

Tale Valley Trust Newsletter

www.talevalley.com



Tale Valley Trust

Reg. Charity No. 1079582

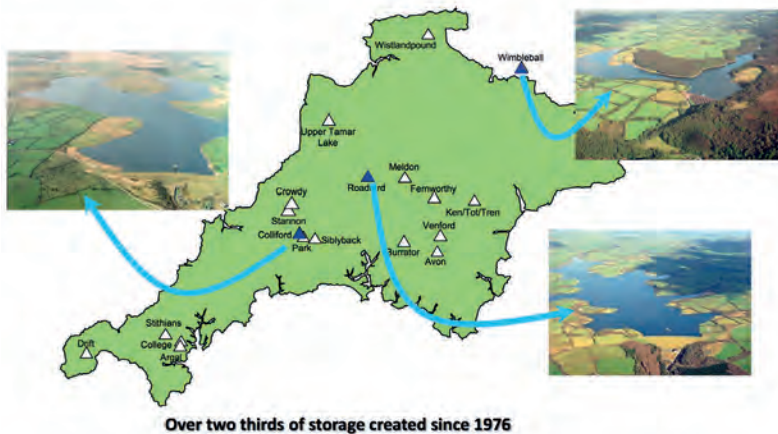
Where does our drinking water in Devon come from?

Converting 'raw' water to drinking water standard is a more complex, expensive and energy intensive process than most people realise.

South West Water (SWW) writes –

Water is abstracted usually from rivers which begin on high ground and flow through farmland and built up areas, often collecting unwanted ingredients along the way. Of course any unwanted elements are removed from your tap water during the treatment process. We do this using ultra-violet light, chemicals, settlement and treatment processes such as Granular Activated Carbon, which removes pesticides. Each area has unique water and unique issues, depending on the catchment. 90% of our supply comes from surface water sources, such as reservoirs and river intakes.

Reservoirs – Meeting 45% of Demand



Over two thirds of storage created since 1976

The other 10% of our supply comes from groundwater sources such as springs, wells and boreholes and are mainly located in East Devon.

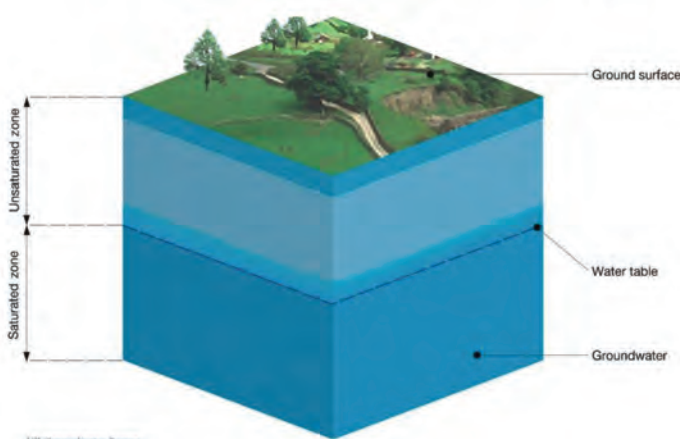
This is different to other regions - for example, Wessex Water gets 75% of its water supplies from groundwater.

During the winter months, when river levels are healthy, we abstract water from rivers with the reservoirs providing back-up supplies. The river and reservoir systems are linked together by a network of pipes, which enable us to transfer water around the region.

Initially we make use of the 17 smaller, local reservoirs. When the storage level in these reservoirs drops to a certain level, we make use of the large, strategic reservoirs, Colliford, Roadford and Wimbleball.

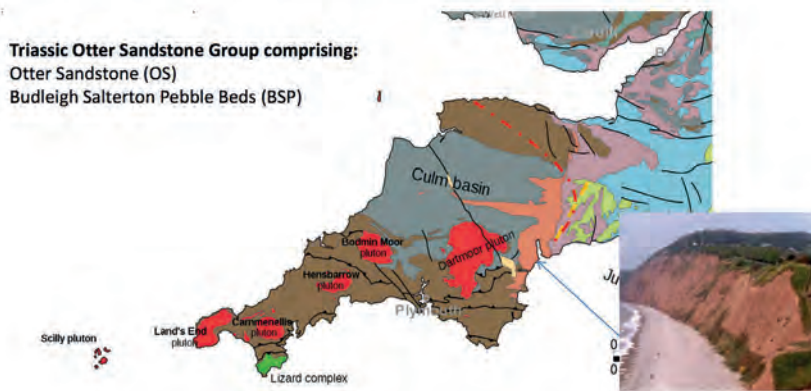
By using the network of pipes we are able to move water around to balance dry periods in one part of our region with wetter periods in another. We are also able to pump water from rivers into our reservoirs, rather than waiting for them to refill naturally.

Groundwater Recharge



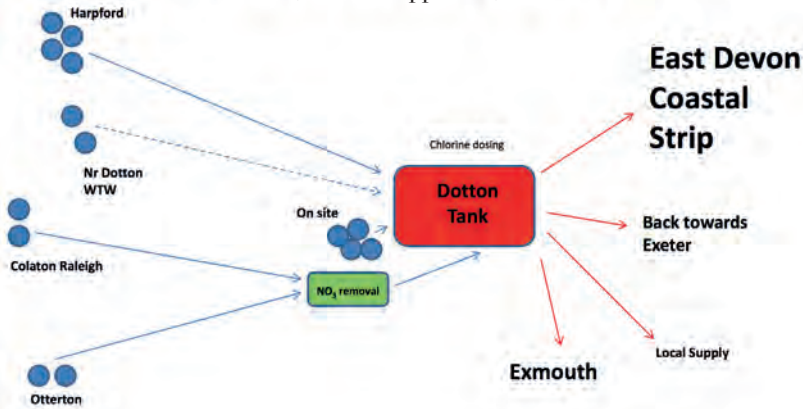
UK Groundwater Forum

Geology of the South West



How Dotton Works

(Newton Poppleford)



Changes since 1996

Since 1996 (the last year our region had water restrictions) we have;

- reduced leakage from our network of pipes by 40%
- invested heavily in making sure we have secure supplies
- been innovative in ways of increasing our reservoir storage, for example converting two former clay pits in Cornwall invested in pump storage schemes at Wimbleball and Colliford to improve resilience
- increased the capacity of our water treatment works
- improved our ability to move water around the region
- improved the efficiency of our works - 80% of domestic customers now have meters (compared with 8% in 1995), customers who switch to a meter tend to use 15% less water as a result

Looking after the land to protect our rivers

Upstream Thinking is South West Water's multi-award-winning catchment management scheme which has been applying natural landscape-scale solutions to water quality issues since 2008. The current program is being delivered through a partnership of South West Water, the Devon Wildlife Trust, the Cornwall Wildlife Trust, the Westcountry Rivers Trust and the Exmoor National Park Authority.

Upstream Thinking is a sustainable approach, working with the expertise of partners, the knowledge of farmers and nature itself to improve raw water quality at source. This keeps down costs for water company customers and reduces the impact of water treatment on the environment.

So what does the Upstream Thinking (UST) project mean for the **River Tale** and the wider Otter catchment, its wildlife and the water abstracted for homes and businesses? Drinking water from the Otter is abstracted by SWW via a series of boreholes in the lower catchment, before treatment at one of three Water Treatment Works: Dotton, Ottery St Mary or Kersbrook. The catchment is an important water source for SWW; hence the Tale and the Otter's selection as part of the Upstream Thinking project and SWW funding. Upstream Thinking takes a land management approach to solving the problems affecting the quality of water in our rivers. Unwanted soil, silt, pesticides and animal waste in rivers increase the cost of water treatment.

Westcountry Rivers Trust and Devon Wildlife Trust offer free services to landowners in the Tale and wider Otter catchment, including advisory farm visits, soil tests, production of Integrated Farm Management Plans and assistance with applications for both Agri-environment funding and DWT's own UST grant fund. Currently lots of farms and landowners are taking up the offer of using our Soil Aerator for free to reduce compaction, enabling increased yields and reducing farmland run off.

For more information please contact David Rolls on 07976 513132 / drolls@devonwildlifetrust.org

or

Yog Watkins on 07854 145896 / yog@wrt.org.uk

Restoration of the memorial to Bishop Patteson (Patteson's Cross) 2017

TALE VALLEY TRUST CONTRIBUTE £1000



This memorial, south of the A30 dual carriageway on the Feniton to Ottery road, is to John Coleridge Patteson, Bishop of Melanesia; the monument was erected at Patteson's Cross by his cousin, John Duke Coleridge of Ottery St Mary, two years after his tragic death in the Solomon Islands in 1871.

Neither ownership nor responsibility for the monument has been claimed by anyone, but it is Grade 2 listed. The memorial is of considerable symbolic importance, both to the local community and to many in the South Pacific. It is a pilgrimage site for visitors from that region, and the greatest legacy of Bishop Patteson is the Melanesian Mission which flourishes today (www.melanesia.anglican.org).

Exposure to the elements over many years had led to minor damage and discolouration to the stonework. Ottery St Mary Heritage Society undertook restoration of the monument in 2017. They needed to raise £4500 for the work. TVT contributed a grant of £1000.

River Otter Beaver Trial – river Tale update August 2018

In 2015, Devon Wildlife Trust (DWT) was granted a licence by Natural England to release beavers back into the River Otter as part of a five year trial to study their impacts on this lowland English river catchment. The ROBT (2015-2020) is managed by a partnership of organisations including University of Exeter, Clinton Devon Estate and Derek Gow Consultancy alongside DWT. Resources for the trial include a two year contribution from Tale Valley Trust (TVT) for the ROBT Field Officer. The ongoing presence of significant beaver activity in the Tale, and this support from TVT means that the Field Officer continues to spend a large proportion of his time working within this part of the catchment.

Survey of Beavers on the River Tale

This summer the Field Officer is working with landowners and volunteers to monitor and survey all eight beaver territories in the River Otter catchment. Two of the eight beaver territories are now found on the Tale. During the winter trapping we found out that the newest beaver arrival on the Tale was pregnant. Subsequently we know overall of three pairs that have given birth during early summer 2018 but cannot say with confidence how many kits that means.

Impacts of beaver dams on riparian / in-channel habitats

The first core territory on the Tale remains in the vicinity of the 2016 release site. The animals here are continuing to thrive and manipulate their environment. As well as building dams and coppicing willow in the wetland habitat adjacent to the river, they continue to build dams in the main river. However, these dams are not generally able to withstand winter flows, and so are dynamic structures that gradually erode and wash out during winter.



One of the temporary dams built in the River Tale channel



Beaver activity along the river corridor



The newly meandering stream, with pools and gravels formed by temporary beaver dams in the Tale. The dams built in this area do not appear to withstand winter flows, but significantly impact geo-morphological processes

The impacts of these temporary structures on the riparian processes have been fascinating to monitor. The dam built in 2016, and then rebuilt in 2017, resulted in a meandering of the main channel, and an increase in the heterogeneity in this short stretch of the river. New riffles and pools were formed, and the wider channel allowed the single stream to divide. The increased scour ensured the new gravels in this location were clean and offer a potentially new high-quality fish spawning habitat, for the time being at least.

Another beaver dam has now been built in the section of the Tale downstream where the second territory is situated. This dam is around 4.5 metres wide and 40 cm tall, and means that there are currently two dams on this tributary (one in each beaver territory). The low flows resulting from the warm dry weather may also trigger more dam building from the two beaver families. The beaver dams have been very beneficial this summer. In drought conditions, the beaver dams hold water back in deep pools providing a refuge for a range of wildlife species (including fish), and leaking dams help enhance base-flows downstream.



A new beaver dam discovered by the Field Officer holding back valuable water during an exceptionally dry summer



Children learning about beaver dam building during a Tale Valley river day

Environment Agency fisheries visit

The ROBT staff work very closely with partners and stakeholders to understand and monitor beaver impacts. A Memorandum of Understanding with the Environment Agency (EA) requires DWT to discuss the implications of any beaver dams on their functions including fisheries and water resource / flood risk management.

As part of the ongoing discussions and research into the impacts of beaver dams on fish populations and passage, the ROBT hosted a visit by EA fisheries specialists to better understand these impacts in the Tale. The visit included the Team Leader for National Fisheries Management and Ecology, who was keen to properly understand the dynamics of beaver dams and fish impacts. These dams in the Tale are the only ones to be built in the main river network in the catchment, and so understanding their impacts is an important part of the trial. The Tale Valley Trust are not in a position to be able to fund the field officer to the end of the trail in 2020. If you are able to contribute to this important work, ultimately so that Natural England allows the beavers to remain in the Otter catchment after the trial ends, *please* help!

River Tale Balsam Report Summer 2018



After more than a decade of cajoling (or press-ganging!) volunteers on our Tale Valley balsam days suddenly corporate environmental social awareness kicked in and on June 27th in addition to our stalwarts we had an additional 11 volunteers from **Exeter Accountants Simpkins Edwards** and a further 5 from **Lloyds Bank Exeter**. This enabled us to cover the seven miles of river with ease and have a team clearing overgrowth on the water meadows brickwork and waterwheel.

June was the hottest month since 1976, with many days in the high 20's degC. Nevertheless water levels in the river were not unusually low due to an exceptionally persistently wet Spring – and possibly related to beaver activity on the upper Tale slowing down the flow of water and draining of the water table. (*Top temperature reached July 3rd 1976 was 35.9C, Cheltenham, on July 26th 2018 it reached 35.1C in Surrey*).

Volunteers were dropped off in pairs and trios to cover from Danes Mill north of Payhembury to the river Otter confluence at Cadhay Bridge, Ottery St. Mary. Apart from a hot spot at Fairmile, between us we removed less than 200 plants over the entire stretch.





Kingfishers, dippers, damselflies and butterflies were seen but the highlight for 2 of us at least was seeing a water vole at the lower end of Tuck Mill beat, swim a short distance very close to us before disappearing into the bank. Highlighting the importance of persistence, the July session was short on volunteers, resulting in only part of the upper reach being cleared. This meant that at the end of August there were considerable pockets of plants already popping seeds at the 2 pond sites between Danes and Tuck mills. Lower down at Church Cover near the A30 bridge and at Fairmile high volumes of plants were also disappointing. However, we were fortunate to have 11 enthusiastic volunteers from **Cornish Mutual Insurance** in addition to 7 regulars so we were able to cover the entire stretch and do some much needed alder and willow thinning on one area of riverbank at Fairmile. The river water level was low but not unduly so considering the continuing predominant dry weather through July, August and into September. Fish life was abundant and at least one kingfisher and dipper were seen, along with otter footprints and less welcome signs of mink. **Many thanks to our volunteers, and the Parish Councils who support our work, including Talaton, Feniton, Payhembury, Broadhembury and Ottery.**

TVT Payhembury

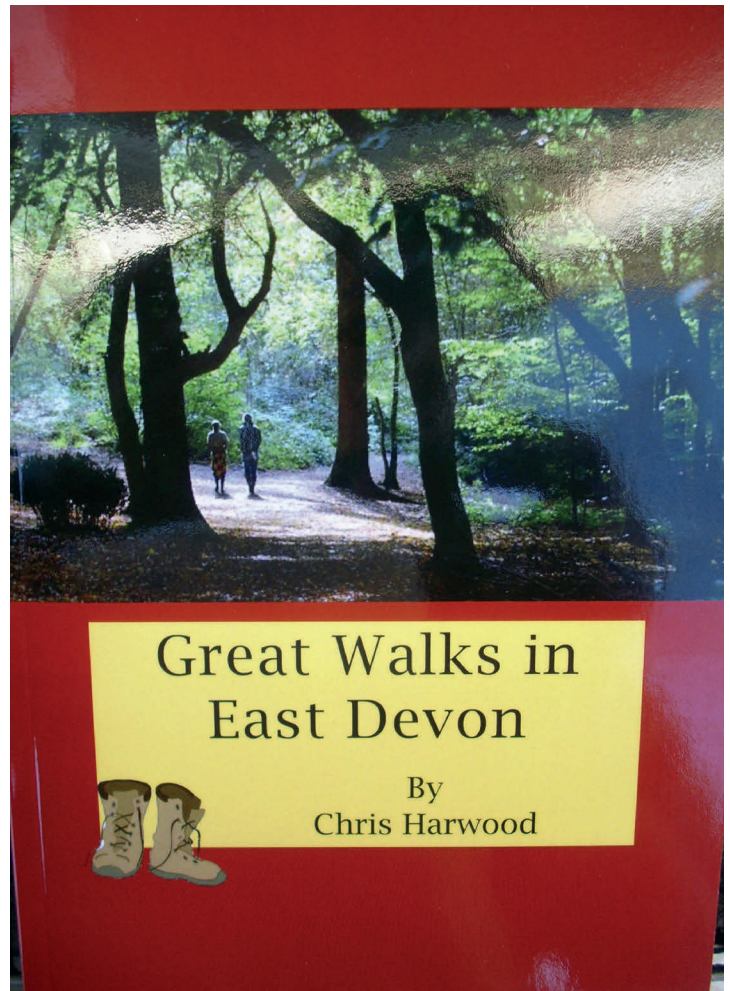
TVT supports new Tale Valley footpath

Payhembury Parish Council is proposing to construct a permissive footpath between Colestocks and Payhembury village. This will run alongside a lane on the other side of the bank allowing walkers to be safe from an increasingly busy thoroughfare between the two hubs. This involves putting in place stock and dog-proof fencing, a stone chip surface, gates at either end and a small footbridge. The Parish Council is aiming to raise the necessary £25,000 as there is no help forthcoming from the County Council. The TVT has contributed £3000 on condition that the project proceeds.

TVT Talaton

Great Walks In East Devon

Chris Harwood, a Tale Valley resident, has for years researched, written up and shared his favorite local walks in the Talaton Parish magazine. The TVT proposed funding a book of these walks so that they were not discarded month by month. Chris generously donated the profit from sales back into the Trust. The initial print run of 200 was followed by a further 100. This success has prompted the author to consider a volume 2!



Clapperentale Waterwheel Restoration

In 2022 the Tale Valley Trust will celebrate its 25th birthday. The Trustees have decided, subject to raising the necessary £25,000, that complementing their flagship Clapperentale water meadows restoration with repairing the defunct water wheel would be an iconic anniversary project fulfilling most of the Trust's objects in a single swoop -

1. The advancement of education of the public concerning wildlife, the countryside, history, archaeology, art, architecture and other subjects relevant to the area of benefit.
2. The conservation and protection of the local environment (including wildlife, the countryside, sites and buildings of historical, archaeological or architectural interest and other sites and features of relevance and importance to the community) for the benefit of the community.
3. The promotion of industry and business in the area of benefit for the public benefit.



**Tale Valley Trust
Water Meadow Management Plan**

Clapperentale Water Wheel

A brief assessment made by Dave Willcox - 27th March 2003

This is a high-speed machine, the rim and speed up gearing produce a high speed to drive all manner of production machinery and this could have been anything. It is most likely to have supported some function that the estate was involved in, strong possibilities are a wood workshop power source, a manufacturing plant, threshing shed, animal feed processing or dairy or food processing plant. It is a powerful machine, the power depends on the amount of water being processed and the wheels extraction efficiency, 60 -70 % is assumed for an overshot.

Taking the chute width, flow gate height and flow speed gives the volume of water per second passing through the machine. Assuming a likely flow speed of 4' per second, a ten foot wheel would be turning at about 8 RPM, the gross shaft power is roughly 1kW per 1" of gate opening and the net or shaft power is just under 1 HP (746 watts) per inch of opening. The wheel buckets will hold a certain maximum and I estimate a maximum operating chute depth of some 5 to 6" or 3.7kW to 5kW mechanical power at the shaft. At full power the machine would be quite noisy, the bearings and brickwork taking most of the shock loads, this would have been apparent to everyone working in the building and provided essential operator feedback.

At the time it would have been a very big investment to install and this would need to be justified, it was definitely supporting a function the Estate was involved in, it will be an interesting subject to research.

I was very surprised at the wheels actual condition, although there was surface corrosion the condition of the ironwork is really very good. The important rim gear teeth and mating jockey wheel were virtually unworn, the main wheel side plates (visible bits) are really 'as new', this machine had either been fully reconditioned just prior to its being taken out of service, or was a light duty unit. The timbers, in particular the sole plate are well worn, ideally if the wheel were to receive its full weight of water they should be replaced however it is all intact and would probably keep working for a year or two without any intervention.

Similarly the spokes although heavily surface degraded are such strong components they would still function well for a light duty load, a more detailed inspection of each rim attachment point would be advisable.

Sundries like the bearing blocks looked fine, the wheel needs raising to view these, I would replace them any way. The chute (the main water delivery channel) is a mess, the main planking timbers could be repaired but this part of the system is in need of upgrade. The control gates and iron work are all repairable, even the chain pull operating block is still in one piece. Its all in a mess and full of rubbish, but with some clearing and tidying and greased up axles the wheel should operate quite happily even in its present state.

I did notice that the wheel bay was wet and surmised that this was either reverse seepage (unlikely) or rainfall runoff, it could also have been from a trial run with the hose. Its a great shame the original power canal has been removed, the input water level would have filled the chute to about half its height. Without some fairly major civil work it is a non starter to recover the system. It is

Tale Valley Trust

Water Meadow Management Plan

still worth investigating the original estate deeds as these always show watercourses, you may be very lucky in that the system is intact and piped, it is much more likely to be solid fill.

The exit outflow is a more easily recoverable feature, from the wheel bay it will be masonry lined for a limited length so a very careful mini digger or hand excavation is essential. There is a strong possibility that some of the original machinery will have been thrown in with the fill so it is worth excavating the entire length, with care. With the outflow recovered the wheel can operate in a re-circulating cycle, a submerged pump feeds water back to the (restored) chute in a closed loop system. The system will need to be modified as the original return is now a raw sewage plant and we really can't allow any mixing. You will need to consider the public acceptance of this close proximity to food production as well.

Perhaps if the outflow length is reduced to a few feet or re-introduced downstream of the reed beds, a garden feature could be made of this. It only takes a few litres/second to keep even a very big wheel turning, a medium sized submerged pump will do this.

WATERWHEEL NOTES

Waterwheel – Clapperentale

Notes from a conversation with Geoff Turl 22/9/03

Geoff Turl's family farmed Clapperentale for 2 generations. He says that of the 2 Kennaway brothers, who jointly bought Escot estate, Richard died unmarried in 1833, leaving £100,000 to his brother John. This money was ploughed back into the estate – in particular all the iron gates & plain wire fences in the Park were made. At the same time all the farm buildings at Clapperentale were built & in 1868 the waterwheel was installed, made at Fairmile by Huxtables.

Geoff remembers that the wheel was used to run a chaff cutter – it was not used to power a thresher. Because of the flat gradient down the contour line from the intake point near Talewater, the ditch was prone to regular silting & therefore high maintenance.

A small pond was built adjacent to the existing galvanized lean-tos. This was fed through a hatch along a brick culvert which “you could probably crawl down, & which is still in tact under the concrete driveway today”.

By the 1930s maintenance on the main channel was minimal & it took 2 days to fill the pond. This was only sufficient to run the wheel for half a day. In 1936 the wheel was abandoned & Mr Kennaway (grandfather of JM Kennaway) provided the Turls with a spare steam engine from the sawmill to replace it.

N.B. There is a brick culvert visible at the *bottom* of the wheel, which no one, including Mr. Turl can identify. The water feeding the wheel came in over the top of it from the culvert described above, & was then returned to the nearby ditch, again via brick culvert which is evident on the lower side.

Harvest Mice

The harvest mouse is mainly found from central Yorkshire southwards. Areas of tall grass provide favourable habitats, such as cereals, road side verges, hedgerows, reed beds, dykes and salt marshes where nests can be built.

Harvest mice are listed as a BAP (Biodiversity Action Plan) Species because they are thought to have become much scarcer in recent years and they require conservation plans to reverse the decline. Changes in habitat management and agricultural methods are thought to be the main cause for the loss of populations from certain areas, although there have been no reliable studies to quantify this change. **Devon Mammal Group** conducted a spot survey during mid November 2017 in part of the Escot wetlands and quickly identified 12 nests – woven balls of grass attached to strong stems of vegetation. This is very encouraging and will have a bearing on future enhancements of the 8 acre wetlands area by the **Wildwood Escot Trust**.

Rotary ditcher

The ditcher, imported from America and funded in Spring 2017 by the Tale Valley Trust and a generous grant from East Devon's Sustainable Development Fund, was put through its paces in the water meadows that October. A demonstration day was organised by Devon Wildlife Trust to show wildlife reserve managers what a benefit this machinery can be in creating wetland habitats over large areas in a very short time.

Hawfinches

Flocks of rare hawfinches arrived in Britain during December 2017. The remarkable invasion of the bird – which is the UK's largest, rarest and most elusive finch – has been attributed to poor seed crop yields in other parts of Europe, notably in the bird's main winter-feeding grounds of Germany and Romania. In contrast, in Britain there was an explosion of berries, nuts and seeds, after fine spring weather in 2017(!)

It is thought there are fewer than 1000 pairs of hawfinch native to the UK. Experts said the influx was unparalleled, with twitchers recording the same number of sightings as it would usually take a lifetime to accrue. Escot has hosted small flocks of up to a dozen throughout the winter and into April. With the very wet and freezing Spring weather followed by the scorching summer of 2018, resulting in lower grain, berry and nut yields, it will be interesting to see what migrates to the UK during the 18/19 winter.



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Janice Drake
Tale Valley Trust, c/o Escot House, Escot Park, Ottery St Mary EX11 1LU


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Telephone: 01404 819155

The Tale Valley Trust is able to help the valley community, its flora, fauna, biodiversity and heritage because of your support and generosity. Its existence and effectiveness depends on individual donations, however small, and small grants.

This newsletter is only produced biannually because of the costs involved.

Tale Valley Trust, Sarah Hogg, Yellands Farm, Whimble, Exeter, Devon, EX5 2QX
Telephone: 01404 822 886 | Email: sarah@yellandsfarm.co.uk

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