

Calstock Wetlands

Creation and Development Update Feb 2023 ver 2



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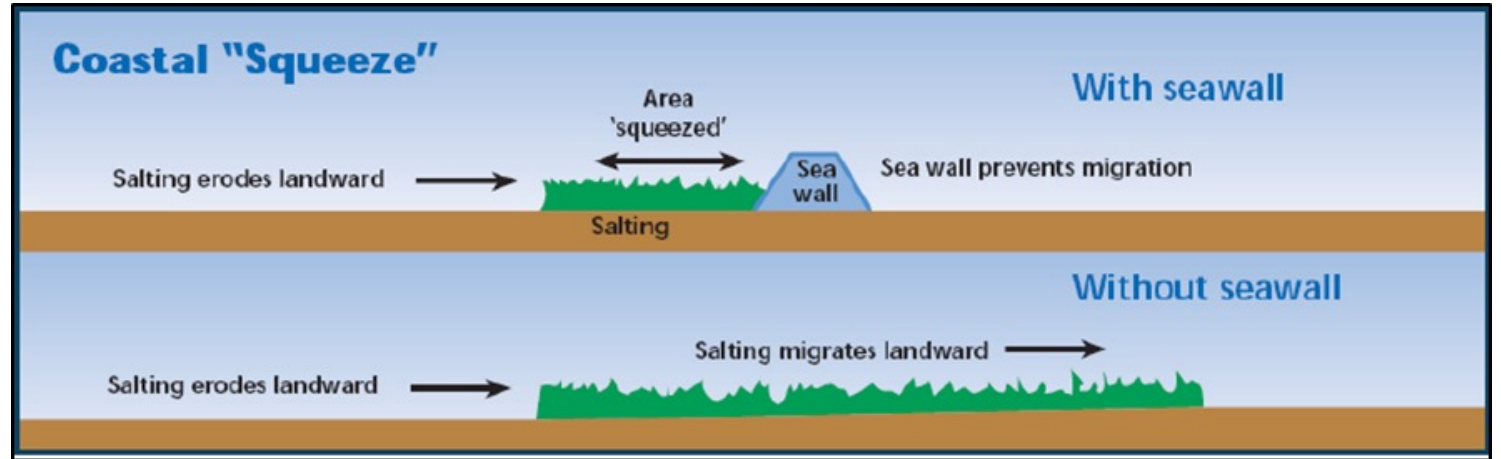
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Why the Wetlands Were Created

In November 2021, the Environment Agency completed construction of a scheme to provide a new flood defence solution, to protect low lying properties at Calstock. The previous flood defence embankment was in poor condition and came close to breaching in the winter of 2012/2013. Retaining the old embankment in its previous alignment was deemed neither sustainable nor economically viable. An important part of the scheme required to satisfy legal requirements of the Habitats Directive, was the creation of approximately 11ha of intertidal habitat by flooding low grade grazing lands with tidal waters.



The land as original pasture August 2019



The breaching of the old embankment creating a new salt water marsh will offset the loss of salt water marsh in other parts of the estuary caused by 'Coastal Squeeze' resulting from sea level rise.

Timeline of Events

2019

September – Sheep taken off land.

October – Work started on bund construction, but abandoned after a few weeks due to bad weather.

2020

April 2020 – Work resumed on first bunds at treatment works.

October 2020 – Work largely completed.

2021

October – Footbridge construction starts with contractor.

13th November breaching of redundant embankment.

26th November – bridge contractor offsite.

2022

24th March – Final phase of bridge construction using local labour

14th April – Footbridge open to public



The Wetlands July 2022

The Tamar Community Trust (TCT)

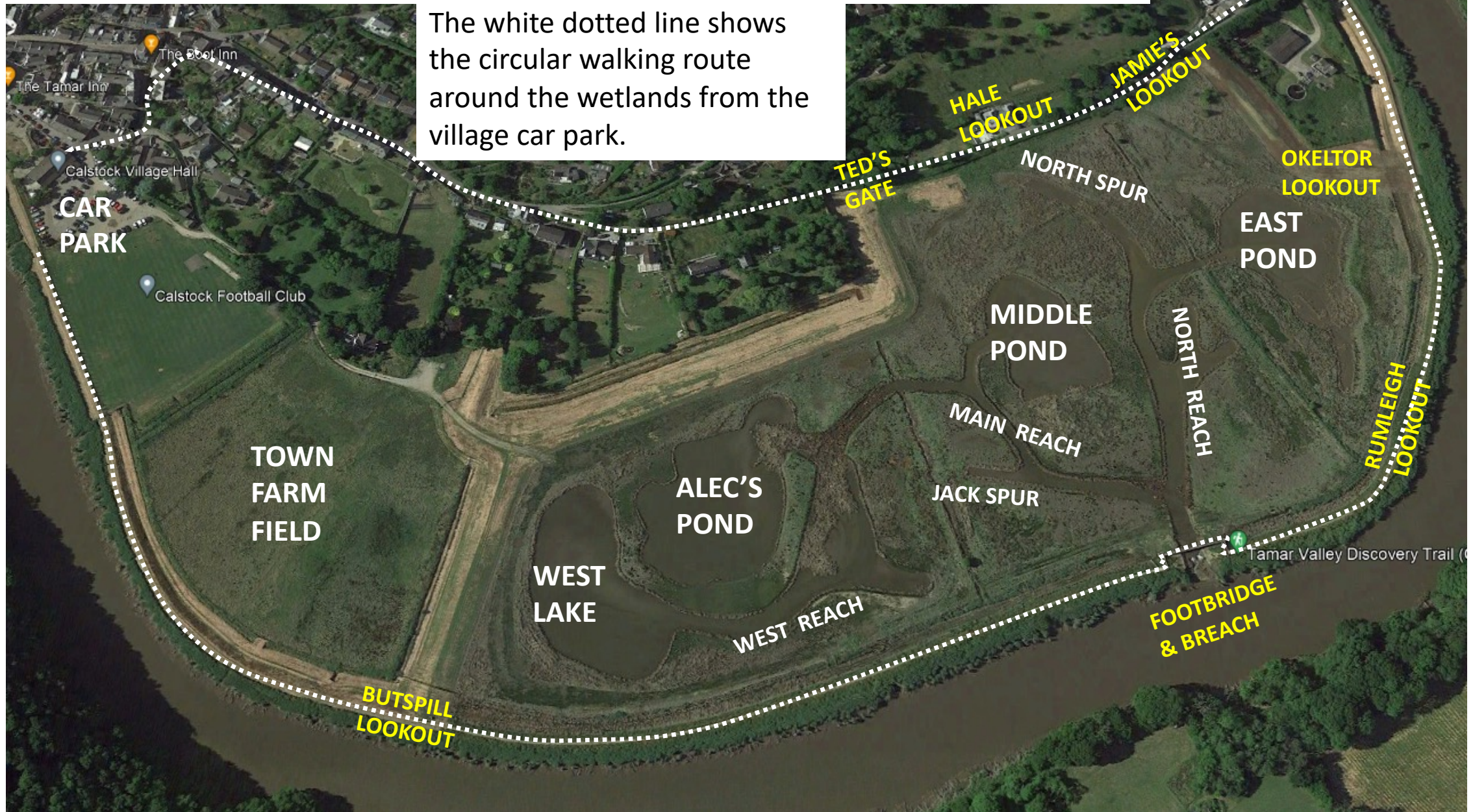
The TCT is a charitable Trust formed in 2009 to promote sustainable development and regeneration within the Tamar Valley AONB mainly through the maintenance of public access and trails. It is managed by a team of volunteer Trustees, with the work done through a team of volunteers. It is mainly funded by various grants and financial support from local councils.

The Environment Agency (EA) needed a responsible body to manage the wetlands, and the Trust stepped forward and was given a leasehold by the EA of the wetland area. The TCT now manages the wetlands according to a management plan agreed with the EA. Management of the wetlands is mostly hands off, with most of the effort put into monitoring the evolution of the wetlands and looking to enhance the visitor experience.

The first task for the TCT was to facilitate the design and construction of a footbridge across the breach with the help of the Environment Agency.



Aerial Map of Wetlands with ponds and lookouts named



The Wetlands 1 Year After Breaching

As we go into the 2nd Winter after breaching, the wetlands are undergoing significant changes. Much of the vegetation both original and new, survived well into the summer of 2022. The rushes that had grown up around the edges of the excavations continued to thrive.

However, when the autumn came along, the vegetation appeared to rapidly die back, and become smothered in silt. Very quickly the wetlands turned into a muddy landscape. We shall be looking in the coming years how new vegetation establishes itself.

The North Spur July 2022 (left) And Nov 2022 (right)

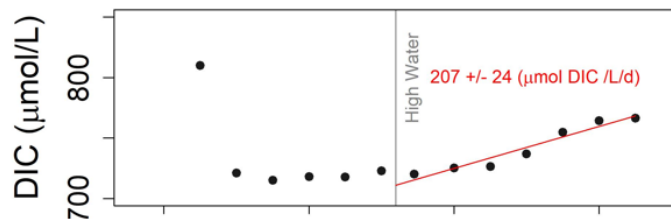


Monitoring for Nature Based Solutions (NbS).

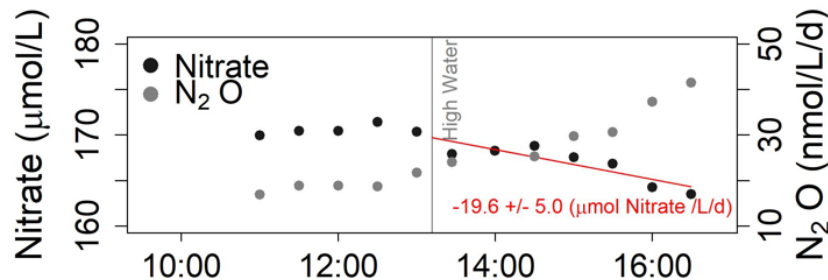
We are working with such organisations as Plymouth University and Plymouth Marine Laboratory (PML) to look at other changes as the wetlands evolve. Such things as measuring sedimentation, carbon storage and nutrient recycling give indicators on the function of the wetlands and its effect on the environment.

The graphs below are an analysis of data from one day in 2022 observed by PML. Samples are taken as the water enters then leaves the wetlands either side of high tide.

The increase in CO₂ in the water leaving the wetlands is likely due to the decomposition of vegetation. It is expected that this trend will reverse in time. NO₃ content (a pollutant from agriculture and waste water) is reduced as sediment drops out of the water column. N₂O (in this case most likely produced by bacterial activity) also increased, and it is expected that this trend will in time reverse.



Net Respiration (December),
i.e. CO₂ production

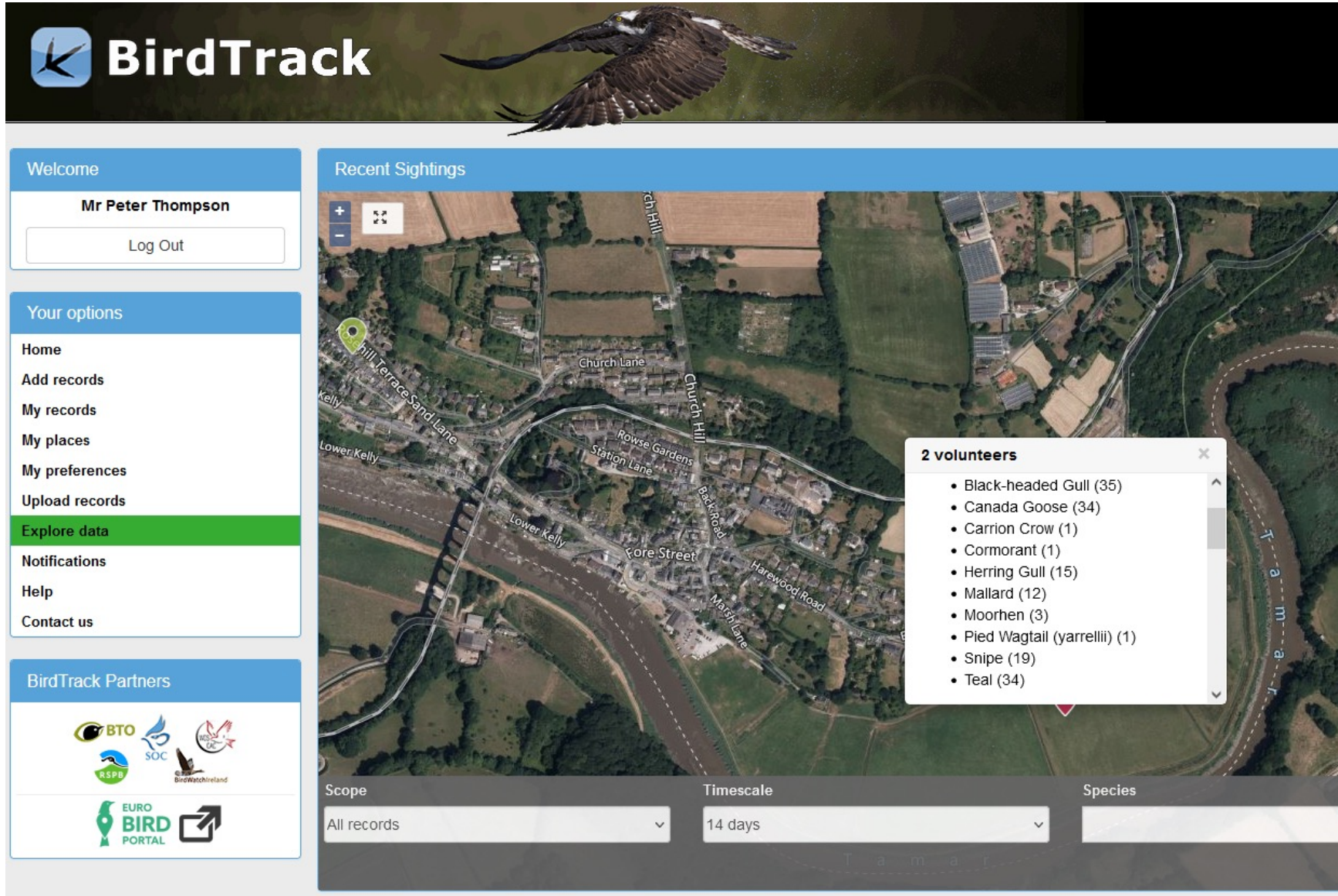


Net NO₃⁻ removal (December),
but N₂O production!

How could this data be used?

The Wetlands has presented a unique opportunity to measure changes in climate relevant biogeochemical processes right from the initial stages of creation through managed coastal realignment. The information collected will inform Earth System models to better understand regional and global climate processes and provide a case study for measuring the effectiveness of NbS in mitigating the impacts of climate change. This will help environmental managers and policy makers to make informed decisions based on robust scientific evidence in the design and implementation of future NbS.

The Wetlands Reserve is created as a habitat for birds foraging, not so much for breeding. The public are invited to record their sightings when they visit the site.



The screenshot displays the BirdTrack website interface. At the top, there is a header with the BirdTrack logo and a large image of a bird in flight. Below the header, the main content area is divided into several sections:

- Welcome:** A section for Mr Peter Thompson with a Log Out button.
- Your options:** A list of navigation links including Home, Add records, My records, My places, My preferences, Upload records, Explore data (highlighted in green), Notifications, Help, and Contact us.
- BirdTrack Partners:** A section featuring logos for BTO, SOC, RSPB, and Birdwatch Ireland, along with the EURO BIRD PORTAL logo.
- Recent Sightings:** A map view showing the Calstock Wetlands area. A pop-up window titled "2 volunteers" lists the following bird sightings:
 - Black-headed Gull (35)
 - Canada Goose (34)
 - Carrión Crow (1)
 - Cormorant (1)
 - Herring Gull (15)
 - Mallard (12)
 - Moorhen (3)
 - Pied Wagtail (yarrellii) (1)
 - Snipe (19)
 - Teal (34)
- Filters:** At the bottom, there are three dropdown menus for filtering the data: Scope (set to "All records"), Timescale (set to "14 days"), and Species.

Uploading sightings using the BirdTrack App is very easy. Calstock Wetlands is a designated site. This data is then collected to look at trends in bird activity. Bird population changes are a prime indicator in the health of the environment.

Bird Sightings

Now we are in our second year after the breach we can start to build a seasonal picture of changes in the bird population. Below are some of our more permanent residents:



The Fish Eaters – clockwise from left:
Cormorant, Little Grebe, Kingfisher,
Grey Heron, Little Egret

Bird Sightings

The Dabbling Ducks – Teal & Mallard numbers consistently growing:



Mud skimmers – more lately Avocet coming up from the lower estuary.



Bird Sightings



Water Rail

Foragers

Grey Wagtail

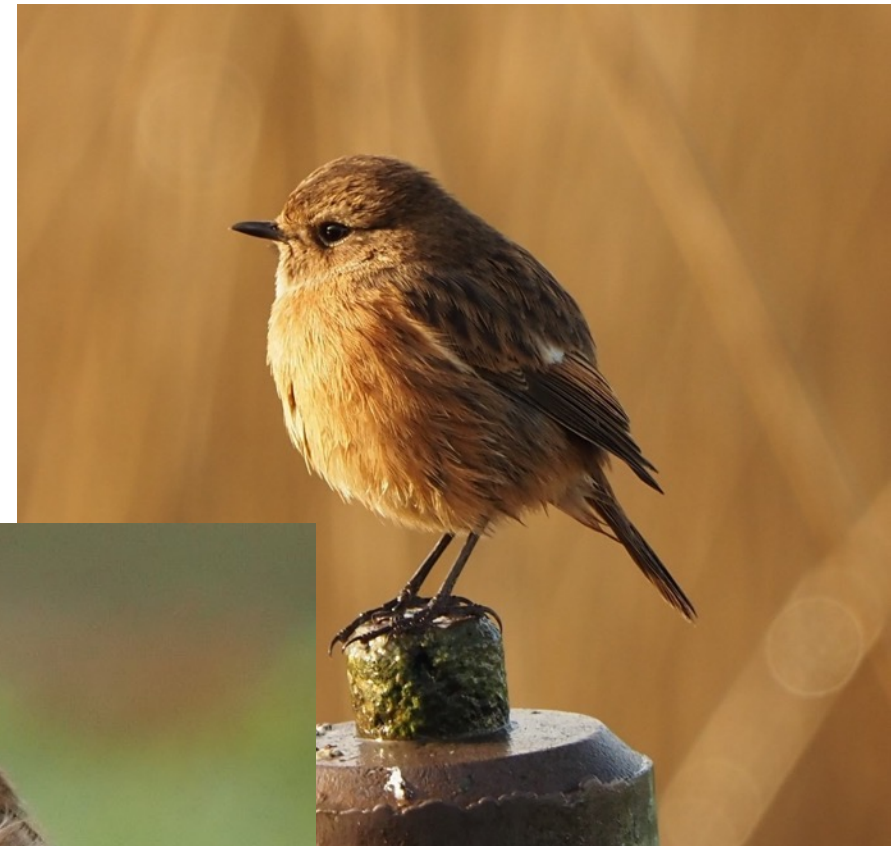


Green Sandpiper

Snipe — master
of camouflage. Flocks of 50 or more
may be seen



Stone Chat
— Long term
resident, stayed
around from
before the breach



Some Casual Visitors:



Bar Tailed Godwit –
Late summer



Greenshank – Late summer

Shelduck – Winter / Spring



Educational Access

The TCT has made a successful application for a Stewardship Grant to help finance the management of the wetlands. One exciting aspect of the grant is the opportunity to organise school visits to engage students from local schools and colleges with the environment. Work is still in progress on the syllabus but the essence of the visits will be for the students to study different types of land use within the environment. Trust volunteers will liaise with teachers to tie in aspects of the visit with key parts of the students curriculum in preparation for the visit.

Schools, colleges and youth organisations that may be interested in such visits should contact the TCT at: projects@tamarcommunitytrust.org.uk





Any
Questions?