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SOUTH EAST DEVON HABITAT REGULATIONS PARTNERSHIP

Agenda for South and East Devon Habitat Regul Executive Committee Tuesday, 16th July, 2019, 2.00 pm

Members of South and East Devon Habitat Regulations Executive Committee

Councillors S Bond, R Sutton and M Wrigley

Venue: Council Chamber Blackdown House, East Devon District Council, Honiton EX14 1EJ

Contact: Chris Lane 01395 517544; email clane@eastdevon.gov.uk
(or group number 01395 517546)

9 July 2019

1 Public speaking

Information on public speaking is available online.

2 Minutes of previous meeting (Pages 3 - 7)

3 Apologies

4 Declarations of interest

Guidance is available online to Councillors and co-opted members on making declarations of interest

5 Matters of urgency

Information on matters of urgency is available online

6 Confidential/exempt items

To agree any items to be dealt with after the public (including the Press) have been excluded. There are no items which officers recommend should be dealt with in this way.

7 Exe Estuary Wildlife Refuges 1st Annual Monitoring report (Pages 8 - 83)

8 Monitoring Petalwort at Dawlish Warren (Pages 84 - 107)

9 Staffing Requirements of the SEDESMS (Pages 108 - 129)

10 Future areas of work (Page 130)

11 Exclusion of the public

The Vice Chairman to move the following:

> "that under Section 100(A) (4) of the Local Government Act 1972 the public (including the press) be excluded from the meeting as exempt information, of the description set out on the agenda, is likely to be disclosed and on balance the public interest is in discussing this item in private session (Part B)".

12 Ongoing Management at South West Exeter and Dawlish SANGS

Under the Openness of Local Government Bodies Regulations 2014, any members of the public are now allowed to take photographs, film and audio record the proceedings and report on all public meetings (including on social media). No prior notification is needed but it would be helpful if you could let the democratic services team know you plan to film or record so that any necessary arrangements can be made to provide reasonable facilities for you to report on meetings. This permission does not extend to private meetings or parts of meetings which are not open to the public. You should take all recording and photography equipment with you if a public meeting moves into a session which is not open to the public.

If you are recording the meeting, you are asked to act in a reasonable manner and not disrupt the conduct of meetings for example by using intrusive lighting, flash photography or asking people to repeat statements for the benefit of the recording. You may not make an oral commentary during the meeting. The Chairman has the power to control public recording and/or reporting so it does not disrupt the meeting.

Members of the public exercising their right to speak during Public Question Time will be recorded.

Decision making and equalities

For a copy of this agenda in large print, please contact the Democratic Services Team on 01395 517546

EAST DEVON DISTRICT COUNCIL

Minutes of the meeting of South and East Devon Habitat Regulations Executive Committee held at King Charles room, Forde House, Teignbridge District Council, Brunel Road, Newton Abbot, TQ12 4XX. on 29 April 2019

Attendance list at end of document
The meeting started at 2.00 pm and ended at 3.10pm.

1 Public speaking

The Chairman, Cllr Humphrey Clemens, welcomed everyone present to the meeting and explained that there had not been a recent meeting of the Executive Committee as this had been a year of implementation of previous decisions made.

Cllr Martin Wrigley, Teignbridge District Council asked the following questions:

- Since Teignbridge District Council had passed a motion to deal with climate change issues. What was the Habitats team doing to reduce their carbon footprint?
  Neil Harris, Habitats Regulations Delivery Manager responded that Teignbridge District Council had only declared on the climate change issue in the last couple of weeks, but he agreed that this was an issue that demanded attention in the future. The environment was at the core of what the group did.

- Was very impressed with the Habitat teams working patterns. The SUV was seen driving around Dawlish at 8.00pm one evening and asked what were they doing at this time in the evening?
  Neil Harris, Habitats Regulations Delivery Manager responded that the groups SUV worked around the clock. There was a particular issue in Dawlish at present that some walkers were waiting until staff had finished their shift and walking in restricted areas. Staff had become aware of this and had changed their shift to a later one to try to prevent this activity and would have been driving home in the SUV at 8.00pm.

- In reading the reports there were a number of elements to the various projects. What was the monitoring and measurement of how well the projects have been going? There seemed to be no feedback given on targets and no progress monitoring. Where can this information be found?
  Neil Harris, Habitats Regulations Delivery Manager responded that there was on going monitoring of wildlife and a number of the reports presented to the Executive Committee contained feedback on things like visitor numbers and visits. Species monitoring was also going on at Dawlish Warren. A further report on wildlife monitoring would be given at the next meeting.

2 Minutes of the previous meeting

Minutes of the South East Devon Habitat Regulations Executive Committee meeting held on 20 April 2018 were agreed as a true record.

3 Declarations of interest

Cllr Paul Diviani – Personal Interest as Chairman of Blackdown Hills AOB.

Cllr Ollie Pearson – Personal interest as partner worked for National Trust.

4 Matters of urgency

There were no matters of urgency.

5 Financial Report 2019

The Executive Committee considered the Habitats Regulations Delivery Manager's report which sought to update members of the Executive Committee on the overall financial position of the developer contributions received by the partner authorities as mitigation payments towards measures identified in the South East Devon European Mitigation Strategy.

The report set out details of the contributions received from inception to date and anticipated income from contributions where planning permission had been granted but the contribution had not yet been paid. Details of expenditure against 2017/18 and 2018/19 Annual Business plans, as well as total expenditure to date were also provided. Updated housing forecasts had been made available from each partner authority and were reported in Table 3. These projections had also been used to assist in outlining the indicative 5 year Delivery Plan.

RESOLVED 1. that the Executive Committee notes the update on the overall financial position including contributions received, expenditure and anticipated contributions (from signed S106).
2. that the Executive Committee notes the expenditure against budget for the 2018-19 Annual Business Plan and reasons given for any variance.

6 2018/19 Annual Business Plan - Annual Report

The Executive Committee considered the Habitats Regulations Delivery Manager's report, which was an update on the progress made in delivery of new mitigation measures set out in the 2017-18 and 2018-19 Annual Business Plans and ongoing measures from the 2016-17 Plan. It was important that progress continued to be made, or this would put the delivery of partner Authorities Local Plans at risk due to the continued legal duties under the Habitat Regulations.

The measures outlined in the plan had been debated and endorsed by the Officer Working Group. The plan outlined the delivery of ongoing measures established in the 2016/17 and 2017/18 ABPs, as well as a range of additional measures. In total, the plan earmarked expenditure of an estimated £192,170.

Fergus Pate, Principal Growth Point Officer, Teignbridge District Council, reported on the changes to the car park at Dawlish Warren. The Parking Order had been made and there had been further discussions with the traders which had caused the District Council to look again at its bylaws powers. There was the need to report back to the Executive Committee at the next meeting and make recommendations on changes to the car park

at Dawlish Warren as the legal process had been very complex. There would also be a report necessary to be made to Teignbridge District Council's Executive Committee.

RESOLVED 1. that the progress made in delivering the 2017-18 and 2018-19 Annual Business Plans be noted.
2. that the status of mitigation measures from each of the plans, as well as explanations given for measures subject to delay and revised completion dates be noted.

7 2019/20 Annual Business Plan and Five Year Delivery Plan

The Executive Committee considered the Habitat Regulations Delivery Manager's report, which set out the principles for the on-site projects, which had been recommended as a priority by the Habitats Regulations Delivery Officer, in conjunction with the Officer Working Group. Following the request for a rolling 5 year Delivery Plan from Natural England, this has been incorporated into an updated 5 year plan.

RESOLVED 1. that the 2019-20 Annual Business Plan and the commitments and actions set out therein be approved.
2. that the updated 5 year Delivery Plan be noted.
3. that the adjustment of the Habitat Mitigation Officers contracts to permanent status to align with the funding allocated in the mitigation strategy be approved.
4. that the retention of the Devon Loves Dogs project Coordinator for 5 years from November 2019 and funding for a used vehicle from May 2019 as outlined in Section 2 be approved.
5. that redirecting the funds outlined in section 3 to cover the associated costs of 4. Above be approved.
6. that a further report be received on funding the Delivery Manager role and specific accountancy/monitoring officer resource at the next meeting.

8 Risk Register Report 2019

The Executive Committee considered the Habitat Delivery Managers report which sought to update members of the Executive committee on the Risk Register 2019. As part of the project development of the South-Est Devon European Site Mitigation Strategy a detailed risk register is used to take account of the various categories of risk that exist or emerge in all elements of the Strategy.

It was noted that although none of the risks on the register were noted as severe, there remained a number of risks which had the potential for high strategic and operational impact, if not carefully addressed. Continued partnership working and keeping updated on changes in the operational environment would assist in mitigating these risks. Continued and effective delivery of the Strategy and the development this enabled remained of very high importance to all partners.

Amanda Newsome, Natural England, questioned whether developer's should listed as joint risk owners and whether it was appropriate for a third party to be considered responsible for a risk.

RESOLVED 1. that the identification, categorisation and prioritisation of risks as recorded in the accompanying Risk Register, associated with the delivery of the South-East Devon European Site Mitigation Strategy be noted.
2. that the control measures in place to mitigate the risks identified be noted.
3. that an updated Risk Register report be received in 6 months.

9 SANGS Delivery at Dawlish and SWE

The Executive Committee considered the Habitat Delivery Managers report, which highlighted that significant progress had been made on SANGS land agreements with developers at South West Exeter (SWE) with 17 hectares now agreed. This was expected to transfer to Teignbridge District Council in July 2019 and agreement for a further 4.5 hectares was underway. The Delivery Strategy for the site had been updated prior to procurement and establishment, which would be led by TDC Green Spaces, following the same approach as at Dawlish SANGS. TDC were negotiating head of terms with Land Trust for a long-lease of both Dawlish and South-West Exeter to ensure effective management in-perpetuity. The intention was to work towards finalising the lease and funding agreement this summer (2019).

Cllr Humphrey Clemens, Chairman, reported on how successful the SANGS sites at Dawlish had been and how popular they were with walkers. He asked whether it would be possible to have a hot drink facility on site. Neil Harris, Habitats Delivery Manager reported that it would not be appropriate and against the principles of the SANGS.

RESOLVED 1. that the progress made by Teignbridge District Council towards the delivery of Suitable Alternative Natural Green Space (SANGS) at South West Exeter (SWE) be noted.
2. that the progress made by TDC in developing and securing long lease funding agreements for management in perpetuity at Dawlish and SWE SANGS be noted**.**
3. that Devon County Council's success in securing the Housing Infrastructure (HIF) award for development at SWE, including SANGS, be noted.
4. that a report be received at the next meeting on the specific funding arrangements of the HIF and consideration of the implications on current SANGS funding arrangements.

10 Dates of future meetings

Tuesdays 16 July 2019, 29 October 2019, 28 January 2020 and 28 April 2020 at 2.00pm. All dates are subject to the existing terms of reference that meetings will be held according to workload. Meetings will be held in the Council Chamber, East Devon District Council, Blackdown House, Border Road, Honiton EX14 1EJ.

Attendance List

Councillors present:

Cllr Humphrey Clemens, Teignbridge District Council (Chairman)
Cllr Paul Diviani, East Devon District Council

Cllr Ollie Pearson, Exeter City Council (Sub for Cllr Rachel Sutton)

Officers in attendance:
Neil Harris, Habitats Regulations Delivery Manager (ECC)
Anita Williams, Principal Solicitor (and Deputy Monitoring Officer) (EDDC)
Chris Lane, Democratic Services (EDDC)
Amanda Newsome, Natural England
Fergus Pate, Principal Growth Point Officer (TDC)
Estelle Skinner, (TDC)
Peter Hearn, Strategic Infrastructure Planning (ECC)
Andy Wood, East of Exeter Projects Director (EDDC)
Naomi Harnett, (EDDC)

Apologies:
Cllr Rachel Sutton, Exeter City Council
Henry Gordon Lennox, Strategic Lead – Governance and Licensing (EDDC)

Chairman ..... Date: .....

SOUTH EAST DEVON
HABITAT REGULATIONS
PARTNERSHIP

South East Devon Habitat Regulations Executive Committee

Exe Estuary wildlife refuge monitoring – 1st Annual report

Neil Harris, Habitat Regulations Delivery Manager
July 2019

Legal comment/advice:

The report does not raise any direct legal implications requiring comment.

Finance comment/advice:

There are no direct financial implications arising from the recommendations in this report.

Public Document:	Yes
Exemption:	None
Review date for release	None

Recommendations

It is proposed that the Executive Committee:

1. Notes the initial results from the annual wildlife refuge monitoring report.
2. Receives the second annual wildlife refuge monitoring report in summer 2020.
3. Receives an overarching review of monitoring results after completion of the third year of monitoring (2021).

Equalities impact: Low

Risk: Low. This report provides the results of the first annual report of the Exe estuary wildlife refuge monitoring programme. Monitoring is ongoing, so these results are interim and will form part of a three year programme to determine the efficacy of the approach to preventing recreational disturbance to the protected bird species on the Exe estuary. This is important because without robust and effective mitigation which enables the partner authorities to be certain of no net impact to protected sites, continued development as outlined in respective local plans and within 10km of the estuary is at risk of legal challenge.

1. Summary

1.1 As a Special Protection Area (SPA) regularly supporting a community of at least 20,000 waterbirds, the Exe estuary is afforded legal protection against the deterioration of its habitats and disturbance (and distribution) of the species for which it has been designated.

1.2 Disturbance can modify the feeding and roosting habits of protected bird species and place additional energetic stress through increased activity and lost feeding opportunities. This is likely to reduce fitness and survival, particularly if it occurs during periods when they are already stressed by other factors, such as poor weather, food shortage or prior to/after long distance migration. It can also reduce the area of habitat available to the birds for feeding or roosting.

1.3 Ongoing and regular monitoring of bird species and numbers via the Wetland Bird Monitoring Scheme (WeBS[1]) shows that the majority of the internationally important populations of Dark-bellied Brent Goose, Wigeon and Oystercatcher in the estuary are found at Dawlish Warren National Nature Reserve (NNR) and Exmouth Local Nature Reserve (LNR). Protecting these habitats and species from disturbance goes to the heart of the mitigation strategy for the Exe estuary.

1.4 In June 2016, the Habitat Regulations Executive Committee (HREC) approved a review of zonation in the Exe Estuary as part of the 2016-17 Annual Business

[1] *The Wetland Bird Survey (WeBS) is the monitoring scheme for non-breeding waterbirds in the UK, a partnership coordinated by the British Trust for Ornithology (BTO).*

Plan. Given their history of involvement with users on the estuary, the Exe Estuary Management Partnership (EEMP) were awarded a contract to undertake the work.

1.5 The EEMP undertook an extensive and extended consultation with users of the Exe and other members of the public between December 2016 and June 2017. This proposed establishing two areas at the Duck Pond and north of Dawlish Warren where all human activity would be discouraged in order to reduce the frequency and impact of disturbance events in areas of critical ecological importance.

1.6 The consultation resulted in significant changes to the original proposals, primarily in response to stated concerns of safety and accommodating (as far as possible) existing uses of the areas.

1.7 Amended proposals needed to balance the legal obligations of the protected areas against the legitimate interests of users. The final recommendations from the EEMP's "Exe Estuary Zonation Review Consultation Report" were endorsed by the EEMP Management Group in June 2017.

1.9 From June to August 2017 there was a 6 week period during which a "final options" consultation was carried out by the South East Devon Habitat Regulations Partnership (SEDHRP). This was particularly to allow for seasonal estuary users to comment and to allow for comments on the EEMP's final recommendations.

1.10 Responses to the SEDHRP consultation were not substantially different in nature to those received during the first phase. Evidence from previous studies and research[2], coupled with the precautionary approach required by legislation made it clear that doing nothing was not an option.

1.11 After discussion of the comments received, the Officer Working Group (OWG) agreed to put forward the final EEMP recommendations to HREC. This was subject to further work with Exeter City Council as the Harbour Authority to address the anomaly of continuing to allow use of the Exmouth refuge by Powerboats.

1.12 HREC considered and approved the recommendations to establish wildlife refuges, at Exmouth from 15 Sept – 31 Dec and all year round at Dawlish Warren, in October 2017. No fines or enforcement were suggested or recommended and an annual monitoring programme, to report over a 3 year period, was integral to the recommendations.

1.13 Permissions and licenses were sought from respective agencies and marker buoys were placed in the estuary in early August 2018. An intensive programme of public engagement was carried out, with pop-up events, literature and press releases/social media posts in preparation for the official "launch" of the refuges in September 2018.

[2] *See October 2017 SEDHRP report "Review of zones in the Exe Estuary"*

2. The study.

2.1 Following a competitive tendering process, Footprint Ecology were awarded the contract and began monitoring the areas in February 2018, prior to the official launch of the refuges. This was so that, in time, it would be possible to discern whether there were any observable changes in behaviour prior to and after the refuges were officially established.

2.2 The main objectives of the consultant brief, included here as Appendix A, are:

- To determine (as far as is practicable) whether the Wildlife Refuges at Dawlish Warren and Exmouth a) work to reduce disturbance to water birds from recreational activities within these areas and b) positively contribute to the ability of the Exe Estuary to support designated bird populations in the SPA.
- To undertake a 3 year programme of monitoring (by direct observation) of the Exmouth (15 Sept – 31 Dec) & Dawlish Warren (all year) Wildlife Refuge areas, to ascertain their efficacy. Gather sufficient new data to establish the base line for new refuge areas.
- To ascertain the type, frequency and impact of disturbance events at the Exmouth Wildlife Refuge area outside of the date range of the refuge, when SPA designated species are present.
- To determine the level of adherence to the refuge areas (whether leading to a disturbance event or not).

2.3 Essential components of the survey include the following elements:

- To survey, record and quantify any disturbance events (type, response, distance, impact, species, number, time, tide) caused to water birds from different types of human activity within the refuges – on the water, inter-tidal and foreshore. This should also include activities in the refuges which do not result in disturbance.
- To survey and assess the effects on waterbirds of any consequences of displacement of water based recreational activity to other ecologically important areas in the Exe Estuary.
- Use existing studies to inform survey methodology, to ensure a growing and consistent evidence base. To use any available data (such as WeBS) to help gauge any discernible changes in the patterns of waterbird population and distribution as a result of the Wildlife Refuges.
- To compile an annual report including summary of results, interpretation of the data, full results and any issues arising.
- To compile an overarching report after a period of 3 years monitoring. This report to include comprehensive summary of results, interpretation of the data and (if appropriate) recommendations for future management.

2.4 The brief also made clear the requirement for a robust methodology which includes consideration of WeBS data, the original Exe Disturbance Study

(Footprint Ecology, 2011) and monitoring by both the EEMP and Teignbridge District Council Rangers. It references the need for direct comparison with previous studies to effectively extend the dataset and facilitate statistical analysis.
2.5 To ensure clear and concise output from the 3 year programme, the brief also included specific reference to 5 key questions which look to establish how effective the refuges are:

1) How well are the Wildlife Refuges adhered to in general?
2) Are the Wildlife Refuges working to reduce disturbance to the designated bird species on the Exe?
3) Have the Wildlife Refuges positively affected the ability of the Exe Estuary to support designated bird populations? I.e. if a reduction in disturbance is observed, is this enough to conclude no adverse effect on site integrity for the SPA features?
4) If there is an insufficient reduction in disturbance to conclude no adverse effect on site integrity for the SPA features, what further actions in these areas can be taken to avoid and minimise the disturbance to waterbirds from recreational activities?
5) Do any particular activities continue to cause disturbance within the refuges?

2.6 Included here as Appendix B, the survey utilises two different monitoring approaches:

- Core Counts, involving continued observation over a fixed time period (1 hour and 45 minutes), recording the birds present, human activity, and any interactions between people and birds, and;

- Vantage Point Counts (VPC), involving quick, 'snapshot', counts recording the number of birds present and the distribution of human activity.

2.7 Core Counts provide detailed data relating to the responses of birds and prolonged observation across a fixed recording area. This approach builds on the Exe Disturbance Study and has been developed in line with a series of studies across the UK. Each count involves the following elements:

- Two counts of birds, one count at the start and one at the end of the survey period;
- A diary of all potential disturbance events observed during the 1 hour and 45 minutes following the first count;
- A record of the response of selected bird species to each of the potential disturbance events recorded in the 'diary', including counts of birds present and the number of birds flushed, etc., and;
- Any additional information.

2.8 VPC are much quicker and easier to carry out, cover a much wider area, and are undertaken much more frequently than the Core Counts. The VPC therefore provide the best indication of how frequently there are people inside the refuges. These consisted of 'snapshot' counts, each lasting around 15 minutes, whereby a wide expanse of the estuary was scanned with binoculars from pre-selected vantage points, and a count made of any people, activities, and birds present.

These counts are simple to complete and provide an easily replicated approach which meant that the Habitat Mitigation Officers were able to undertake these counts, providing supplementary data to the Core Counts.
2.9 As shown in Appendix C, four survey locations were used – two at Exmouth and two at Dawlish Warren. To ensure coverage across a range of conditions and circumstances, visits were timed to coincide, as far as possible, with the following:

- A range of weather conditions, including some dates with strong winds when water sports and sailing are likely to take place;
- Any particular events that were known the be taking place;
- Weekends and weekdays and different times of day, and;
- A range of tide states.

2.10 Survey effort from Feb 2018 to March 2019 was spread across months, with a total of 52 Core Counts (representing 91 hours of direct observation) and 123 VPC (representing a further 30 hours) – a total of 121 hours of survey.

2.11 Monitoring is ongoing and it is important to note that the data and results in the first annual report are just the initial part of a larger body of counts to be undertaken over a three year period.

3. **Monitoring results – Year One summary**

3.1 Key findings from the first annual report are as follows:

- High numbers of birds were present in and around both refuges.
- The Core Counts from Exmouth were highest in the autumn/early winter (when the refuge was active) while this was less apparent at Dawlish, providing support for the different time periods that the refuges are active.
- Vantage Point Count data showed a significant difference in the proportion of waders and of wildfowl recorded inside the Exmouth refuge, compared to outside the refuge, during the post-refuge period. There was a greater proportion of birds present inside the refuge when it was active. For the Dawlish refuge, differences were not so clear and suggest a higher proportion of waders inside the refuge during the pre-refuge period, but the opposite for wildfowl.
- In terms of recreational use, the Exmouth side was much busier, with many more dog walkers, walkers, and watersports recorded at the Exmouth Duck Pond in particular.
- There was no evidence that the refuges are deterring visitors to the respective areas in general, for example the Core Count data showed watersports and dog walkers using the general Duck Pond area (i.e. including areas outside the refuge) when the refuge was active.
- Vantage Point Count data showed recreational use inside the refuges, particularly Exmouth, when the refuge was not active; this then dropped to a low level when the refuge was active, suggesting that people were changing their behaviour and recognising the refuges.
- There were relatively few times that people were recorded within the refuges while they were active, but incursions were recorded.

- In terms of overall number of disturbance events, dog walkers and bait diggers accounted for most of the incursions into the refuge at Exmouth (but kitesurfers, windsurfers, walkers and a RIB were also recorded).
- Walkers, bird watchers, crab tilers and shore fishing were the main incursions into the refuge at Dawlish.
- Observations of bird responses to activities taking place within the refuges recorded a total of 66 waders and 696 wildfowl flushed, during the period from 15 September when the refuges were active.
- Comparison of data from different time windows, when the refuges were active or not suggests there is a higher likelihood of a behavioural response occurring when the refuges are active, with higher proportions of birds taking flight or responding.

3.2 In summary, the data therefore indicates that the refuges do support significant numbers of birds and that incursions into the refuges (when they are active) are relatively infrequent, but when they do occur they can have a marked impact in terms of a behavioural response from the birds present.

3.3 Further monitoring will highlight whether there are changes in the number of incursions over time and whether there are shifts in how the areas are used by birds over time.

3.4 As is true of all the mitigation measures outlined in the South East Devon European Site Mitigation Strategy, the wildlife refuges should be continue to be viewed in the context of a wider, interconnected and coordinated approach. This includes a broad range of educational resources via the Habitat Mitigation Officers, leaflets, signage and interpretation. Other projects promote responsible dog ownership and behaviour across the whole region and significant areas of countryside have been (and will be) brought forward as Suitable Alternative Natural Green Space (SANGS). Monitoring is integral to the strategy, is progressing according to the approved annual and 5yr business plans and is appropriately designed to focus on the combined effects of all the measures as part of the larger whole.

Neil Harris
Habitat Regulations Delivery Manager

South East Devon
Habitat Regulations
Executive Committee
July 2019

Natural England comment:

Natural England welcomes this first annual monitoring report and supports the recommendations made.

The initial results indicate that the wildlife refuges are effective in reducing disturbance within those areas.

SOUTH EAST DEVON
HABITAT REGULATIONS
PARTNERSHIP

Exe Estuary Wildlife Refuge Study – Consultant brief

Objectives of the Exe Wildlife Refuge Monitoring Programme:

- To determine (as far as is practicable) whether the Wildlife Refuges at Dawlish Warren and Exmouth a) work to reduce disturbance to water birds from recreational activities within these areas and b) positively contribute to the ability of the Exe Estuary to support designated bird populations in the SPA.
- To undertake a 3 year programme of monitoring (by direct observation) of the Exmouth (15 Sept – 31 Dec) & Dawlish Warren (all year) Wildlife Refuge areas, to ascertain their efficacy. Gather sufficient new data to establish the base line for new refuge areas.
- To ascertain the type, frequency and impact of disturbance events at the Exmouth Wildlife Refuge area outside of the date range of the refuge, when SPA designated species are present.
- To determine the level of adherence to the refuge areas (whether leading to a disturbance event or not).

There are essential components of the study that are critical to meeting its core objectives. Tenders should identify any components which could not be delivered within the available budget and what (if any) budget would be required to achieve all the study components.

Essential components:

- To survey, record and quantify any disturbance events (type, response, distance, impact, species, number, time, tide) caused to water birds from different types of human activity within the refuges – on the water, inter-tidal and foreshore. This should also include activities in the refuges which do not result in disturbance.
- To survey and assess the effects on waterbirds of any consequences of displacement of water based recreational activity to other ecologically important areas in the Exe Estuary.
- Use existing studies to inform survey methodology, to ensure a growing and consistent evidence base. To use any available data (such as WeBS) to help gauge any discernable changes in the patterns of waterbird population and distribution as a result of the Wildlife Refuges.
- To compile an annual report including summary of results, interpretation of the data, full results and any issues arising.
- To compile an overarching report after a period of 3 years monitoring. This report to include comprehensive summary of results, interpretation of the data and (if appropriate) recommendations for future management.

The safety of all users on the estuary is of paramount importance. Any vessel or craft is able to enter either of the Wildlife Refuges for reasons of immediate safety. It is considered reasonable to expect users, once safe, to make their way out of the refuge or recover their craft at the shore.

Background:

The Exe Estuary is designated as a Special Protection Area (SPA) for regularly supporting a community of at least 20,000 waterfowl. In simple terms, this affords the estuary legal protection against the deterioration of its habitats and disturbance (and deterioration) of the species for which it has been designated. Evidence reported in the Exe Disturbance Study (*Footprint Ecology, 2011*) demonstrated that:

"Disturbance is currently therefore influencing the distribution and behaviour of birds on the Exe. These impacts may be sufficiently widespread and frequent to result in the estuary being less able to support the designated bird populations"

East Devon, Exeter and Teignbridge Councils have all established Local Plans which set out housing growth across the region. The South-east Devon European Site Mitigation Strategy (*Footprint Ecology, 2014*) describes housing growth in the context of the Exe:

"Housing within 1km of the Exe Estuary is set to increase by 20% (3,138 houses) as a proportion of existing housing within 1km (15,395 houses). Looking at all housing within 10 km, there will be a 29% increase surrounding the Exe…"

In June 2016, a partnership of the three Councils formed as the South East Devon Habitat Regulations Executive Committee (HREC). At their inaugural meeting, the Committee approved a review of zonation in the Exe Estuary as part of the 2016-17 Annual Business Plan. Due to their neutral standing, history of involvement, established network of user groups and success in implementing a Voluntary Exclusion Zone in 2009, the Exe Estuary Management Partnership (EEMP) were commissioned to undertake the zoning review.

Results of species monitoring via the Wetland Bird Survey (WeBS) shows that the majority of the internationally important populations of Dark-bellied Brent Goose, Wigeon and Oystercatcher in the estuary are found at Dawlish Warren National Nature Reserve (NNR) and Exmouth Local Nature Reserve (LNR). Coupled with the presence of the Zostera (eelgrass) beds, EEMP's initial discussions with key stakeholders quickly identified these two key areas as critical to the ecological function of the SPA.

Comments, compromises and suggestions put forward by respondents to the EEMP's consultation were discussed by members of the EEMP and South East Devon Habitat Regulations Partnership (SEDHRP) Officer Working Groups on 6th June 2017. This resulted in significant amendments to the original proposals, primarily in response to concerns of safety and accommodating (as far as possible) existing uses of the areas.

The Wildlife Refuges are essentially a request to the thousands of people using the Exe Estuary to act responsibly and refrain from using two critically important ecological areas. As shown in figures 1-3 below, these represent just 3.5% (840,548 m^2) of the SPA (23,457,100 m^2) throughout the year (at Dawlish Warren) and a total of 7% (1,669,295 m^2) for 14 weeks of the year (when including the Exmouth refuge area).

A rigorous programme of monitoring is necessary in order to understand whether or not these refuges are successful in reducing disturbance from recreational activities and positively affecting the ability of the estuary to support the designated bird populations. Without robust and effective mitigation which enables the partner authorities to be certain of no net impact to protected sites, continued development as outlined in respective local plans and within 10km of the estuary is at risk of legal challenge.

Figure 1: Wildlife Refuge areas relative to the wider estuary

Exe Estuary

Figure 2: Dawlish Warren Wildlife Refuge area

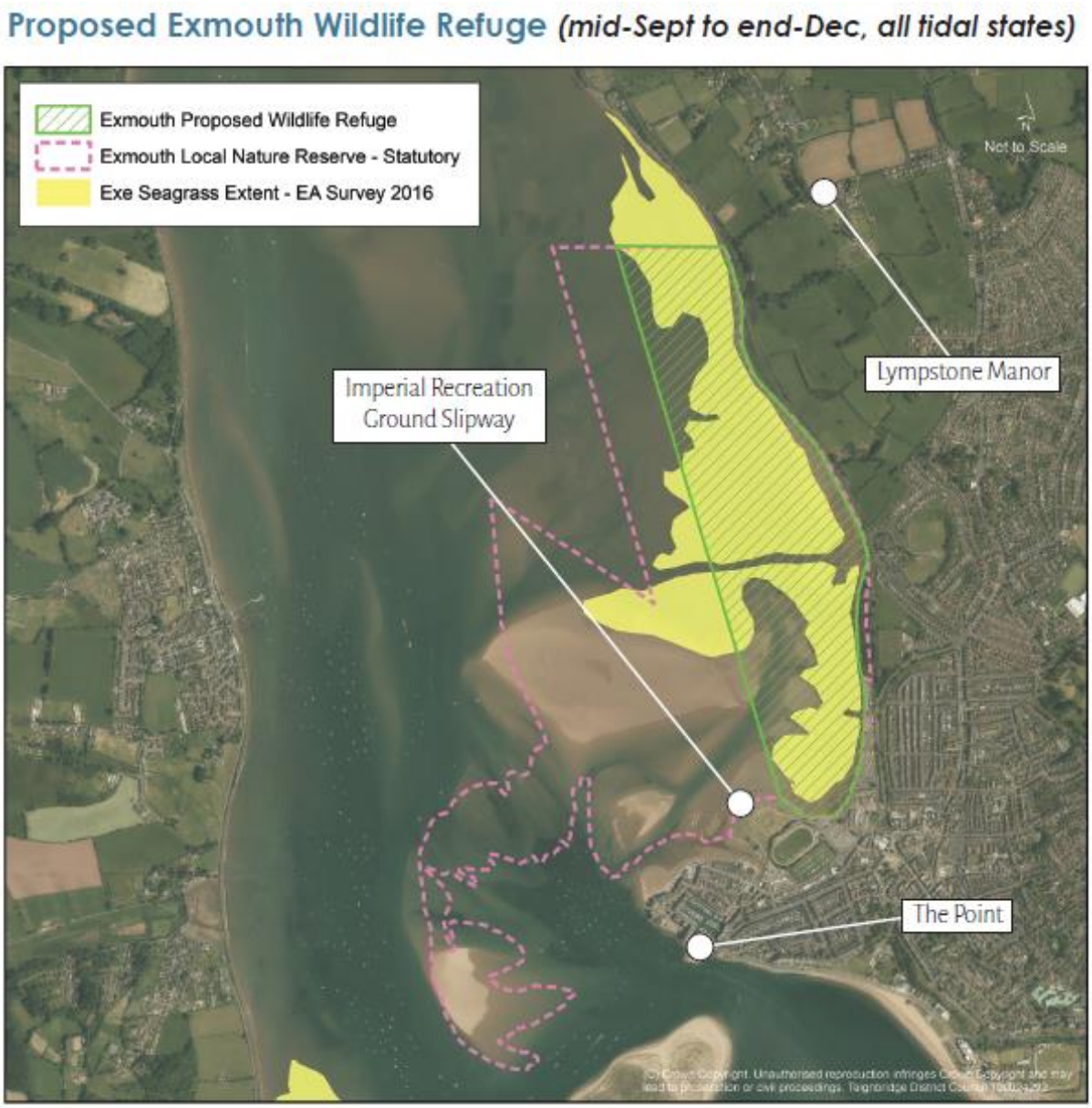
Start datum (NGR SX 97802 80423) at Cockwood Steps / railway crossing which establishes the start of the boundary line, runs easterly to the south-eastern tip of the wreck (NGR SX 98048 80414), then south-easterly along the mean low water mark to the defined landing area (NGR SX 98989 80204), follows the defined landing area south to the mean high water mark (NGR SX 99026 80139) then follows the mean high water mark along the sand spit back to the shoreline (NGR SX 97924 78932), then follows the shoreline (mean high water mark) back to the start datum (NGR SX 97802 80423).

- For dog walking: statutory exclusion already in place through byelaw.
- For low tide activities (e.g. angling, bait digging, walking):
- On the foreshore, stay left of line between Cockwood Steps and the southern tip of the wreck.
- For high tide activities (e.g. canoeing, dinghy sailing, SUP):
- Buffer zone for water-based activities, which comes in from the boundary outlined above (and therefore the navigation channel) by 100m, until the mouth of Shutterton Creek, where the boundary re-joins at the mean low water mark (NGR SX 98697 80008).

Dawlish Warren Wildlife Refuge: Other considerations

- Current Angling Voluntary Exclusion Zone superseded by new Dawlish Warren Wildlife Refuge.
- Continued access for Eales Dock via Shutterton Creek, with a voluntary agreement to promote responsible use of the VEZ to users of the dock.
- Nine existing crab tilers will continue to work under permit in the northern part of this area, in adherence to the Inshore Fisheries and Conservation Authority (IFCA) byelaw and following robust and updated codes of conduct.
- Official survey work by statutory authorities (or those with permission from these bodies) is unaffected by the refuge.

Figure 3: Exmouth Wildlife Refuge area



Start datum (NGR SX 99660 81171) at the Imperial Recreation Ground establishes the start of the boundary line, which runs northerly to the northern limit of the Local Nature Reserve (NGR SX 99084 83101), then easterly to the shoreline (NGR SX 99463 83101), then follows the shoreline (mean high water mark) back to the start datum (NGR SX 99660 81171).

Dog walkers are to turn left when accessing foreshore from the Imperial Recreation Ground slipway. This allows for a buffer zone for feeding and roosting birds, as dog walkers with their dogs off lead on the intertidal caused the highest percentage of major flights from all the observed potential disturbance events. The slipway is also an easy reference point to communicate to the high number of dog walkers that visit the area. This buffer zone also includes other low tide activities, such as walking and bait digging.

Exmouth Wildlife Refuge: Other considerations

- Current Kitesurfing Exclusion Zone superseded by new Exmouth Wildlife Refuge
- Water skis have continued use within their designated area, where the 10 knot speed limit can be exceeded, as set out in byelaw 5a.
- Wildfowlers to have continued use of areas on Exe, including within the Exmouth Wildlife Refuge, as agreed through consent with relevant authorities who grant lease agreements. Activity is tightly controlled through regulations, agreements, tests and permits.
- Continued angling from area on shore adjacent to Exmouth Wildlife Refuge, i.e. 'The Gate / Field'. However, anglers to avoid entering Exmouth Wildlife Refuge by boat.
- Official survey work by statutory authorities (or those with permission from these bodies) is unaffected by the refuge.

The outputs of this study will be used to inform management advice in respect of delivering adequate and effective mitigation to ensure no net impacts to internationally important wildlife sites as a result of increasing recreational pressures.

This study will contribute to the delivery of the South-east Devon European Site Mitigation Strategy by providing a measure of the success or failure of a voluntary approach to addressing the impacts of recreation to designated bird species on the Exe Estuary SPA.

Location & timeframes:

The study boundaries are as shown in figures 1-3 above and as described, where the Dawlish Warren Wildlife Refuge applies all year. The Exmouth Wildlife Refuge applies from 15 Sept – 31 Dec but the study should also include surveys either side of this period, when SPA designated bird species are present.

Methodology:

Tenders should allocate effort and costs against each of the components set out below. The successful tender will need to include supervision from the start by a suitably experienced researcher so that the data collected is of sufficient quality that it can withstand rigorous scrutiny – and to employ suitably experienced staff to collect the data.

Tenders should also address how they propose to take into account the original Footprint report (28 counts of people and activities on the estuary between 28/12/2009 and 02/04/2011). Additionally, (if appropriate) the tender should also look to incorporate the results of other monitoring by the Exe Estuary Management Partnership (2016) and Teignbridge District Council Rangers (2009-2017).

1) **Existing data**. This study should seek to draw upon existing data concerning waterbird distribution, movements and disturbance within the areas of study and across the wider Estuary. The Exe Disturbance Study (2011) by Footprint Ecology will be a key source of information, as well as data from WeBS. Baseline information for both refuges is available from the Disturbance Study.

   The study should adopt a methodology that allows direct comparison with that used for the Exe Disturbance Study. This will effectively extend the data set, facilitating statistical analysis.

2) **Survey**

The survey should enable the following questions to be answered:

1) How well are the Wildlife Refuges adhered to in general?
2) Are the Wildlife Refuges working to reduce disturbance to the designated bird species on the Exe?
3) Have the Wildlife Refuges positively affected the ability of the Exe Estuary to support designated bird populations? I.e. if a reduction in disturbance is observed, is this enough to conclude no adverse effect on site integrity for the SPA features?
4) If there is an insufficient reduction in disturbance to conclude no adverse effect on site integrity for the SPA features, what further actions in these areas can be taken to avoid and minimise the disturbance to waterbirds from recreational activities?
5) Do any particular activities continue to cause disturbance within the refuges?

The Habitat Regulations Delivery Manager can help to coordinate the work of the Habitat Mitigation Officers to assist in additional surveys to ensure as comprehensive a dataset as possible, and gain permission from relevant reserve managers.

Management

The Study will be overseen by the Habitat Regulations Officer Working Group, who advise the Habitat Regulations Executive Committee. The successful tendering organisation will meet with the Office Working Group at the start of the contract to agree on the work to be undertaken and subsequently at appropriate intervals on no fewer than 4 occasions per calendar year. They will also be expected to attend one meeting of the Habitat Regulations Executive Committee per calendar year (July) in order to present the results of the annual monitoring & overarching review reports.

The main point of contact will be the Habitat Regulations Delivery Manager.

Budget
Provision of up to £10,000 per year (£30,000 total) has been made at this time for the study.

Output
The study will produce two annual reports, one in March 2019 and one in March 2020. It will also produce an overarching review report in March 2021 (which also comprises year 3 survey results). All reports will be made available electronically and by hard copy, which will provide the information required by this brief (or amendments made to it as agreed between the Consultants and the Officer Working Group) and will provide 8 copies of these to the Officer Working Group in an annual meeting with them no later than 31st March in each respective year.

Key deadlines:

First meeting with Officer Working Group: Fri 24th November
Start of contract: January 2018

Key survey periods: Jan 2018 to Jan 2021

Key reporting periods:

1st Draft Annual Report to Officer Working Group: March 2019
1st Final Annual Report to Officer Working Group: April 2019
Then yearly according to the same timeframe, until
Draft 3 Year Review Report: March 2021
Final 3 Year Review Report: April 2021

The consultant is responsible for preparing Risk Assessments for all survey work. Copies should be made available to the Officer Working Group.

The consultant must have public liability insurance and evidence of this must be provided on acceptance of the contract.

You are invited to submit a written quote by 9am on Monday 20th November 2017. Please submit this quote to the Habitat Regulations Delivery Manager, c/o East Devon District Council, Knowle, Sidmouth, EX10 8HL

Please provide a quote for those elements of the study which are achievable within the limit of £10,000 per year, giving clear reference to those elements. If necessary, please provide a quote for any additional elements and what additional cost would be required.

Parameter	Description	Objective
Duration	DW: Year round, emphasis from August-March. EX: 15 Sept - 31 Dec (periods outside this range to be agreed). Start: Jan 2018 End: Jan 2021	To collect data specific to the operation of the refuges. To understand whether the refuge at Exmouth operates when important bird populations are present.
Activity monitoring	The survey should record all forms of recreational disturbance, identifying those activities which continue to cause the most disturbance.	To determine the level of recreational disturbance in the refuges before & after they are established.
Categorisation of observations of effects on waterbirds.	To adopt a methodology that allows direct comparison with that used in the Exe Disturbance Study.	To be consistent with and contribute to the existing dataset.
Survey cover	Surveys should be planned to reflect waterbird distribution and behaviour/activities in the Wildlife Refuge areas: Through the tidal cycle Through the diurnal cycle Through the season	To ensure that the survey reflects the range of normal variations in conditions on the estuary which may impact on disturbance.

	At varying use levels (e.g. weekends, bank holidays; optimal conditions for recreational activities).	
Observations of bird response	To adopt a methodology that allows direct comparison with that used in the Exe Disturbance Study	To be consistent with and contribute to the existing dataset.

Assessment of quotations:

Quotations received will be judged using the following criteria:

Methodology proposed
Ability to meet the essential study components within budget
Experience and suitability of project team
Ability to compete within the stated timetable
Quality of the submission and interpretation of the brief

In the event that two or more tenders achieve similar scoring, a shortlist of applicants will be invited for interview with the Officer Working Group in order to discuss their tender.

Habitat Regulations Delivery Manager

c/o East Devon District Council
Knowle,
Sidmouth,
Devon EX10 8HL

FOOTPRINT ECOLOGY

Exe Estuary Wildlife Refuge Monitoring Programme – 1st Annual Report

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Summary

This is an interim report, part of a three-year monitoring programme for two wildlife refuges on the Exe Estuary. The refuges have been created to provide space for wildlife at a site with growing levels of recreation use. The refuges are voluntary and cover two key parts of the estuary (at Dawlish and at Exmouth), providing intertidal feeding and roosting habitat for wintering water birds, for which the Estuary is internationally important.

This report presents data from the period February 2018 – March 2019. The refuges were established on the 15th September 2018 and therefore the monitoring data covers a period before the refuges were established as well as when they were running and active. While the Dawlish refuge runs year-round, the Exmouth one is only active from mid-September to the end of December each year, coinciding with the time of year when the area is most important for birds.

Monitoring comprised of two different fieldwork elements. Core Counts involved continuous recording for one hour and forty-five minutes, logging all human activity within a set recording area, as well as the number of birds and interactions between people and birds. Core Counts were conducted at four locations. The Core Count recording areas included parts of each refuge, as well as neighbouring areas of mudflat. Vantage Point Counts were the second fieldwork thread and were undertaken much more frequently. These involved a snapshot count of all recreational activity on the intertidal and shoreline areas, with each event being mapped, and the number of birds inside and outside the refuge estimated. These counts were completed quickly, and three vantage point locations were utilised.

Key findings included:

- High numbers of birds were present in and around both refuges.
- The bird Core Counts from Exmouth were highest in the autumn/early winter (when the refuge was active) while this was less apparent at Dawlish (on the western side of estuary), providing support for the different time periods that the refuges are active.
- Vantage Point Count data showed a significant difference in the proportion of waders and of wildfowl recorded inside the Exmouth refuge during the post-refuge period, compared to outside the refuge. A greater proportion of birds were also present inside the refuge when it was active. For the Dawlish refuge, differences were not so clear and suggest a higher proportion of waders inside the refuge during the pre-refuge period, but a larger number of wildfowl inside the refuge once it was active.
- In terms of recreation use, the Exmouth side was much busier, with many more dog walkers, walkers, and watersports recorded at the Exmouth Duck Pond in particular.
- There was no evidence that the refuges are deterring visitors to the respective areas in general, for example the Core Count data showed watersports and dog walkers using the general Duck Pond area (i.e. including areas outside the refuge) when the refuge was active.
- Vantage Point Count data showed recreational use inside the refuges, particularly Exmouth, when the refuge was not active; this then dropped to a low level when the

refuge was active, suggesting that people were changing their behaviour and recognising the refuges.

- There were relatively few times that people were recorded within the refuges while they were active, but incursions were recorded; in terms of overall number of events, dog walkers and bait diggers accounted for most of the incursions into the refuge at Exmouth (but kitesurfers, windsurfers, walkers and a RIB were also recorded) and walkers, bird watchers, crab tilers and shore fishing were the main incursions into the refuge at Dawlish.
- Observations of bird responses to activities taking place within the refuges recorded a total of 66 waders and 696 wildfowl flushed, during the active period.
- Comparison of data from different time windows, when the refuges were active or not, suggests there is a higher likelihood of a behavioural response occurring when the refuges are active, with higher proportions of birds taking flight or responding.

The data therefore indicate that the refuges can support good numbers of birds and that incursions into the refuges (when they are active) are relatively infrequent, but when they do occur they can have a marked impact in terms of a behavioural response from the birds present. These results are interim and part of a three-year monitoring programme. Further monitoring will highlight whether there are changes in the number of incursions, and whether there are shifts in how the areas are used by birds, over time.

Contents

Acknowledgements

This report was commissioned by the South East Devon Habitats Regulations Partnership. We are grateful to Neil Harris for overseeing the work and to the steering group for useful input and discussion prior to the work commencing.

John Waldon undertook the majority of the fieldwork, particularly the Core Counts. Sama Euridge and Amelia Davies (South East Devon Habitats Regulations Partnership) also undertook Vantage Point Counts. Data were entered and digitised by Zoe Caals (Footprint Ecology).

1. Introduction

1.1 This report is an interim report, part of a three-year monitoring programme of two recently established voluntary wildlife refuges on the Exe Estuary.

The Exe Estuary

1.2 The Exe Estuary lies between Teignbridge District to the west, East Devon District to the east and Exeter City to the north. It is designated as a Special Protection Area (SPA), Ramsar site, European Marine Site, and Site of Special Scientific interest (SSSI).

1.3 The SPA includes the estuary waters, foreshore, saltmarsh, and the sand dunes and spit of Dawlish Warren, and extends to Exeter at the top (northern part) of the estuary. The estuary includes a range of intertidal habitats, including mudflats, sandflats, Eelgrass *Zostera* sp. beds, Mussel *Mytilus edulis* beds, and saltmarsh. A number of bird roost sites at the top end of the estuary are freshwater grazing marsh, and the lagoons at Bowling Green Marsh and Exminster Marshes lie within the SPA and are also Royal Society for the Protection of Birds (RSPB) reserves.

1.4 The Exe Estuary qualifies under Article 4.1 of the Birds Directive by supporting overwintering populations of the following species, listed on Annex I of the Directive:

- Avocet *Recurvirostra avosetta* (at least 28.3% of the wintering population in Great Britain). The majority of British Avocets move from their East Anglian breeding grounds to coastal estuary sites, either in East Anglia or on the south coast. The Exe Estuary is one of only three SPAs classified for non-breeding Avocets.
- Slavonian Grebe *Podiceps auritus* (at least 5.0% of the wintering population in Great Britain). The Exe Estuary is one of only three sites in the UK classified as an SPA for non-breeding Slavonian Grebe, with the other two sites being in Scotland.

1.5 The Exe Estuary qualifies under Article 4.2 of the Birds Directive for both its overwintering populations of regularly occurring migratory species and as a site supporting an internationally important assemblage of birds.

- The estuary supports the following migratory species over winter: Dark-bellied Brent Goose *Branta bernicla bernicla,* Dunlin *Calidris*

alpina alpina, Oystercatcher *Haematopus ostralegus,* Black-tailed Godwit *Limosa limosa islandica*, and Grey Plover *Pluvialis squatarola.*

1.6 The estuary also qualifies under Article 4.2 of the Directive as it regularly supports an assemblage of at least 20,000 wintering waterfowl, including: Black-tailed Godwit, Dunlin, Lapwing *Vanellus vanellus*, Grey Plover, Oystercatcher, Red-breasted Merganser *Mergus serrator*, Wigeon *Anas penelope*, Dark-bellied Brent Goose, Cormorant *Phalacrocorax carbo*, Avocet, Slavonian Grebe and Whimbrel *Numenius phaeopus.* This list is taken from the site citation, where a range of assemblage species is normally quoted, but not the entire assemblage species list. Other species therefore also form part of the assemblage.

Legislative context and impacts from recreation

1.7 A particular issue for nature conservation in England is how to accommodate increasing demand for new homes and other development without compromising the integrity of protected wildlife sites. Wildlife sites are protected through legislation at both a national (SSSIs) and European level (European wildlife sites, often also referred to as Natura 2000 sites, which include SPAs), and these place particular duties on local authorities and government bodies.

1.8 New development in proximity to European wildlife sites must consider the potential effects that the new development may have upon them. There is now a strong body of evidence showing how increasing levels of development, even when well outside the boundary of protected wildlife sites, can have negative impacts on the sites and their wildlife interest. The issues are particularly acute in southern England, and on coastal sites (Saunders *et al.* 2000; Randall 2004; Liley & Sutherland 2007; Clarke, Sharp & Liley 2008; Liley 2008; Stillman *et al.* 2009; Ross *et al.* 2014).

1.9 The nature conservation impacts of development are varied (e.g. Underhill-Day 2005). One particularly difficult and challenging impact relates to the use of sites to meet recreational needs, and the resultant disturbance to waterfowl on coastal sites. Disturbance has been identified by Natural England as a generic issue across many European Marine Sites (see Coyle & Wiggins 2010), and can be an issue for a range of species.

1.10 Disturbance to wintering and passage waterfowl can result in:

- A reduction in the time spent feeding due to repeated flushing/increased vigilance (Fitzpatrick & Bouchez 1998; Stillman & Goss-Custard 2002; Bright *et al.* 2003; Thomas, Kvitek & Bretz 2003; Yasué 2005);
- Increased energetic costs (Stock & Hofeditz 1997; Nolet *et al.* 2002)
- Avoidance of areas of otherwise suitable habitat, potentially using poorer quality feeding/roosting sites instead (Cryer *et al.* 1987; Gill 1996; Burton *et al.* 2002; Burton, Rehfisch & Clark 2002), and;
- Increased stress (Regel & Putz 1997; Weimerskirch *et al.* 2002; Walker, Dee Boersma & Wingfield 2006; Thiel *et al.* 2011)

1.11 Comparisons of estuary SPA sites across England highlight the Exe Estuary as potentially being particularly vulnerable to development and the impacts from recreation (Ross *et al.* 2014). That work ranks the Exe Estuary among the top five most vulnerable sites, and it is particularly vulnerable compared to other locations due to factors such as the relatively high volume of housing currently close to the SPA, it's relatively small size, and the high proportion of the shoreline which is currently accessible.

Strategic mitigation and the creation of refuges

1.12 Concern about impacts of housing growth from new development, particularly linked to considerable growth set out in relevant plans in and around Exeter (i.e. Teignbridge, Exeter and East Devon), led to a strategic mitigation approach covering the Exe Estuary and nearby European sites. The approach involved developer contributions being used to fund a broad package of mitigation work (see Liley *et al.* 2014 for details and background).

1.13 In June 2016, the South East Devon Habitat Regulations Executive Committee was formed, involving a partnership of the three local authorities. The Committee approved a review of zonation in the Exe Estuary as part of the 2016-17 Annual Business Plan and this review identified two parts of the estuary as critical to the ecological function of the SPA. As a result, these two areas were proposed as voluntary refuges, within which recreation use is minimised, and their creation was officially approved by the Executive Committee at their meeting of 23rd October 2017.

1.14 One refuge relates to Exmouth, with the other at Dawlish Warren, together encompassing around 7% of the estuary and shown in Map 1. Both refuges became operational in 2018, officially running from the 15th September 2018.

The Dawlish Warren refuge is subsequently in place year round, whilst the Exmouth refuge is only in place (active) between 15th September and the end of December each year.

1.15 There are allowances for certain activities within the refuges (see Exe Estuary Management Partnership 2017 for full details), which include crab tiling in the Dawlish refuge (9 crab tilers continue to work under permit) and shore fishing (accessing from the shore and not by boat) at Exmouth. The refuges are clearly defined on the ground through the use of large yellow buoys and signs (Figure 1).

Figure 1: Yellow buoys in a line at Exmouth, indicating the edge of the refuge, looking towards Lympstone. Inset: sign on shore indicating when the refuge is active.

Aims of this study

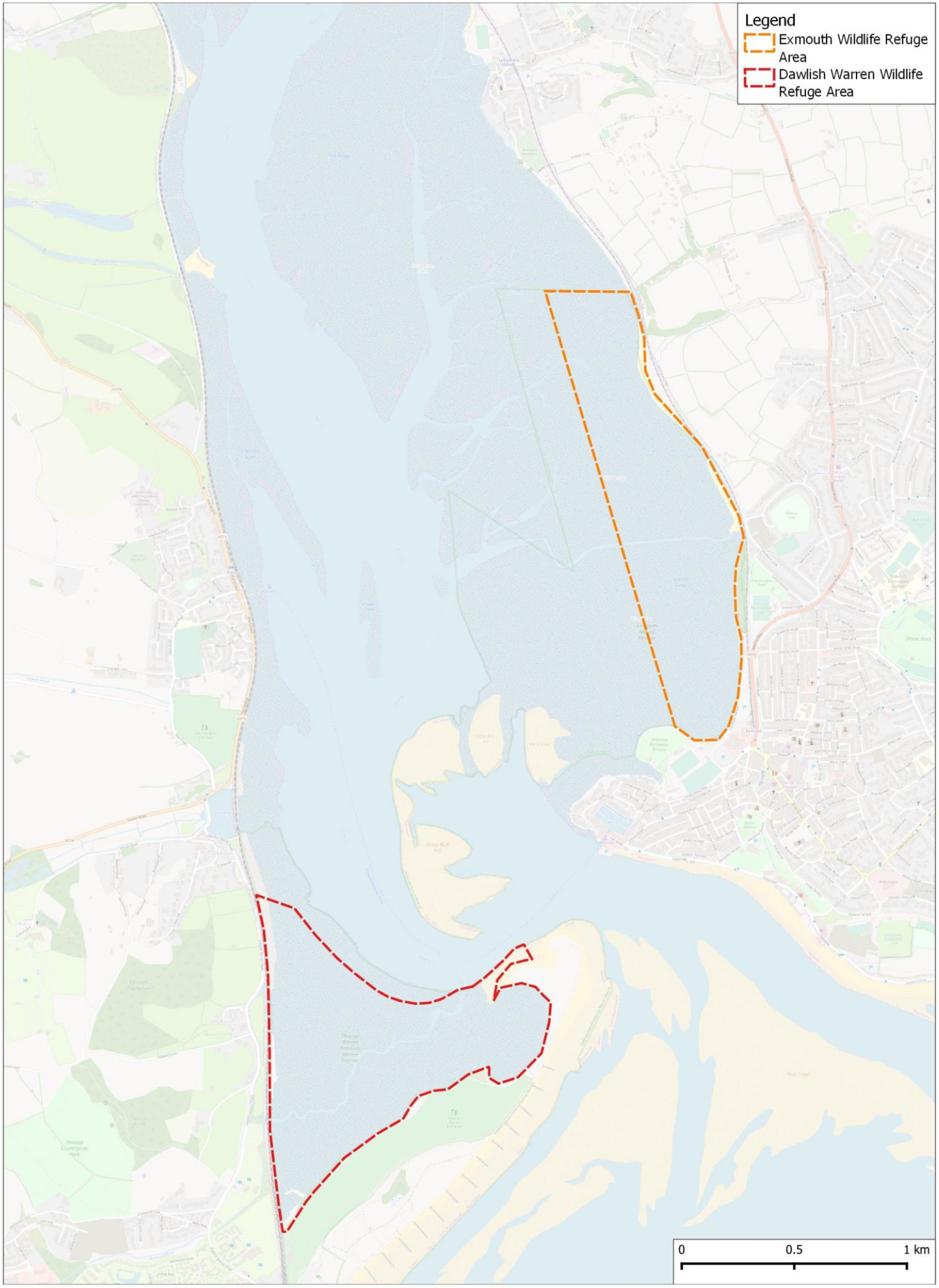
1.16 The creation of refuges such as these is a relatively novel approach in the UK to managing recreation pressure, and there are some potential challenges. It may be that the refuges are still vulnerable to disturbance from activities around the periphery, or from people straying into the refuges (which may include those that deliberately choose to ignore the refuges, those that have to enter them for safety reasons, or those that are simply unaware). Certain activities, such as wildfowling and crab tiling, will also continue to take place, and it may be that the level of use from these activities is sufficient to undermine the effectiveness of the refuges. It is therefore important to collect monitoring data to check how well the refuges are working and what further measures (if any) may be needed to ensure they work well.

1.17 Over time it might be expected that – if working well – bird use within the refuges will increase. As such, a higher proportion of the sites' birds may occur within the refuge. It may however take time for such patterns to become established, especially when the refuge is in place within a set

temporal window. Changes in bird numbers may also mean that more birds are recorded being flushed, or exhibiting other behavioural responses, and any potential changes in bird use and behaviour are therefore likely to be complex.

1.18 Robust, carefully designed, monitoring is therefore necessary to help deliver the mitigation and ensure its effectiveness. Such monitoring needs to dovetail with previous data collection (the Exe Disturbance Study) and run over a number of years, and the results and key messages from the data need to be fed back to users, and those responsible for overseeing the refuges, to ensure their success.

Map 1: Exe Estuary Wildlife Refuge Areas.



2. Methods

2.1 Two different monitoring approaches have been utilised:

- Core Counts, involving continued observation over a fixed time period (1 hour and 45 minutes), recording the birds present, human activity, and any interactions between people and birds, and;
- Vantage Point Counts, involving quick, 'snapshot', counts recording the number of birds present and the distribution of human activity.

2.2 Core Counts provide detailed data relating to the responses of birds and prolonged observation across a fixed (but relatively small) recording area. Vantage Point Counts are much quicker and easier to carry out, cover a much wider area, and are undertaken much more frequently than the Core Counts. The Vantage Point Counts therefore provide the best indication of how frequently there are people inside the refuges.

Core Counts

2.3 The approach is one that builds on the previous Exe Disturbance survey (Liley *et al.* 2011), and has been developed in line with a series of studies across the country, commissioned by Natural England and others (Liley, Stillman & Fearnley 2010; Liley & Fearnley 2011, 2012; Ross *et al.* 2014; Ross & Liley 2014; Liley *et al.* 2015, 2017).

Recording elements

2.4 Each count involved the following elements:

- Two counts of birds, one count at the start and one at the end of the survey period;
- A diary of all potential disturbance events observed during the 1 hour and 45 minutes following the first count;
- A record of the response of selected bird species to each of the potential disturbance events recorded in the 'diary', including counts of birds present and the number of birds flushed, etc, and;
- Any additional information.

2.5 These different elements are described in more detail below, but in summary the bird counts provide a detailed level of use within the core area, the diary records the levels of human activity, the response data details any behavioural response to disturbance shown by the birds present, and the additional information provides context and background.

Bird count

2.6 At the start of each survey visit, a count of the birds present was conducted, comprising all waders, gulls, terns, wildfowl, grebes, divers, and herons/egrets. The count only recorded the birds present within a pre-defined recording area that extended to a maximum of 500m from the watch point. This area was carefully mapped for each location, using aerial photographs. All mapped areas had a clear line of sight, with their entire extent (within 500m) visible to the recorder from the fixed watch point. Each fixed watch point was selected to be at a point where any disturbance caused by the presence of the surveyor could be minimised/avoided, although the size of the recording area varied at each location due to differences in topography/hydrology, etc.

Diary

2.7 All recreation events (and other potential disturbance events, such as trains, aircraft, contractor work, birds of prey, etc.) which occurred during the following 1 hour and 45 minutes were recorded in a diary format. This diary involved all observed events that could affect birds within the recording area, including those that occurred outside (but still in the vicinity of) the recording area. This was due to the fact that activities above the Mean High Water Mark (MHWM), and events outside the recording area, could still disturb birds. Regardless of whether birds were present or not, all events were recorded in the diary, allowing comparisons of the levels of human activity in different areas.

2.8 Each diary entry was assigned a unique identifier, indicating a single unique event, with details recorded including activity (categorised to standard codes), group size, zone (intertidal, on water, or above MHWM), length of time present in area, and notes relating to behaviour.

Bird response

2.9 Events in the diary were categorised as a 'potential disturbance event' if:

- It coincided with birds being present within the count area; and,
- It occured within 200m of birds within the recording area; or
- There was a behavioural response recorded for birds within the recording area (i.e. seen to become alert, change position, or were flushed).

2.10 For each potential disturbance event, the response of the birds was recorded, even if no behavioural response was logged – i.e. if the birds were not visibly disturbed.

2.11 The disturbance data recorded the number of birds within 200m of the potential source of disturbance, with each group of birds of a given species being recorded as an observation. There could therefore be multiple observations for the same potential disturbance event, for example someone walking across the intertidal zone might pass within various groups of birds of different species.

2.12 For each observation, behaviour was categorised simply as 1) feeding or 2) roosting / preening / loafing. The response of the birds was categorised, using simple categories ('Alert', 'walk/swim', 'short flight (less than 50m)' 'Major Flight' or 'No Response') and the number of birds falling into each response category recorded. Each observation might therefore involve a range of responses, for example some birds in a flock might remain *in situ* whilst a part of the flock undertakes a major flight. To simplify the data presentation, we also used single response codes, assigning each observation a single code representing the strongest response observed (e.g. if any of the birds in a group undertook a major flight, major flight would be the single response code assigned to the observation).

2.13 For each activity/event where disturbance occurred the maximum distance from the birds to the event was estimated, as the straight-line distance from the source of disturbance to the birds. If there was no response from the birds, then the minimum distance from each species present to the disturbance event was recorded (i.e. how close the disturbance event was to the birds). If the birds were in a tight flock, or only a single individual was involved, then this distance was relatively easy to measure. If the birds were scattered over a wide area, and all were disturbed, then the distance from the closest bird to the disturbance was noted. In all cases distances were estimated to the nearest 5m. In order to ensure consistency in recording distances we:

- Used aerial photographs, with distance bands plotted, at each location. When blown up and printed on good quality paper, with distance bands overlaid, such images show creeks, buoys, marker posts and landmarks clearly;
- Used laser rangefinders to determine the distance to key landmarks/features and the birds;

- Triangulated or paced out some of the distances at the end of the survey – this can be helpful where distances are hard to estimate during the survey period (for example due to the angles between the observer, source of disturbance, and the birds), and;
- Ensured that observers were well trained, and occasionally did counts together to check that the data were collected in a standard fashion.

Additional Information

2.14 Additional information provided context and background and included tide times, tide coverage, and weather.

Survey locations, timing and logistics (including coverage of tide states, etc.)

2.15 Four survey locations were used, two at Dawlish Warren and two at Exmouth. These are shown in Map 2. Visits were spread over different days and times of day to ensure a range of conditions and circumstances were covered. As far as possible, visits included the following:

- A range of weather conditions, including some dates with strong winds when water sports and sailing are likely to take place;
- Any particular events that were known the be taking place;
- Weekends and weekdays and different times of day, and;
- A range of tide states. At the Dawlish Warren Bird Hide survey point, most visits were targeted towards high tide. For large tides (above 3.6m) we aimed to avoid the time around 1hr before high tide to 2hrs after (as wardens were potentially in place to intercept visitors); at Cockwood and the two Exmouth survey points, visits covered a range of tide states.

Vantage Point Counts

2.16 Alongside the prolonged, detailed, watches described above, we undertook a series of Vantage Point Counts, utilising a similar approach to the original Exe Disturbance work. These consisted of 'snapshot' counts, whereby a wide expanse of the estuary was scanned with binoculars from pre-selected vantage points, and a count made of any people, activities, and birds present. The aim of these counts was to supplement the work set out above (Core Counts) with a simpler approach that ensures much wider coverage (the entire refuge area). The Vantage Point Counts were quick and easy to do, and, as such, collection of a large sample was feasible, with data collected by Footprint Ecology supplemented with data from the mitigation rangers. Prior to commencement of the surveys, the rangers were provided

with full training to ensure that the methods used by all surveyors were consistent.

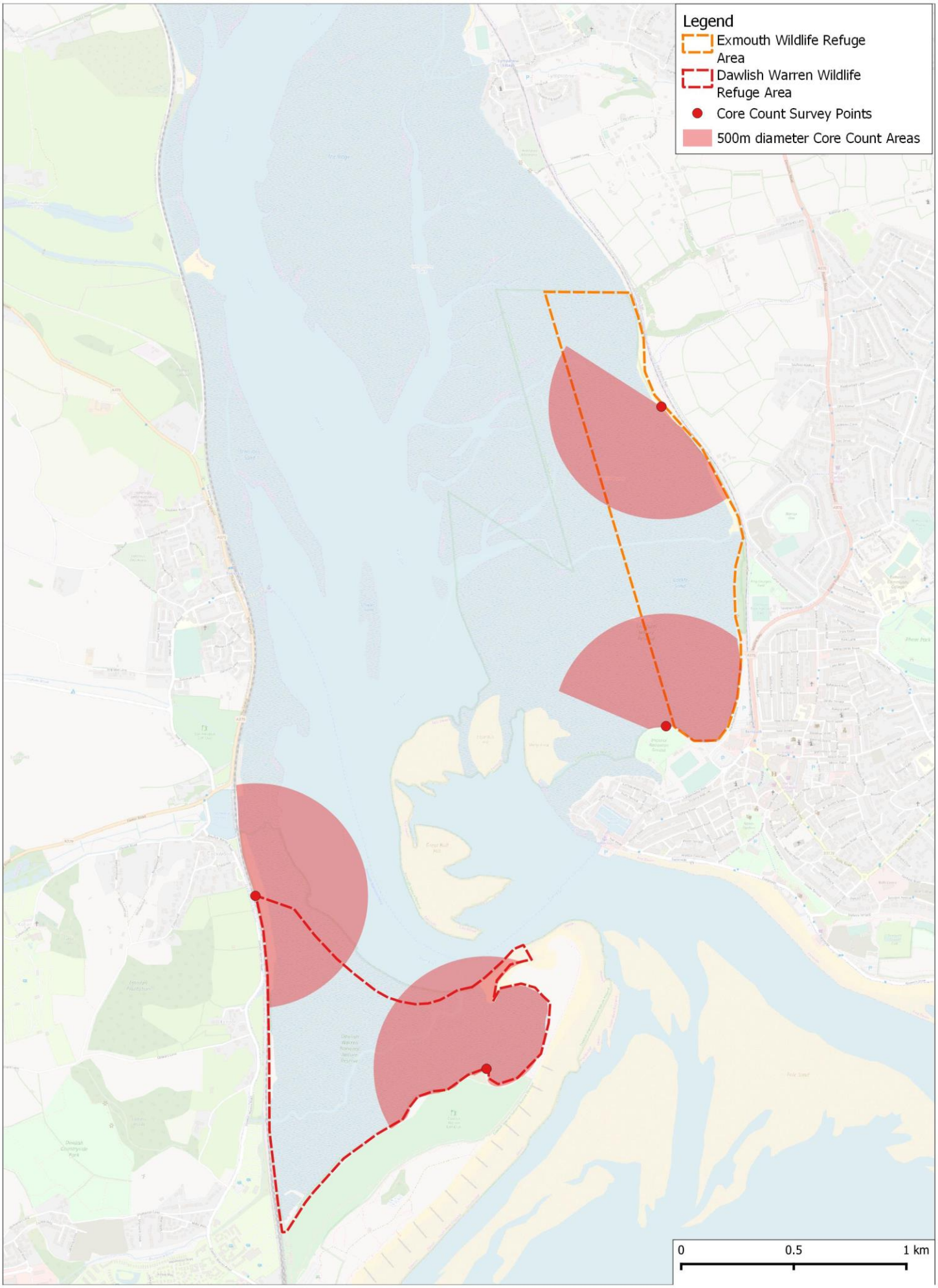
2.17 Vantage Point Counts took place at three locations (Map 3), which together provided a view of a wider area of the estuary; each location was easy and quick to access. Each Vantage Point Count visit involved the surveyor mapping all people and activities visible, recorded by scanning slowly with a single sweep of binoculars. Every effort was made to map the locations of the people/activities observed as precisely as possible. Given the difficulty in identifying the exact location of distant individuals (e.g. crab tilers) on large expanses of featureless mudflat the points as mapped are relatively approximate. Where physical demarcations existed (e.g. the buoy lines marking the boundaries of the refuge areas) it was possible to identify the exact location of people/activities within proximity to them. This was not the case however for additional areas which lacked visible boundary markers (e.g. the D&S IFCA Byelaw 24 "crab tiling" line).

2.18 A count of birds within the area was also made during the Vantage Point Counts. This bird count was relatively quick and recorded only wildfowl and waders. Large flocks were estimated rather than systematically counted and counts will be approximate in some cases (for example when there were birds roosting on the distant saltmarsh to the south of the Cockwood vantage point location). The location of the birds counted were not mapped during the Vantage Point Counts, but the number of birds inside and outside the refuge areas was noted.

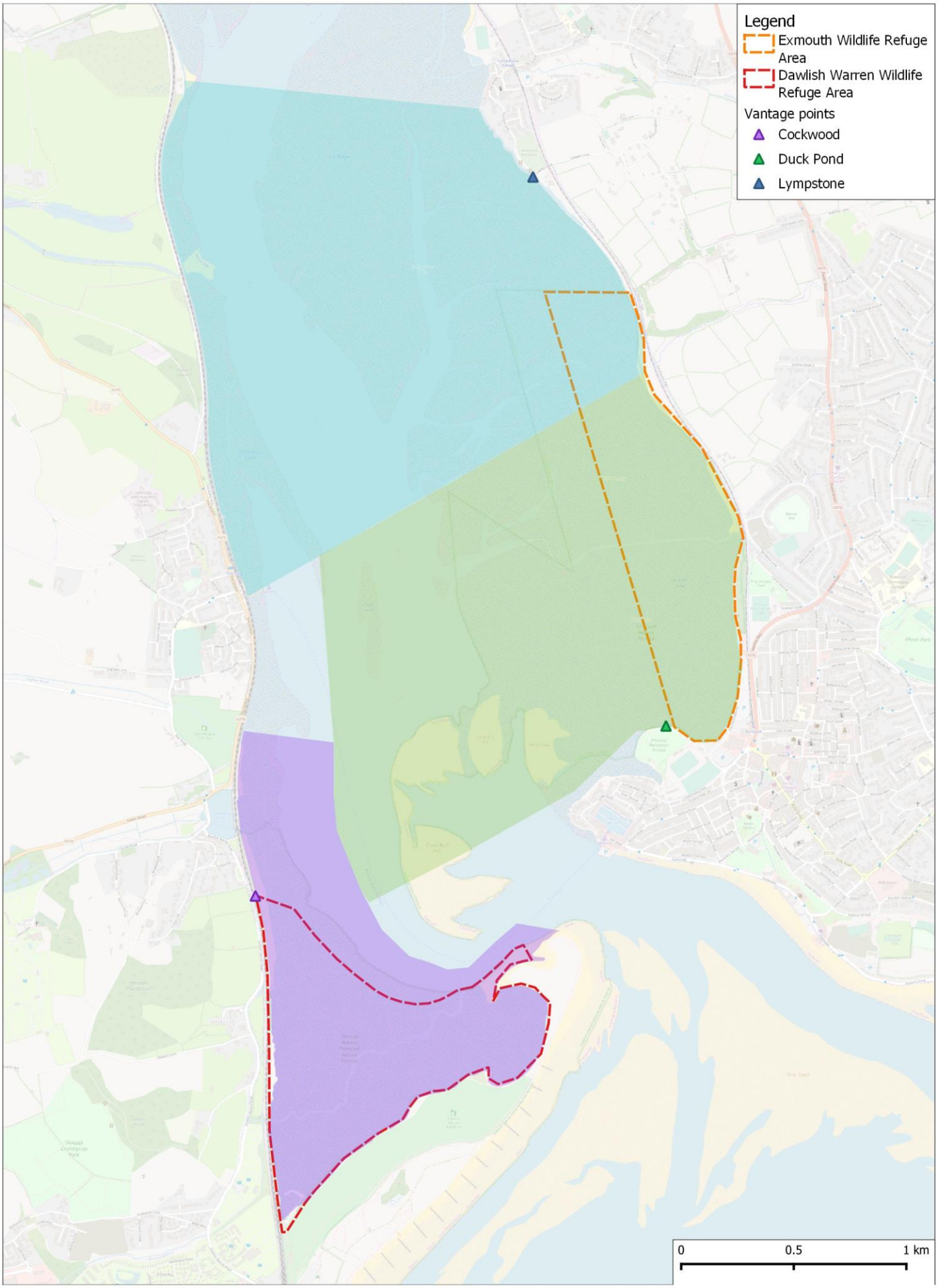
2.19 The Vantage Point Counts took up to 15 minutes to carry out, and were simple to complete, providing an easily replicated approach. We aimed for repeat counts from multiple dates and times. While not recording levels of disturbance *per se* (i.e. birds being flushed), with a reasonable sample spread over time, the Vantage Point Count data provided information on:

- Which activities took place within the refuges;
- How frequently they occured;
- How the numbers of birds in the refuges varied (e.g. when the estuary was busy, when there were events within the refuges, etc.); and,
- Vantage Point Counts were undertaken whenever a Core Count site visit was made. In addition, a number of targeted Vantage Point Count visits were made to ensure good coverage and a wide range of dates, conditions, and times of day.

Map 2: Exe Estuary Core Count locations.



Map 3: Exe Estuary Vantage Point locations and approximate field of view of each.



Timing across the year of both count types

2.20 The temporal spread of counts and total fieldwork undertaken from the start of the monitoring in early 2018 through to the end of March 2019 are summarised in Table 1. Survey effort was spread across months, and monitoring is on-going. The data presented in this report therefore relates to the counts shown in Table 1. It is important to note these data are just the initial part of a larger body of counts and this report therefore only includes data from the first part of the monitoring period.

2.21 In total, during the period February 2018-March 2019, 52 Core Counts were undertaken, involving 13 at each of the four survey points. At both the Cockwood and Dawlish Warren survey locations, 10 Core Counts took place in the post-refuge period and 3 took place in the pre-refuge period. At both of the Exmouth locations, 8 of the counts were made during the period that the refuge was active following its' instigation, and a combined total of 5 during the pre-refuge and post-refuge inactive period.

2.22 In total, 44 Vantage Point Counts were undertaken at Cockwood, with 25 of these during the period that the refuge was active. A total of 44 counts were undertaken at the Duck Pond (19 of which were during the time when the Exmouth refuge was active) and 38 were undertaken at Lympstone (12 of which were when the Exmouth refuge was active).

Data analyses and presentation

2.23 The data collected was analysed using R and Minitab statistical software packages, with graphs and tables produced using both R and Microsoft Excel. The graphs include examples of stacked barplots, histograms, and box and whisker plots. The latter graph type depicts a range of information in a single plot, including the median value (represented by a thickened central line within the box), the interquartile range (the distribution of 25% to 75% of the data) of the dataset (the box itself), the range of the dataset (the 'whiskers'), and any outlier values (represented as stand alone points).

Table 1: Summary of the number different counts by month and location, over the period February 2018-end March 2019. Ticks/shading indicate whether the refuge was operational during the month (with brackets indicating months where the refuge was operational for part of the month only).

Month	Year	Core Counts Exmouth	Core Counts Dawlish	Vantage Point Counts (Footprint Ecology)	Vantage Point Counts (South East Devon Habitats Regulations Partnership)	Total Vantage Point Counts	Exmouth refuge operational /active	Dawlish refuge operational
Feb	2018	2	2	3	0	3	x	x
Mar	2018	2	2	3	3	6	x	x
Apr	2018	0	0	3	1	4	x	x
May	2018	0	0	0	8	8	x	x
Jun	2018	0	0	0	2	2	x	x
Jul	2018	0	0	0	9	9	x	x
Aug	2018	0	2	3	10	13	x	x
Sep	2018	4	2	6	4	10	(✓)	(✓)
Oct	2018	4	4	6	12	18	✓	✓
Nov	2018	6	4	9	6	15	✓	✓
Dec	2018	4	2	6	2	8	✓	✓
Jan	2019	2	2	6	7	13	x	✓
Feb	2019	2	4	6	3	9	x	✓
Mar	2019	0	2	3	2	5	x	✓
Total		**26**	**26**	**54**	**69**	**123**		

3. Results

Bird numbers

Core Counts

3.1 Bird numbers from the Core Counts are summarised by date in Figure 2, with wildfowl and waders accounting for most of the birds counted. The higher counts at the two Exmouth locations were made during the autumn/early winter period, when the refuge was active. Counts of over a thousand birds were recorded during three of the Exmouth Core Counts, all during the period within which the refuge was active.

3.2 These high counts were from both the Duck Pond and Exmouth north, indicating the potential for both areas to support high numbers of birds (mostly wildfowl, but also a large number of waders). Large wader totals at the Duck Pond included 354 Oystercatcher and 87 Curlew on the 9th October 2018. The bird numbers recorded at both of the Exmouth locations after the end of December were relatively low in comparison, with none exceeding 400 birds in total across all species.

3.3 At the Dawlish Warren and Cockwood locations, waders accounted for a much higher proportion of the birds counted. Larger counts at these two locations were also less concentrated around the autumn/early winter period, for example there were high counts from both the Cockwood and Dawlish Warren survey locations in January 2019. The largest counts recorded for each species at each survey location are provided in the Appendix.

Vantage Point Counts

3.4 The Vantage Point Count data are summarised in Figure 3, which shows the count data inside and outside the refuges, when they were active and when not. In Figure 3 all Vantage Point Count data are used, including across different tide states and times of year. The data are also summarised in Table 2, where the median values and total counts are given. In Table 2 the initial rows summarise all Vantage Point Counts, while the lower rows exclude those visits at high tide. In both Figure 3 and Table 2, the Exmouth counts reflect the data from both vantage points on the eastern side of the estuary.

Figure 2: Maximum counts for each Core Count (maximum taken from the count at start and at end of visit, for each species), by date and location. Note the axis are different in each figure. Letters next to the dates indicate tide states: L=low; H= high, R = rising, F = falling.

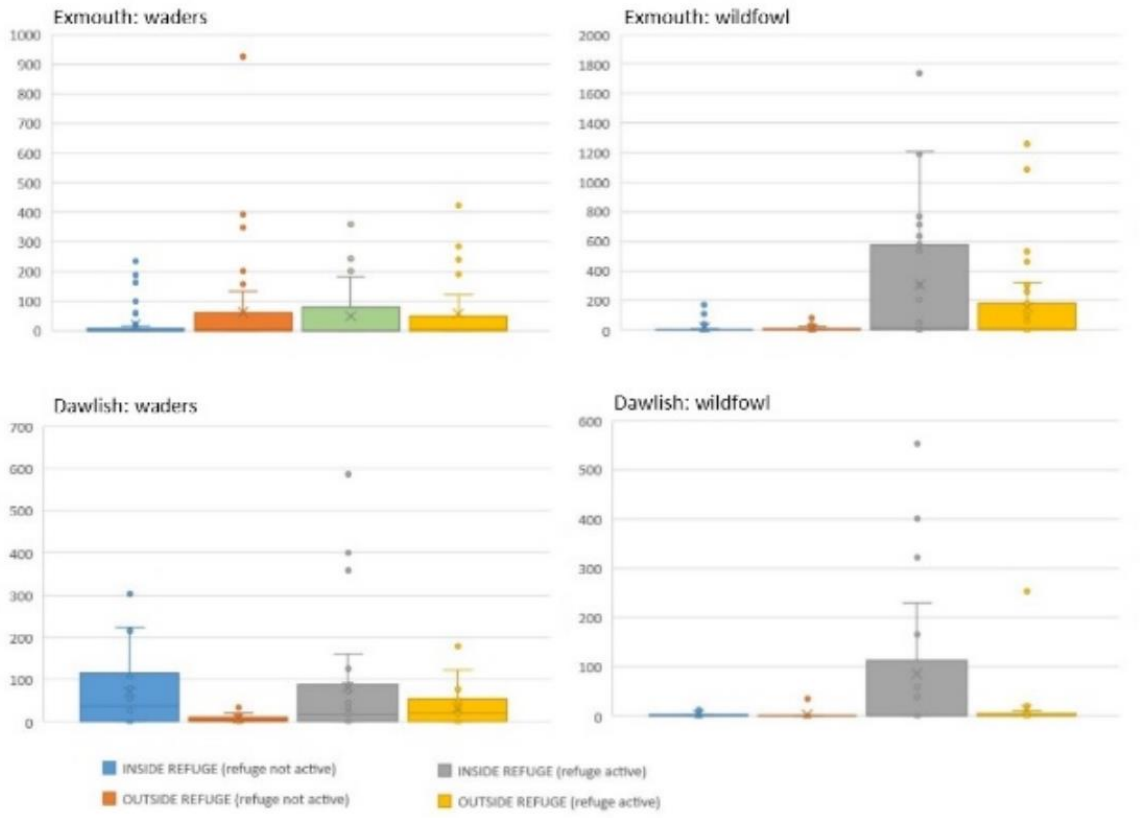


Figure 3: Vantage Point Count bird data, comparing counts from inside and outside the refuges.

Table 2: Summaries of bird counts from vantage points inside and outside refuges, when refuges were active and when not active. Grey shading reflects the higher median and higher total in each row.

Refuge	Species	Refuge active?	Birds INSIDE refuge			Birds OUTSIDE refuge		
			Median	Total	n	Median	Total	n
All counts								
Exmouth	Waders	Active	0	1529	31	4	1759	31
Exmouth	Waders	Not	0	1016	51	5	3114	51
Exmouth	Wildfowl	Active	14	9420	31	10	4862	31
Exmouth	Wildfowl	Not	0	681	51	0	522	51
Dawlish	Waders	Active	18	2097	25	20	788	25
Dawlish	Waders	Not	36	1369	19	2	145	19
Dawlish	Wildfowl	Active	1	2167	25	0	336	25
Dawlish	Wildfowl	Not	0	43	19	0	38	19
Excluding high tide counts								
Exmouth	Waders	Active	6	1505	19	30	1751	19
Exmouth	Waders	Not	1	1004	35	15	3029	35
Exmouth	Wildfowl	Active	45	7771	19	64	3216	19
Exmouth	Wildfowl	Not	0	386	35	1	491	35
Dawlish	Waders	Active	78.5	1568	12	25.5	422	12
Dawlish	Waders	Not	45.5	738	12	10.5	135	12
Dawlish	Wildfowl	Active	49	1860	12	1.5	324	12
Dawlish	Wildfowl	Not	0	31	12	0	38	12

3.5 One of the challenges with presenting and analysing count data, where birds can occur in large flocks and are mobile, is that the data are often in the form of some very high counts alongside plenty of low or zero counts. With birds clumped in space and time, such data are inevitable. With relatively small sample sizes, analysis at this interim stage is therefore limited by sample size, meaning sophisticated analysis controlling for tide state, time of year, and when the refuges are active is not possible. Nonetheless some patterns are visible.

3.6 The data show that, at Exmouth, more waders were counted outside the refuge compared to inside. However, the refuge accounts for a relatively small proportion of the intertidal habitat within the Vantage Point Count area, so this is perhaps not surprising. When the Exmouth refuge was active a total of 1,529 waders were counted inside compared to 1,759 outside (i.e. a ratio of 1:1.2). By contrast, when the refuge was not active, 1,016 waders were counted inside compared to 3,114 outside (ratio of 1:3.1). These totals indicate an overall difference in the proportionate use of the refuge by waders when the refuge was active compared to when it was not (X^2_1=389.63, p<0.001).

3.7 For wildfowl counts at Exmouth, the patterns were slightly different. Counts inside and outside were very much higher during the period the refuge was active, and the totals were roughly twice as high inside the refuge compared to outside (9,420 birds inside compared to 4,862 outside). When the refuge was not active there were roughly similar proportions inside compared to outside (681 inside compared to 522 outside). Again, these relative proportions are significantly different (X^2_1=42.76, p<0.001). At Exmouth therefore the data indicate that for both waders and wildfowl a higher proportion of individuals were inside the refuge compared to outside when the refuge was active.

3.8 At the Dawlish refuge, the total number of waders counted inside the refuge compared to outside was always much higher, whether the refuge was active or not. The overall proportions were significantly different (X^2_1=186.916, p<0.001), with a smaller proportion of the totals inside the refuge when the refuge was active.

3.9 For the wildfowl counts from the vantage point at Cockwood, when the refuge was active a total of 1,860 birds were counted inside the refuge compared to 324 outside, while when the refuge was not active the counts were much lower and relatively similar, with a total of just 31 birds inside

and 38 outside. These relative proportions are significantly different (X^2_1=80.30, p<0.001), indicating a higher proportion inside the refuge when it was active.

3.10 In the comparisons above we have pooled data for waders and wildfowl, in order to look for general patterns. Count data for a selection of different species and species groups are shown in Figure 4, here we have pooled the data across both refuges. These plots indicate some variation in species, and further data will be necessary before detailed analysis can include differences between species.

3.11 These results are therefore generally supportive that the refuges are working, in that there is evidence of a greater proportion of use within the refuges when they are active. The patterns are however potentially confounded by the time of year, as the data reflecting when the refuges are not active is from the late winter/early spring period.

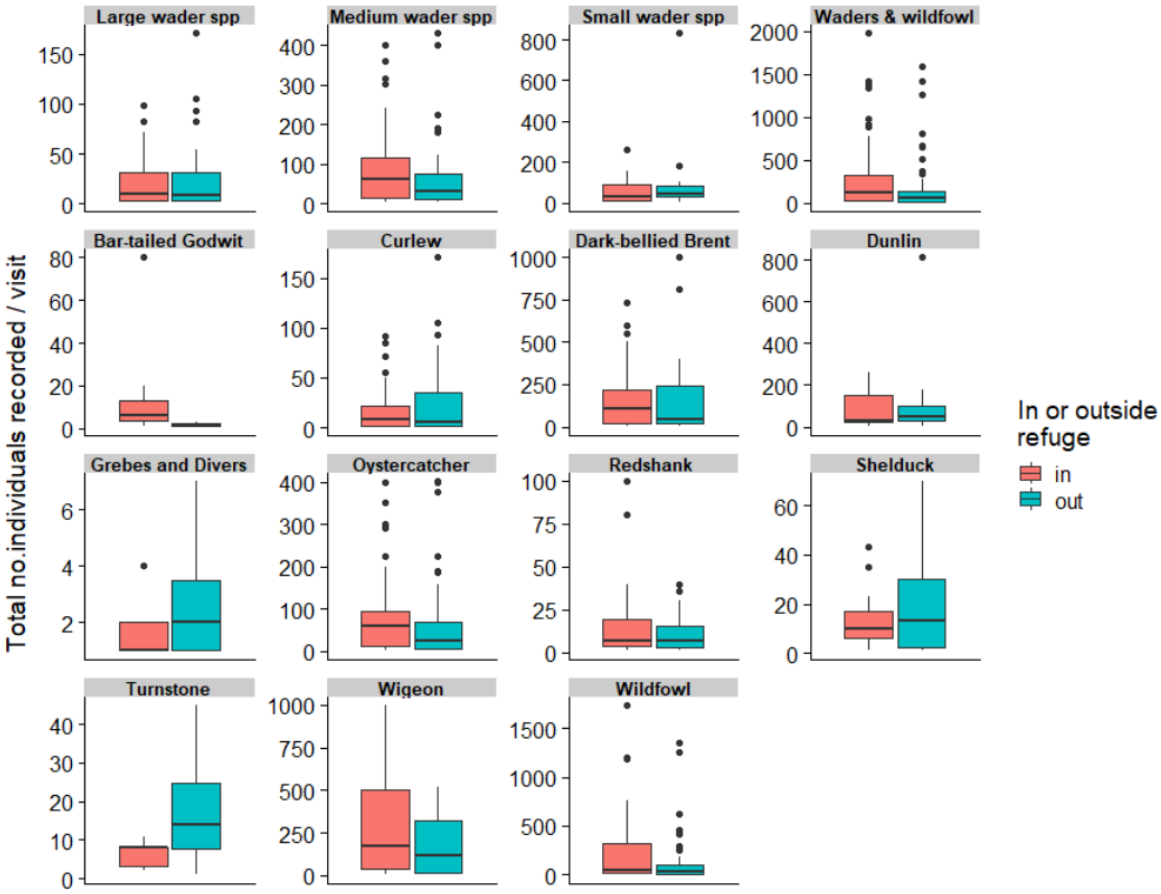


Figure 4: Number of individuals recorded in and outside of the combined refuge areas across all survey visits for a subset of recorded species/species groups *(note varying y axis scales per plot, and that the data presented in the figure corresponds solely to geographic location, and does not consider the temporal status of the Exmouth refuge area).*

Human Activity

Number of recreation events

3.12 Core Count data are summarised in Figure 5, showing the overall totals for the two sides of the estuary from all counts. These data reflect all observations of people and events that could disturb birds, both inside and outside the refuges. In general, it can be seen that the Exmouth side was much busier in terms of people on foot, with more dog walkers and walkers in particular.

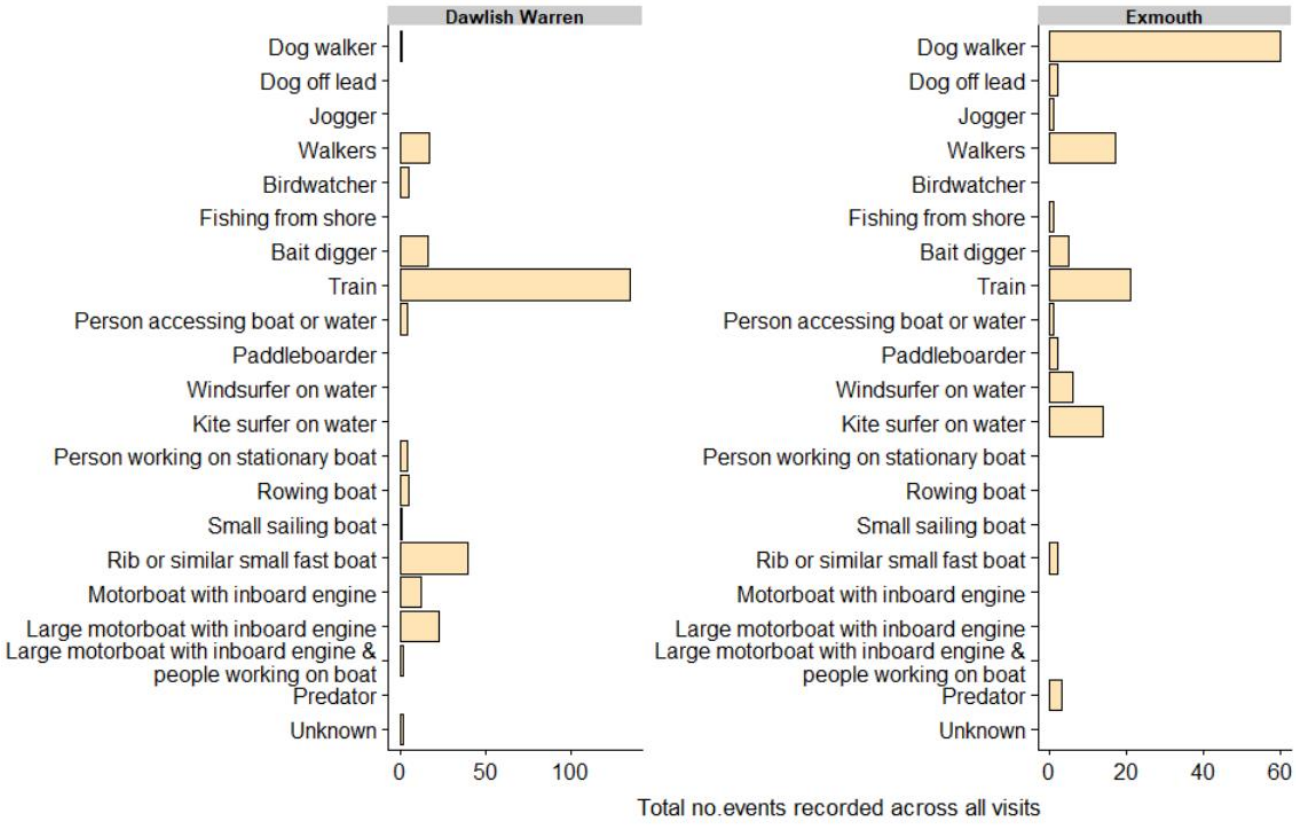


Figure 5: Total number of recreation events recorded from either side of the Exe Estuary during the survey period core counts, with Dawlish Warren corresponding to the Cockwood and Dawlish Warren Core Count survey locations, and Exmouth to those at the Duck Pond and Lympstone (*note varying y axis scales between plots, and that the figure does not differentiate between events occurring inside and outside of refuge areas*).

3.13 Core Count data are summarised by location and date in Figure 6, again these data show all activities in the recording area, regardless of whether inside or outside the refuge. The colours broadly indicate the types of activity, with blue shading representing activities on the water, allowing the

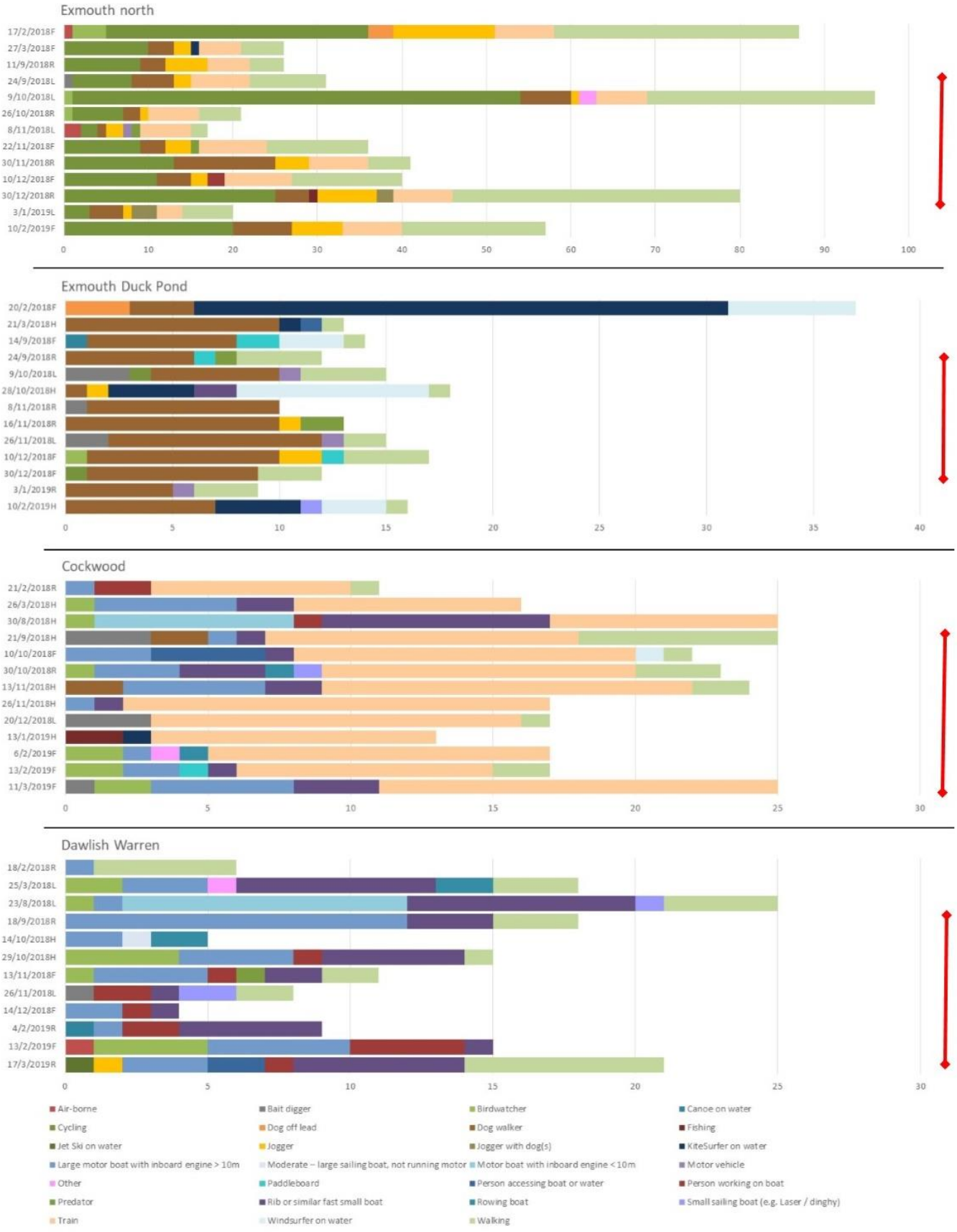


Figure 6: Diary data from the Core Counts, by date. Note the different axis scales for each location. The red vertical lines indicate the periods when the relevant refuge was active. Letters next to the dates indicate tide states: L=low; H= high, R = rising, F = falling. Bait digger also includes crab tiling and cockle raking.

eye to pick out key differences between locations. At Dawlish Warren there were a relatively high proportion of water-based events and also to some extent at Cockwood (where trains were also frequently recorded). At Exmouth north cyclists and walkers were the main activities, while dog walkers were particularly focussed at the Duck Pond.

3.14 By showing the data by date in this fashion it is possible to check that there is no particular change in access levels as a result of the refuges being active, i.e. whether the refuges deter people from visiting. For example, all the high tide counts at the Exmouth Duck Pond recorded kite surfers as present, including those when the refuge was active. Dog walkers were also recorded in all the Core counts carried out at the Duck Pond, and there is no apparent difference in their numbers when the refuge is active, suggesting the refuge is not deterring visitors.

Incursions inside the refuges: vantage point data

3.15 On the whole there were relatively few times that people were recorded within the refuges while they were active. The activities recorded within the refuges from the Vantage Point Counts are summarised in Figure 7. In terms of overall number of events, dog walkers and bait diggers accounted for most of the incursions into the refuge at Exmouth, whilst walkers, bird watchers, crab tilers, and shore fishing were the main incursions into the refuge at Dawlish.

3.16 Observations from the Vantage Point Counts of incursions into the refuges (when the refuges were active) are summarised in Table 3. We have included activities such as crab-tiling in the table, as while they are not subject to the voluntary exclusion, they are still a presence within the refuge and the table therefore shows the extent of all activity within the refuges.

3.17 In total, there were 25 vantage point observations undertaken from Cockwood while the refuge was active and there were 14 events observed within the Dawlish refuge on 10 separate dates. Only 2 of the events were beyond 50m from the shore, and therefore well within the refuge; both of these involved people shore fishing (as opposed to fishing from a boat).

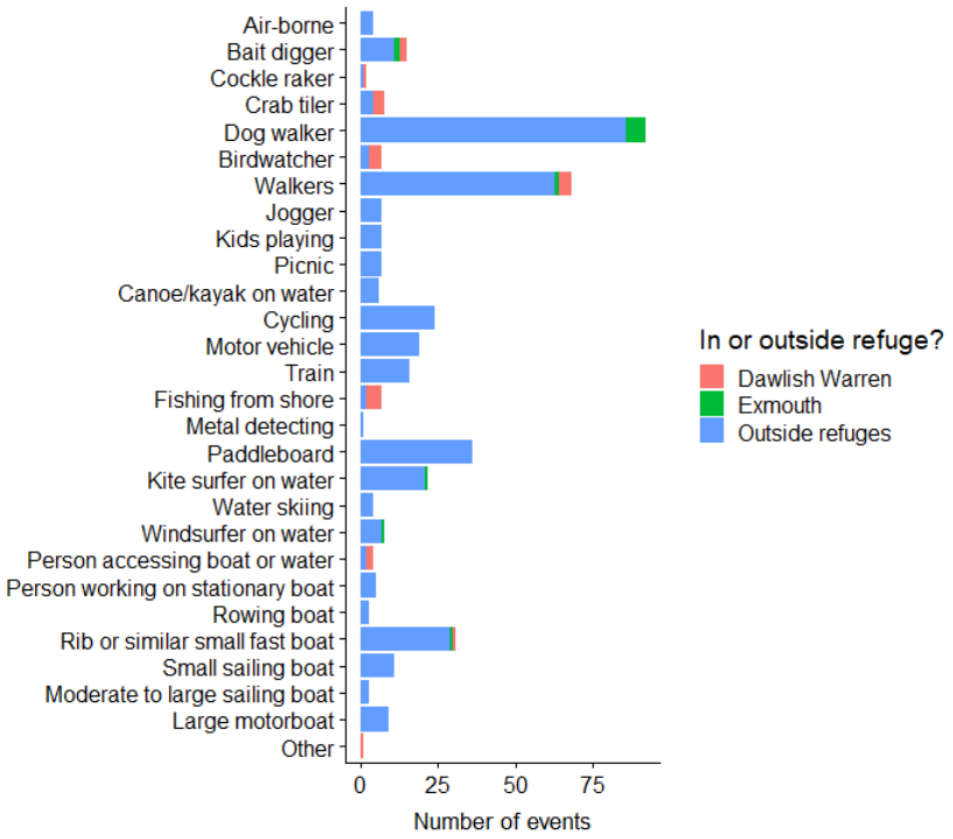


Figure 7: Total number of recreation events recorded inside and outside of refuge areas when the Exmouth refuge was active, collated from Vantage Point Count data.

3.18 Two vantage points related to the Exmouth refuge: 19 Vantage Point Counts were undertaken at the Duck Pond when the refuge was active and 12 were undertaken at Lympstone when the refuge was active. In total, 12 different events were observed within the refuge during these counts, on 11 different dates. 6 of the observations involved incursions more than 50m from the shore, i.e. well within the refuge. These involved 2 bait diggers, 2 dog walkers, 1 kite surfer and 1 windsurfer.

3.19 The Vantage Point Count data (as given in Table 3) are also summarised in Figure 8, which shows all the observations within the refuges, including the pre-refuge period for both and when the Exmouth refuge was inactive in the post-refuge period. For the Exmouth refuge in particular, there is good evidence of a decrease in incursions whilst the refuge is active (indicated by the red bar at the top of each plot). At the Duck Pond there appears to be a drop in use in September, followed by low levels of use while the refuge is active followed by a little more use in January, once the exclusion is no longer in place. For the Lympstone vantage point there

Table 3: Observations of incursions into the refuges when active, from Vantage Point Count data. Grey shading highlights those observations at least 50m from the shore – i.e. those that were well within the boundary of the refuge.

Date	Group size (no. of people)	Number dogs off lead	Number dogs on lead	Refuge	Activity	Tide	Approx. distance from shore (m)
21/09/2018	2	0	0	Dawlish	Fishing (from shore)	High	10
21/09/2018	1	0	0	Dawlish	Birdwatcher	High	10
24/09/2018	1	1	0	Exmouth	Dog walker	Low	100
14/10/2018	1	0	0	Dawlish	Birdwatcher	High	10
17/10/2018	2	0	0	Exmouth	Walking	Low	10
23/10/2018	1	0	0	Dawlish	Fishing (from shore)	Low	170
23/10/2018	1	0	0	Dawlish	Fishing (from shore)	Low	130
26/10/2018	2	2	0	Exmouth	Dog walker	High	20
26/10/2018	1	0	0	Exmouth	Windsurfer on water	High	120
26/10/2018	1	0	0	Exmouth	Kite surfer on water	High	210
26/10/2018	1	0	2	Exmouth	Dog walker	Low	60
13/11/2018	4	0	0	Dawlish	Walking	Low	30
13/11/2018	1	0	0	Dawlish	Crab tiler	Low	360
25/11/2018	2	0	3	Exmouth	Dog walker	High	40
26/11/2018	1	0	0	Exmouth	Bait digger	Falling	220
30/11/2018	1	0	0	Exmouth	Rib or similar fast small boat	High	30
10/12/2018	1	0	0	Exmouth	Bait digger	Low	190
11/12/2018	2	2	0	Exmouth	Dog walker	Low	10
14/12/2018	1	0	0	Dawlish	Other	High	40
16/12/2018	1	0	0	Dawlish	Walking	High	30
16/12/2018	3	0	0	Dawlish	Fishing (from shore)	High	20
30/12/2018	1	2	0	Exmouth	Dog walker	High	30
13/01/2019	2	0	0	Dawlish	Fishing (from shore)	High	30
21/01/2019	2	0	0	Dawlish	Birdwatcher	Falling	20
13/02/2019	1	0	0	Dawlish	Birdwatcher	High	20
19/03/2019	1	0	0	Dawlish	Crab tiler	Low	390

were few observations within the refuge, but the data shows the same pattern, with no observations while the refuge is active.

3.20 On the western side of the Estuary, use appears to show less of a change, but levels of incursion remain very low.

Figure 8: Vantage Point Count data showing all observations inside refuges, by activity. The three plots represent the three survey points, and the red lines indicate when the relevant refuge was operational/active. Note that the y axis scales differ between plots. Note also the dates differ between plots and dates with no bars indicate zero counts.

Incursions inside the refuges: Core Count data

3.21 In total, at both the Cockwood and Dawlish Warren Core Count locations, 10 Core Counts were undertaken when the refuge was active. At both the Exmouth locations, 8 of the counts were during the period the refuge was active. This gives a total of 36 counts – equivalent to 63 hours of observation (each count being an hour and 45 minutes). These 63 hours were split between the Dawlish side (35 hours) and the Exmouth side (28 hours).

3.22 Activities within the refuges during these 63 hours of observation are summarised in Table 4. The majority of events were at the Duck Pond, where 16 incursions were recorded during 14 hours of observation. At the Duck Pond 10 of the 16 incursions were dog walkers, some of which were walking along the intertidal and keeping relatively close to the shore to the east of the slipway. Others, such as the bait digger on the 26th November at Exmouth (Figure 9) were well within the refuge and present within it for an extended period.

Figure 9: Bait digger within the refuge area on November 26th 2018.

Table 4: Numbers of incursions within the refuges (when refuges active), from Core Counts.

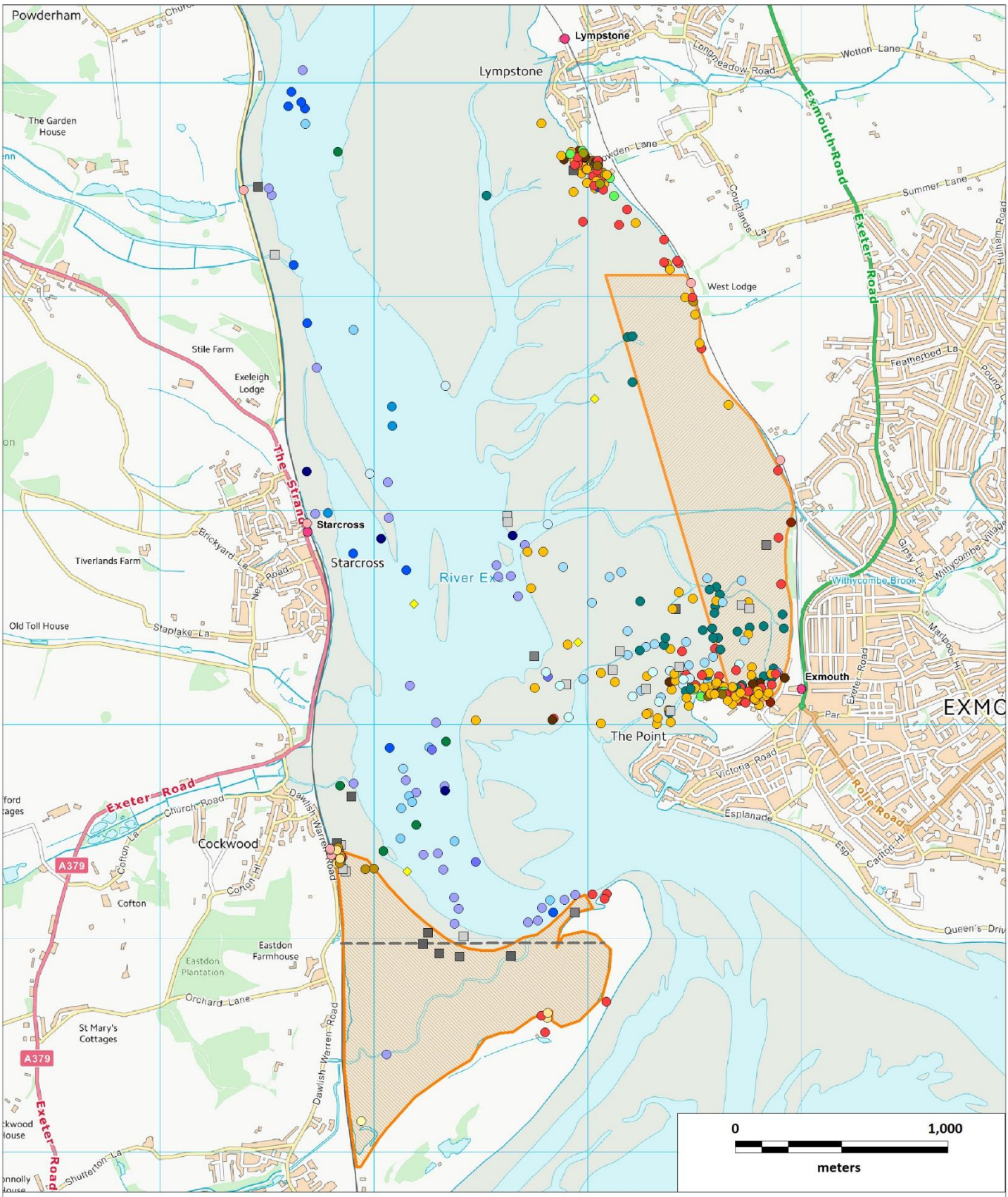
Date	Duration (mins)	Activity	Group size (people)	No. of dogs on lead	No. of dogs off lead	Description/notes
Exmouth North: a total of 1 incursion on 1 date (out of 10). 14 hours observation.						
30/11/2018	3	Dog walker	1		1	On foreshore 5m from wall
Exmouth Duck Pond: a total of 16 incursions across 5 dates (out of 10). 14 hours observation						
28/10/2018	15	Windsurfer on water				Launched on shore within refuge
28/10/2018	5	Rib or similar fast small boat				Fast speed boat/RIB
28/10/2018	19	Windsurfer on water				Same windsurfer left area and returned 4x
16/11/2018	3	Dog walker	1		1	
16/11/2018	21	Dog walker	1		1	Beachcombing/collecting on high tide line
16/11/2018	3	Dog walker	2		1	
16/11/2018	10	Dog walker	1		1	
26/11/2018	105	Bait digger	1			Well within exclusion zone. There at start and stayed in exclusion zone for whole of count. Moving around.
10/12/2018	5	Walking	28			Pre-school group with 5 adults walked onto shore
10/12/2018	2	Dog walker	1		1	
10/12/2018	3	Dog walker	1		1	B returned. No birds near
10/12/2018	32	Dog walker	1		1	Collecting from tideline
30/12/2018	10	Dog walker	2		1	Dog entered water
30/12/2018	4	Dog walker	2		1	
30/12/2018	8	Dog walker	5		1	
30/12/2018	4	Cycling	3			Boys on bikes along bottom of sea wall
Dawlish Warren: 9 incursions, including 1 crab tiling. Incursions recorded on 2 dates (out of 10). 17.5 hours observation.						
26/11/2018	6	Walking	1			
26/11/2018	35	Walking	2			Sat down - moved into dunes
26/11/2018	35	Crab tiling				turning over seaweed
17/03/2019	2	Jogger	2			rounded point into bight
17/03/2019	3	Walking	1			kept above HT line
17/03/2019	5	Walking	2			walking across bight
17/03/2019	14	Person accessing boat or water	1			Salvage operation. Man walked into refuge to sort anchor, then returned to boat.
17/03/2019	10	Person accessing boat or water	1			Salvage operation. Man returned to anchor on intertidal
17/03/2019	8	Walking	2			On far side, below Cockwood and railway
Cockwood: total of 8 incursions, including 3 crab tiling. Incursions recorded on 4 dates (out of 10). 17.5 hours observation.						
21/09/2018	50	Walking	1			
21/09/2018	55	Walking	1			fed c20 herring gulls
21/09/2018	40	Crab tiling				
21/09/2018	14	Walking	2			Moved slightly onto shore - intertidal
21/09/2018	20	Dog walker	2		1	

Date	Duration (mins)	Activity	Group size (people)	No. of dogs on lead	No. of dogs off lead	Description/notes
20/12/2018	120+	Crab tiling	1			
13/02/2019	10	Walking	2			
11/03/2019	86+	Crab tiling	1			

Spatial distribution of potential disturbance events

3.23 The spatial data resulting from the mapping of the activities recorded during the Vantage Point Counts are shown in Maps 4 to 7. Map 4 shows all the data, covering the periods before the refuges were operational, and also the period in early 2019 when the Exmouth refuge was not active. The subsequent maps split the data by relevant time periods. Map 5 shows the data for the period before mid-September 2018, i.e. before the refuges were operational and active. Map 6 then shows the period from mid-September through to the end of December, when both refuges were active. Map 7 then shows the data for January – March 2019, during which period only the Dawlish refuge was active.

Map 4: Vantage point data: all activity across all counts



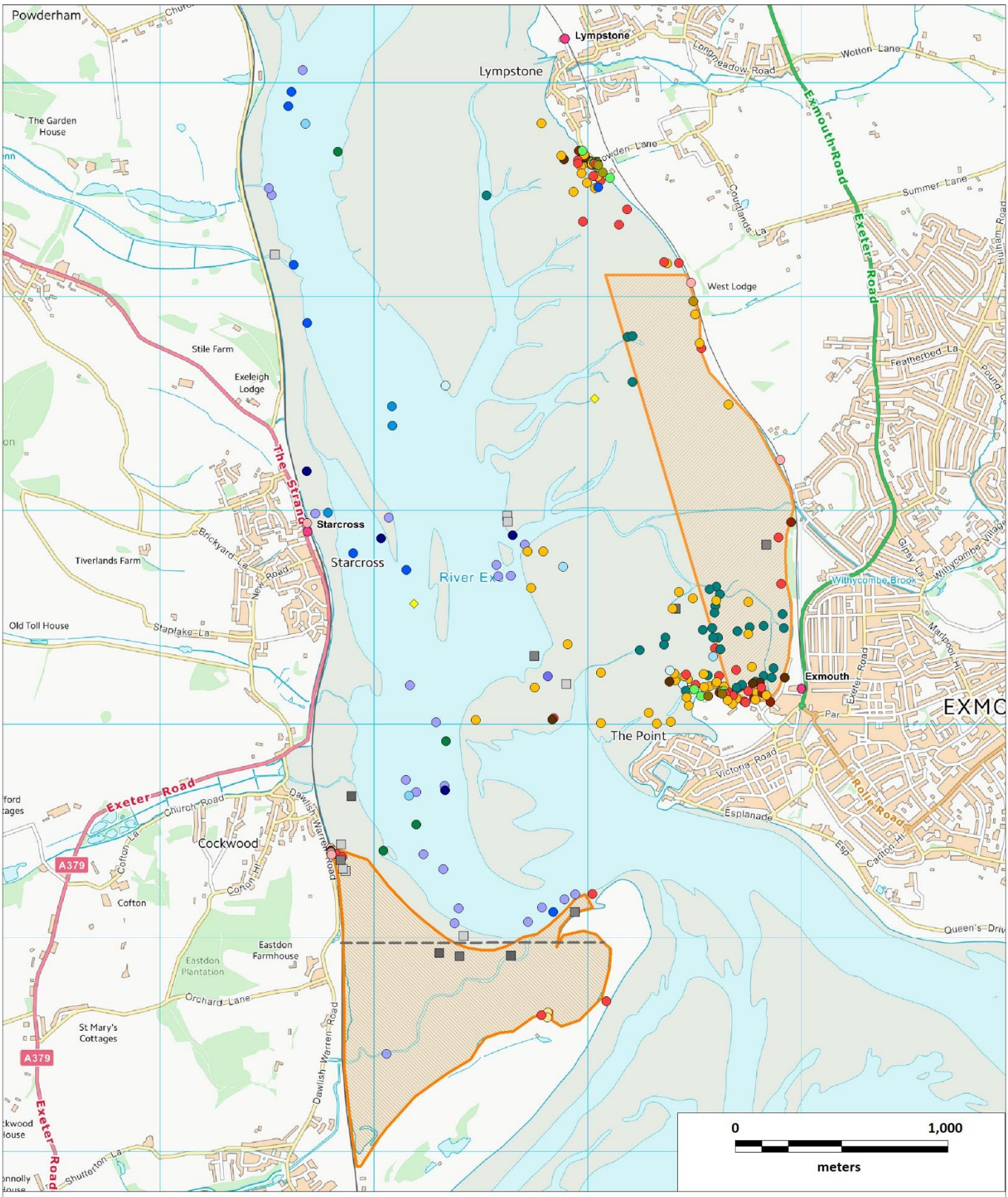
Air-borne	(4)	Kids playing	(7)	Picnic	(7)
Bait digger	(15)	KiteSurfer on water	(22)	Rib or similar fast small boat	(31)
Birdwatcher	(7)	Large motor boat with inboard engine > 10m	(9)	Rowing boat	(3)
Canoe/kayak on water	(6)	Metal Detecting	(1)	Small sailing boat (e.g. Laser / dinghy)	(11)
Cockle raker	(2)	Moderate/large sailing boat, not running motor	(3)	Train	(16)
Crab tiler	(8)	Motor vehicle	(19)	Walking / rambling (without dog)	(68)
Cycling	(24)	Other	(1)	Water skiing	(4)
Dog walker	(92)	Paddleboard	(36)	Windsurfer on water	(8)
Fishing (from shore)	(7)	Person accessing boat or water	(4)		
Jogger	(7)	Person working on boat (boat stationary)	(5)		

Dawlish Warren refuge area

Approx line for D&S IFCA Byelaw 24 (no crab tiling to south)

Exmouth refuge area

Map 5: Vantage point data: all activity February - mid September 2018



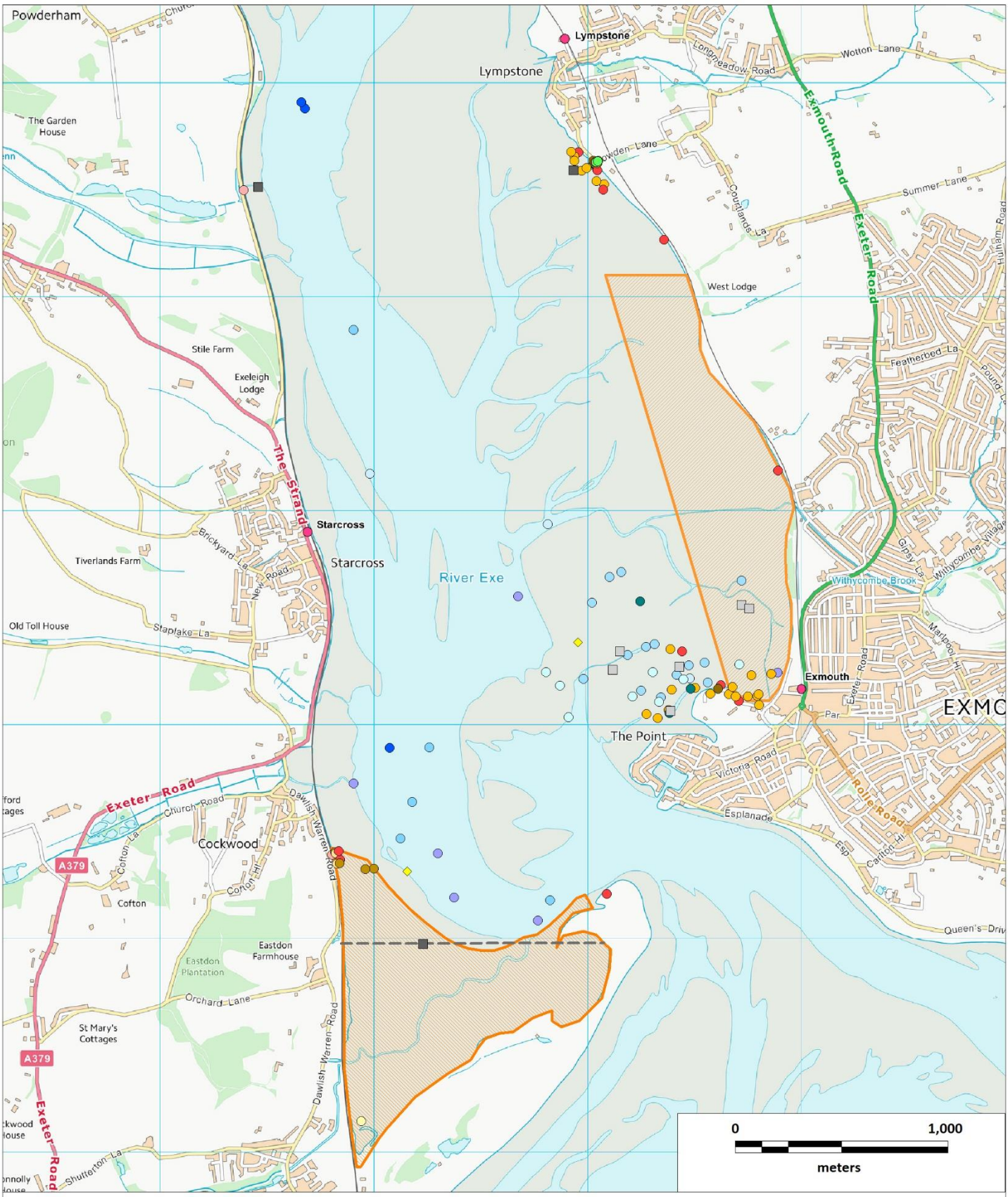
Air-borne	(2)	Jogger	(3)	Picnic	(7)
Bait digger	(8)	Kids playing	(7)	Rib or similar fast small boat	(23)
Birdwatcher	(3)	KiteSurfer on water	(2)	Rowing boat	(1)
Canoe/kayak on water	(3)	Large motor boat with inboard engine > 10m	(2)	Small sailing boat (e.g. Laser / dinghy)	(8)
Cockle raker	(2)	Moderate/large sailing boat, not running motor	(3)	Train	(11)
Crab tiler	(3)	Motor vehicle	(10)	Walking / rambling (without dog)	(40)
Cycling	(13)	Paddleboard	(33)	Water skiing	(4)
Dog walker	(54)	Person accessing boat or water	(4)		
Fishing (from shore)	(1)	Person working on boat (boat stationary)	(4)		

Approx line for D&S IFCA Byelaw 24 (no crab tiling to south)

Dawlish Warren refuge area

Exmouth refuge area

Map 6: Vantage point data: all activity, mid September - end December 2018



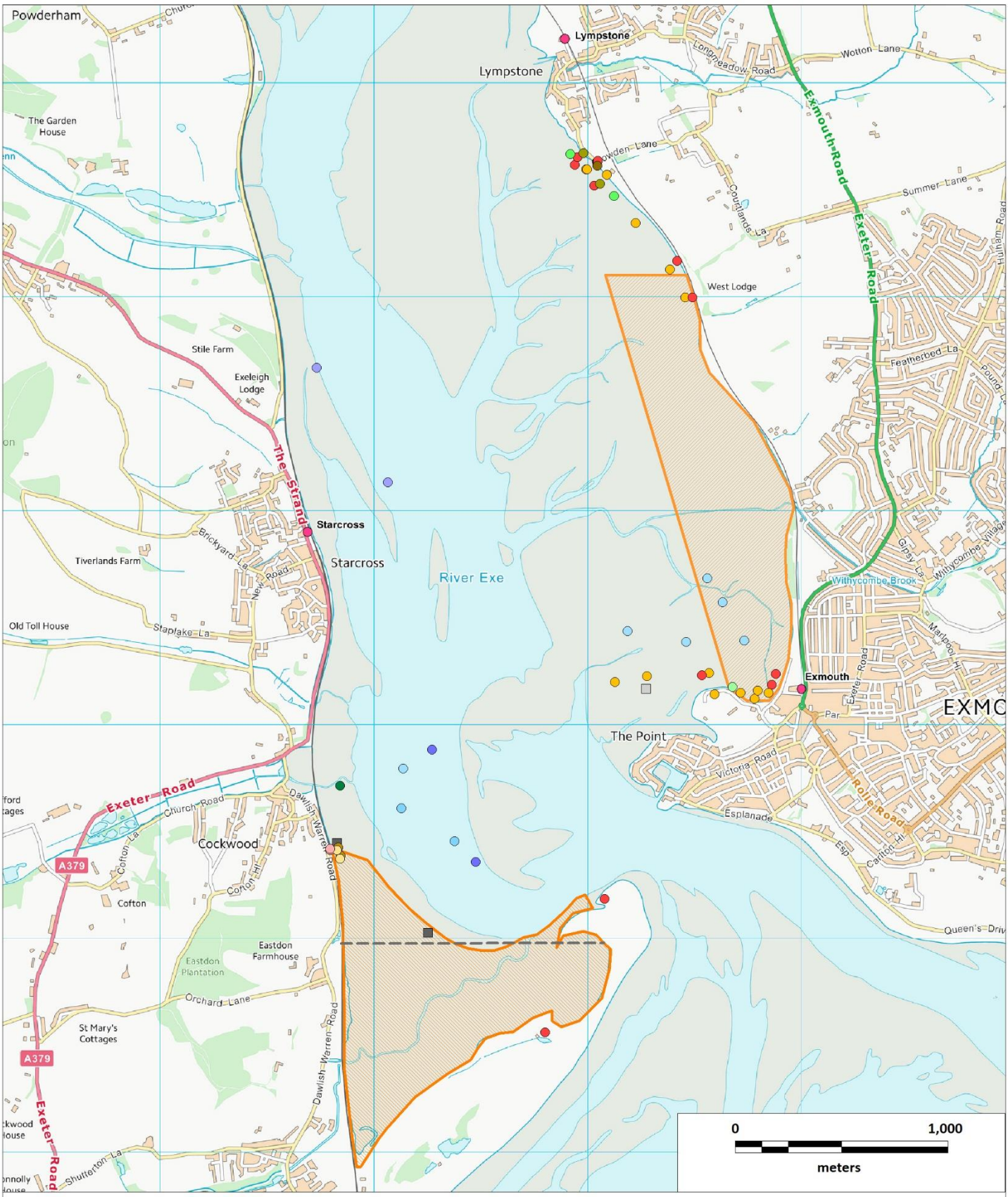
Air-borne	(2)	Fishing (from shore)	(4)	Rib or similar fast small boat	(6)
Bait digger	(6)	Jogger	(2)	Small sailing boat (e.g. Laser / dinghy)	(3)
Birdwatcher	(2)	KiteSurfer on water	(14)	Train	(2)
Canoe/kayak on water	(3)	Large motor boat with inboard engine > 10m	(5)	Walking / rambling (without dog)	(16)
Crab tiler	(3)	Motor vehicle	(6)	Windsurfer on water	(8)
Cycling	(7)	Other	(1)		
Dog walker	(24)	Paddleboard	(3)		

Dawlish Warren refuge area

Exmouth refuge area

Approx line for D&S IFCA Byelaw 24 (no crab tiling to south)

Map 7: Vantage point data: all activity January - March 2019



Bait digger	(1)	Jogger	(2)	Rib or similar fast small boat	(2)
Birdwatcher	(2)	KiteSurfer on water	(6)	Rowing boat	(2)
Crab tiler	(2)	Large motor boat with inboard engine > 10m	(2)	Train	(3)
Cycling	(4)	Metal Detecting	(1)	Walking / rambling (without dog)	(12)
Dog walker	(14)	Motor vehicle	(3)		
Fishing (from shore)	(2)	Person working on boat (boat stationary)	(1)		

Dawlish Warren refuge area

Exmouth refuge area

Approx line for D&S IFCA Byelaw 24 (no crab tiling to south)

Bird responses to disturbance (Core Count data)

Overview of all data

3.24 The following analysis and data presentation all draw on the Core Count data, which recorded interactions between recreation events and birds present within the recording area.

3.25 Responses to different events are summarised in Figure 10, which uses the data from all observations and all time periods (i.e. both when the refuges were active and when they were not). Sample sizes were relatively small for some activities and therefore some caution is required when comparing between activities or locations. In general, however the results indicate generally lower levels of birds showing behavioural responses to events at Dawlish compared to Exmouth.

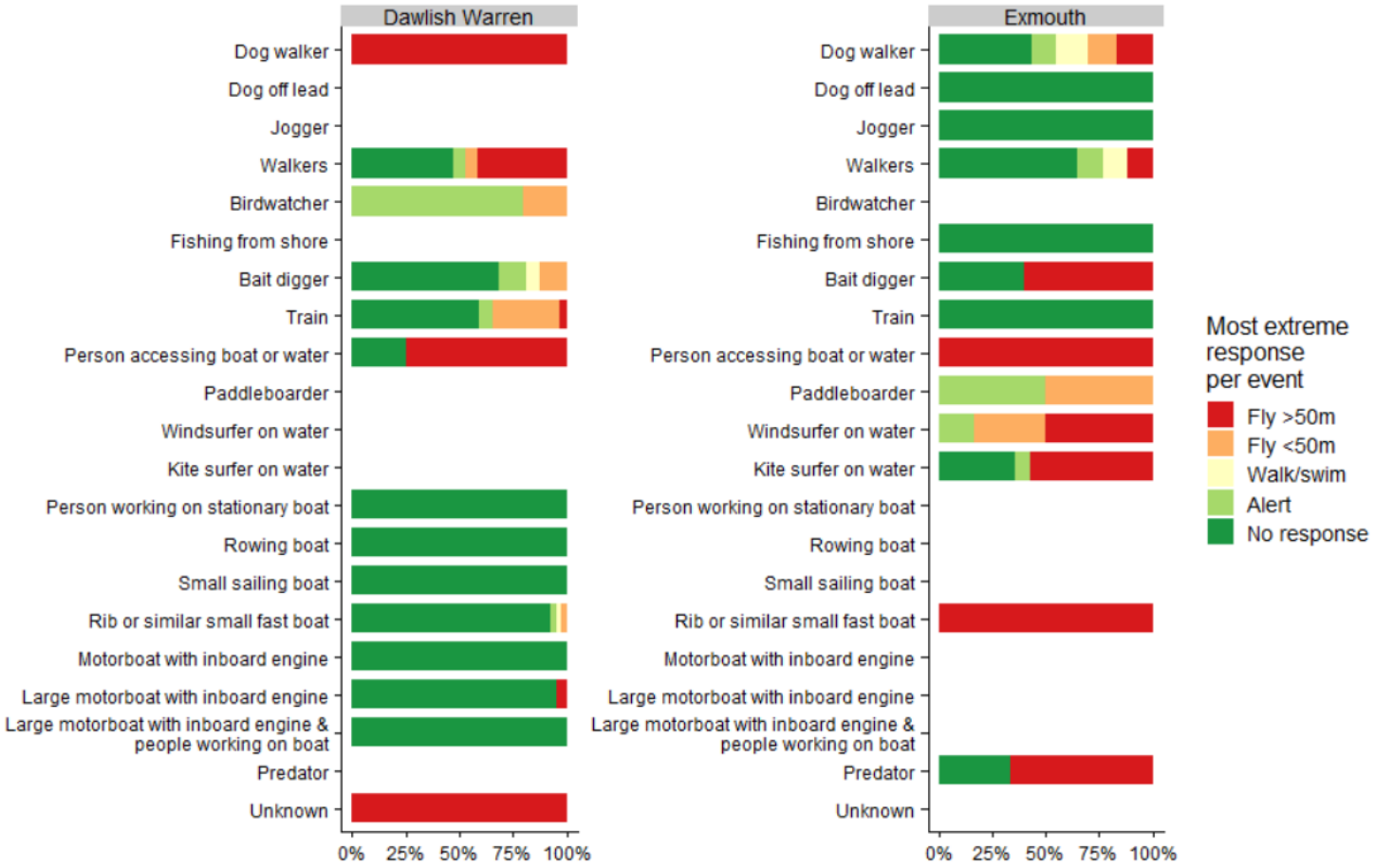


Figure 10: Bird responses to different recreation events on either side of the Exe Estuary, calculated from Core Count data. Dawlish Warren corresponds to Cockwood and Dawlish Warren survey points, and Exmouth to those at the Duck Pond and Lympstone.

3.26 The sample sizes are given in Figure 11, which provides an overview across all the data of the proportion of birds flushed by different activities. Much of the boat traffic (which is focussed in the main channel) in particular can be seen to have resulted in very low levels of birds being flushed. The species groups where the highest proportions of birds were recorded flushed were small wader species and wildfowl (Figure 12).

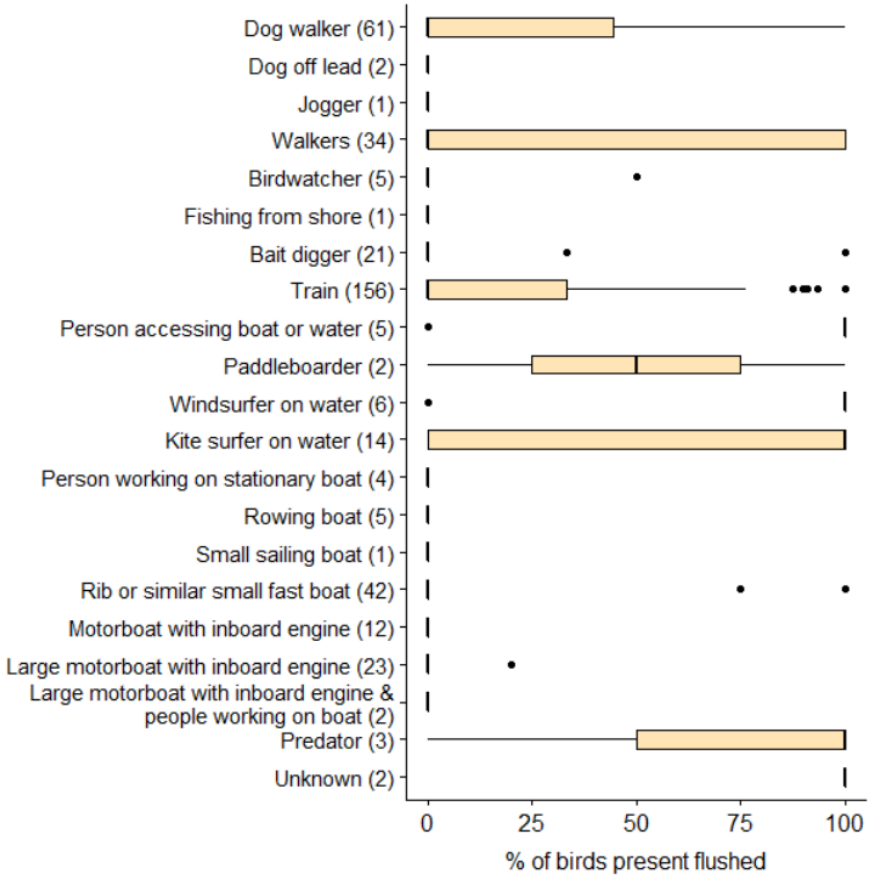


Figure 11: Percentage of birds present within 200m of each recreation event flushed (caused to fly) during Core Counts. Numbers in parentheses correspond to number of each event recorded during the survey period.

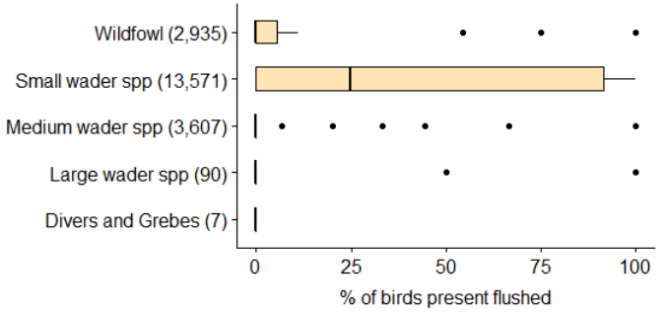


Figure 12: Percentage of birds present within 200m of each recreation event flushed (caused to fly) during Core Counts, split by species group. Numbers in parentheses correspond to total number of individual birds within each grouping recorded across all survey visits.

3.27 The number of birds flushed is summarised in Figure 13 and Figure 14. Trains resulted in some large flocks being flushed. This was related to the waders roosting on the concreted slope adjacent to the train tracks around 260m north of the Cockwood survey point (Figure 15). Occasionally the roost here was large and sometimes quite high up the slope; variations in the response of the birds here related to which side of the tracks the train was on and how fast it was going. The roost included smaller waders (e.g. Ringed Plover, Dunlin, Sanderling) which were often closer to the train tracks and flushed (Figure 14). Other activities recorded flushing large flocks included dog walkers, people accessing boats/the water, windsurfers, kite surfers, and one observation relating to a RIB.

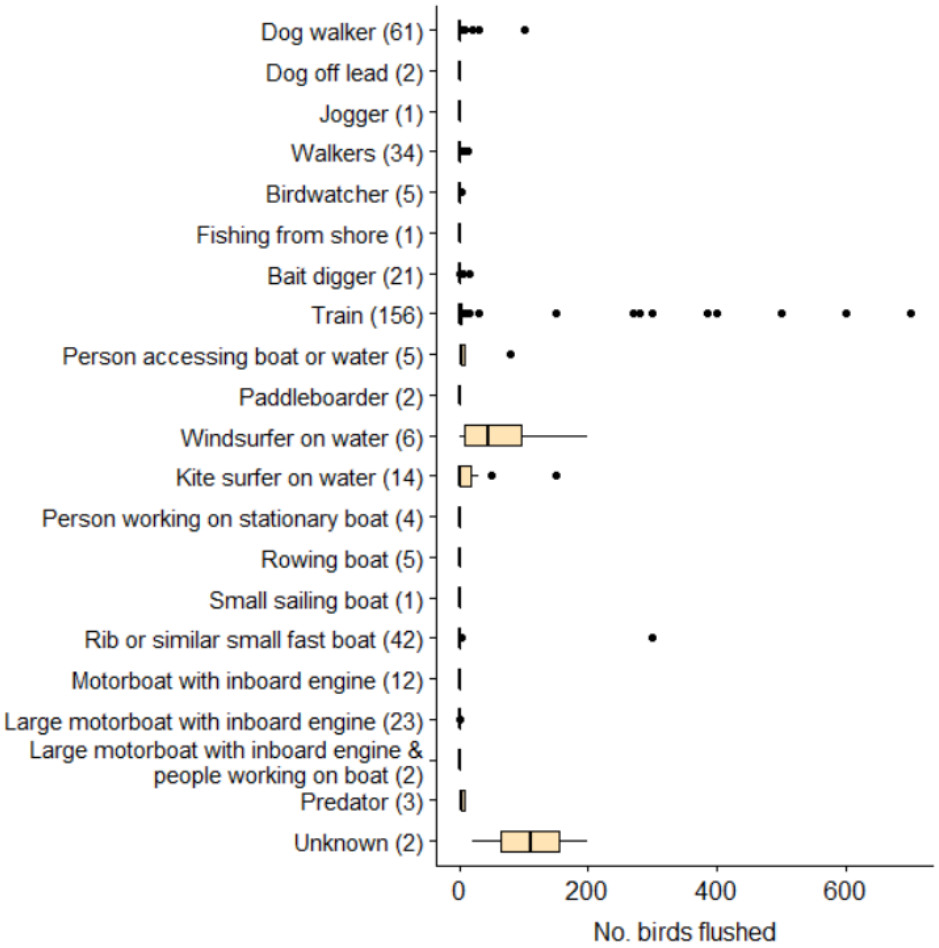


Figure 13: Total number of birds present within 200m of each recreation event flushed (caused to fly) during Core Counts. Numbers in parentheses correspond to number of each event recorded during the survey period.

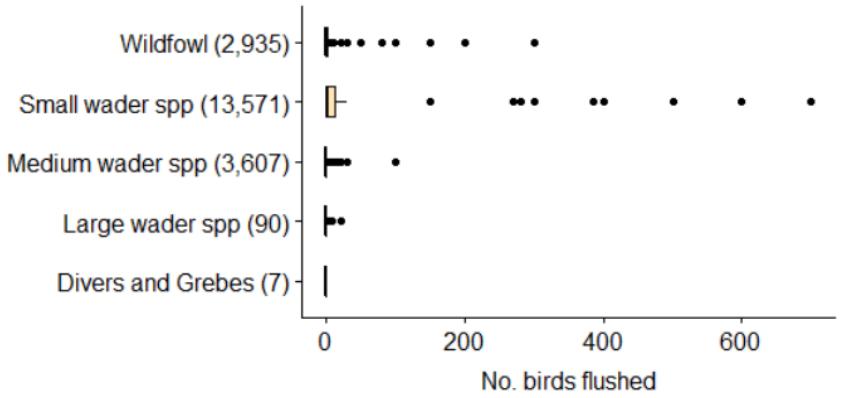


Figure 14: Total number of birds present within 200m of each recreation event flushed (caused to fly) during Core Counts. Numbers in parentheses correspond to total number of individual birds within each grouping recorded across all survey visits.

Figure 15: Redshank and Ringed Plover responding to passing train, north of Cockwood steps.

Disturbance events within refuge

3.28 All potential disturbance events that were within the refuges while they were active are summarised in Table 5. This shows all the behavioural responses (waders and wildfowl) observed that related to access events that took place within the refuges and when birds were present within the recording area. It is important to note that these relate to the responses observed during the core count and within the recording area. As the refuges extend beyond the recording areas for core counts it is possible that individual events did disturb more birds than recorded, furthermore some events were present in the area for a prolonged period, extending before and/or after the count period. For example, the bait digger shown in Figure 9 was present at the start of the count and also still present within the refuge at the end, 105 minutes later. As such any birds disturbed when he first appeared and walked out were not recorded.

3.29 It can be seen that a total of 388 wildfowl and 50 waders were seen to be flushed more than 50m (major flight) by events that were incursions into the refuge.

Table 5: Potential disturbance events within the refuges, while they were active. Table gives the number of birds (waders and wildfowl only) in each category of response.

Activity	Location	Date	Total waders					Total wildfowl				
			No response	Alert	Walk/swim	Minor flight	Major flight	No response	Alert	Walk/swim	Minor flight	Major flight
Walking	Cockwood	21/09/18					9					
Bait digger	Cockwood	21/09/18	4									
Windsurfer on water	Duck Pond	28/10/18						150	50			
Rib or similar fast small boat	Duck Pond	28/10/18							100		150	150
Windsurfer on water	Duck Pond	28/10/18										80
Windsurfer on water	Duck Pond	28/10/18									100	100
Windsurfer on water	Duck Pond	28/10/18									50	50
Windsurfer on water	Duck Pond	28/10/18									8	
Dog walker	Duck Pond	16/11/18			20							

Activity	Location	Date	Total waders					Total wildfowl				
			No response	Alert	Walk/swim	Minor flight	Major flight	No response	Alert	Walk/swim	Minor flight	Major flight
Dog walker	Duck Pond	16/11/18					30					
Dog walker	Duck Pond	16/11/18	19									
Bait digger	Duck Pond	26/11/18	20		10	10	5					
Bait digger	D. Warren	26/11/18	1	2								
Dog walker	Exmouth n.	30/11/18	2					10				
Walking	Duck Pond	10/12/18					6		20			
Dog walker	Duck Pond	10/12/18							15			
Bait digger	Cockwood	20/12/18	5					3				
Dog walker	Duck Pond	30/12/18										8
Dog walker	Duck Pond	30/12/18			2							
Dog walker	Duck Pond	30/12/18			3							
Walking	Cockwood	13/02/19				6						
Bait digger	Cockwood	11/03/19	11	1	1							
Person accessing boat or water	D. Warren	17/03/19	6									
Total			**68**	**3**	**36**	**16**	**50**	**163**	**185**		**308**	**388**

3.30 Response data are summarised in Figure 16, which gives responses by core count location. The four plots show:

a) all time periods, i.e. data pooled for each location for all observations across all dates;
b) observations during the times when the relevant refuges were active (i.e. September – December 2018 for the Exmouth refuge and September 2018 – March 2019 for the Dawlish refuge;
c) Observations from the time periods when the relevant refuge was not active (as such b and c are both a subset of a);
d) Observations relating to events that were incursions into the refuge during the time when the refuge was active (i.e. a subset of b).

3.31 The plots indicate that when incursions occur within the refuges and the refuges are active (plot d) there is a relatively high likelihood of a behavioural

response, for example some of the longest red bars indicating major flights are in this plot. Only 6% of the incursions into the refuge at the Duck Pond did not result in a behavioural response.

3.32 There is relatively little difference evident when comparing across the other plots, however at Cockwood there were no observations involving disturbance from the 35 observations during the period the refuge was not active, whereas when the refuge was active behavioural responses were recorded, including major flights.

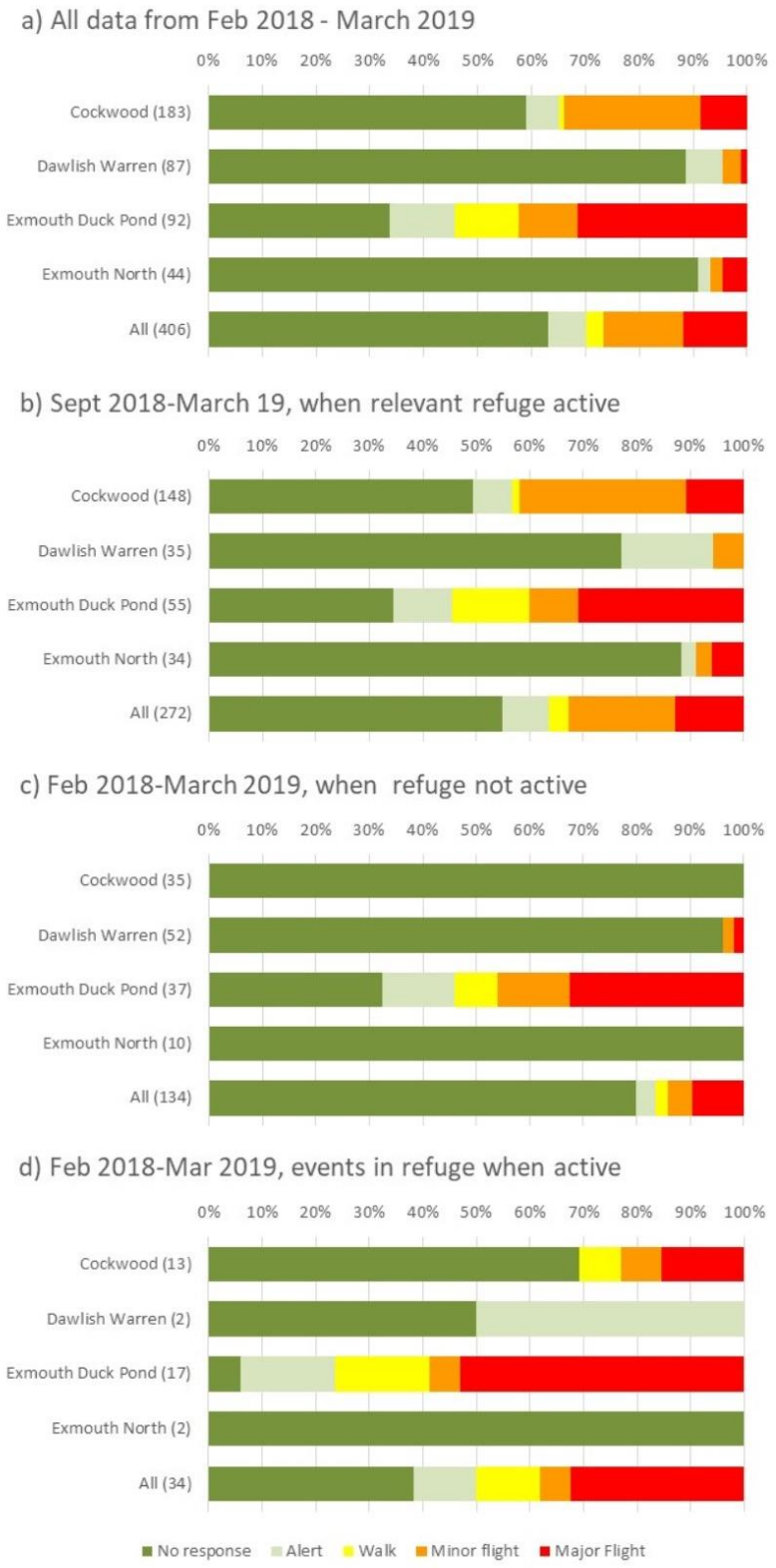


Figure 16: Responses to potential disturbance events by Core Count location, split into when different time windows when refuge active. Based on single response codes. Numbers in parenthesis are the number of observations.

4. Discussion

4.1 The results of the first 13 months of monitoring indicate that the refuges can support important numbers of birds, with the maximum count of wildfowl recorded within the Exmouth refuge on a single occasion during the survey period (9,420 individuals), equating to 41% of the 5 year mean (combined maximum count) wildfowl population for the entire Estuary (Frost et. 2019).

4.2 Incursions into the refuges (when they are active) are relatively infrequent, but when they do occur they can have a marked impact (in terms of a behavioural response) from the birds present. The results to date, while only interim, indicate that the refuges are making a difference, but a small number of visitors are either not aware or choosing to ignore the refuges.

4.3 Future monitoring will reveal whether use changes over time, for example it is difficult to anticipate whether the levels of incursions will change. It may be that visitors become more aware of the refuges and the need to keep out, or equally it may be that the novelty wears off and – once people see some incursions – more occur.

4.4 It is not possible from the monitoring to understand the motivations of those people who enter the refuges when they are not supposed to. Only direct contact with those people will inform their reasons and what future approaches are necessary to minimise the levels of incursions. It may be that there will always be a small number of incursions.

4.5 The bird data indicate that the Exmouth Duck Pond area does support good numbers of birds in the autumn/early winter period, in accordance with the recommendations in the zonation review (Exe Estuary Management Partnership 2017). The late autumn/early winter peak in wildfowl numbers within the refuge, followed by a decrease towards the end of the year, may be due to the depletion of the Eel grass beds by foraging geese and ducks. Given that bird numbers peak at this time and then drop, the monitoring data does not provide a clear picture of 'before' the refuges were in place, as the monitoring commenced in February.

4.6 The decreased variation seen in the numbers of waders using the Dawlish refuge throughout the survey period may be due to several factors. It could potentially be explained by the presence of the main channel of the Exe along its' border, with the topography and water depth on the channel edge

potentially being less suitable for foraging than the shallower/more level areas within the refuge.

4.7 The Exe Disturbance Study (Liley *et al.* 2011) did involve a similar fieldwork approach, at the Duck Pond and using the same field surveyors; therefore some comparison with that data are of relevance and provide additional context. The Exe Disturbance Study involved 50 counts following a methodology very similar to the Core Count methodology[1]. From those 50 counts, 22% of observations involved no response from birds present and 43% involved major flights[2]. In this study, across all Core Count observations 34% of observations involved no response and 32% involved major flights (see Figure 16). This would suggest a shift over time since the 2011 work.

Recommendations for the future monitoring

4.8 Monitoring is scheduled to continue and over time the data will build, allowing opportunity for more comprehensive analysis and reporting. We have identified the following as key points to note at this stage in the fieldwork:

4.9 Currently the Core Count recording does not differentiate the numbers of birds within and outside the refuge, within the recording area. The disturbance data are difficult to collect and involve multiple, simultaneous, recording, so there is little scope to add more data collection, however it should be possible to record specifically whether birds within the refuge respond to an event (whether inside or outside), and this can be added into future recording forms.

4.10 The Vantage Point Counts are important as they can be done quickly and the data shows patterns over multiple tide states, times of day, seasons and weather conditions. It is important that this continues. A relatively small number are scheduled month by month to be undertaken by Footprint Ecology and these are supplemented by data collected by the South East Devon Habitats Regulations Partnership rangers. It is important these data continue to be collected, and ideally should cover different conditions, days and tide states.

[1] Though note that each count in the previous study was of a shorter duration.
[2] Figures from table 9 in the Exe Disturbance Study.

References

Bright, A., Reynolds, G.R., Innes, J. & Waas, J.R. (2003) Effects of motorised boat passes on the time budgets of New Zealand dabchick, Poliocephalus rufopectus. *Wildl. Res.*, **30**, 237–244.

Burton, N.H.K., Armitage, M.J.S., Musgrove, A.J. & Rehfisch, M.M. (2002) Impacts of man-made landscape features on numbers of estuarine waterbirds at low tide. *Environ. Manage.*, **30**, 857–864.

Burton, N.H., Rehfisch, M.M. & Clark, N.A. (2002) Impacts of disturbance from construction work on the densities and feeding behavior of waterbirds using the intertidal mudflats of Cardiff Bay, UK. *Environ Manage*, **30**, 865–71.

Clarke, R.T., Sharp, J. & Liley, D. (2008) *Access Patterns in South-East Dorset. The Dorset Household Survey: Consequences for Future Housing and Greenspace Provision.* Footprint Ecology / Poole Borough Council.

Coyle, M. & Wiggins, S. (2010) *European Marine Site Risk Review*. Natural England Research Report, Natural England.

Cryer, M., Linley, N.W., Ward, R.M., Stratford, J.O. & Randerson, P.F. (1987) Disturbance of overwintering wildfowl by anglers at two reservoir sites in South Wales. *Bird Study*, **34**, 191–199.

Exe Estuary Management Partnership. (2017) *Exe Estuary Zonation Review Consultation Report*.

Fitzpatrick, S. & Bouchez, B. (1998) Effects of recreational disturbance on the foraging behaviour of waders on a rocky beach. *Bird Study*, **45**, 157–171.

Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hearn, R.D., Robinson, A.E., Stroud, D.A., Wotton, S.R. & Balmer, D.E. (2019) *Waterbirds in the UK 2017/18*: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.

Gill, J.A. (1996) Habitat choice in wintering pink-footed geese:quantifying the constraints determining winter site use. *Journal of Applied Ecology*, **33**, 884–892.

Liley, D. (2008) *Development and the North Norfolk Coast: Scoping Document on the Issues Relating to Access*. Footprint Ecology / RSPB / Norfolk Coast Partnership.

Liley, D., Cruickshanks, K., Waldon, J. & Fearnley, H. (2011) *Exe Disturbance Study*. Footprint Ecology / Exe Estuary Management Partnership.

Liley, D. & Fearnley, H. (2011) *Bird Disturbance Study, North Kent 2010-2011*. Footprint Ecology / Greening the Gateway.

Liley, D. & Fearnley, H. (2012) *Poole Harbour Disturbance Study*. Footprint Ecology / Natural England.

Liley, D., Hoskin, R., Lake, S., Underhill-Day, J. & Cruickshanks, K. (2014) *South-East Devon European Site Mitigation Strategy*. Footprint Ecology.

Liley, D., Panter, C., Marsh, P. & Roberts, J. (2017) *Recreational Activity and Interactions with Birds within the SSSIs on the North-West Coast of England*. Unpub., Footprint Ecology / Natural England.

Liley, D., Stillman, R.A. & Fearnley, H. (2010) *The Solent Disturbance and Mitigation Project Phase II. Results of Bird Disturbance Fieldwork, 2009/10.* Footprint Ecology / Solent Forum.

Liley, D. & Sutherland, W.J. (2007) Predicting the population consequences of human disturbance for Ringed Plovers Charadrius hiaticula: a game theory approach. *Ibis*, **149**, 82–94.

Liley, D., Underhill-Day, J., Panter, C., Marsh, P. & Roberts, J. (2015) *Morecambe Bay Bird Disturbance and Access Management Report*. Unpublished report by Footprint Ecology for the Morecambe Bay Partnership.

Nolet, B.A., Bevan, R.M., Klaassen, M., Langevoord, O. & Van der Heijden, Y. (2002) Habitat switching by Bewick's swans: maximization of average long-term energy gain? *J. Anim. Ecol.*, **71**, 979–993.

Randall, R.E. (2004) Management of coastal vegetated shingle in the United Kingdom. *Journal of Coastal Conservation*, **10**, 159–168.

Regel, J. & Putz, K. (1997) Effect of human disturbance on body temperature and energy expenditure in penguins. *Polar Biology*, **18**, 246–253.

Ross, K. & Liley, D. (2014) *Humber Winter Bird Disturbance Study*. Footprint Ecology.

Ross, K., Liley, D., Austin, G., Clarke, R.T., Burton, N.H., Stillman, R.A., Cruickshanks, K. & Underhill-Day, J. (2014) *Housing Development and Estuaries in England: Developing Methodologies for Assessing the Impacts of Disturbance to Non-Breeding Waterfowl*. Footprint Ecology, unpublished report for Natural England.

Saunders, C., Selwyn, J., Richardson, S., May, V. & Heeps, C. (2000) *A Review of the Effects of Recreational Interactions within UK European Marine Sites*. UK CEED & Bournemouth University.

Stillman, R.A., Cox, J., Liley, D., Ravenscroft, N., Sharp, J. & Wells, M. (2009) *Solent Disturbance and Mitigation Project: Phase I Report*. Footprint Ecology / Solent Forum.

Stillman, R.A. & Goss-Custard, J.D. (2002) Seasonal changes in the response of oystercatchers Haematopus ostralegus to human disturbance. *J. Avian Biol.*, **33**, 358–365.

Stock, M. & Hofeditz, F. (1997) Compensatory limits: energy budgets of Brent Geese, Branta b- bernicla, the influence of human disturbance. *Journal Fur Ornithologie*, **138**, 387–411.

Thiel, D., Jenni-Eiermann, S., Palme, R. & Jenni, L. (2011) Winter tourism increases stress hormone levels in the Capercaillie Tetrao urogallus. *Ibis*, **153**, 122–133.

Thomas, K., Kvitek, R.G. & Bretz, C. (2003) Effects of human activity on the foraging behavior of sanderlings Calidris alba. *Biological Conservation*, **109**, 67–71.

Underhill-Day, J.C. (2005) *A Literature Review of Urban Effects on Lowland Heaths and Their Wildlife*. English Nature, Peterborough.

Walker, B.G., Dee Boersma, P. & Wingfield, J.C. (2006) Habituation of Adult Magellanic Penguins to Human Visitation as Expressed through Behavior and Corticosterone Secretion. *Conservation Biology*, **20**, 146–154.

Weimerskirch, H., Shaffer, S.A., Mabille, G., Martin, J., Boutard, O. & Rouanet, J.L. (2002) Heart rate and energy expenditure of incubating wandering albatrosses: basal levels, natural variation, and the effects of human disturbance. *J Exp Biol*, **205**, 475–83.

Yasué, M. (2005) The effects of human presence, flock size and prey density on shorebird foraging rates. *Journal of Ethology*, **23**, 199–204.

Appendix: Maximum counts of species at each Core Count location

This appendix gives the maximum counts for each species across the Core Counts undertaken at each survey location. The counts are for the entire recording area and therefore encompass areas inside and outside the refuge areas.

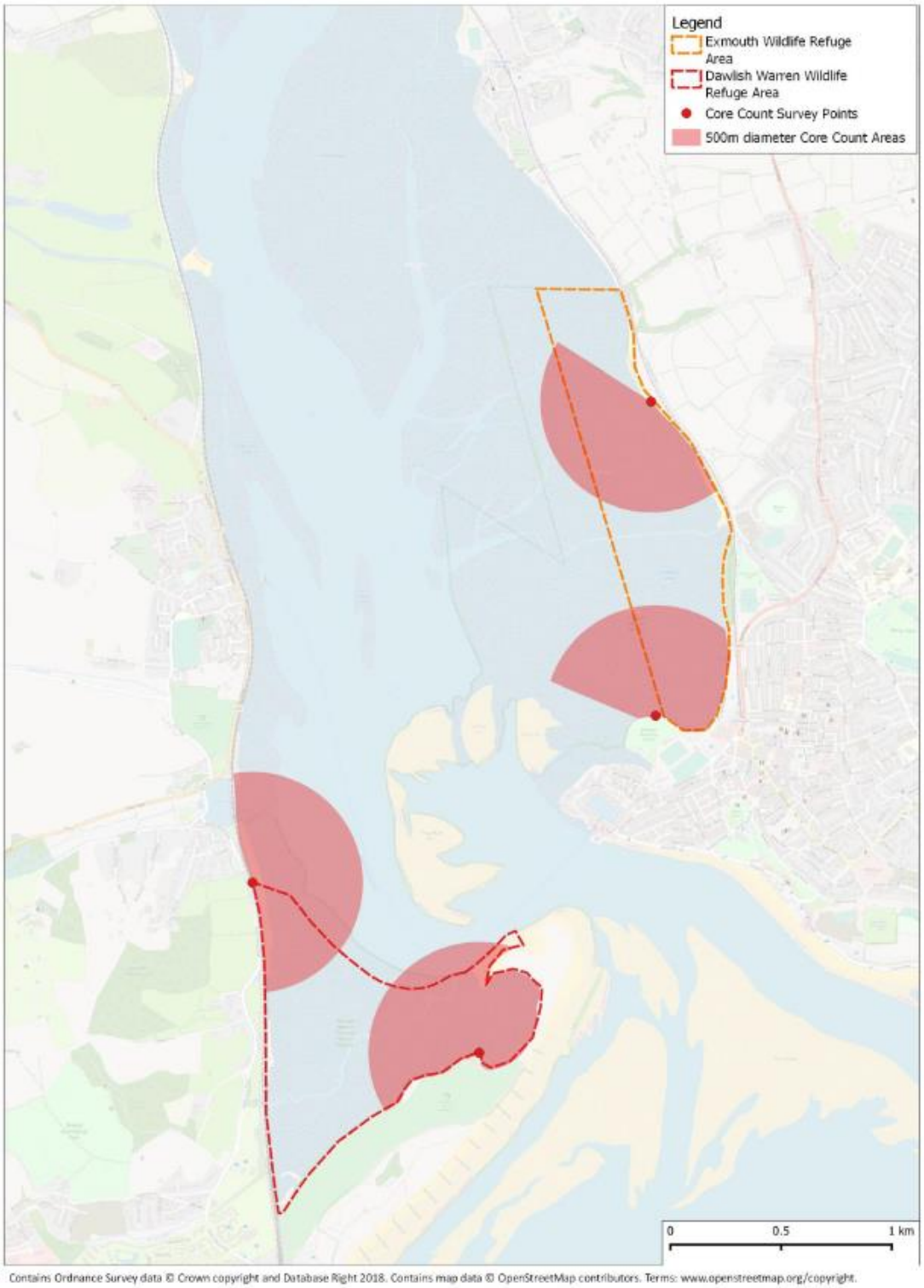
Species	Cockwood	Dawlish Warren	Exmouth Duck Pond	Exmouth North
Waders				
Avocet				2
Bar-tailed Godwit	13	30		
Black-tailed Godwit	7	2	4	45
Curlew	8	130	87	79
Dunlin	800	510		300
Greenshank	3	4	1	
Grey Plover		87		30
Oystercatcher	60	404	354	68
Redshank	272	15	3	34
Ringed Plover	22	40		4
Sanderling	2	12		
Snipe				1
Turnstone	20	15	15	17
Wildfowl				
Canada Goose	18		98	68
Dark-b. Brent Goose	216	205	655	996
Eider	3	2		
Mallard			62	55
Mute Swan	28	32	40	32
Pale-bellied Brent Goose				5
Pintail			55	169
Red-b. Merganser	10	2	4	
Shelduck	20	13	160	98
Teal	7	2		
Wigeon		110	352	1295
Divers/Grebes				
Great C. Grebe	5	1	1	13
Great N. Diver		2		
Little Grebe	1	1		3

Slavonian Grebe	1			
Gulls/Terns	80	129	50	300
Black-headed Gull	32	30	33	200
Common Gull	34		3	28
Common Tern	2			
Great Black-b. Gull		129	8	
Herring Gull	80	30	50	300
Lesser Black-b. Gull		5		
Sandwich Tern	6		2	
Other Species				
Cormorant	9	28	1	
Grey Heron	1			1
Kingfisher	1			
Little Egret	3	6	11	16
Shag	8	1		

Habitat Regulations Executive Committee

Exe Estuary wildlife refuges 1st annual monitoring report: Appendix C

Map 2: Exe Estuary Core Count locations.



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SOUTH EAST DEVON
HABITAT REGULATIONS
PARTNERSHIP

South East Devon Habitat Regulations Executive Committee

Monitoring Petalwort at Dawlish Warren – conservation assessment and prognosis

Neil Harris, Habitat Regulations Delivery Manager
July 2019

East Devon
Exeter City Council
Teignbridge District Council South Devon

Legal comment/advice:

There are no legal implications identified which require comment.

Finance comment/advice:

The costs arising from the recommendations that relate to the responsibility of this Committee (costs relating to habitat mitigation) can be met from exiting budgets approved.

Public Document:	Yes
Exemption:	None
Review date for release	None

Recommendations

It is proposed that the Executive Committee:

1. Notes the conservation assessment and prognosis report and the recommendations set out therein.
2. Recommends that Teignbridge District Council liaise with Natural England to urgently address the potential risk of losing Petalwort from Dawlish Warren.
3. Receives an update from Teignbridge District Council at the next meeting.
4. Subject to (2) and (3) above, receives another report on the conservation assessment of Petalwort in 2022.

Equalities impact: Low

Risk: High.

The attached report, included here as Appendix A, suggests that without management intervention there is a high risk that Petalwort may disappear from Dawlish Warren entirely.

1. Summary

1.1 Petalwort is a small, pale green plant which is one of the special interest features for which Dawlish Warren Special Area of Conservation (SAC) is designated. It is nationally scarce in the UK, being widely but sparsely distributed. Dawlish Warren is one of seven sites in England where the plant is recorded.

1.2 Petalwort was originally identified at Dawlish Warren in 1997 by Dr David Holyoak in two general areas of Dawlish Warren, one population close to the Visitor Centre and the second broadly spread across the Greenland Lake grassland (see Appendix B for a rough indication of these areas). Subsequent surveys took place in 1999, 2001, 2003 and 2012.

1.3 Following the Beach Management Scheme, completed by the Environment Agency in 2017, it is likely that a dynamic dune system will redevelop in parts of the site. If the dunes erode as predicted by the Environment Agency, the second area may become inundated with seawater, destroying the existing population and decreasing the chance of natural regeneration through spore dispersal.

1.4 Teignbridge District Council (TDC) Green Spaces Rangers at the Warren have already undertaken some experimental translocations of Petalwort and habitat creation to areas behind the newly constructed wall near the Visitor Centre (most likely to be protected from any inundation by the sea), under licence from Natural England.

1.5 Monitoring of the success/failure of these translocations and the status of the plant onsite was approved by HREC in June 2016. As reported in regular updates to HREC, this monitoring has been delayed due to related proposals which included habitat creation to create suitable conditions for translocation. This necessitated disturbance of other habitat within the SAC and therefore consideration of the Assessment of Likely Significant Effect (ALSE) was required by Natural England (NE).

1.6 The previous survey of Petalwort at the Warren in 2012 developed a baseline dataset to enable identification of population trends and the overall condition of the plant across the site. This survey recorded two areas where populations of the plant could be found, referred to as the Greenland Lake Slack (a dune slack is a low lying area which is seasonally flooded and has low nutrient levels) and the area to the west of the visitor centre.

2.0 The survey

2.1 Following a competitive tendering process, the botanist Richard Lansdown was awarded the contract to carry out the survey and report work. Mr Lansdown had previously surveyed the site in 2012.

2.2 Main objectives of the survey were:

- Establish a baseline mapping survey of Petalwort in the Visitor Centre slack and the Greenland Lake slacks at Dawlish Warren NNR.

- Identify suitable locations for the establishment of scrapes to create early successional stage habitat for colonisation by Petalwort. This will identify areas that are currently free from Petalwort, but where Petalwort can colonise naturally.

- A survey of both the Visitor Centre slack and Greenland Lake slacks is required.

- The report should include discussion about the distribution of Petalwort and any potential issues which could affect its future distribution and numbers

- This report and survey will feed into an ongoing programme of monitoring to assess the impact of visitor pressure on this species and its habitat, the rate of successional change colonisation within the scrapes and timing/location of further habitat creation works.

- A detailed mapping study the distribution of Petalwort thalli at Dawlish Warren is required. 20cm x 20cm quadrats should be used and Petalwort and associated species recorded. A suitable scale map should be used e.g. 1:5000 OS map % cover estimates or similar measure should be used. This should also indicate bare ground and general physical parameters (aspect, hydrology, human impacts)

2.3 Included here as Appendix A, the report survey uses an identical method to that employed in 2012, informed by previous mapping of potentially suitable habitat (Lansdown 2012) enabling more specific targeting of low-lying areas or hollows. Each hollow within Greenland Lake Slack (see Page 2 of Appendix A) was inspected thoroughly on hands and knees, with small plants confirmed using a x8 hand-lens. The sex of fertile plants was noted once per gender per hollow, to indicate fertility of the population. Hollows were numbered using the same numbering system as presented by Lansdown (2012).

3. Monitoring results

3.1 Populations of Petalwort were found in Greenland Lake Slack in seven hollows, with a total of 1301 thalli (the main body of the plant) counted, although hollow No. 9 (which had supported 300-400 thalli in 2012) was not surveyed because it was inundated due to heavy rain the night before. Both sexes were recorded in three hollows and female plants only in another two. Including an estimate of up to 400 thalli in hollow No. 9, the total population of Petalwort in Greenland Lake Slack in 2019 is estimated to be 1300-1700 thalli

3.2 Comparison of the results of counts from previous years, although not directly replicated, suggests that when surveys were considered reliable (1999, 2003, 2012, 2019), the number of thalli recorded fell between 2003 and 2012 and has since remained stable.

3.3 The overall distribution of thalli has remained fairly consistent, with much local variation, although there appears to be a trend for the shallower hollows to become less suitable as they become overwhelmingly dominated by grass and sedges.

3.4 Unfortunately, despite intensive searches, no thalli were found in either of the slacks where plants had been introduced to the west of the visitor centre or in the Visitor Centre Slack. This suggests that transplanting was unsuccessful and that the Visitor Centre Slack population may now be extinct.

3.5 Survey indicates that it is likely that the difference in the distribution of thalli in different hollows may be at least partly related to the height of the hollow above the groundwater table. If correct, then it would appear likely that groundwater-table helps to suppress other vegetation. Thus, the higher the hollow is above the maximum groundwater level, the less able Petalwort is to compete against other plants.

3.6 As the groundwater table drops relative to ground level within Greenland Lake Slack, fewer areas remain suitable for Petalwort. If correct, then this has significant implications for any attempt to create suitable habitat for the plant in the area around the visitor centre.

3.7 The other important factor from the survey is that the distribution of Petalwort in hollows is very patchy. For this reason, it is not realistic to count the number of thalli in a small part of a hollow and then extrapolate up to derive an estimate of the total population within the hollow.

4. Discussion

4.1 Precise comparison between data collected in 2019 and previous surveys appears to be impossible because it is not possible to be certain that all thalli are found, as some may be very small or obscured by dense vegetation, as well as because of the difficulty in precisely re-locating the boundaries of specific hollows.

4.2 Simple interpretation of the data suggests that there has been a decline in the population since 2003, including a reduction in the area occupied, both as the number of populations and the area over which thalli occur. This is probably due to successional change within Greenland Lake Slack, possibly linked to a lowering of the water table, as the hollows in which it was not found are now too dry and densely vegetated with other plants for Petalwort to survive.

4.3 The 2019 survey enabled a comparative test of the efficacy of the condition assessment method proposed in the 2012 survey. As there is no other formal method available, there is no way to tell if any of the criteria put forward are valid measures of the condition of populations at the Warren. That being said, the methods used and refinement of the assessment over time is considered to be the best available approach.

5. Prognosis

5.1 The report warns that the failure of attempts to establish Petalwort in areas to the west of the Visitor Centre means that if the Greenland Lake Slack population continues to decline, there is no reliable way of ensuring the survival of the plant at Dawlish Warren.

5.2 It goes on to suggest that it is known that work which resulted in excavation of sand from part of Greenland Lake Slack in the past led to colonisation by Petalwort. Therefore, it determines, it is clearly possible to increase the population by scraping or removing substrate – and that the only way to identify a reliable method by which populations could be established to the west of the Visitor Centre is by experimental work on existing populations.

5.3 The report states that if the organisations responsible for the management of Dawlish Warren are committed to conservation of Petalwort (and other species) to mitigate the likely impact if sea incursion to Greenland Lake Slack, then they need to actively support on experimental work to try to ensure the future of the species in areas which will remain after relaxation of the sea defences.

5.4 It suggests that most of the remaining population could actually be lost as a result of a single sea incursion event. It concludes that the prognosis for Petalwort at Dawlish is very poor without an extensive and imaginative translocation programme.

5.5 This programme, it is recommended, must include experimental translocation, combined with habitat management. Recognising that the entire population of Petalwort (and other species) is likely to be lost, the report goes on to say that there should be no constraint on potential for experimental manipulation of populations within Greenland Lake Slack.

6. Visitor pressure

6.1 Understanding the impact of increasing visitor pressure is somewhat complicated. On one hand, if not inundated by saltwater, predicted increases in visitor pressure on Greenland Lake Slack could actually benefit Petalwort by increasing pressure on other plants and thereby maintaining bare habitat.

6.2 However, heavy visitor pressure in the area around the Visitor Centre could compromise any further attempts to establish notable species in this area, unless visitor access is very carefully managed. An approach could be to minimise access in the most vulnerable areas but leave unrestricted in less sensitive areas.

6.3 The result could serve to maintain habitat for species which would otherwise be lost to natural succession. Thus, it is argued, the potential effects of increased visitor pressure are more dependent upon management than numbers or seasonality.

7. Conclusion

7.1 The report concludes that not enough is known about the ecology of Petalwort to undertake conservation measures and be confident of success. However, the report also makes clear that the survival of the plant at Dawlish Warren is in clear jeopardy if and/or when the dunes are breached by the sea.

7.2 A number of suggestions are made in the report for potential methods to preserve the species onsite. These all involve disruption to other SAC habitat and therefore would require discussion, cooperation and licensing with Natural England. They are:

- Extensive excavation of areas in the land around the visitor centre, taking levels down to those which currently support Petalwort in Greenland Lake Slack.
- Translocating individual plants of Petalwort, digging down to locate the parent plant of thalli on the surface.
- Propagating Petalwort using methods applied elsewhere to enable extensive planting of very high numbers of plants into potentially suitable habitat.
- Transplantation of turves within Greenland Lake Slack to study colonisation patterns. Turves should be removed and introduced to potentially suitable habitat created through management, the holes created should be filled with bare sand from nearby areas to create a bare surface for colonisation. This may help to establish why previous translocation attempts have been unsuccessful.
- Transplantation of fertile plants of both sexes should also be tested to establish whether this may have a better chance of success.

7.3 In the event that any of the works above are successful, it is noted that transplanted populations are likely to be subject to much higher pressure from tourism. In particular, if the area of the warren is reduced by the sea, then remaining areas are likely to be subject to much greater pressure and may be compromised because of this.

Neil Harris
Habitat Regulations Delivery Manager

South East Devon
Habitat Regulations
Executive Committee

July 2019

Natural England comment:

We note the findings of the report and the recommendations made.

Natural England is supportive of management measures to encourage creation of suitable habitat within the SAC.

We note that the report identifies a risk of heavy visitor pressure around the Visitor Centre compromising further attempts to establish petalwort in this area, unless access is carefully managed. This is precisely what the mitigation strategy and measures within the strategy are intended to address.

We suggest that the Environment Agency should also be involved in discussions and funding regarding future measures as they also have a duty with regard to their activities and statutory remit to avoid impacts upon the special features of the site and may be planning further changes in response to the erosion which has occurred following the implementation of their scheme. This is particularly relevant in light of the report's observations that heavy visitor pressure around the visitor centre

Habitat Regulations Executive Committee

Monitoring Petalwort at Dawlish Warren – conservation assessment and prognosis: Appendix A

CONSERVATION ASSESSMENT AND PROGNOSIS FOR PETALWORT (*PETALOPHYLLUM RALFSII*) AT DAWLISH WARREN

May 2019

by
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CONSERVATION ASSESSMENT AND PROGNOSIS FOR PETALWORT (*PETALOPHYLLUM RALFSII*) AT DAWLISH WARREN

May 2019

1 INTRODUCTION

In 2012 populations of Petalwort (*Petalophyllum ralfsii*) at Dawlish Warren were surveyed to develop a baseline for monitoring population trends and the condition of the metapopulation (Lansdown 2012). Since this survey, the decision was taken to stop maintaining sea defences to the main part of the dune system and a wall was constructed immediately east of the visitor centre to maintain protection of this area. Between 2012 and 2019, under licence from Natural England, a number of *P. ralfsii* thalli were transplanted from Greenland Lake Slack to hollows in the area to the west of the visitor centre, including one which had previously been scraped to lower levels with the aim of making it more suitable for *P. ralfsii*.

This report presents the results of a survey to repeat data collection carried out in 2012 and assess the condition of the metapopulation following construction of the wall. Additional aims of this survey were to assess the success of attempts to translocate *P. ralfsii* to scrapes to the west of the visitor centre and to try to predict the consequences of sea incursion to Greenland Lake Slack.

The method employed in 2019 was identical to that employed in 2012 but was informed by mapping of potentially suitable habitat (Lansdown 2012) enabling more specific targeting of low-lying areas or hollows potentially representing suitable habitat for *P. ralfsii*. However, hollows were not as well-defined and easily recognised as implied by Figure 1.1 (see Chapter 2). Each hollow within Greenland Lake Slack was inspected thoroughly on hands and knees, with small plants confirmed using a x8 hand-lens. The sex of fertile plants was noted once per gender per hollow, to indicate fertility of the population. Hollows were numbered using the same numbering system as presented by Lansdown (2012) and reproduced here as Figure 1.1.

Acknowledgements

I am grateful to Phil Chambers, Steve Ayres and their colleagues for their help with background information, as well as with organising and carrying out the survey.

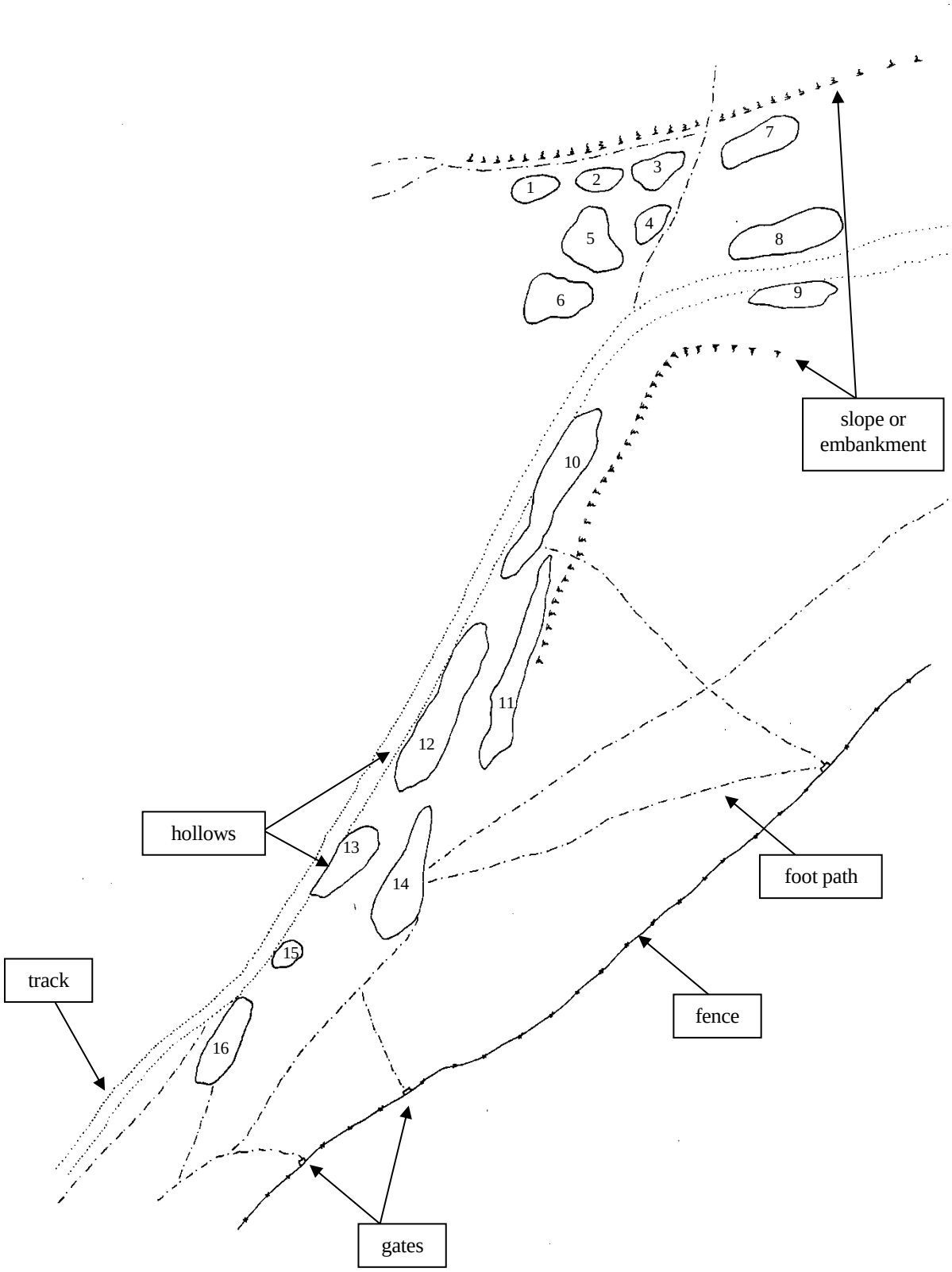

Figure 3.3 Distribution of hollows in Greenland Lake Slack with preliminary numbering system

2. RESULTS

In 2019, populations of *P. ralfsii* were found in Greenland Lake Slack in seven hollows, with a total of 1301 thalli counted (Table 2.1), although hollow No. 9 (which had supported 300-400 thalli in 2012) was not surveyed because it was inundated due to heavy rain the night before. Both sexes were recorded in three hollows and female plants only in another two. Including an estimate of up to 400 thalli in hollow No. 9, the total population of *P. ralfsii* in Greenland Lake Slack in 2019 is estimated to be 1300-1700 thalli. Populations were scattered throughout the slack in areas where they had been recorded by previous surveys (Lansdown 2012), however there had been changes in the occurrence of thalli in different hollows, with some hollows such as No. 16 no longer supporting plants but others such as Nos. 4/5 supporting a large number of thalli where none had been found in 2012. In 2012 hollow No. 16 was maintained along the line of a path through a stand of reeds. In 2019, the path had moved slightly and no longer created conditions suitable for *P. ralfsii*.

Table 2.1 Number of thalli recorded in each hollow in Greenland Lake Slack in 2012 and 2019

Hollow No.	2012	2019	Notes
1	0	0	These hollows very shallow and dry, probably not suitable
2	0	0	
3	0	0	
4	0	106	Not feasible to distinguish between these two hollows
5	0		
6	0	3	
7	0	0	Hollow very shallow, dry, probably not suitable
8	400-500	11	Dominated by sparse *Carex panicea*
9	300-400	present	Inundated, not surveyed
10	400	1063	
11	0	0	
12	50-100	90 + 17	Difficult to relocate boundaries of these two hollows
13	100-150		
14	<10	11	
15	0	0	
16	<10	not found	path no longer used
Total No. thalli	**1270-1570**	**1301**	
No. populations	**7**	**7**	

Comparison of the results of counts from previous years, although not directly replicated, suggests that when surveys were considered reliable (1999, 2003, 2012, 2019 - Table 2.2), the number of thalli recorded fell between 2003 and 2012 and has since remained stable. The overall distribution of thalli has remained fairly consistent (Table 2.1) with much local variation, although there appears to be a trend for the shallower hollows to become less suitable as they become overwhelmingly dominated by grass and sedges. Comparison of the maps of thallus distribution (Figs. 2.1-2.3) suggest that in spite of being perennial, *P. ralfsii* is quite mobile.

Table 2.2 Results of all available counts and estimates of thallus numbers at Dawlish Warren

Date	V.C. Slack	Greenland Lake Slack	Notes
4 April 1997	Few thalli	No information	Brief search following discovery of species new to site, not a survey
15-16 May 1997	76 thalli counted	3 thalli found	Probably too late in the spring
12 Dec. 1999	>1000 estimated; 387 counted on ca. 25% of area	1,000-10,000 estimated; 428 thalli counted on ca. 15% of area	Survey under good conditions
12 October 2001	ca. 200 thalli	ca. 250 thalli	Survey probably inadequate
15-17 April 2003	ca. 600 thalli	ca. 2500 thalli	Slacks flooded in January to March 2003
2-3 Feb. 2012	1 thallus found	ca. 1250-1600 thalli	3 dry winters prior to survey
4-5 April 2019	no thalli found	ca. 1301 thalli found	slack No. 9 inundated, not surveyed

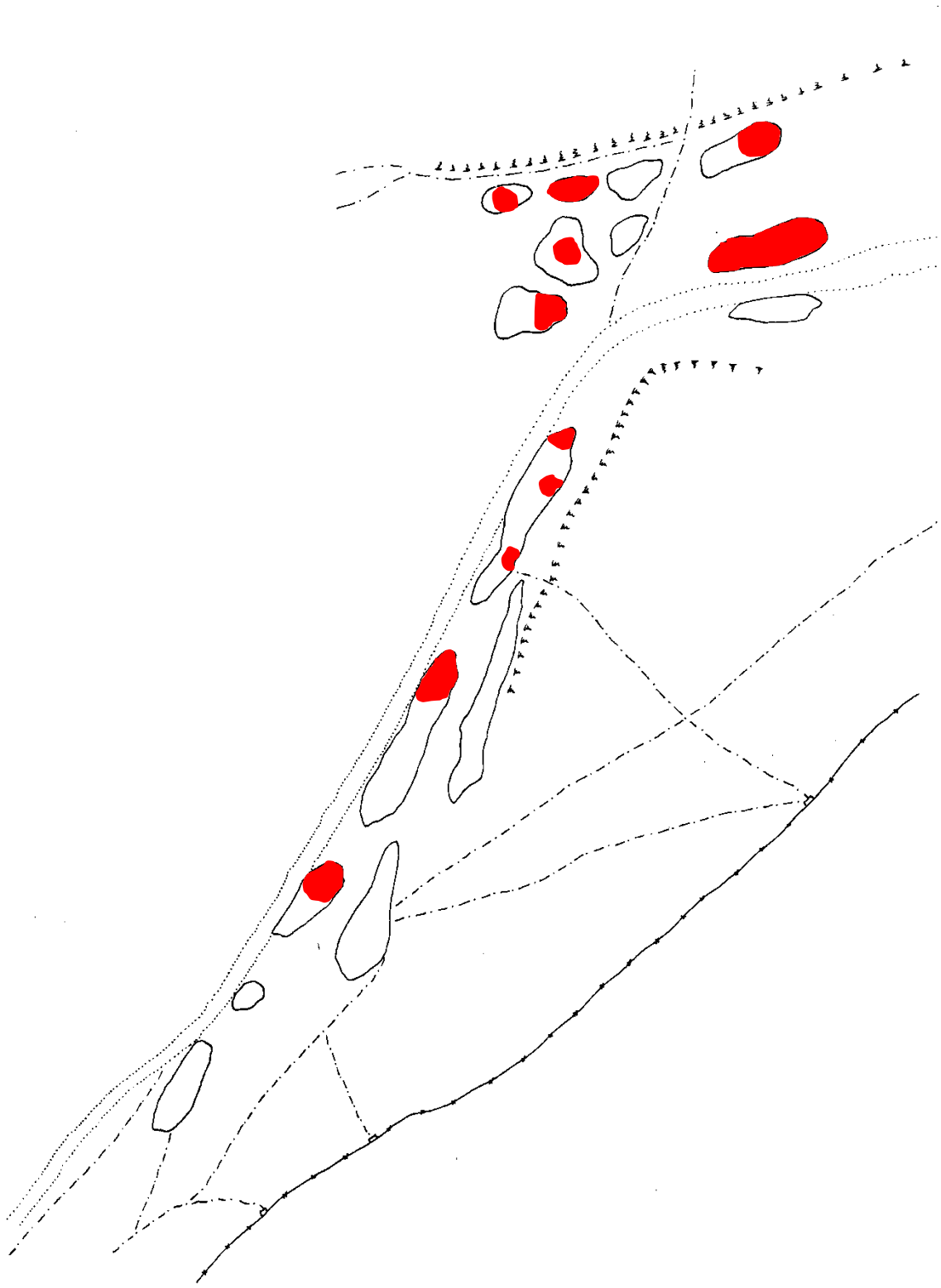

Figure 2.1 Distribution of *P. ralfsii* in Greenland Lake Slack in 2003 (interpreted from Holyoak 2003)

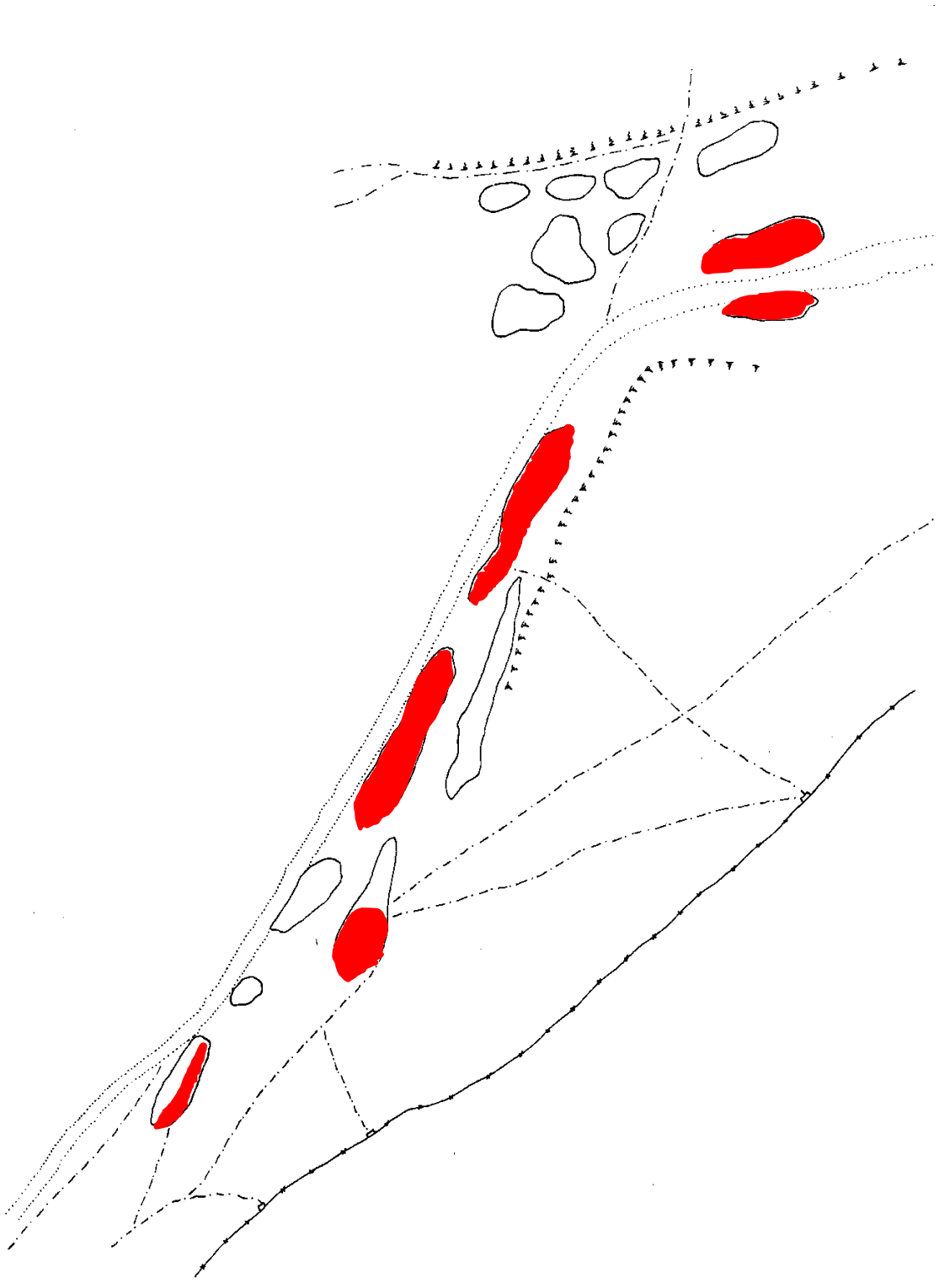

Figure 2.2 Distribution of *P. ralfsii* in Greenland Lake Slack in 2012 (from Lansdown 2012)

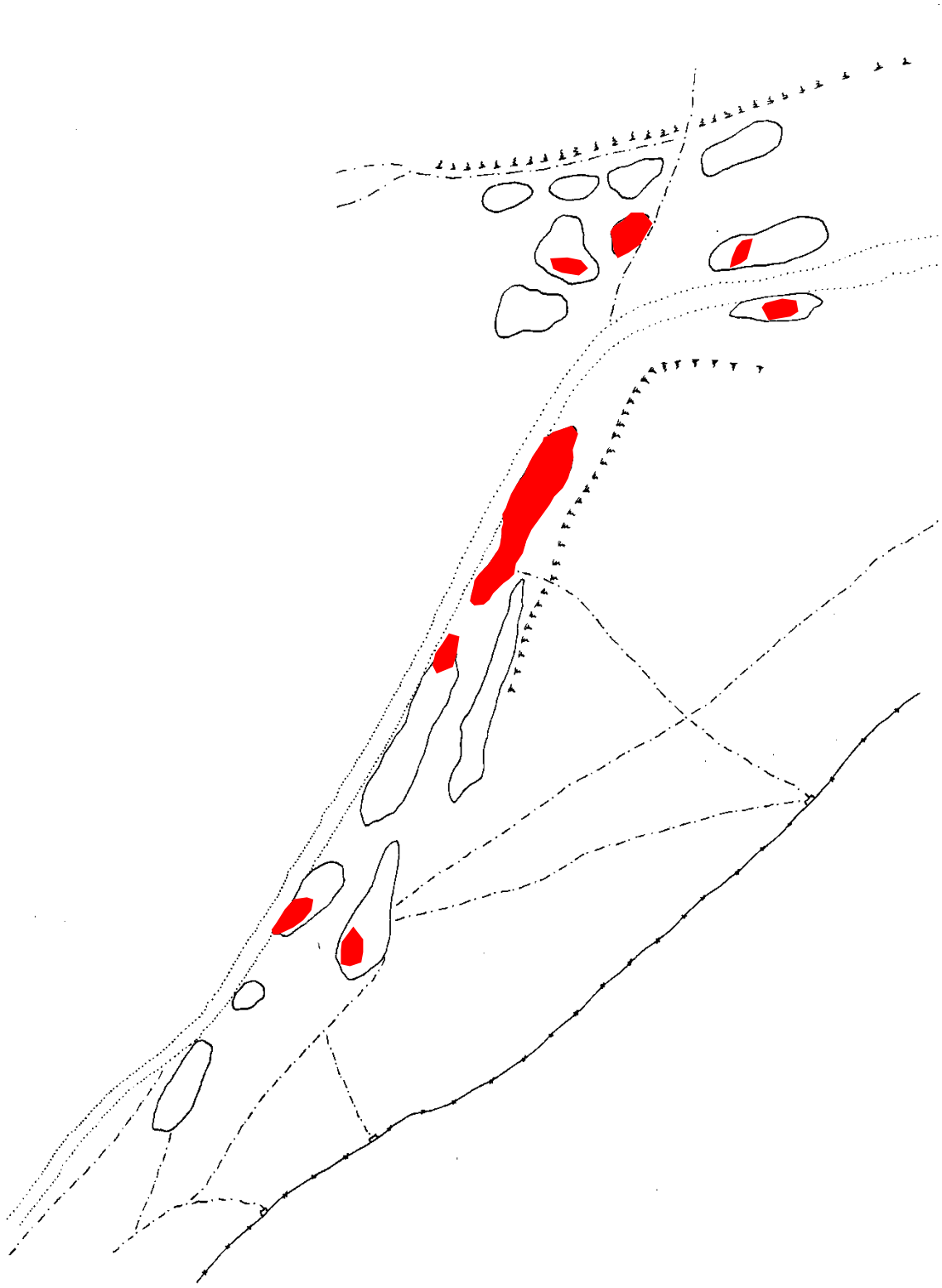

Figure 2.3 Distribution of *P. ralfsii* in Greenland Lake Slack in 2019

Despite intensive searches, no thalli were found in either the slacks where plants had been introduced to the west of the visitor centre or in the Visitor Centre Slack. This suggests that transplanting was unsuccessful and that the Visitor Centre Slack population may now be extinct.

Figure 2.4 Hollow No. 10, with sticks marking the location of thalli and yellow lines to highlight solitary thalli and groups of thalli

Figure 2.5 Hollow No. 12 with Hollow No. 10 behind

Thalli occurred in different parts of hollows, depending on a variety of factors. Thus, in hollow No. 10, the lowest levels of the hollow were dominated by bare ground with scattered bryophytes and tufts of grasses of sedges, with a broad fringe of mosses around the sides and then vascular plant-dominated sward on higher ground (Figure 2.4). In hollow No. 10 *P. ralfsii* occurred mainly within the fringe of mosses. While in hollows such as 5, 6 and 14 (Fig. 25), *P. ralfsii* occurred in areas with only patchy vascular plants in the lowest parts of the hollow.

It appears likely that this difference in the distribution of thalli may be at least partly related to the height of the hollow above the groundwater table. If correct, then it would appear likely that groundwater-table helps to suppress vascular vegetation, the higher the hollow is above the maximum groundwater level, the less able *P. ralfsii* is to compete against vascular plants. As the groundwater table drops relative to ground level within Greenland Lake Slack, fewer areas remain suitable for *P. ralfsii*. If correct, then this has significant implications for any attempt to create suitable habitat for *P. ralfsii* in the area around the visitor centre.

The other important factor shown by these images (Figs. 2.4-2.5) is that the distribution of *P. ralfsii* in hollows is very patchy. For this reason, it is not realistic to count the number of thalli in a small part of a hollow, extrapolating up to derive an estimate of the total population within the hollow (c.f. Anon 1999).

3 DISCUSSION

3.1 Survey method

This is the first survey carried out after development of the baseline in 2012 and as such represents the first opportunity there has been to test the condition assessment method proposed (Lansdown 2012). Precise comparison between data collected in 2019 and previous surveys appears to be impossible because it is not possible to be certain that all thalli are found, as some may be very small or obscured by dense vegetation, as well as because of the difficulty in precisely re-locating the boundaries of specific hollows.

It is very difficult to have confidence in counts of thalli, partly for the reasons outlined above and partly because not all thalli are visible at the surface at any given time (Holyoak 2003). In spite of this it is clear that mapping the distribution of thalli in relation to the sketch map of hollows, combined with counting thalli, provides an indication of changes in the size of the population, as well as differences in distribution. Simple interpretation of the data (Table 3.1) suggests that there has been a decline in the population since 2003, including a reduction in the area occupied, both as the number populations (applying the definition from Lansdown 2012) and the area over which thalli occur. This is probably due to successional change within Greenland Lake Slack, possibly linked to a lowering of the water table, as the hollows in which it was not found are now too dry and densely vegetated with vascular plants for *P. ralfsii*.

Year	Number of hollows with thalli	Estimated total population
2003	9	2500
2012	7	1270-1570
2019	7	1300-1700

The main constraints on use of counts of thalli are:

- It is time-consuming, taking approximately two days to cover the 16 hollows identified in Greenland Lake Slack, as well as the Visitor Centre Slack and hollows around the Visitor Centre.
- It is vulnerable to short-term changes in the weather, such as the impracticality of surveying hollow number 9 due to heavy rain during the previous night which left standing water in the hollow through which it was impossible to see the thalli. Equally, extended periods of dry weather can make it almost impossible to find thalli.
- It is difficult to divide up the hollows in a way which ensures no (or limited) duplication but comprehensive coverage of suitable habitat.
- It can be deeply unpleasant, surveying for two days on hands and knees.

It also proved difficult for the wardens to conduct monitoring, not least because of potential confusion with other liverwort species.

It would be highly desirable to find an alternative method of assessing the conservation condition of the populations and metapopulation of *P. ralfsii* at Dawlish. However, at present there is no obvious way of doing this which would provide an indication of the conservation condition of the metapopulation.

3.2 Condition assessment

Survey in 2019 has enabled a test of the efficacy of the method proposed in 2012. It is clear a) that for the foreseeable future it is not practical to assume that surveys can be carried out each year or b) that the most effective method of assessing the conservation value of the entire metapopulation at Dawlish must include a count of the number of thalli. The assessment process proposed by Lansdown (2012) is presented below with consideration of its merits.

A. If at least ten thalli, including sexually active plants are found in a population at least once in five years, then that population can be considered to be in favourable condition.

In 2019 more than ten thalli were found in six of seven populations (see Table 3.1) and five of these populations included sexually active plants. Thus, five populations meet this criterion and could be considered to be in good condition. There is no way of knowing whether this may be a valid measure of the condition of populations.

B. If 50% of each hollow has more than 50% higher plant cover, then the hollow may be considered to be in unfavourable condition for *P. ralfsii*.

Higher plant cover was not recorded in the field in 2019, but all hollows included more than 50% cover of higher plants over much of their area. The important difference was that in those hollows supporting large populations of *P. ralfsii*, the cover was either patchy, there was available bare ground or there were extensive patches of mosses through which *P. ralfsii* could grow and these were the areas in which thalli were found. There is therefore a need to replace this measure with a measure of the representation of bare ground in hollows.

C. If more than 90% of populations comprising the Greenland Lake Slack metapopulation are in favourable condition and at least three different populations include "hotspots" with at least 50 thalli, then the overall metapopulation may be considered to be in favourable condition.

Whilst not based on records over five years, application of this criterion to available data (Table 3.1) suggests that it may not be useful. For example, there is no evidence for a decline in the condition of the metapopulation between 2019 and 2012 but the measure would indicate a failure.

Table 3.1 Condition assessment based on data from two surveys

	Assessment year	Reference year	%	condition
2012 : 2003	7	9	78	fail
2019 : 2012	6	7	86	fail
2019 : 2012	6	9	67	fail

It is clear that the second two indicators would benefit from modification to represent the specific micro-habitat tolerances of *P. ralfsii*. It would also be useful to add a measure of distribution, as well as an indicator of total population. An alternative protocol, applicable to collected every five years could be:

If five or more hollows support P. ralfsii and the total number of thalli recorded exceeds 1,000, including male and female individuals, then the metapopulation may be considered to be in favourable condition.

It is important to recognise that there is no information available on inter-annual variation in the number of thalli produced by a single plant or in the number of plants a population. To derive an informed assessment of the condition of individual populations or the metapopulation as a whole, there would be a need to collect detailed autecological information, as well as monitoring groundwater levels.

3.3 Prognosis

3.3.1 Translocation and habitat creation

The failure of attempts to establish *P. ralfsii* in areas to the west of the Visitor Centre means that if the Greenland Lake Slack metapopulation continuous to decline, there is no reliable way of ensuring the survival of *P. ralfsii* at Dawlish. However, it is known that work which resulted in excavation of sand from part of Greenland Lake Slack in the past led to colonisation by *P. ralfsii*. It is therefore clearly possible to increase the population by scraping or removing substrate. The only way to identify a reliable method by which populations could established to the west of the Visitor Centre is by experimental work on existing populations.

If the organisations responsible for the management of Dawlish Warren are committed to conservation of *P. ralfsii*, *Cheilothela chloropus* and *Ophioglossum azoricum* to mitigate the likely impact if sea incursion to

Greenland Lake Slack, then they need to actively support on experimental work to try to ensure the future of these three species in areas which will remain after relaxation of the sea defences. This work must include experimental translocation, combined with habitat management. Recognising that the entire population of P. ralfsii (and other species) is likely to be lost, there should be no constraint on potential for experimental manipulation of populations within Greenland Lake Slack.

3.3.2 Relaxation of sea defences

Remote imagery presented by Lansdown (2012) shows that if, as a result of relaxation of sea defences, the morphology of Greenland Lake Slack returns to a structure similar to that which occurred in 1945, all populations of *P. ralfsii* currently present in Greenland Lake Slack, as well as populations of other notable species such as rabbit moss (*Cheilothela chloropus*) and small adder's-tongue (*Ophioglossum azoricum*) would be lost. Most could actually be lost as a result of a single sea incursion event. Thus, the prognosis for *P. ralfsii* at Dawlish is very poor without an extensive and imaginative translocation programme.

3.3.3 Visitor numbers

In the absence of saline incursion, predicted increases in visitor pressure on Greenland Lake Slack could benefit *P. ralfsii* by increasing pressure on vascular plants and thereby maintaining bare habitat. As can be seen from the difference in hollow No. 16, in 2012 use of the path through the reeds maintained open ground enough for *P. ralfsii* to survive. The slight change in the route followed by walkers between 2012 and 2019 to avoid the wettest area meant not only that *P. ralfsii* had gone, but the hollow could no longer be recognised.

Saline incursion and any loss of the dune area beyond the new sea wall will inevitably result in greater human pressure on remaining dune habitats. The potential effects of this on species such as P. ralfsii are very difficult to predict. Clearly, if attempts to establish *P. ralfsii* (and in the absence of work to establish the other notable species apart from *Romulea columnae*) in areas protected by the new sea wall continue to be unsuccessful, the question is academic as the notable species will have been lost from the site. Heavy visitor pressure in the area around the Visitor Centre could compromise any further attempts to establish notable species in this area, unless visitor access is very carefully managed, however if access is minimised in the most vulnerable areas but open in less sensitive area, the result could serve to maintain habitat for these species which would otherwise be lost to succession. Thus, the potential effects of increased visitor pressure are more dependent upon management than numbers or seasonality.

3.4 Long-term conservation of *P. ralfsii* at Dawlish Warren

We still do not know enough about the ecology of *P. ralfsii* to be able to undertake conservation with any confidence of success. The predicted loss of the populations in Greenland Lake Slack presents an opportunity to carry out experimental management in a natural population. Possible methods which could be tested include:

- Extensive excavation of areas in the land around the visitor centre, taking levels down to those which currently support *P. ralfsii* in Greenland Lake Slack.
- Translocating individual plants of *P. ralfsii*, digging down to locate the parent plant of thalli on the surface.
- Propagating *P. ralfsii* using methods applied elsewhere to species such as Atrichum angustatum and Ceratodon conicus (Lansdown 2018) to enable extensive planting of very high numbers of plants into potentially suitable habitat.
- Transplantation of turves within Greenland Lake Slack to study colonisation patterns. Turves should be removed and introduced to potentially suitable habitat created through management, the holes created should be filled with bare sand from nearby areas to create a bare surface for colonisation. This may help to establish why previous translocation attempts have been unsuccessful.
- Transplantation of fertile plants of both sexes should also be tested to establish whether this may have a better chance of success.

Even if successful, transplanted populations are likely to be subject to much higher pressure from tourism. In particular if the area of the warren is reduced by the sea, then remaining areas are likely to be subject to much greater pressure and may be compromised because of this.

4. CONCLUSIONS

1. The population of *P. ralfsii* in the Visitor Centre Slack appears to have died out, following a long-term decline.

2. It appears likely that attempts to translocate *P. ralfsii* to establish populations in natural and artificial hollows west of the Visitor Centre have been unsuccessful.

3. The population of *P. ralfsii* in Greenland Lake Slack appears to have declined since 2003 in terms of total numbers of thalli, the number of hollows occupied and the distribution of thalli. This is probably at least partly due to successional changes in the dune system, probably involving a decline in the water table, as the hollows which no longer support *P. ralfsii* are too dry and heavily vegetated by vascular plants to be suitable.

4. Populations of *P. ralfsii* (as well as those of *Cheilotheila chloropus* and *Ophioglossum azoricum*) in Greenland Lake Slack are unlikely to survive if relaxation of sea defences results in the predicted saline incursion and changes to the topography of the site.

5. In the absence of sea incursion, increased visitor pressure could have a beneficial effect on populations of P. ralfsii in Greenland Lake Slack, increasing pressure on vascular plants (particularly sedges and grasses), thus maintaining open habitats suitable for *P. ralfsii*, however it could equally have a negative effect on all species through uncontrolled soil compaction or erosion, depending on the circumstances. For any effects to be beneficial, there will be a need for active control of access.

6. The potential effects of increased visitor pressure on notable species within the area around the visitor centre, in the event of saline incursion and changes to the topography of the point will depend on the effectiveness of attempts to translocate these species to the area and on management of visitor access. Low-level access is likely to benefit these species, supressing establishment of dense swards of aggressive grasses.

7. The predicted loss of *P. ralfsii* from Greenland Lake Slack presents an opportunity to undertake experimental work to identify methods by which existing populations can be expanded and new populations established

REFERENCES

Anon. 1999. Species Action Plans for plants: Petalwort. London: Plantlife.

Holyoak, D.T. 2003 Status and conservation of petalwort (*Petalophyllum ralfsii*) at Dawlish Warren NNR, South Devon. Unpublished report to Teignbridge District Council, Newton Abbot, Devon.

Lansdown, R.V. 2018 Experimental work to develop a protocol for re-establishment of mud-capped walls in the Cotswolds toward conservation of the rare and threatened mosses which they support. Unpublished report to Natural England, Bristol.

Habitat Regulations Executive Committee

Monitoring Petalwort at Dawlish Warren – conservation assessment and prognosis: Appendix B

Key:

Red boxed area: Visitor Centre

Yellow boxed area: Greenland Lake

SOUTH EAST DEVON
HABITAT REGULATIONS
PARTNERSHIP

South East Devon Habitat Regulations Executive Committee

Staffing requirements of the South East Devon European Site Mitigation Strategy.

Naomi Harnett, Principal Project Manager,
Exeter & East Devon Growth Point
July 2019

East Devon
Exeter City Council
Teignbridge DISTRICT COUNCIL South Devon

Legal comment/advice:

Although there are no direct legal implications arising, it is important to note that appropriate resourcing to ensure successful delivery of the overall SEDESMS mitigation strategy is important and therefore the recommendations seem appropriate.

Finance comment/advice:

There are significant employment costs outlined in this report which members are being asked to approve in order to continue to implement the Mitigation Strategy. Costs detailed in the report amount to £430,000. Options are given on how this can be funded and an option for recovery needs to be approved to ensure these costs can be met, if approved.

Public Document:	Yes
Exemption:	None
Review date for release	None

Recommendations

It is proposed that the Executive Committee:

1. Acknowledges the importance of having sufficient staff capacity in place to implement the Mitigation Strategy
2. Re-approves changes to employment contracts to;
    1. make the two Habitat Mitigation Officer posts permanent
    2. extend the funding for the Devon Loves Dogs (DLD) Coordinator for a further 5 years to November 2024.
3. Approves extending the funding for the Habitat Regulations Delivery Manager role for a further 5 years to March 2025
4. Approves changes to the DLD Coordinator and Delivery Manager employment contracts to permanent.
5. Approves expenditure to secure dedicated monitoring officer and accountancy support
6. Re-approves expenditure to cover the costs of purchasing, maintaining and running a vehicle for the use of the Devon Loves Dogs Coordinator
7. Considers the options for meeting the financial costs associated with these provisions and confirms support for Option 2.
8. Receives a follow up paper at the next meeting detailing the position regarding funding from the Housing Infrastructure Fund

Equalities impact: Low

Risk: High.

If dedicated staff are not in place to continue progressing the delivery of the South East Devon European Site Mitigation Strategy, there is a high risk that the approach would be significantly compromised and become not fit for purpose. In turn, this would put the delivery of the partner Authorities' Local Plans at very high risk due to their continued legal duties under the Habitat Regulations.

1. Background and Context

1.1 The Habitat Regulations protect European sites of the highest level of international importance. Councils are required to ensure no adverse impact on sites, including their habitats and wildlife. This includes managing pressures arising from a growing population which in turn is a function of housing development in the vicinity of the sites.

1.2 In 2014 a joint South East Devon European Site Mitigation Strategy (SEDESMS) was finalised for Teignbridge, Exeter and East Devon. This drew together the scientific evidence that had already been prepared. At the same time it harnessed international expertise and real-world examples in order to arrive at a suite of mitigation measures whose implementation would protect the integrity of the European sites as new development came forward.

1.3 By 2015 the three Councils had commissioned a joint evidence base and adopted a shared Mitigation Strategy. Each was collecting funds from development in order to meet the entire costs of projects identified in the Mitigation Strategy. A structure for implementing the joint approach was required. Building on the experiences of other local authorities managing similar cross-boundary issues, the three authorities established the South East Devon Habitat Regulations Executive Committee (HREC) as a statutory joint committee with shared decision making powers.

1.4 The inaugural meeting of HREC was in June 2016. This meeting formally endorsed the mitigation strategy, agreed the Terms of Reference and approved the first annual Business Plan and 5 year Delivery Plan.

1.5 Across the three European Sites the Mitigation Strategy identified 60 measures[1]. HREC decisions on how to deploy the funds that are being collected from new development are guided by the Mitigation Strategy and confirmed through five year Delivery Plans and annual Business Plans. A key part of the Strategy is to ensure that sufficient staff capacity is in place to ensure that these measures can meaningfully be implemented.

1.6 This paper sets out the key areas of consideration, including the need to vary employment contracts and funding options, which have been recommended as a priority by the Principal Projects Manager, in conjunction with the Officer Working Group. In particular there are decisions for the Executive Committee to make regarding the retention of staff, as the initial fixed term contracts for the Delivery Manager, Habitat Mitigation Officers (HMO) and Devon Loves Dogs (DLD) Project Coordinator expire during the 2019/20 financial year.

2. Call In

2.1 A paper on the contractual status and funding for the two HMOs roles and DLD Project Coordinator was considered by the last HREC meeting in April 2019. *Inter alia* the Committee resolved to;

- Approve adjustment of the Habitat Mitigation Officers contracts to permanent status to align with the funding allocated in the mitigation Strategy.
- Approve the retention of the Devon Loves Dogs Project Coordinator for 5 years from November 2019 and funding for a used vehicle from May 2019.

The timing was important as the contractual period for these roles currently only runs to October and November 2019, respectively.

2.2 Subsequent to the meeting this decision was called in for further scrutiny by TDC's Overview and Scrutiny Committee for the following reasons;

[1] *(https://www.teignbridge.gov.uk/planning/biodiversity/exe-estuarydawlishwarren-habitat-mitigation/evidence-base/ , See Table 26 from p218)*

"I request that decisions made at the meeting of the South East Devon Habitat Regulatory Partnership Executive Committee meeting of the 29th April 2019 be reviewed.

Specifically item 7 (relating to the annual business plan and the 5 year delivery plan) items:

"3. that the adjustment of the Habitat Mitigation Officers contracts to permanent status to align with the funding allocated in the mitigation strategy be approved."

"4. that the retention of the Devon Loves Dogs project Coordinator for 5 years from November 2019 and funding for a used vehicle from May 2019 as outlined in Section 2 be approved.

5. that redirecting the funds outlined in section 3 to cover the associated costs of 4. Above be approved."

Item 3 on the grounds that no performance reviews or job evaluation changes have been evidenced, and that ongoing funding has not been secured or agreed.

Item 4 (and 5) on the basis that the need of a car (at £18K) has not been evidenced, nor the evaluation of other potential solutions. In addition the role is intended to encourage people to walk dogs locally, rather than travel by car to areas in need of habitat preservation, and as such could be seen to be counter-productive to the task in hand."

A subsequent report was prepared for the meeting on the 28th May (see Appendix A). The draft minutes of the Committee meeting record the following resolution;

That Councillor Wrigley, as the Council's appointed representative on the Partnership Executive Committee; asks the questions of the Partnership Executive Committee, and gathers information on procedures that are in place to evidence the work of the strategy and the officer posts that were the subject of the call in; and reports back to this Committee on the outcome of discussions with the Partnership Executive Committee.

3. Assessment

3.1 It is clearly important that members of the committee are confident that meaningful progress is being made in terms of the implementation and successful delivery of the Mitigation Strategy. The Strategy itself sets out a detailed monitoring programme in this respect.

3.2 The monitoring programme in place is set out in Table 3 below. This programme ensures that the mitigation measures are working as anticipated and provides an opportunity to review/refine the approach as necessary. This includes allocation of resources, including where wardening is most needed throughout the year and where additional measures may be needed.

3.3 With the implementation of the wildlife refuge areas we have included additional monitoring above and beyond that laid out in the Strategy. The results of this monitoring will provide supplementary evidence to guide future management and delivery of mitigation measures. The initial results of the monitoring are the subject of a specific item on the agenda for this meeting.

3.4 The Strategy is designed to enact mitigation measures which will have cumulative impacts across the region. Monitoring of species, habitats and visitor behaviour is designed to provide regular information which assists management effort.

Table 3 – Monitoring elements as required by the mitigation strategy

Monitoring	Justification	Approach
Visitor numbers at set locations on all three sites	Repeat monitoring will inform how use is changing over time	Car-park counts, spot counts of people, mapping of people on the site (from vantage points); automated counters. Undertaken at a sample of locations and repeated annually
Visitor activities, motivation, profile and behaviour at all three sites	Provides information on what people do, why they visit and how they behave	Questionnaires at a sample of access points repeated every 5 years. Questionnaires including home postcode, route on site, etc
Fires, vandalism and other incidents at all three sites	Provides a check as to whether such incidents are increasing over time and if so where	Standardised incident reporting. All fires carefully mapped using GPS
Enforcement at all three sites	Provides a record of how many	Record of time spent on site
	times byelaws/codes of conduct are contravened	(patrol boat and wardens) and number of incidents dealt with
Monitoring of vegetation change at Dawlish Warren	As the tipping point at which trampling will negatively impact cannot be predicted, ongoing monitoring will provide an early warning	Fixed point photography and more detailed quadrat sampling
Monitoring of accretion and erosion at Dawlish Warren	The dynamic nature of the site and likely future changes mean accurate information is essential to inform management	Use of aerial imagery, eg by drone, at regular intervals. May be required to inform sea defence works
Regular monitoring of petalwort	Necessary to check on changes of distribution over time and any implications for visitor management	Reliable monitoring protocol established and repeated over time
Regular monitoring of breeding Annex I birds on the Pebblebeds	Necessary to check for changes in distribution allowing management to be modified if required	Standard bird surveys, undertaken every 3 years
Southern damselfly monitoring	Key locations may change over time	Regular transects and counts, repeated annually
Continued monitoring of wintering waterfowl on the Exe	Ensures any changes in bird use of the site are picked up	WeBS
Disturbance monitoring on the Exe	Checks to monitor response of birds and levels of disturbance	Repeat of approach in Exe Disturbance Study, potentially at 5 year intervals.
Continued monitoring of crab tiles	Ensures crab tillers are following byelaws	Counts of tiles, already undertaken/overseen by IFCA

3.5 Further monitoring has been implemented with the use of SNAP to monitor all interaction between the HMOs and members of the public. The extract from another item on the April 2019 HREC agenda at Appendix B provides data on the extent to which the HMOs interact with members of the public

3.6 In conclusion, the strategy sets out a robust monitoring programme, which is being implemented according to approved business plans. The results of the monitoring are reported to the HREC when results are available. The monitoring programme ensures that the mitigation work is being reviewed and recommendations to improve the approach can be made as necessary.

3.7 It is clearly beyond the scope of the Committee to manage individual staff performance. Nonetheless measures are in place, such as annual performance reviews, to ensure that key objectives are set which relate back to the implementation of the Strategy. This is in line with the employment practices of EDDC as the host Authority.

3.8 It should be acknowledged that the delay in confirming the extension of contracts is creating considerable uncertainty for the post holders concerned. If this positon is not resolved before October then the posts will be made redundant and the associated redundancy costs will need to be met. This would also prevent the re-employment of Habitat Mitigation Officers and the Devon Loves Dogs Project Coordinator in their current remit and new roles associated with the Mitigation Strategy would need to be substantially different.

3.9 Appendix C sets out the staff capacity and associated requirements that are considered necessary to support the successful delivery of the Mitigation Strategy moving forward. In addition to the roles covered in the April Committee paper this also includes the Habitat Regulations Delivery Manager role and the need for dedicated accountancy and monitoring support.

4. Financial options

4.1 The estimated cost of retaining the Delivery Manager and Devon Loves Dogs Project Coordinator, whilst funding the DLD vehicle, Accountancy support and Monitoring Officer support over the next 5 years is £430,000.Three potential options are identified for how these costs can be met as set out below.

Option 1

4.2 Over the same 5 year time period, significant savings to Mitigation Strategy funds are expected due to the successful Housing Infrastructure Fund (HIF) award for South West Exeter SANGS. Whilst detailed arrangements are currently being finalised, it is anticipated that there may be sufficient capacity to reinvest a share of these funds into covering the staffing requirements.

Option 2

4.3 In reviewing the Strategy there is potential to identify funding for reinvestment from measures which can be tailored to provide savings or are no longer appropriate to consider as realistic mitigation options. These funds could therefore be brought forward in the event that they are required, if any unforeseen issue arises with utilising savings from the HIF award:

- Achieving £120K by removing most of the visitor survey monitoring allocated in the Pebblebed Heaths Visitor Management Plan (PBH VMP), which was a duplication of the same monitoring allocated in the Strategy.[2]
- Realising £160K by discontinuing the measure relating to access restrictions at Dawlish Warren. The layout and morphology of the site has changed radically since the Strategy was completed, making reference to restriction of access along the Bight no longer relevant.
- Redirecting £45K allocated to changes to the layout of Dawlish Warren Golf Club.[3]

4.4 By redirecting the funds as outlined above, it is possible to realise £325,000 towards the additional funding recommended over the next 5 years. This would leave £105,000 outstanding, which would require increasing developer contributions on future planning permissions to cover the balance.

Option 3

4.5 Another potential option would be to maintain current Strategy measures as planned and increase developer contributions to cover the necessary investment in staff over the next 5 years.

4.6 Tables 1 and 2 below set out the options:
Table 1: Future dwellings to end of current Local Plans/Core Strategy

LPA	Future dwellings after 2024, to end current LP	Number of "charges" (based on one zone or both)[4]
TDC	1,718	3,318
EDDC	5,082	9,191
ECC	937	1,268
Total	7,737	13,777
Overall	**17,163**	**29,079**

[2] Note that £180K is allocated in the PBH VMP. This would see the retention of £60K of that funding to contribute to region-wide visitor survey monitoring. This is to balance the rebasing exercise in July 2017, which discounted the monitoring allocated in the original Strategy by £60K to partially address this issue of double funding between the Strategy and PBH VMP.
[3] It is now considered improbable that it would be possible to reach agreement to make any changes to the layout of the course. This is, in large part due to the constraints of space on the 18 hole course but also the dynamic state of the Warren following the Beach Management Scheme.
[4] As the staffing requirements relate to all sites, it is appropriate to source funding from all partner authorities. Strategy funding is arranged so that dwellings in "overlap" zones pay twice for these cross site measures. This is because officer time is required to address measures at two sites rather than one. See Table 27, pg. 224 of the South East Devon European Site Mitigation Strategy.

Table 2: Options 2 & 3 – Potential increases in developer contributions

Option	Required funds	Future dwellings	Per dwelling
2	£105,000	29,079	£3.61
3	£430,000	29,079	£14.79

4.7 It is worth noting that none of the proposed options are considered to be mutually exclusive and that it would be feasible to take elements of each in order to reach a different arrangement.

4.8 It is recommended that the committee supports Option 2, as it provides financial certainty. This option provides the required funding proposed savings from the strategy, as set out, and a small increase in developer contributions.

4.9 However, the Habitat Regulations Delivery Manager will continue to review Option 1. If it is possible to utilising savings with HIF funding the SW Exeter SANGS then this option would become the preferred approach as it would not entail increasing developer contributions. However, due to current lack of clarity it cannot be the preferred option.

5. Conclusion

5.1 This paper seeks approval for the staffing set out in the Annual Business Plan and 5 year Delivery Plan.

5.2 Existing staffing levels can be maintained through developer contributions, without any additional budgetary burden on core local authority budgets.

5.3 It is essential that dedicated staff are in place to ensure that delivery of the South East Devon European Mitigation Strategy can continue. The mitigation work ensures protection of the European Sites, including a range of flora and fauna. Without appropriate mitigation, the delivery of the partner Authorities Local Plans will be at risk as they will not be able to meet their legal duties under the Habitat Regulations.

Naomi Harnett
Principal Project Manager
Exeter & East Devon Growth Point
July 2019

Natural England comment:

Natural England is broadly supportive of the recommendations made in this paper.

However we feel that it should have set out in more detail the specific need for this accountancy and monitoring support in a way which clearly differentiates the work they will undertake on behalf of the SEDHRP from the “business as usual” work of the accountancy and monitoring officers currently in post.

Whilst we also support the extension of the Devon Loves dogs post for a further 5 years we wold also like to secure a commitment from the partnership and the post holder to seek opportunities, during that 5 year period, to bring additional partners in to the project and grow the coverage of the project to new areas of Devon. In our view this is essential in securing the long term viability and effectiveness of the project and the brand in delivering the necessary mitigation in a strategic way.

OVERVIEW & SCRUTINY COMMITTEE

CHAIRMAN:

DATE:	**28 May 2019**
REPORT OF:	**Principal Delivery Officer**
SUBJECT:	**Called in decisions of the South East Devon Habitat Regulations Executive Committee.**
PART I	

RECOMMENDATION

That the following decisions of the South East Devon Habitat Regulations Executive Committee are reviewed and agreed:

1) **Adjustment of the Habitat Mitigation Officers contracts to permanent status to align with the funding allocated in the mitigation strategy be approved;**
2) **Retention of the Devon Loves Dogs project Coordinator for 5 years from November 2019;**
3) **Funding for a used vehicle from May 2019 as outlined in Section 2 be approved.**

1. PURPOSE

1.1 To consider specific decisions made by the South East Devon Habitat Regulations Executive Committee on 29 April 2019, which have been called in.

1.2 Sections 2 to 4 of this report revisit the background to the Habitat Regulations and the joint Executive Committee. The subsequent sections address the called in decisions of 29 April.

2. THE HABITAT REGULATIONS

2.1 The European Habitats Directive has been transposed into UK law through the Conservation of Habitats and Species Regulations (the 'Habitat Regulations').

2.2 The Habitat Regulations protect European Sites of the highest level of international importance. Councils are required to ensure no adverse impact on Sites, including their habitats and wildlife. This includes managing pressures of a growing population and, therefore, housing development projects within the vicinity of the Sites.

2.3 Exiting the European Union is not expected to alter the relevance of the Habitat Regulations and the provisions of the Habitats Directive will continue to be reflected in UK law.

3. THE EUROPEAN SITES

3.1 The relevant European Sites are shown at Appendix 1 and comprise:

- Dawlish Warren Special Area of Conservation
- Exe Estuary Special Protection Area
- East Devon Pebblebed Heaths Special Area of Conservation

3.2 In the case of the Exe, for example, the area qualifies as a European Site for regularly supporting at least 20,000 waterfowl, including Avocet and Brent Goose, that rely on being able to rest and feed over winter in order that they have the energy to migrate and breed in Spring. This is a finely balanced situation where human disturbance can result in mortal consequences for the protected species. If the frequency of disturbance might increase as a result of new development, the Habitat Regulations require that the associated implications for the protected wildlife must be mitigated.

4. A JOINT STRATEGY AND JOINT COMMITTEE

4.1 Natural England are the Government's statutory nature conservation body. They are responsible for advising councils on how to apply the Habitat Regulations. Local authorities must have regard to their advice.

4.2 The consistent advice of Natural England has been that Teignbridge, Exeter and East Devon's councils should respond to the combined impacts of their development growth on the European Sites together and through a single strategy.

4.3 In 2014 a joint South East Devon European Site Mitigation Strategy (SEDESMS) was finalised for Teignbridge, Exeter and East Devon. This drew together the scientific evidence that had already been prepared. At the same time it harnessed international expertise and real-world examples in order to arrive at a suite of mitigation measures whose implementation would prevent the condition of the European Sites from worsening as new development came forward. The Mitigation Strategy and associated evidence are available at the following web link:

https://www.teignbridge.gov.uk/planning/biodiversity/exe-estuarydawlish-warren-habitat-mitigation/evidence-base/

4.4 By 2015 the three Councils had joint evidence and a joint strategy. Each was collecting funds from development in order to meet the entire costs of projects identified in the Mitigation Strategy. A structure for implementing the joint approach was required. Building on the experiences of other local authorities managing similar cross-boundary issues, the three authorities delegated authority to form a new South East Devon Habitat Regulations Executive Committee (HREC) but local scrutiny has been retained by the individual councils.

4.5 Across the three European Sites the Mitigation Strategy identified 60 measures (See Table 26 from p218). HREC decisions on how to deploy the funds that are being collected from new development are guided by the Mitigation Strategy and confirmed through five year Delivery Plans and annual Business Plans.

4.6 The South East Devon Habitat Regulations Partnership is the operational arm of the HREC and responsible for implementing decisions of the Committee. Further information about the European Sites and the work of the partnership is available from a new website at: https://www.southeastdevonwildlife.org.uk/

5. CALLED IN DECISIONS

5.1 The latest HREC meeting was held on 28 April 2019 and each of the decisions that have been called in are addressed below. The relevant officer report is at Appendix 2 and draft minutes from the meeting are available elsewhere within the Overview and Scrutiny Committee agenda.

Two Habitat Mitigation Officer Permanent Positions

5.2 The HREC approved making the two current temporary Habitat Mitigation Officer (HMO) posts permanent. These positions are currently fixed term and due to end during October 2019.

5.3 The call in of this decision was on the grounds that no performance reviews or job evaluation changes had been evidenced, and ongoing funding may not have been secured or agreed.

5.4 The HMOs help to promote the importance of the European Sites working to educate and inform members of the public on a daily basis. The partnership approach of the HMOs also includes close work with the Wetland Bird Survey (WeBS) team, the Exe Estuary Management Partnership, the Royal Yachting Association Green Blue, and liaison with conservation/land management teams across the region (EDDC, TDC, RSPB, DWT and Pebblebed Heaths Conservation Trust).

5.5 The two HMO roles are identified in the Mitigation Strategy, which refers to the positions as ‘two wardens’ and identifies a need for the roles to continue on a permanent and ongoing basis. On the basis of that evidence developer contributions continue to be collected in order to fund the roles on a permanent basis. Sufficient funding is available.

5.6 East Devon District Council is the host authority responsible for employing all South East Devon Habitat Regulations Partnership Officers. In the first instance temporary positions were created in order to trial the effectiveness of the roles. This has been successful, hence the decision to make the HMO positions permanent. The roles have not changed however and no job evaluation is required.

5.7 The extract from another item on the April 2019 HREC agenda at Appendix 3 provides data on the extent to which the HMOs and the Dog Project Coordinator interact with members if the public.

5.8 Standard East Devon District Council human resources policy where a fixed term contract over two years is extended, is to make the contract permanent. This is because after two years the employee has the same statutory rights as a permanent member of staff anyway. There is no difference in the fundamental terms or conditions of the contracts and no difference to the employees' rights as they relate to redundancy.

5.9 All South East Devon Habitat Regulations Partnership Officers participate in annual 'performance excellence reviews' and have done so since their employment started. They also meet with their line manager on a monthly basis in order to review ongoing performance.

Devon Loves Dogs Project Coordinator – 5 Year Contract Extension

5.10 Call in of the decision to extend the Devon Loves Dogs Project Coordinator role principally related to the purchase of a new vehicle but it is sensible to review both aspects, which are closely linked.

5.11 The Devon Loves Dogs Project Coordinator position is about communicating positive messages to dog owners; highlighting the breadth of dog walking alternatives to the European Sites and promoting responsible dog walking.

5.12 The HREC Report at Appendix 2 explains at Section 3 that duplicate visitor survey monitoring funding is available and can be redirected to an extension of the post for a further five years from November 2019.

5.13 The Mitigation Strategy anticipated that this work would continue indefinitely but sought to assign it to the Habitat Regulations Delivery Manager in the longer term. Practical experience since the Mitigation Strategy was prepared has shown that the time and resource implications of this arrangement would not be manageable. Best practice observed through the Habitat Regulations Partnership's national networks and the Dorset Dogs programme has highlighted the importance of employing a dedicated Dog Project Coordinator.

5.14 Funding of the Project Coordinator post for five years will leave time for a review of the Mitigation Strategy as part of Greater Exeter Strategic Plan process. The updated Strategy will be able to take into account whether to collect developer funding for the Devon Loves Dogs Project Coordinator position beyond 2024.

Funding for a used vehicle

5.15 The duplicate visitor survey funding from new development would also cover the estimated £18,000 cost of purchasing, running and maintaining a vehicle that would be used to transport the Devon Loves Dogs Project Coordinator to the European Sites as well as to community engagement events across the

area over a five year period. It would also be used to store and transport the large branded gazebo which is used at events along with other display material.

5.16 Call in of the decision to purchase and maintain the vehicle was on the basis that the need for it had not been evidenced and other potential solutions had not been evaluated. Section 2 of the HREC report at Appendix 2 considers the alternative options and need for the vehicle to some extent but an expanded explanation is set out below.

5.17 The current position is that:

- The officer is an essential car user.
- Loading and unloading the officer's own vehicle takes around 1 hour each day there is an event
- There is an implicit expectation that the officer needs to make storage available at home.

5.18 This approach places a strong reliance on the good will of the Devon Loves Dogs Project Coordinator in making a lot of storage space at home available. The combined cost of the current approach, as well as travel to appropriate alternative storage facilities, is estimated at around £4,500 per annum.

5.19 The proposed budget for running and operating a new vehicle over five years is less at £3,000 per annum. This arrangement would also free up Project Coordinator time to spend with the community rather than loading vehicles. This is because the vehicle would also provide storage and would not require loading and unloading at each end of the day. The calculated cost of the vehicle excludes the residual value that it might attract at the end of the five year period.

5.20 The working area of the Devon Loves Dogs Project Coordinator extends across and beyond the 'zone of influence' shown at Appendix 1. Besides the current arrangement and the proposed purchase of a used van, three other alternatives have been considered.

1) Public transport to travel to the various Devon Loves Dogs events would not feasible owing to the weight and bulk of the equipment carried by the officer.
2) Because of the distance and range of apparatus involved it would not be possible for the officer's duties to be undertaken on foot or by bike.
3) Hiring a vehicle over five years would cost approximately £20,000, excluding fuel and insurance and would not address storage requirements.

6. NEXT STEPS

6.1 Overview and Scrutiny Committee is recommended to agree the three decisions that are described in this report.

6.2 If the Committee disagrees it should make and justify alternative recommendations to the HREC. The next HREC meeting is due on 16 July 2019.

Fergus Pate
Principal Delivery Officer

Wards affected	*All outside Dartmoor*
Contact for any more information	*Fergus Pate*
Background Papers (For Part I reports only)	*Described in report*
Key Decision	*No*
In Forward Plan	*No*
In O & S Work Programme	*Yes*

Habitat Regulations Executive Committee

Staffing requirements of the South East Devon European Site Mitigation Strategy: Appendix B

HMO SNAP Monitoring results – 2016 to date

	Nov 2016 - Nov 2017		Nov 2017 – Nov 2018		Nov 2018 – Feb 19		2016 to date TOTAL	
Dawlish Warren	Ppl spoken to	No of interactions	Ppl spoken to	No of interactions	Ppl spoken to	No of interactions	Ppl spoken to	No of interactions
Dune Ridge	145	60	81	36	-	-	**226**	**96**
Finger Point	17	6	3	2	-	-	**20**	**8**
Greenland Lake	47	21	48	24	2	1	**97**	**46**
Groyne 9>	292	127	268	120	94	41	**654**	**288**
Groynes 1-9	33	14	70	31	19	11	**122**	**56**
Main Woods (DD)	20	7	14	9	7	4	**41**	**20**
Soft Sand Bay	175	90	61	28	0	-	**236**	**118**
The Bight	-	-	9	2	0	-	**9**	**2**
Warren Point	22	11	54	17	4	1	**80**	**29**
Visitor Centre	48	23	71	33	10	5	**129**	**61**
Total	**799**	**361**	**679**	**302**	**136**	**63**	**1614**	**726**
Exe Estuary								
Bowling Green Marsh	19	10	32	15	7	5	**58**	**30**
DW Wildlife Refuge	4	2	2	2	2	1	**8**	**5**
Exminster Marshes	7	7	12	8	1	1	**20**	**16**
Exmouth Duck Pond / LNR	279	159	285	168	10	8	**574**	**335**
Half Moon Field	2	1	-	-	-	-	**2**	**1**
Imperial Rec	10	6	-	-	-	-	**10**	**6**
Old Sludge Beds	0	1	-	-	-	-	**-**	**1**
Total	**321**	**186**	**331**	**193**	**20**	**15**	**672**	**394**

	Nov 2016 – Nov 17		Nov 2017 – Nov 2018		Nov 2018 – Feb 19		2016 to date TOTAL	
Pebblebed Heaths	Ppl spoken to	No of interactions	Ppl spoken to	No of interactions	Ppl spoken to	No of interactions	Ppl spoken to	No of interactions
Aylesbeare Common	80	34	29	15	2	3	**111**	**52**
Bicton Common	110	65	33	29	7	5	**150**	**99**
Bystock	17	11	31	16	10	5	**58**	**32**
Colaton Raleigh Common	148	85	44	19	7	4	**199**	**108**
Dalditch Common	3	3	-	-	-	-	**3**	**3**
East Budleigh Common	53	42	28	24	10	6	**91**	**72**
Harpford Common	7	10	1	9	1	1	**9**	**20**
Hawkerland	32	24	25	13	-	2	**57**	**39**
Model Airfield	1	1	-	-	-	-	**1**	**1**
Woodbury Common	585	284	55	33	3	4	**643**	**321**
Venn Ottery	1	3	-	2	1	3	**2**	**8**
Total	**1037**	**562**	**246**	**160**	**41**	**33**	**1324**	**755**
Total (combined)	**2157**	**1109**	**1256**	**655**	**197**	**111**	**3610**	**1875**

Habitat Regulations Executive Committee

Staffing requirements of the South East Devon European Site Mitigation Strategy: Appendix C

Staff capacity and associated requirements

1. Two Habitat Mitigation Officer Permanent Positions

1.1 The HREC approved making the two current temporary Habitat Mitigation Officer (HMO) posts permanent. These positions were originally recruited as fixed term roles on three year contracts (due to end during October 2019). At the last HREC meeting, April 2019, it was approved that the HMO contracts could be changed to permanent status to align with the funding allocated in the mitigation strategy

1.2 The decision to change the HMO contracts was subsequently called in by Teignbridge District Council Overview & Scrutiny Committee on the grounds that no performance reviews or job evaluation changes had been evidenced and ongoing funding may not have been secured or agreed.

1.3 The two HMO roles are identified in the Mitigation Strategy, which refers to the positions as 'two wardens' and identifies a need for the roles to continue on a permanent and ongoing basis. On the basis of that evidence developer contributions continue to be collected in order to fund the roles on a permanent basis. Sufficient funding is available.

1.4 East Devon District Council is the host authority responsible for employing all South East Devon Habitat Regulations Partnership Officers. In the first instance temporary positions were created in order to trial the effectiveness of the roles. This is considered to have been successful (see below), hence the decision to make the HMO positions permanent. As the roles have not changed no job evaluation exercise is required.

1.5 Standard East Devon District Council human resources policy where a fixed term contract over two years is extended, is to make the contract permanent. This is because after two years the employee has the same statutory rights as a permanent member of staff anyway. There is no difference in the fundamental terms or conditions of the contracts and no difference to the employees' rights as they relate to redundancy.

1.6 All South East Devon Habitat Regulations Partnership Officers participate in annual 'performance excellence reviews' and have done so since their employment started. This includes assessing performance relative to set objectives. They also meet with their line manager (the Habitat Regulations Delivery Manager) on a monthly basis in order to review ongoing performance.

1.7 The HMOs help to promote the importance of the European Sites, working to educate and inform members of the public on a daily basis. The partnership approach of the HMOs also includes close work with the Wetland Bird Survey (WeBS) team, the Exe Estuary Management Partnership, the Royal Yachting Association Green Blue, and liaison with conservation/land management teams across the region (EDDC, TDC, RSPB, DWT and Pebblebed Heaths Conservation Trust).

1.8 The HMOs continue to keep a record of their interactions (conversations) with visitors. This shows that they have had 1875 engagements with over 3600 people since November 2016. These roles remain one of the most effective means of delivering key messages to the people using these areas. The HMOs ensure that visitors to the protected sites received key messages about the importance and sensitivities of these areas.

2. Retention of the Habitat Regulations Delivery Manager

2.1 Funding for the Delivery Manager role expires in March 2020. The Mitigation Strategy identified funding for this role for a period of 5 years. However, there is a clear ongoing requirement for the role.

2.2 The Delivery Manager oversees the continued delivery of the Strategy, co-ordinates projects, works with partners, reports to the Committee, ensures ongoing delivery of operational measures, undertakes line management of mitigation staff, and works to refine/inform the evolving approach.

2.3 Given the way in which the Strategy has developed, establishing measures still subject to review and the continuing requirement to deliver mitigation, it is recommended that the Delivery Manager role is extended for at least another 5 years. According to East Devon District Council human resources standard practise, this will entail making the contract permanent, given the length of time already in post.

3. Devon Loves Dogs Project Coordination

3.1 The Devon Loves Dogs Project Coordinator position is about communicating positive messages to dog owners; highlighting the breadth of dog walking alternatives to the European Sites and promoting responsible dog walking.

3.2 The Mitigation Strategy anticipated that this work would continue indefinitely but sought to assign it to the Habitat Regulations Delivery Manager in the longer term. Practical experience since the Mitigation Strategy was prepared has shown that the time and resource implications of this arrangement would not be manageable as there is no spare capacity. Best practice observed through the Habitat Regulations Partnership's national networks and the Dorset Dogs programme has highlighted the importance of employing a dedicated Dog Project Coordinator.

3.3 Funding of the Project Coordinator post for five years will leave time for a review of the Mitigation Strategy as part of Greater Exeter Strategic Plan process. The updated Strategy will be able to take into account whether to collect developer funding for the Devon Loves Dogs Project Coordinator position beyond 2024.

3.4 The duplicate visitor survey funding from new development (see section 3, below) would also cover the estimated £18,000 cost of purchasing, running and maintaining a vehicle that would be used to transport the Devon Loves Dogs Project Coordinator to the European sites as well as to community engagement events across the area over a five year period. It would also be used to store and transport the large branded gazebo which is used at events along with other display material.

3.5 The current approach, whereby the post holder uses the family vehicle places a strong reliance on the good will of the Devon Loves Dogs Project Coordinator in making a lot of storage space at home available. The combined cost of the current approach, as well as travel to appropriate alternative storage facilities, is estimated at around £4,500 per annum.

3.6 The proposed budget for running and operating a new vehicle over five years is less at £3,000 per annum. This arrangement would also free up Project Coordinator time to spend with the community rather than loading vehicles. This is because the vehicle would also provide storage and would not require loading and unloading at each end of the day. It is estimated that this takes at least an hour per day. The calculated cost of the vehicle excludes the residual value that it might attract at the end of the five year period.

3.7 The working area of the Devon Loves Dogs Project Coordinator extends across and beyond the 10km mitigation Strategy ‘zone of influence’. Besides the current arrangement and the proposed purchase of a used van, three other alternatives have been considered.

1) Public transport to travel to the various Devon Loves Dogs events would not feasible owing to the weight and bulk of the equipment carried by the officer.
2) Because of the distance and range of apparatus involved it would not be possible for the officer’s duties to be undertaken on foot or by bike.
3) Hiring a vehicle over five years would cost approximately £20,000, excluding fuel and insurance and would not address storage requirements

3.8 The DLD scheme is nearing its second year of operation and is enjoying growing success with a 400-strong membership, increasing number of followers on social media and expanded partnership working. The Strategy clearly identifies a long-term vision for the scheme, allocating funding for running costs of £2K per year over the full 80 year period. The benefit of communicating key messages directly and positively to a key user group is reflected in a growing membership base and requests for help from other organisations across the region.

3.9 For the reasons given above, it is recommended that sufficient funding is made available for the purchase, maintenance and running costs of a quality, used van (Citroen Berlingo or similar) over the next 5 years.

4. Funding for dedicated Monitoring Officer and Accountancy support

4.1 In the context of pressures on partner authority resources, it is further recommended that other costs associated with the administration and accountancy requirements of the Strategy are partly borne by developer contributions. This would address ongoing difficulties in collating housing completion and finance data, which pose a considerable risk to the future governance and operation of the Strategy.

4.2 To date, accountancy and monitoring support has largely been provided on a hidden/un-costed basis, particularly by EDDC. The work of the Delivery Manager requires regular input of various Monitoring Officers and Accountants and is necessitated by the obligation to mitigate development. Resourcing these roles should therefore be considered as part of the costs of Strategy delivery and incorporated as “Cross site” (non-infrastructure) measures. This will help to formalise the arrangements for compiling the required management information to enable the implementation of the Mitigation Strategy.

4.3 Dedicated resources will ensure:

- Ongoing and regular input from an accountant required to liaise with Delivery Manager to ensure robust financial management and planning, reporting to OWG/HREC. 0.2 FTE input anticipated.
- Ongoing and regular, co-ordinated input from a monitoring officer required to liaise with Delivery Manager to ensure robust housing completion/allocation monitoring data is provided to inform financial forecasts and numbers of homes built (to compare with mitigation provided). 0.2 FTE input anticipated.

4.4 This will provide resources to each of the three local authorities.

Agenda Item 10

South East Devon Habitat Regulations Executive Committee (SED HREC)

SOUTH EAST DEVON HABITAT REGULATIONS PARTNERSHIP

SED HRE Committee Future areas of work plan 2019/20		
Date of Committee	**Report**	**Lead**
30 October 2019	Progress update. Housing Infrastructure Fund update.	Senior Responsible Officer
30 January 2020	Pebblebed Heaths Car Parking Strategy (to be confirmed). Monitoring review.	Senior Responsible Officer
17 April 2020	2019/20 Annual report. 2020/21 Annual business plan. Updated 5Yr Delivery Plan. Financial report.	Senior Responsible Officer

Future areas of Work for decision/discussion/scoping as appropriate:

Members gave consideration to items for this report at its meeting on 16 July 2019.

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