal overall
- Actions 4.3.1 and 4.4.5 also apply here
- Control the spread of yellow-flag iris if deemed necessary

#### **4.3.3 Surrounding wooded areas**

Rusty sallow (*Salix cinerea*) has become well established along the southern margin of the pond. Whilst these plants are a useful screen from the path to the pond they can spread into the main areas of the pond if left unmanaged.

Actions for 2020:

- Reweave screens around path outside of breeding season
- Remove trees inside the pond at immediate risk of windthrow due to poor soil i.e. trees with exposed roots or growing at an angle
- Remove plants encroaching into open areas during work on the reedmace beds to minimise disturbance

### **4.4 Control of undesirable species**

#### **4.4.1 Ragwort control**

Ragwort (*Senecio jacobea*) is classed as a 'mauvaise herbe' and its control must be undertaken by the land manager. Ingestion of ragwort can be extremely harmful to both animals and humans.

Actions for 2020:

- Control ragwort during the flowering season (May-July) where it is present in areas grazed by the Grazing Animal Project herd by hand pulling and dispose far from site either by composting under tarpaulins or at the impot

#### **4.4.2 Hottentot fig**

The Hottentot fig (*Carpoprotus spp.*), native to South Africa will quickly spread and smother the growth of other plants if left unmanaged. New plants can propagate from small sections of stem so effective removal is necessary to reverse its spread. The main focus area is along the Houmet-Herbe coastal path but other sites are continually monitored and controlled.

Actions for 2020:

- Using CVs regularly hand pull areas of Hottentot fig
- Dispose of through incineration at the Impot

#### **4.4.3 Scrub control**

Scrub can be a useful habitat corridor for wildlife and areas of dense scrub should be maintained. Similarly, gorse stands below a certain age have been strongly linked to the breeding success of Dartford warblers. However, limiting the spread of scrub is important to avoid it becoming dominant in the area.

Actions for 2020:

- Maintain areas of dense scrub but prevent its encroachment onto grassland areas using hand tools and tractor equipment where appropriate.
- Create a varied age structure of gorse by clearing more mature stands outside of the breeding season using hand machinery and tractor mounted equipment where appropriate. However, well-established areas with no undergrowth should be maintained for their habitat quality.

#### **4.4.4 Bracken control**

Bracken (*Pteridium spp.*) will quickly become dominant in an area if left unchecked. Regular cutting 3 times a year is necessary to halt its spread. Bracken can spread rapidly through the rhizome and cutting alone will not damage the underground roots.

Actions for 2020:

- Undertake regular cutting sessions outside the breeding season using tractor mounted and handheld equipment
- Research other ways of damaging bracken such as bruising and crushing, or ways of damaging the rhizome

#### **4.4.5 *Crassula* and parrot's feather**

Both species of aquatic plant are highly competitive and can quickly smother native species. Control is necessary to maintain the areas of open water and lesser reedmace. *Crassula* regenerates rapidly after control measures and can be difficult to eradicate. This has become especially concerning after a series of very mild winters has enabled these species not to dieback as normal but to continue to thrive and develop biomass year on year. Nevertheless, conditions at Mannez lend themselves to the possible eradication of *Crassula* and a shift in strategy towards complete removal should be sought before it spreads to Longis Pond.

Actions for 2020:

- Implement robust biosecurity measures with the ABO Ltd. and others working in and around Mannez pond to prevent the spread from Mannez pond to Longis.
- While water level is low in summer, undertake control measures for parrot's feather and *Crassula* down to the rhizome through manual removal in conjunction with the reedmace control plan (Action 4.3.1).
- Investigate whether abiotic conditions are responsible for the lack of *Crassula* in Longis Pond and whether salinization treatments could reduce the incidence in Mannez Pond.

#### **4.4.6 Brown-tail moth**

The larvae of the brown-tail moth (*Euproctis chrysorrhoea*) can cause extremely adverse allergic reactions to both people and animals.

Actions for 2020:

- Remove and burn brown-tail moth nests wherever feasible; particularly around paths

#### **4.5 Footpath and access**

Longis common especially is a popular area for dog walkers and the AWT maintains a network of footpaths throughout the site. Maintaining and improving access to the site and features is a key commitment from the AWT to the community.

##### **4.5.1 Footpath cutting**

Footpaths need regular cutting to prevent scrub and grass encroachment and allow continued access.

Actions for 2020:

- Perform regular cuts of the footpaths using powerscythe and tractor mounted equipment
- Additional care must be taken to survey the area before performing cuttings during sensitive breeding times (April - August)

##### **4.5.2 Marker stones**

White marker stones mark paths and important features throughout the reserve. As a public resource, these stones should be maintained. Clearly marking paths will also help to limit the disturbance of the public on sensitive areas.

Actions for 2020:

- Create a map of marker stones for the reserve
- Clear vegetation from around the stones
- Repaint marker stones at least once a year
- Collaborate with Visit Alderney to ensure that marker stones are properly incorporated into island and tourism literature

#### **4.6 Amenity features**

The Longis Reserve is an important amenity resource for the community and maintaining the features of the site is a crucial part of its long term management. Alongside the existing historical features such as the Odeon and fortifications the AWT has constructed a number of amenity features such as the bird hides at Mannez and Longis ponds.

##### **4.6.1 Bird hides**

The bird hides at Longis and Mannez ponds are popular visitor attractions and should be kept in good order to allow full enjoyment from these areas.



Actions for 2020:

- Regularly sweep and clean the inside of the hides
- Maintain and update the information boards as necessary
- Record sightings from sightings book

#### **4.6.2 Signage, information and important features**

In conjunction with the Visit Alderney, funding that was previously reserved for work at the Odeon has been released for other works around Alderney including signage and information boards. We will continue to work with Visit Alderney to maintain and improve signage around the reserve. The trench system along the Houmet-Herbe path is prone to flooding and additional work is necessary to ensure this site is safe for public use.

Actions for 2020:

- Work with the Visit Alderney team to improve access and information points around the site
- Maintain the other signs and information boards around the site
- From time to time use a water pump in the Houmet-Herbe trenches to limit the flooding. Whitewash the trench parapet to mitigate the likelihood of falls.

#### **4.7 Ecological surveying and monitoring**

A continual surveying effort is undertaken throughout the reserve and is important for directing conservation actions.

##### **4.7.1 Phase 1 and 2 surveys**

The Phase 1 habitat maps were updated for the reserves last year (Figure 7).

Actions for 2020:

- Use updated maps to inform a new AGAP strategy going forward.
- Compare the updated maps to previous versions to identify changes in habitat types and to inform where conservation actions such as scrub control are particularly necessary.



Figure 7. Updated phase 1 habitat survey for the Longis Reserve

#### 4.7.2 Reedbed planning

Monitoring the health of the reedbed year round and the species diversity within it is important for informing the long term management strategy of the area. A reedbed monitoring plan was implemented and some of the external areas of the reedbed were surveyed in October (Fig 1). However, WeBS was not undertaken at Longis last year.

Actions for 2020:

- Continue with the established reedbed monitoring, noting the changes in reedbed structure with the grazing and cutting regime  
Use the bird data collected by the Avian Ecologist and the ABO rather than undertaking WeBS

#### 4.7.3 Bat survey

There is already an established bat monitoring route through the reserve (Fig 5), set up following the National Bat Monitoring Programme (NBMP) guidelines and methodologies.

Actions for 2020:

- Complete NBMP surveys twice in July, following established route and methodology (Appendix 3)

#### 4.7.4 Butterflies

There is already a UK Butterfly Monitoring Scheme (UKBMS) transect located in the reserve (Fig 5) and this is monitored annually following the set methodology (Appendix 4).

Actions for 2020:

- Continue with the established UKBMS survey effort
- Use historical data to draw conclusions on the butterfly populations in Longis

#### 4.7.5 Bees

A bee monitoring plan was established in 2017 following the already established UKBMS transects (Figure 8) in 5 key locations across Alderney, with one of them passing through Longis reserve.

Actions for 2020:

- Continue bee surveys in the reserve as part of the island wide effort, liaising with the



**Figure 8.** National Bat Monitoring Program and UK Butterfly Monitoring Scheme transects within Longis Reserve

Bumblebee Conservation Trust

#### **4.7.6 Dragonflies and damselflies**

Historically Mannez pond has experienced the most diverse range of dragonfly species of any site on the island, housing many of Alderney's 16 species. After 3 years of failure to maintain areas of open water within the pond a survey of dragonflies conducted in 2019, four species of dragonfly and one unidentified damselfly were observed at Longis pond but only emperor dragonflies were recorded at Mannez.

Actions for 2020:

- Maintain areas of open water in both ponds, but especially Mannez, to improve the overall invertebrate and Odonata diversity.
- Conduct 30 minute point counts at the ponds, split between two survey locations, one being at Longis pond and the other at Mannez pond, at the following times of year: 3 in June, July and August or 5 in late May, June, July, August, early September. These point counts should be carried out during sunny, calm and dry weather conditions.

#### **4.7.7 Breeding birds**

There has been sporadic participation in the BTO Breeding Birds Survey on the reserve historically. However, census data collected by the ABO Ltd. can help support the BBS effort.

Actions for 2020:

- Collate data from BBS provided by volunteers and other data collected by the Avian Ecologist with census data from the ABO Ltd. to note any changes in bird populations in the reserve
- Share all data with the ABO Ltd

#### **4.7.8 Marine and intertidal survey**

The Longis Reserve boundary extends into the low water mark of Longis Bay. The bay contains 49 marine biotypes but is often overlooked in the management of the reserve.

Actions for 2020:

- Undertake survey for ormers and invasive species during low spring tides in March
- Liaise with the Living Seas Officer and Marine Ecologist to develop survey plans and conservation actions for Longis Bay

## 5. References

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Goddard, C.S. (2018a). *Longis Reserve Action Plan 2019*. Alderney Wildlife Trust

Goddard, C.S. (2018b). *Longis Reserve Annual Review 2019*. Alderney Wildlife Trust

Manzano-Rubio, R. and Whyte, M. (2017) *Longis Reserve Management Plan 2017-2021*. Alderney Wildlife Trust.

## 6. Appendices

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**Appendix 1 Gantt Chart Detailing Work Programme for the Year 2020**

LONGIS RESERVE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AGAP												
Grassland cutting												
Bramble control												
Longis Pond/Reed-bed												
Mannez Pond/Reed-bed												
Footpath maintenance				Breeding season: avoid tractor in breeding areas								
Ragwort Control												
Hottentot Fig												
Bracken Control												
Amenity Features												
Litter picking												
Brown Tail Moth Control												
Planning												
Aftercare of planted trees												
Survey and monitoring												
Phase 1 and NVC surveys												
UKBMS transect (butterfly)												
BCT surveys (bumblebees)												
NBMP Field survey (bats)												
Breeding Birds Survey												
Wetlands Bird Survey												
Dragonfly Survey												
Ormer Hunts												
Events												

## Appendix 2 Reedbed Monitoring Plan

### The Longis pond – Reedbed monitoring

#### 1. Reedbeds

##### 1.1. Common reed (*Phragmites australis*)

Common reed (*Phragmites australis*) is a tall, perennial, rhizomatous grass growing in wetlands. It commonly forms extensive stands known as reedbeds. Common reed tolerates a wide variety of environmental conditions and it is able to withstand submerged conditions. It can grow both in shallow standing water and on shore. The stems grow to 2-4m tall. The leaves are 20-30cm long. Inflorescence is a large, dense, dark purple panicle, about 20-50cm long.

The aboveground growth begins in the spring when soil and ambient temperatures trigger growth from belowground tissues. Growth continues throughout the summer until seed set. Common reed flowers in late summer. After the seeds are formed plants begin to senesce and shift resources to belowground tissues. Although dead, the strong stems will remain erect throughout the winter. The stems remain standing the following year, helping to aerate the submerged roots.

Common reed reproduces primarily vegetatively from a vast underground rhizome network. Common reed's seeds are spread by wind. Wind-dispersed seeds and seed banks can play an important role in establishing new plants in areas free of vegetation.

##### 1.2. Reedbeds

Reedbeds are wetland habitats primarily dominated by common reed. They are transitional habitats found in the zone between water and land. Young reeds colonise open water or wet ground. Over time reedbeds can gradually dry out as they build up a thick litter layer that eventually rises above the water level. More plants are able to colonise the drier areas where litter has accumulated. Eventually reedbeds will be encroached by scrub and succeed to woodland if they are left unmanaged.

##### 1.3. Management

Management is important for maintaining a range of successional phases and variety of ages within the reedbed. Reedbed management focuses primarily on two issues: the water regime and the removal of vegetation. Natural water regime with cycles of higher water levels in the winter and lower water levels in the summer is generally more beneficial to the wildlife than having stable deep water year round.

The vegetation can be removed by cutting, by burning either cut or standing vegetation, or by removing the surface layers of reed litter. Grazing can also be used to manage reedbeds. In conservation, reed cutting (or vegetation removal by other methods) is done for two main reasons: to slow, or reverse, the natural succession to scrub and woodland and to increase structural variation in the reedbed. Cutting reduces the rate of litter accumulation and at the same time stimulates the production of new reed.

Conservation cutting to maintain reed dominance is undertaken in the winter during the non-growing season. Summer cutting of reed reduces its competitive ability allowing a more diverse mix of vegetation and ultimately eliminates the reed. The reedbed is cut in rotation to ensure a varied age structure. Burning can be used to remove already cut reed or standing reed in late winter when the reed is dead and dry. Due to the small size of the reedbed at Longis pond, burning standing reed is not a suitable method. However, raised burning areas have been established successfully in the past. Cut reed has been manually raked and gathered to the raised burning areas and burnt on site that way. Surface layers of reed litter can be removed to promote growth from the rhizomes. By removing both the litter and rhizome the area can be returned to open water. Grazing of reedbeds is a potentially valuable method for maintaining early succession reedbed. In areas where grasslands are present, low intensity grazing can be used to create dynamic reed-wet grassland interfaces (White et al., 2014).

## **2. Biodiversity value of reedbeds**

Reedbeds are diverse transitional wetland habitats, which can support rich wildlife. Reedbeds value for wildlife is affected on three different levels:

**Size of the reed bed**

**Proportion of different successional phases** within the reedbed

**Structural variability** within the successional phases

In general, larger sites allow more habitat variation and are more likely to support viable populations of wetland species. Reedbed sites should include areas of open water. Inward encroachment of the reed might need to be controlled to maintain an area of open water. Having areas of deeper water within the water bodies helps to decrease the inward encroachment. Scrub removal might be needed to control the scrub encroachment and to maintain the size of the reedbed. The aim should be to keep the reed dominant, but not necessarily remove all scrub. Having some scrub within the drier parts of the reedbed can benefit the wildlife (White et al., 2014).

### **2.1.Successional phases**

All parts of the hydrological gradient from open water to dry reed have biodiversity value. Successional phases of reedbed can be divided into four categories: open water, wet reed, seasonally flooded reed and dry reed. All of them support different fauna and flora. Thus, ideally all stages of reedbed succession should be present within a site to support maximal

amount of species. Below are listed some of the species associated with different successional phases. The lists are mostly based on Bringing reedbeds to life project and report led by RSPB. Bringing Reedbeds to Life was a large-scale programme of scientific research and habitat monitoring, coupled with practical habitat management. The importance of reedbeds for birds is discussed on a separate paragraph after that.

### **Open water**

- Varied open water bodies are important for aquatic invertebrates and macrophytes.

### **Wet reed (wet year round)**

- Early successional reedbeds are important for reedbed and wetland specialist invertebrates.
- Well-vegetated ditches are important for newts.

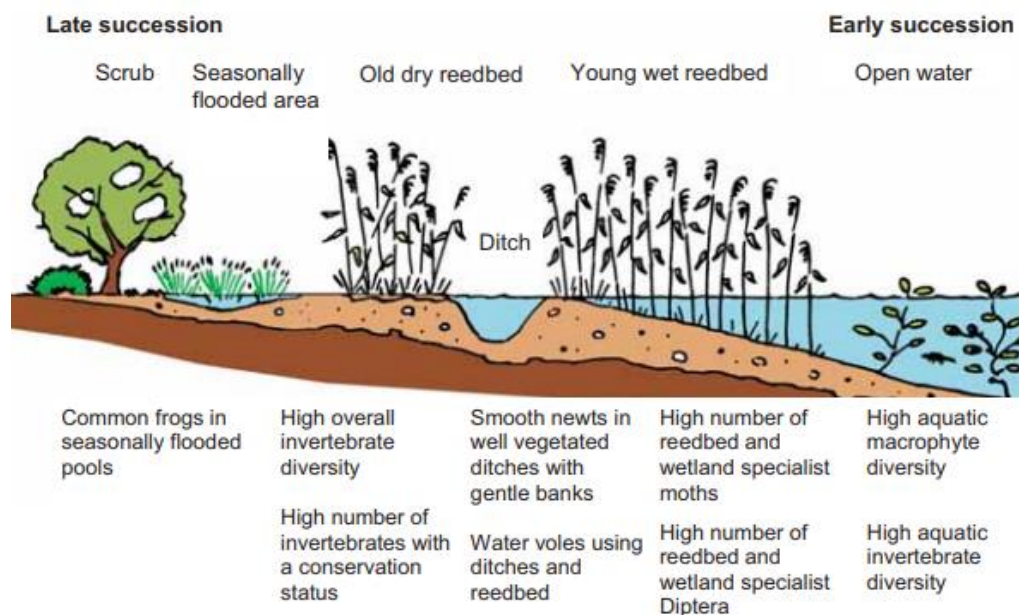
### **Seasonally flooded reed**

- Seasonally flooded pools are important for common frogs.
- Blue-zone areas (seasonally wet parts of reedbed) tend to be highly productive for invertebrates and amphibians such as Palmate newts. As such they are good feeding areas for birds.

### **Dry reed**

- The older, drier parts of the reedbed support the highest overall invertebrate diversity.
- As water level declines and reed dominance decreases, the number of associated plants rises. Thus, dry reeds have the highest plant diversity.





Picture 1. Invertebrate and amphibian species associated with different parts of the reedbed (picture taken from Bringing Reedbeds to Life report)

The reedbed at Longis pond is an important habitat for birds. In the winter it provides cover for resident waterfowl such as mallard, coot and little grebe as well as wintering teal, wigeon, snipe and water rail. The reedbed is also used by little egret and grey heron. During the spring and autumn migration numerous birds, including a wide variety of warblers, forage among the reeds. Migrating swallows and sand martins also use the reedbed to roost in and their presence often attracts raptors such as the resident sparrowhawk as well as transient species such as hobby and merlin. In the summer reed warbler, coot, moorhen, little grebe and mallard all nest among the reedbed. Some rarer species such as fan-tailed warbler and Cetti's warbler have also been seen and may occasionally breed.

## 2.2. Structure

The structure of the reed naturally varies along the hydrological gradient. It is also highly influenced by cutting and other management actions. The goal of the reedbed management is to have variable reed structure and variety of ages within a site. Besides varied reed structure, having varied underwater topography is also beneficial. The open water within the reedbed should ideally consist of both shallow and deep water. Shallow waters (<1.5m) provide habitats for submerged and emergent plants. Areas of deeper water (>1.5m) are required to reduce the potential for reed dominance. Connectivity of water bodies is important to allow water flow.

In general, reedbed that dries up has sparser reed, but the reed stems are taller and thicker. The diagram below shows how the specific characteristics of reed structure change when moving from young, wet reed to old, dry reed.

**Young, wet reed**



**Old, dry reed**

- Reed height increases
- Stem diameter increases
- Live stem density decreases
- Total stem density decreases

Reed degeneration results in lower live stem/rhizome density, and fewer panicles/lower seed production. Cutting is used to stimulate the production of new reed. The effects of reed cutting on the reed structure are listed below.

Cutting **increases** reed stem density and the number of panicles (flowering heads).

Cutting **decreases** reed height, stem diameter, and the number of dead stems.

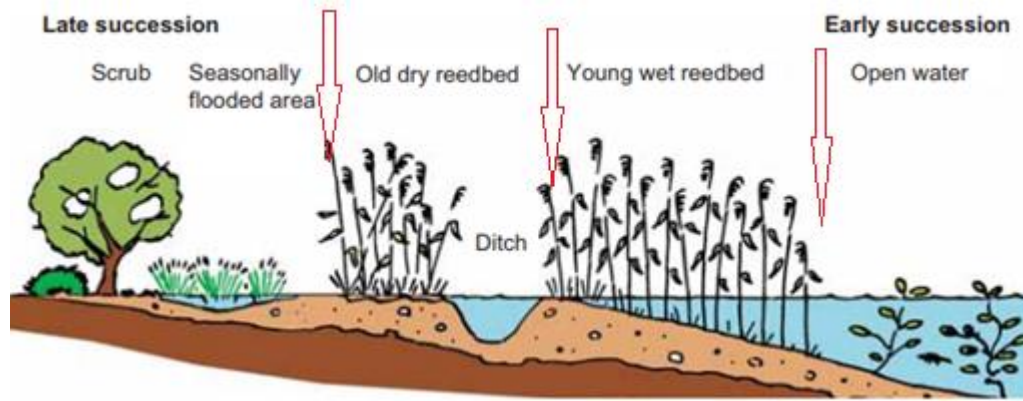
### **REEDBED MONITORING WILL INCLUDE**

1. Using aerial photographs (interval depending on the availability of new aerial photographs):

- size
- the area of open water (to monitor the inward encroachment)
- scrub encroachment

2. Using transects from dry reed to open water (twice a year)

- hydrological regime: winter and summer water levels
- proportions of different successional phases: open water, wet reed (standing water year round), seasonally wet reed, dry reed
- in practice three points are needed: 1. the start of dry reed, 2. the start of standing water, 3. the start of open water (picture below)
- the same transect should be monitored twice a year, once in the winter (highest water level) and once in the summer (lowest water level)



3. Using quadrats along the transect (would only be measured in late summer)

- the structure of the reedbed
  - o reed stem height
  - o reed stem diameter
  - o number of live stems (density)
  - o number of dead stems (density)
  - o total number of stems (density)
  - o number of panicles (flowering heads)/percentage of stems in flower
  - o standing water
- 3-4 quadrats along the transect: dry reedbed, seasonally flooded reedbed, wet reedbed

4. Recording the management

5. Recording the spread of flag iris

**TIMING:**

The vegetation of wetlands is most developed late in the summer (July-September) and is best monitored in August when water levels are at their lowest (Hill et al. 2005). The presence of breeding birds may also restrict access at the other times of year.

Since reedbeds are wetland habitats, the rise and fall of the water table are important factors determining the plants and communities that occur. Hydrological regimes should therefore be monitored (Hill et al. 2005). To monitor the hydrological regime additional visit should be made in late winter (February) when the water levels are the highest. Alternatively or additionally, the boreholes sited to either side of the pond could be used to establish a water table profile for the pond, monitoring heights alongside a measurement from a fixed point in the pond to establish how the ground water profile effects the water levels in the pond and fluctuates during the course of the year.

**References:**

White, G., Self, M. & Blyth, S. (2014). Bringing Reedbeds to Life: creating and managing reedbeds for wildlife. RSPB.

Hill, D., Fasham, M., Tucker, G., Shewry, M. & Shaw, P. (2005) Handbook of Biodiversity Methods - Survey, Evaluation and Monitoring. Cambridge University Press.

**Appendix 3 Bat Conservation Trust guidelines in how to participate in the National Bat Monitoring Program**

**Field Survey card (noctule, serotine, pipistrelle)**

**Planning your survey**

- Survey dates: 1st to 15th July; 16th to 30th July
- Materials: route map, spot descriptions, survey form/notebook
- Ensure that you have read the health & safety checklist, walked your route during daylight & secured permission from relevant landowners
- Be in position to start the survey approximately 20 minutes after sunset at ..... pm (see sunset timetable & pencil in the start time here)

**Starting your survey**

- Just prior to starting, record the following details:  
Temperature Weather conditions (cloud, wind, rain)  
Date Start time
- Don't forget to record the make of bat detector that you have used & your experience/skill level on the survey form

For convenience you can refer to this card instead of your instruction booklet.

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## Methodology

- Begin the first walk with your detector tuned to 25kHz.
- Listen for noctules/serotines only. Pause to check identification if necessary & then resume.
- If it is unclear whether a bat is a noctule or serotine, record as 'unsure'. Record results as Walk 1.

Ignore ALL other species.

- At first spot, re-tune detector to 50kHz and record pipistrelle activity - common (45kHz) & soprano (55kHz) - for two minutes.

- If you cannot identify the species of pipistrelle, record as 'unsure' under Spot 1.

Ignore ALL other species.

- At the end of two minutes, re-tune your detector to 25kHz and commence Walk 2. Repeat the method until you have completed your route.

- After completing Spot 12, stop the survey and record your finishing time.

- Note any changes that you have made to the route.

- If abandoning the survey at any time, record the point at which you stopped & the reason for stopping.

## Appendix 4 Guidelines on how to conduct UK Butterfly Monitoring Scheme transects

### WHEN TO MAKE TRANSECT COUNTS

**Time of year:** A full season's transect counts take place once a week for 26 weeks from the beginning of April to the end of September. Week 'one' runs from 1<sup>st</sup>-7<sup>th</sup> April, week 'two' 8<sup>th</sup>-14<sup>th</sup> April and so on, until week 'twenty-six' which runs

from 23<sup>rd</sup>-29<sup>th</sup> September. You can record earlier than 1<sup>st</sup> April (25<sup>th</sup>-31<sup>st</sup> March is week 0, 18<sup>th</sup>-24<sup>th</sup> March is Week -1 etc.)

or after September (30<sup>th</sup> Sept- 6<sup>th</sup> Oct is Week 27, and so on). If the weather conditions are suitable, you should record

even if there are not likely to be any butterflies present (e.g. early/late in the season) – a negative result is still a result.

**How many weeks:** As many weeks should be walked as possible, as gaps reduce the quality of the data and too many can render it virtually useless. The more gaps the less species-indices can be calculated. Where it has been decided that a transect is aimed a single, usually rare, species (or sometimes for two or three species) then weeks should be walked that cover the flight period(s), with zero counts at either end.

**Time of week:** You can record on any day of the week, but should aim to walk the transect on the first opportunity that

the weather is suitable (some weeks you may not get a second chance!). You only need to record more than once a week

if the weather on your first walk did not meet the criteria.

**Time of day:** Transect counts should ideally be made between 10:45 and 15:45 hours, though between 10:00 and 17:00

hours is usually allowable, though butterfly activity may drop off rapidly during the late afternoon so later times should be avoided.

**Weather conditions:** Transect walks should only be carried out in warm and at least bright weather, with no more than moderate winds and not when it is raining. The minimum criteria are either 13-17°C with at least 60% sunshine, or if there

is no sunshine the temperature must be 17°C or above. Windspeed (Beaufort scale) should be no more than 5 unless the

transect route is sheltered from the wind. Do not record if the temperature is below 13°C except in northern upland areas

where, if butterflies are active, they may be recorded in temperatures down to 11°C. Check that conditions are suitable

before you start the transect, and that if the temperature is less than 17°C there is likely to be sufficient sun.

**Recording butterflies:** walk at a slow, steady pace counting all butterflies seen within a fixed distance – the recommended distance is 2.5m either side of the transect line and 5m ahead. In some habitats e.g. along sea cliffs or woodland rides, it is acceptable to record at a width of 5m along one side only of the transect line. A wider area is recorded on part or all of some transects (e.g. 10m instead of 5). Always stick to the limits established when the transect was set up. Try to avoid double counting where possible e.g. when an individual butterfly repeatedly flies in and out of your recording zone. However, if you lose sight of an individual, and later regain sight of the same species do not assume this is the same individual. Do not count butterflies behind you. Try to identify and separate all species you encounter, including where possible 'difficult' species such as Small and Essex Skipper, whites and the fritillaries. If similar species such as Small White and Green-veined White are flying together at a site you may want to net a sample (a small clear plastic pot can be very useful to temporarily confine the butterfly so it can be examined more easily – hold pot in the shade), to determine the proportion of each species present -you can then divide up your overall counts accordingly. For example, if you catch and identify 8 Small Whites and 2 Green-veined Whites, a count of 30 unidentified whites can be converted to an estimated 24 Small Whites and 6 Greenveined Whites. Note that you will need a license to capture High Brown Fritillary and the use of nets may be prohibited in some areas - contact BC for details. If you are not sure how to identify any species of butterfly you are likely to encounter with certainty then you should take a good identification guide with you. If you see interesting species outside your recording area these should not be included in the transect count but can be recorded in the notes section at the foot of your form or on the back of the form.