



River Colne Catchment Action Network

ColneCAN Conference September 2023





River Colne Catchment Action Network

ColneCAN: 10 years on and next steps

Stewart Pomeroy, Groundwork South

ColneCAN: 10 years on and next steps

Background and Context

- Geography

- Catchment Based Approach (CaBA)

- Colne Catchment Action Network (ColneCAN)

Projects

- Weir Adaptation/Fish Passage

- Invasive Species Control

- Pollutants Study

- Rediscovering the Colne

- Colne Valley Regional Park Landscape Partnership

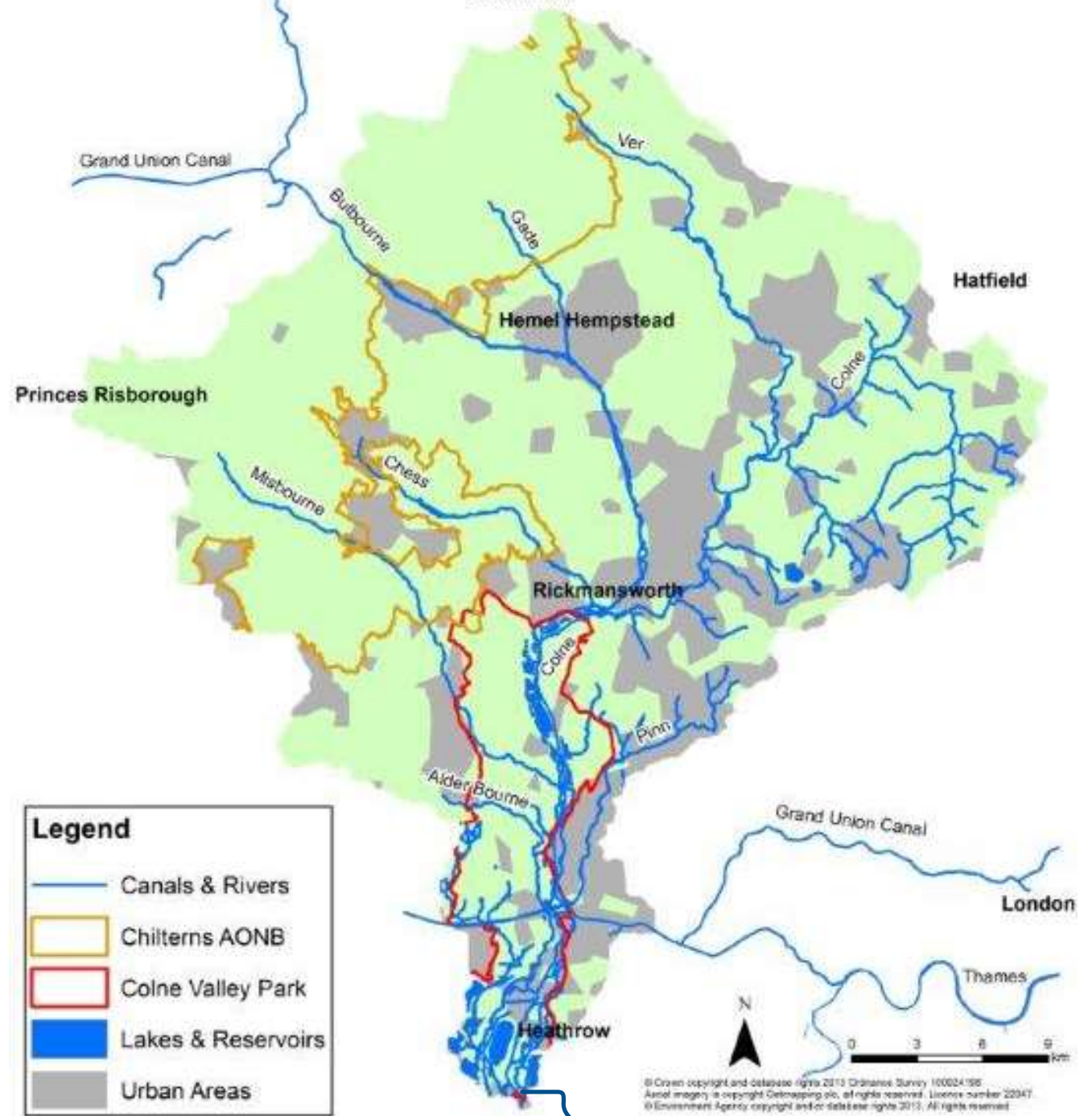
- Chess Smarter Water Catchment

Next steps

- 2023/24

- Near Future

Alderbourne
Ash
Bulbourne
Chess
Colne
Colne Brook
Ellenbrook
Frays
Gade
Horton Brook
Mimmshall Brook
Misbourne
Pinn
Red
Tykes Water
Ver
Wraysbury
....and many more!





Working together to improve the water environment

Connect and learn with thousands of organisations who are delivering collaborative catchment management for the benefit of future generations.

About this site

Local Authorities

Farmers and Landowners

NGOs

Policy Makers

Water Companies

Businesses

Local Communities

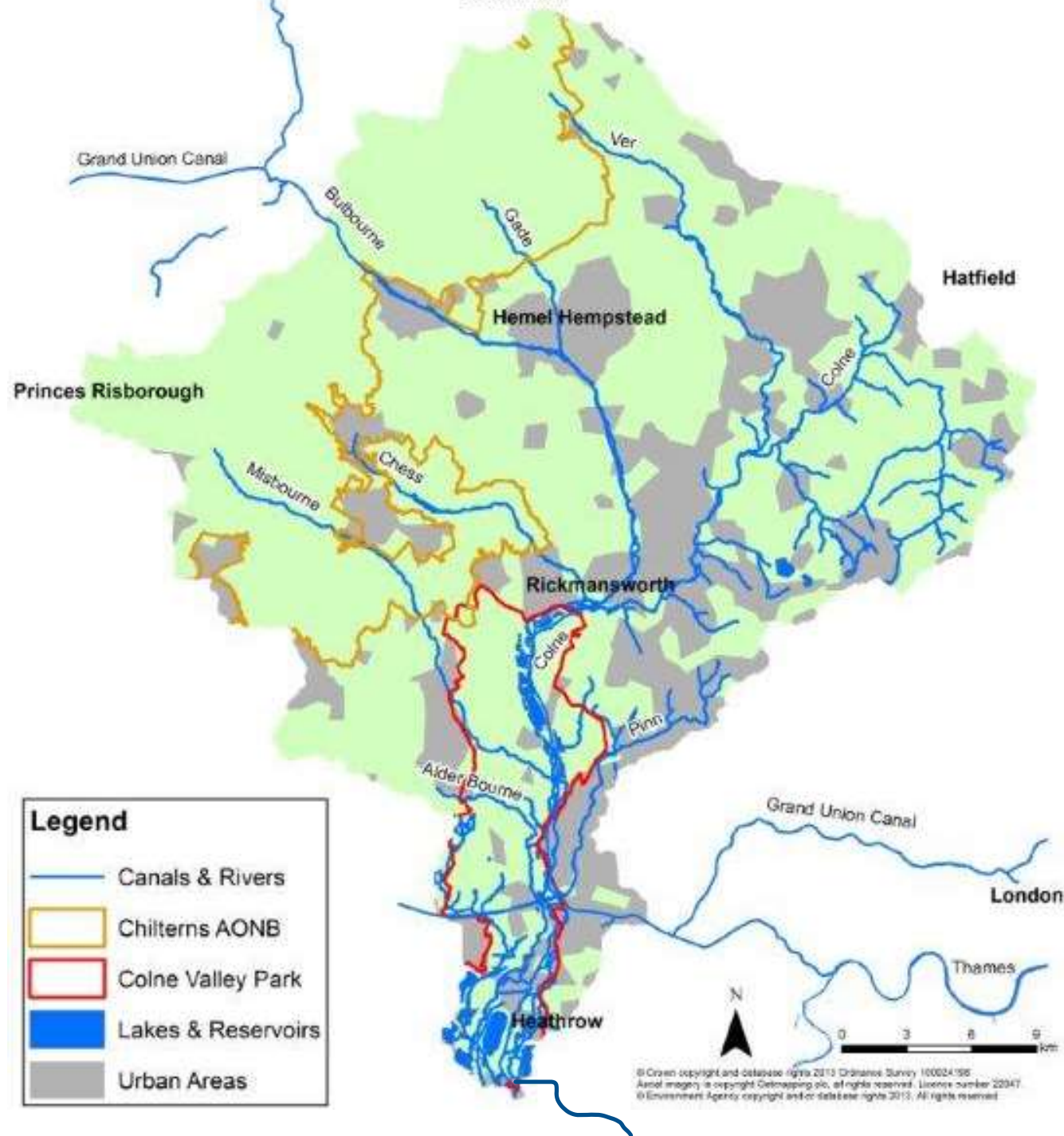
Academia

Colne Catchment Action Network
(ColneCAN)
catchment-wide thinking to inform local
action.

Two long-standing landscape-scale
partnerships:
Colne Valley Regional Park
Chilterns Chalk Stream Project

River based groups

Individual sites or groups of sites





River Colne Catchment Action Network

[Home](#) | [Background & aims](#) | [The action plans](#) | [Get involved](#) | [Riverfly monitoring](#) | [News](#) | [Events](#)

Our Vision is that:

The Colne Catchment is a place where people are working together to protect and improve the water environment for everyone.

Water is clean, plentiful and, sensitively managed, meeting the needs of all those that rely on its resource but enabling it to reach its full biological potential, supporting rich and diverse populations of fish, birds and other wildlife. The Catchment is a healthy, economically vibrant environment, creating a natural and attractive amenity for people to enjoy and improving social wellbeing for present and future generations.

Aims



Control
invasive non-
native species



Involve people
with their local
waterbodies



Improve
wildlife
corridors



Improve
water quality



Manage
flow



Work
together

Fish Passage. Weir Adaptations

Ash, Shepperton

Bulbourne, Boxmoor Trust

Colne, Denham

Colne, Stanwell Moor

Colne, Uxbridge

Colne Brook, Thorney

Misbourne, Chalfont Park

Ver, New Barnes Mill



Invasive Species Control



[Sign up to our Newsletter to get the latest updates](#)

Join the Colne Valley Team in
the battle against Invasive
Species





Micro Pollutants Study

Two years of work on the part of the Colne Valley Fisheries Consultative sampling water and sediment taken from the River Colne in Watford and upstream to the headwaters.



Sign up to our Newsletter to get the latest updates

< Analysis finds 267 micro pollutants in the river Colne





<https://www.rivercolnewatford.co.uk/>



Rediscovering the River Colne



**WATFORD
BOROUGH
COUNCIL**

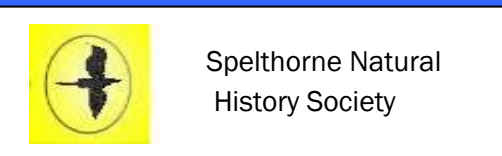




Colne Valley Regional Park - Landscape on the Edge Partnership



17 Partners





Colne Valley: A Landscape on the Edge

the Landscape Partnership in numbers

800 volunteers
contributing **8,000 hours**
to conserve and
improve the
Colne Valley

7 herds of conservation cattle
helping to bring nature
back to special places



Signs

42 wayfinding signs,
20 information boards, and **4 hand-carved statues** to mark the Colne Valley Trail

36 people trained
to check for signs of water voles and monitor for mink
and **44km** of rivers surveyed



1 unifying vision for improving local green and blue spaces

32 organisations collaborating

5 weirs adapted
to help fish and eels move freely along the rivers



Colne Valley Park covers **40 square miles**
on the edge of **5 counties**

Over **70 lakes**

200km of river and canals

100 River Rangers + 30 fully trained

Water saving advice in 14 different languages

70km of river checked for damaging invasive species

1.5km of river corridor enhanced for water voles



8km of river managed sympathetically for water voles by anglers

44 Fishery managers trained in nature conservation



14 places improved for countryside recreation and exploration

72 training and expert sessions

4 knowledge exchanges to help local conservation groups swap great ideas

Spreading the word through:

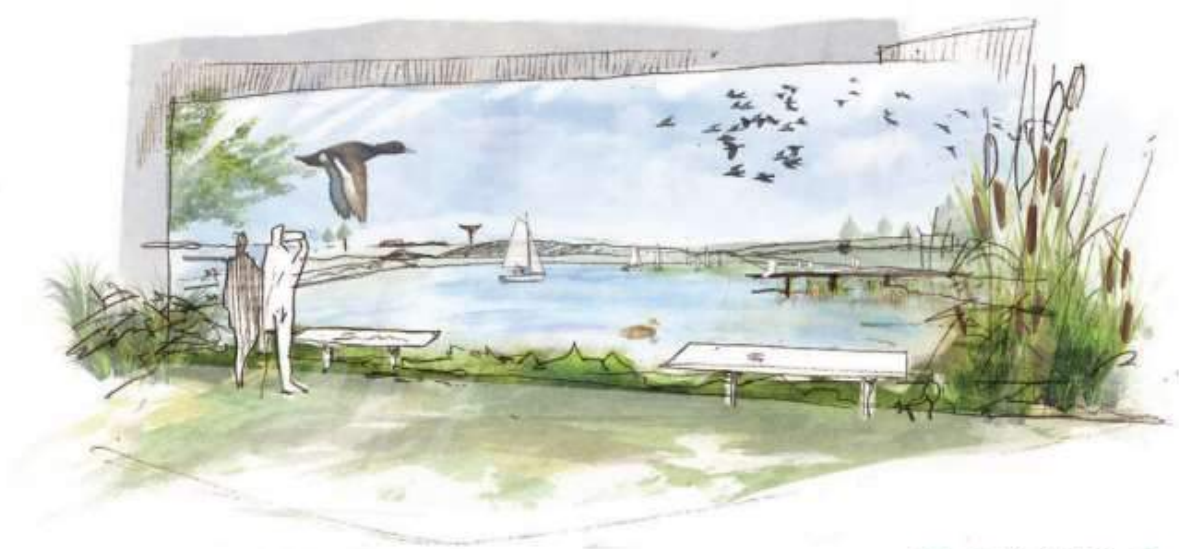
- 2** Interpretation centres
- 4** social media platforms
- 1** website
- 20** newsletters
- 20** walk leaflets

6 areas improved for habitat, not including voles and fisheries

150 events to bring people closer to nature in their area

2 trainees now in employment or further study



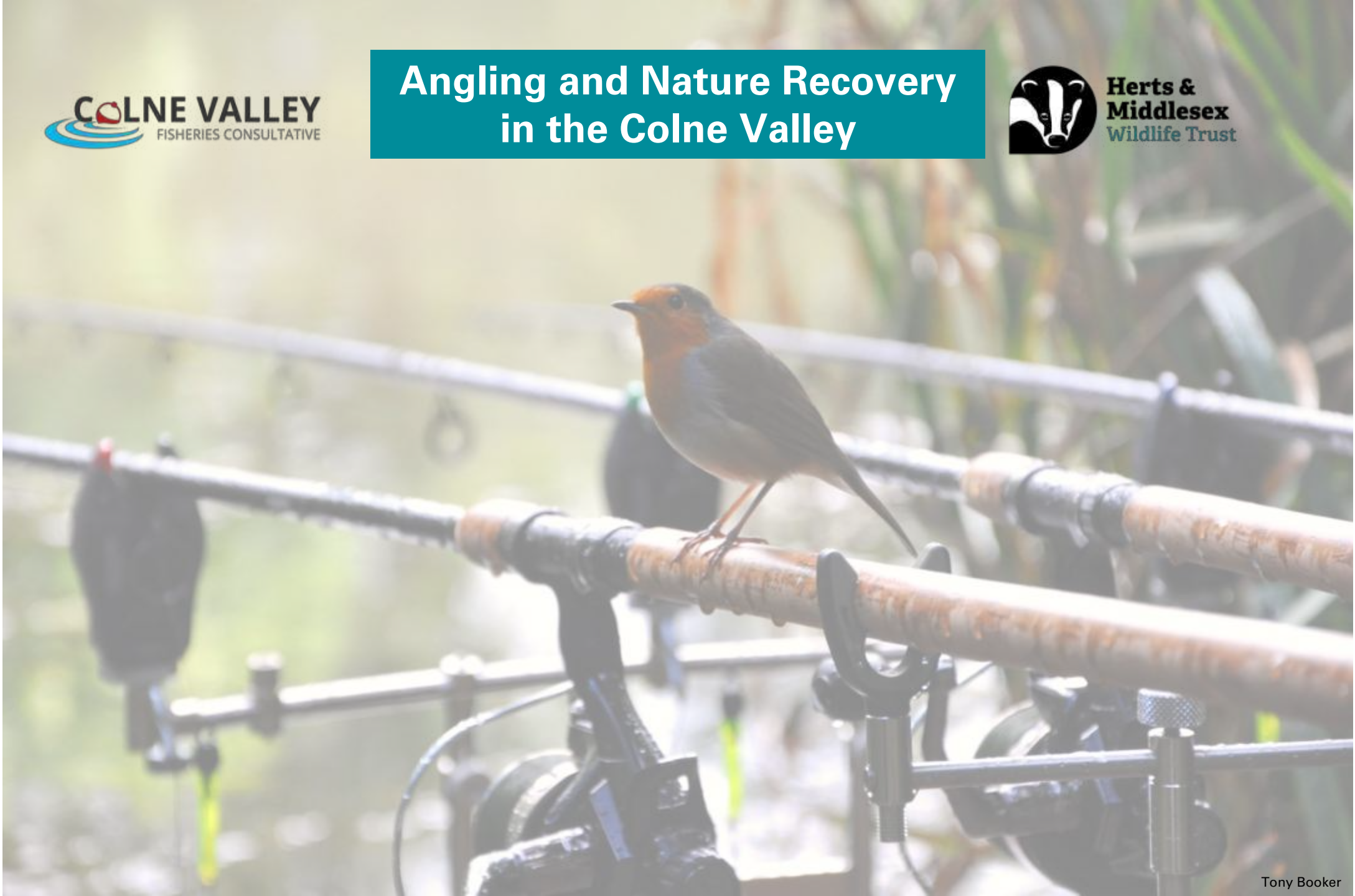


COLNE & CRANE VALLEYS
GREEN INFRASTRUCTURE STRATEGY
SEPTEMBER 2019
EXECUTIVE SUMMARY





Angling and Nature Recovery in the Colne Valley



Angling and Nature Recovery in the Colne Valley



Deliver fisheries and wetland management training to angling clubs within the Colne Valley



44 anglers trained

29 management plans produced



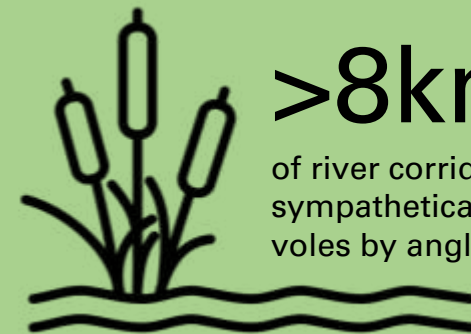
Help anglers to produce fisheries management plans



13 sites
delivering
enhancements for
fish and wildlife



Support angling clubs to implement management plans and deliver enhancements for fish and wildlife



>8km
of river corridor managed
sympathetically for water
voles by angling clubs

How to create water vole habitat...



How to make a kingfisher bank...





All image credits Tony Booker



**River Chess
Smarter Water
Catchment**

Learn about our
landscape

Take a trip
through history

Enjoy the
Chess

Citizen
Science

Understand
our results

Celebrate our
successes

[Back to The
Chilterns](#)



**River Chess
Smarter Water
Catchment**

Making our vision for the River Chess catchment to be a jewel in the heart of the Chilterns a reality.

Next Steps: 2023/24

Water Quality Project

Invasive Species Control

Recruit Programme Manager

Secure Additional Core Funding

DEFRA Landscape Recovery Fund

Thames Water Partnership Support

Get ready for Smarter Water Catchment



Next Steps: Near Future

Micro Pollutants Follow on
Landscape partnership v2

Chess Smarter Water Catchment Legacy

Colne Smarter Water Catchment

Continue Fish Passage Enhancements

Partnership co ordination

Partnership Projects



SUMMARY:

Large & complex catchment

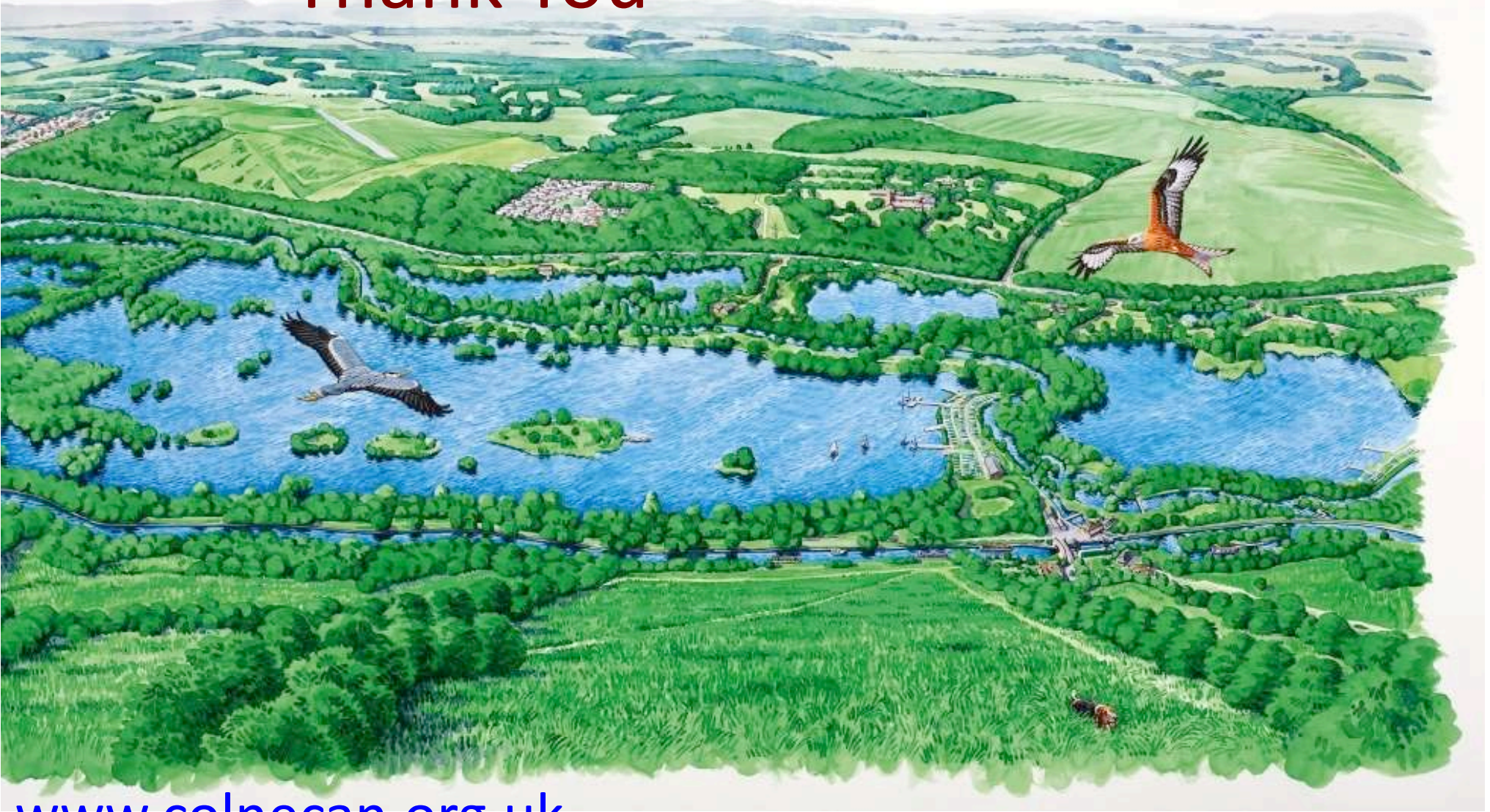
Significant challenges

Catchment-wide thinking to inform local action

Significant projects delivered

Strengthen partnership to enable us to do more

Thank You



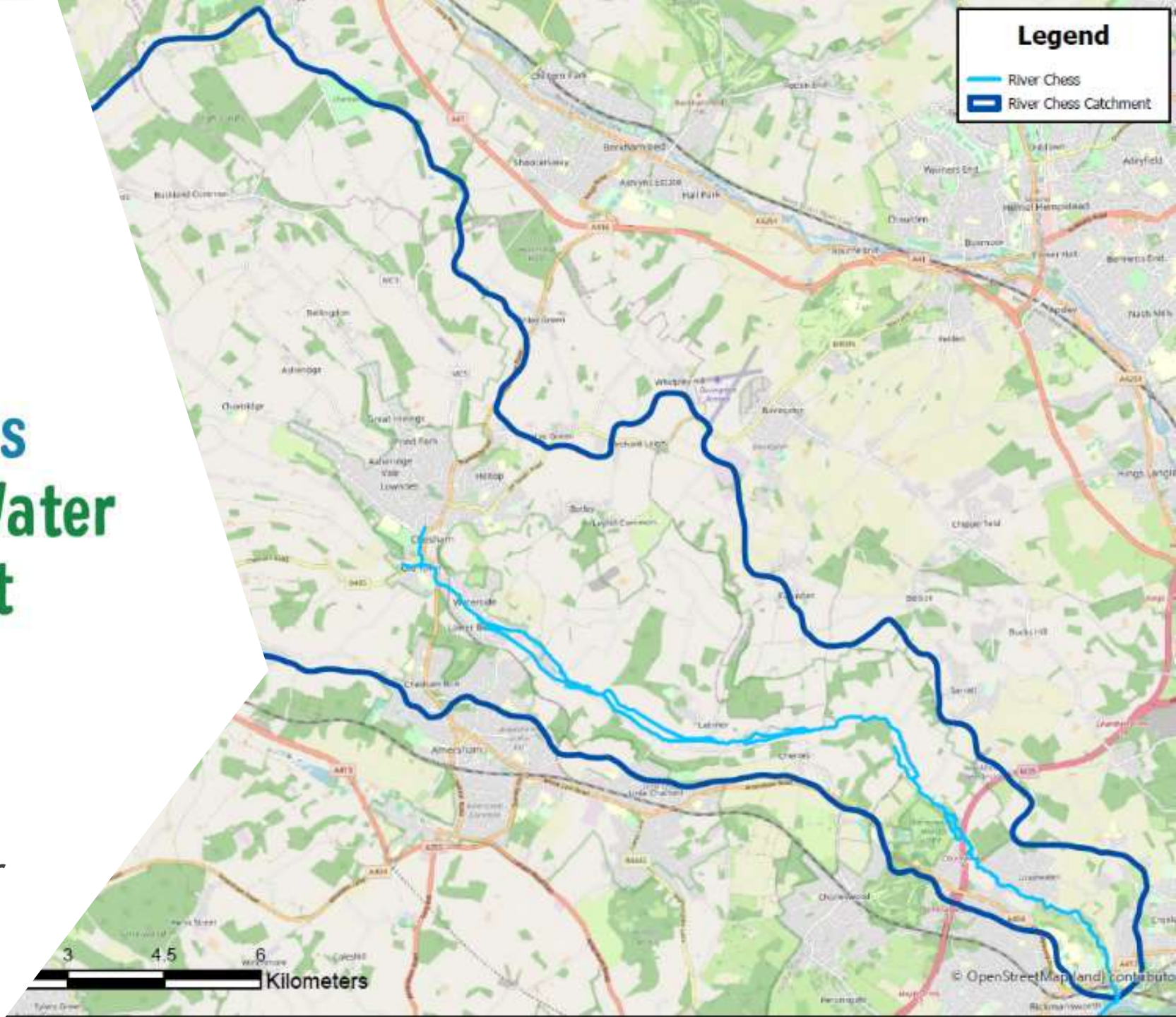
www.colnecan.org.uk

www.catchmentbasedapproach.org

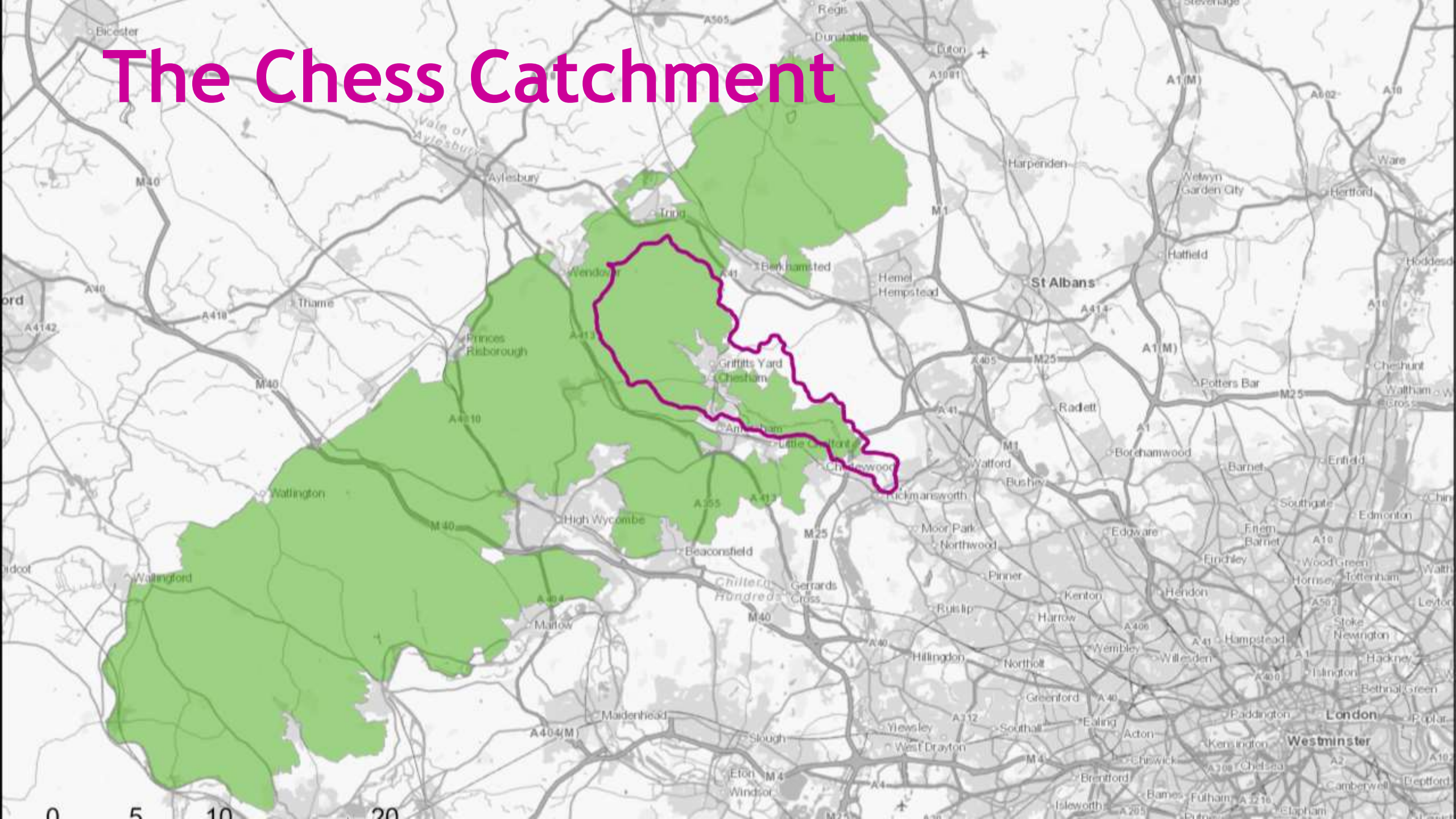


River Chess Smarter Water Catchment

► Steph Horn - Project Coordinator



The Chess Catchment



Chess - Governance

Catchment Hosts

River Chess Association (RCA) & Chilterns Chalk Streams Project (CCSP), Thames Water (TW)

Steering Group Members

Chair: Chilterns Chalk Streams Project
Members: River Chess Association; Sarratt Parish Council; Thames Water; Environment Agency; Herts & Middlesex Wildlife Trust; Buckinghamshire Council; Chilterns Society; Affinity Water

Working Groups

Control of non-native Invasive Species
Nominated lead: CCSP
Group members: RCA, TW

Involving People
Nominated lead: Chiltern Society
Group members: CCB, RCA, Sarratt PC, Affinity Water, Buckinghamshire Council, Chilterns Society, TW

Wildlife Corridors
Nominated lead: Mott Macdonald
Group members: Bucks NEP, HMWT, NE, Forestry Commission, RCA, Hertfordshire County Council, Buckinghamshire Council, TW

Working Together
Nominated lead: Project Coordinator
Deputy: Tom Beeston
Group members: CCB, RCA, AW, TW, Bucks

Water Quality
Nominated lead: CCB
Group members: CCB, Buckinghamshire Council, TW, EA

Managing Flow
Nominated lead: RCA
Group members: Affinity Water, TW, Buckinghamshire Council, EA, RCA Volunteers

Staff Employed

CCSP - Project Coordinator - Steph Horn, Farming Adviser - Josh Biddle, Citizen Science Coordinator - Hannah Parry-Wilson, Research Lead - Kate Heppell (now Landscape Manager at CCB)
Chiltern Society - Community Engagement Officer - Piers Brown

Chess Catchment Themes



CHILTERN
CHALK STREAMS
PROJECT



Chiltern
Society
We work for the Chilterns



Environment
Agency

AffinityWater



Herts &
Middlesex
Wildlife Trust



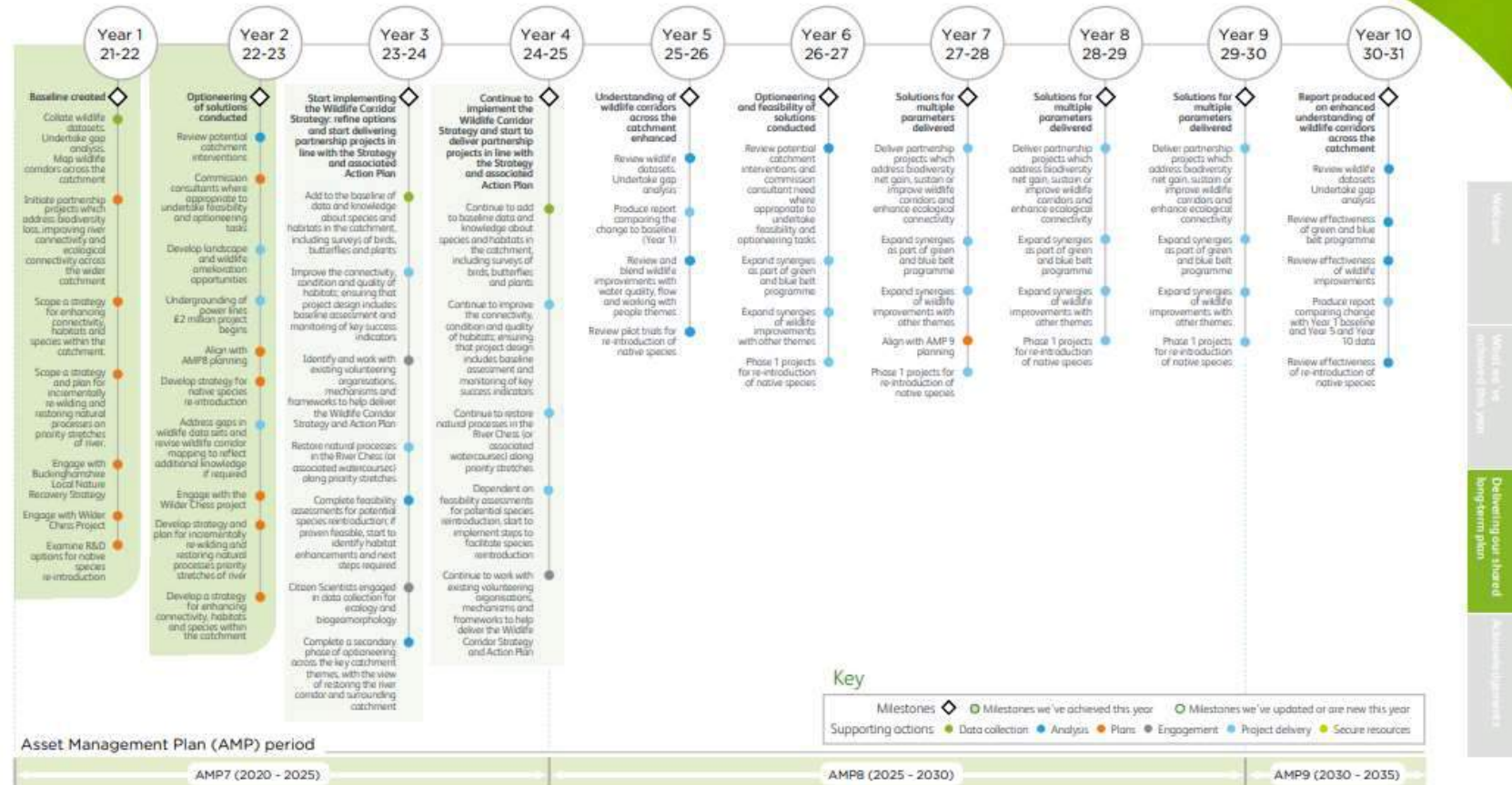
Queen Mary
University of London

10 Year Catchment Plan - published 2021 - reviewed annually

Improving wildlife corridors action plan



Working together to protect and enhance our water environment - Update document



Success in the Chess



- ▶ Water Quality Monitoring
- ▶ Citizen Science
- ▶ Stakeholder Engagement
- ▶ River Restoration
- ▶ Capacity Building
- ▶ Data Sharing
- ▶ Opportunity Mapping
- ▶ Investment
- ▶ Community Projects
- ▶ INNS

Water quality monitoring on the River Chess

Select which variables you want to plot, and click "Update plots" to refresh the plots. The plots may take a few seconds to load.

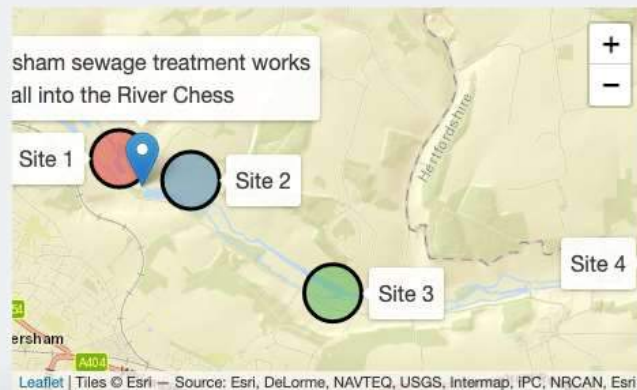
Choose measurements:

- Dissolved oxygen (% saturation)
- Dissolved oxygen (mg/L)
- Electrical conductivity ($\mu\text{S}/\text{cm}$)
- pH
- Temperature ($^{\circ}\text{C}$)
- Tryptophan (RFU)
- Turbidity (NTU)
- Water level (m)

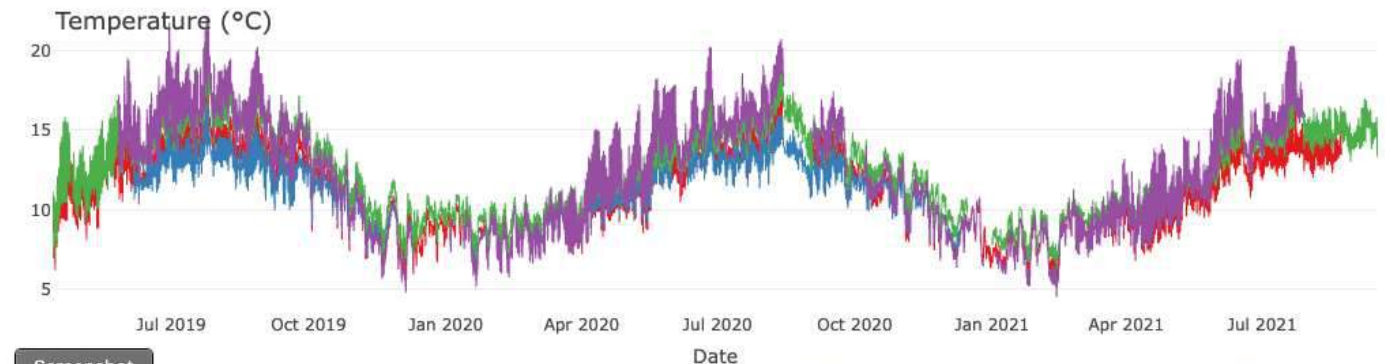
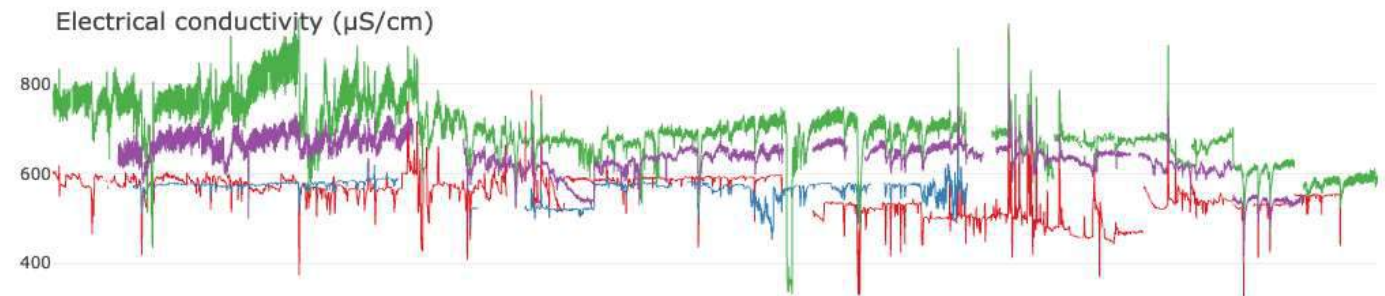
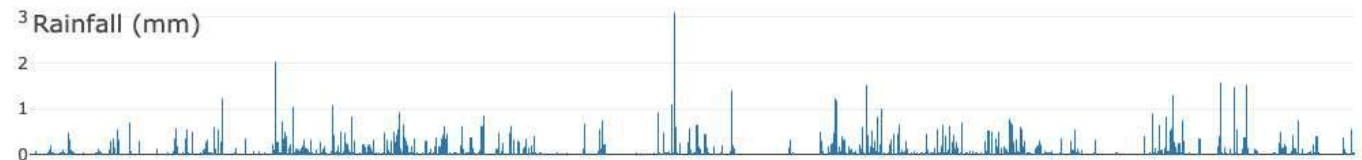
Select start and end dates:

Pick 2 dates

Clear Update plots Show events



River site (click to toggle): — Site 1 — Site 2 — Site 3 — Site 4

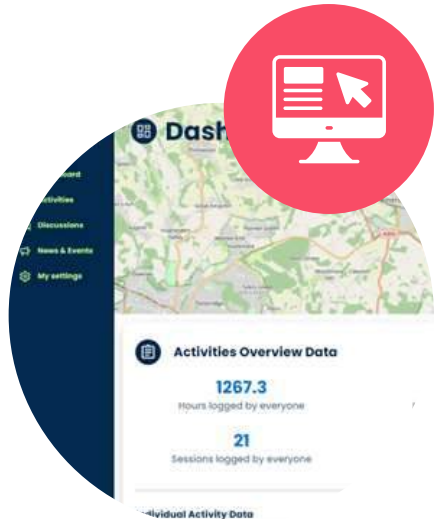


Screenshot

This dashboard uses Environment Agency rainfall data from the real-time data API (Beta) under the Open Government Licence v3.0.



80+ registered Citizen Scientists



1 New Volunteer Portal



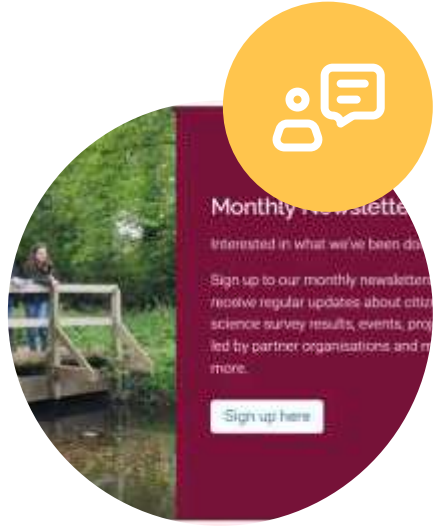
4 Data Analyst Volunteers



9 Survey Types



1342+ Hours Volunteered



100+ Sign Ups for Citizen Science Newsletter



1 New Staff Member



20 Events and counting

CITIZEN SCIENCE

FARMER ENGAGEMENT



1 Farm Cluster
(Chess Valley Farm Cluster)



1 Landowner Cluster
(Wilder Chess)



£63,885 of Grants
Awarded



2 Run-off Surveys
Completed



21 farms in the valley
visited



117 sites collected for
sediment fingerprinting



1 New Staff Member



4 Events



**35+ Community Group
Engaged With**



**6 new Named Footpath
Routes**



**£62,696 Grants
Awarded**



**18 Community
Groups Funded**

COMMUNITY IMPACT



**10 Water Butts
Installed**



**1 Water Saving School
Pilot Project**



1 New Staff Member



25 Events Attended

Investment in Chesham Sewage Treatment Works

Upgrades to Thames Water assets

Sewage Treatment Works Capacity Upgrade

- Optimised existing assets since April 2021 to reduce volumes discharged from storm tanks
- Upgrade the site to increase the capacity that can be treated by ~40% (end of 2023)

Sewage Treatment Works Quality Upgrade

- Upgrade the site to reduce the Phosphorus permit from 2mg/l to 0.25mg/l (end of 2024)


Reducing infiltration & improving the resilience of our network

- ▶ Undertaken CCTV on 4.6km of sewer to identify hotspots & priorities for repair
- ▶ Re-lined large sections & repaired defects
- ▶ Finding and correcting surface water to foul misconnections; sealing and replacing ~750 manholes (by Sept 2022)



A hand in a brown suit jacket is writing on a whiteboard with a white marker. The whiteboard has some faint, illegible markings. The background is a gradient of light blue and white.

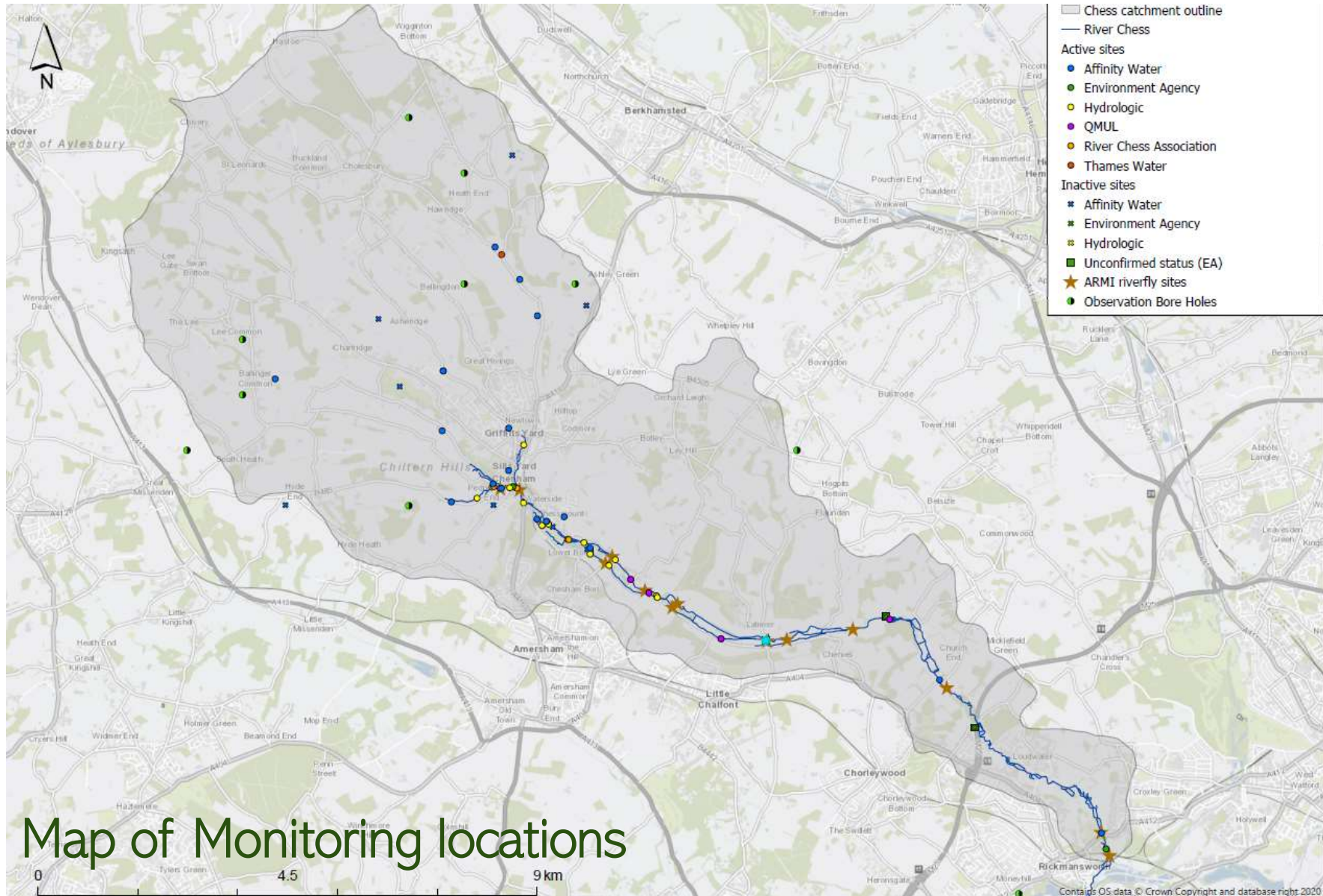
Lessons Learnt in the Chess

- ▶ Landowner grants
 - ▶ Policy
 - ▶ Governance & responsibilities
 - ▶ Stakeholder engagement
 - ▶ Recruitment & resourcing
 - ▶ SMART aims and objectives
 - ▶ Timelines/planning
 - ▶ Project Delivery Barriers
- 
- A series of overlapping, semi-transparent green geometric shapes, primarily triangles and quadrilaterals, arranged in a dynamic, layered pattern on the right side of the slide.

Next Steps

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the slide, creating a modern, layered effect. The text 'Next Steps' is positioned on the left side of the slide in a clean, sans-serif font.

Data Sharing



Pond Mapping & Assessments



INNS



Modelling Catchment Partnerships



Thank you!

For more information please visit:
www.ChessSmarterWaterCatchment.org

Or contact:
stephorn@chilternsaonb.org



Working in partnership:



CHILTERN'S
CHALK STREAMS
PROJECT



Affinity Water



Herts & Middlesex
Wildlife Trust



Queen Mary
University of London

Joanna Hewitson

Joanna.hewitson@threerivers.gov.uk

Three Rivers District Council (TRDC) to support ColneCan Smarter Water Catchment Application

Introduction

Currently LA response to water issues is individual by authority - TRDC, WBC and Dacorum all have their own Water Partnership groups requiring attendance by specialist to make these group meaningful.

Groups need to work together on cross catchment issues, *whilst still retaining a local focus on delivering their district projects.*

TRDC wish to support the ColneCAN Smarter Water Catchment application from Thames Water and see it is as the best chance in the medium term to make a positive difference to the catchment.

They aim to support the application by establishing a group consisting of all the enforcement partners with regard to water: -Local Authorities, including representatives from building control the environment agency, Thames Water and LLFA to develop cross catchment protocols for pollution incidents which harm the river environment.

The chair of the group will be the head of the ColneCAN partnership to ensure the group is aligned with the aims of the ColneCAN steering group.

Role of the Group

Maintain a network of relevant contacts to assist Colne Can in their work.

Establish the regulatory response and communication required in response to pollution incidents.

Exploration of licenses associated with discharges into the river network e.g. canal users, and car wash site

Ensure local authority river restoration projects are identified to ColneCAN

Raise awareness and enforcement of misconnections.

Lend support to funding bids when required.

Progress to date:-

1st Meeting has taken place with core group members Watford and TRDC to establish proposed terms of reference.

Contact has been made with all local authorities to explain what we are attempting.

2nd meeting planned for October with a wider group of local authorities to discuss the draft terms of reference and establish next steps.

Progress with floating pennywort biocontrol in the Colne Catchment



Djami Djeddour, Suzy Wood, Corin Pratt, Anna Tilling, Chris Berman, Daisuke Kurose and Polly Forbes

ColneCAN conference

12th September 2023

Outline

- CABI-who are we, what do we do?
- Biocontrol of weeds- definitions and example
- Progress with National Floating pennywort biocontrol initiative
- Colne Valley progress
- Conclusion and questions



CABI in brief

Not-for-profit intergovernmental organization, established in 1910 by a United Nations treaty-level agreement

Owned by **49 Member Countries** which have an equal role in the organization's governance, policies and strategic direction

Global reach – 450+ staff across more than 25 locations worldwide

Addresses issues of global concern in agriculture and the environment through **research and international development cooperation** e.g. food security, climate change, invasive species

Major publisher of scientific information – books, ebooks, digital learning, compendia and online information resources

Capabilities

Invasive Species Teams in the UK

- 14 team members, 1 Emeritus Fellow, 1 intern
- Defra licenced quarantine facilities x 2, greenhouses, polytunnel
- Expertise – entomology, acarology, plant pathology, mycology, molecular biology, ecology, socio-economy
- Weed biocontrol, insect biocontrol, PRA and horizon scanning, socio-economic impacts of invasive species
- Support to develop policies and guidelines (e.g. EPPO)
- Many projects for sponsors worldwide, including UK and OTs, continental Europe, AUS, NZ, North and South America

Globally, CABI's scientists have many hundreds of years of experience in classical biocontrol – and rising!!



Unfair advantage

Impatiens glandulifera in its native range, the foothills of the Himalayas, Pakistan



Concept of classical biological control

- Non-native plant species arrive in the exotic range without the natural enemies that keep them in check in their native range – *enemy release hypothesis*
- Those native species which do attack them do not cause enough damage for control
- Some of the many insects and diseases in the native range may be specific and damaging enough to be safely released as **biological control agents**
- This approach has been implemented worldwide for over 100 years with notable successes
 - **Use of co-evolved, highly specific natural enemies (e.g. insects, mites, pathogens) from the area of origin of the plant, to provide self-sustaining control, often after a single release** (numbers fluctuate in response to the abundance of the weed)
 - **Not eradication!**
 - **Establishment can take several years....may not be a quick fix**

Biological control of *Salvinia molesta*

In 14 months 200ha *Salvinia* converted to open water

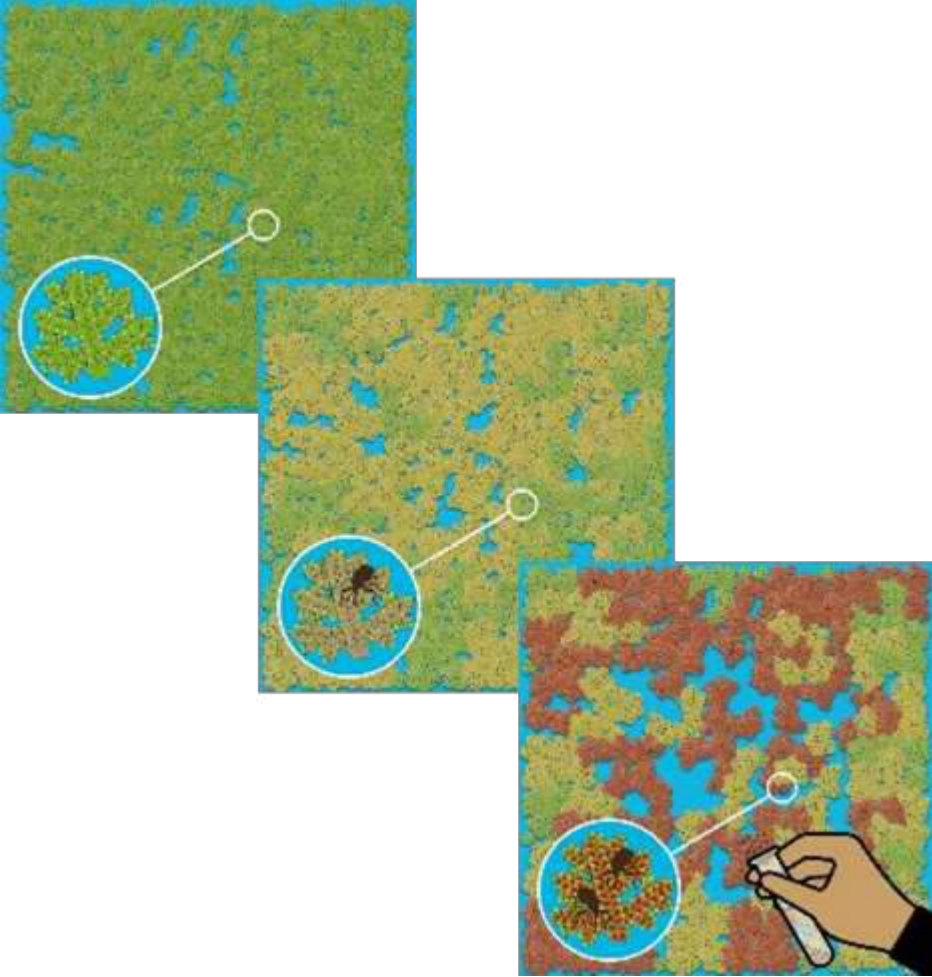
100% reduction of *Salvinia molesta* has been recorded in Australia, South Africa and the USA.



History of GB biocontrol initiatives

- Defra funding since 2010 for work on biocontrol of Japanese knotweed, Himalayan balsam, Australian swamp stonecrop and floating pennywort, in partnership with Welsh Government and Natural England
- Support from EA, Canal & River Trust, private water companies, the MoD, a number of conservation groups, Trusts and Local Authorities, Canadian and Dutch stakeholders
- Feasibility studies /workshops with stakeholders undertaken to assess priorities and potential new targets
- Semi-commercial venture: Mass-rearing and supplying the Azolla (water fern) weevil across the country (weevil ordinarily resident but augmentative releases support year round control)





- **Without the weevil** – Azolla would cost £8.4 to 16.9 million to manage annually
- **With naturalised weevil population** – costs reduced to £0.8 to £1.6 million
- **With augmentation programme** – costs reduced to £31.5 to £45.8 thousand

The arrival of *Stenopelmus rufinasus* is estimated to save around £8 - 15 million per year and the augmentation programme saves a further £0.77 - 1.5 million

Augmentation gives a **benefit : cost ratio** in the range of 44 – 88 : 1

Environmental Improvement Plan 2023

First revision of the 25 Year Environment Plan



United Kingdom

4 Classical Biocontrol Releases

- 2010 psyllid against Japanese knotweed
- 2014 rust pathogen against Himalayan balsam
- 2018 mite against Australian swap stonecrop
- 2021 weevil against floating pennywort

Environmental Improvement Plan 2023:

Removing invasive non-native species from the water environment

Aquatic species are more invasive than terrestrial ones. To slow the spread of invasive non-native species and limit the impacts on the water environment, Defra will:

- Continue to support the development and deployment of biocontrol, such as introducing the weevil to tackle floating pennywort.

The Great Britain Invasive Non-Native Species Strategy

2023 to 2030

Date: February 2023



Department
for Environment
Food & Rural Affairs



Llywodraeth Cymru
Welsh Government

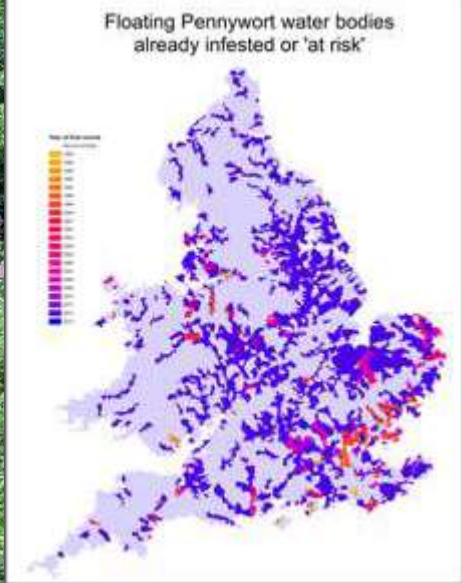


The Scottish
Government

Key Action 7.6

Continue to support the development and roll-out of biocontrol and other novel control methods to improve the long-term management of widespread INNS.

Costs the GB economy an estimated £25.5 million each year (management, disposal, flooding and indirect costs e.g to boating and angling)



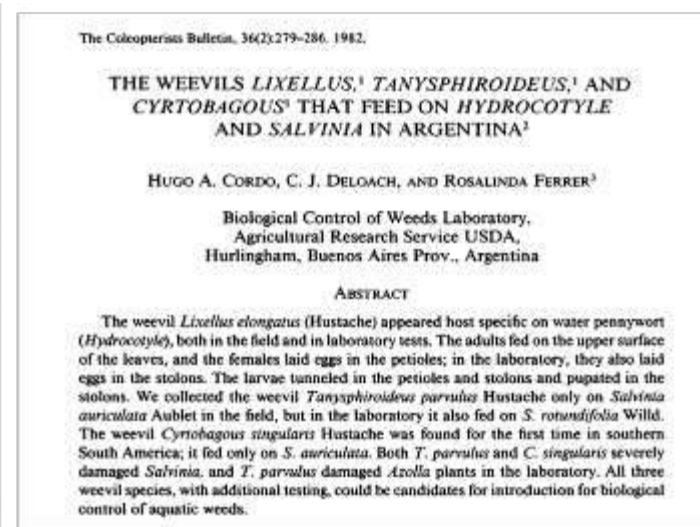
Credit: C. Hughes, CRT



Volunteer day on the Wey Navigation

Project initiation

- **Phase 1** - Scoping study funded by the Environment Agency (2006): Literature and herbaria reviews, survey to Argentina highlighted potential. Surveys also carried out in Brazil and Paraguay – the weevil, *Listronotus elongatus*, had the most potential as a biocontrol agent. Other agents dismissed (rust fungus and stem mining fly)
- Collaboration with SABCL, now FuEDEI crucial
- **Phase 2** - Defra funding under Water Framework Directive facilitated ongoing research (2010-ongoing)
- Export embargo 2011-2012, 2015-16 due to internal conflicts between Environment and Quarantine sectors of Ministry in Argentina. Contingency plans to collaborate with Brazil and the US investigated and preliminary research done in country in Argentina.



Surveyed across Provinces, >16 field sites e.g. drainage ditches, canals, nature reserves, across the seasons



Scoping study and native range surveys



Rust

Check for potential natural enemies in the introduced range



Phytoplasma 16Sr VI "*Candidatus Phytoplasma Trifolii*"

River Soar, dwarf, chlorotic *H. ranunculoides*

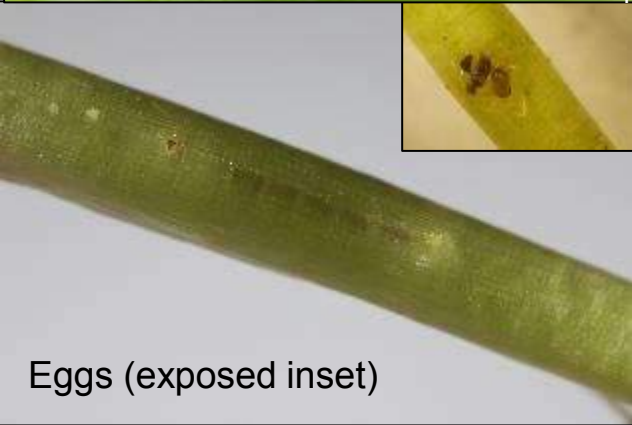
- UK surveys revealed no natural enemies or significant damage; one phytoplasma recorded
- USA surveys by local scientists found mainly generalists except for *Eugaurax floridensis* (fly)

The agent: *Listronotus elongatus*

- Native to South America and collected in Argentina and Paraguay
- Adults feed on upper leaf surface
- Eggs (up to ~20) are inserted in the lower part of the petiole and larvae mine the stems and pupate in stolon
- Egg to Adult ~ 36-40 days @ 24°C (4 instars)
- Larval stage is the most damaging and significantly reduce biomass, causes collapse
- Adults live 3-4 months
- In native range can overwinter at every life stage



Adult *L. elongatus* (0.5cm)



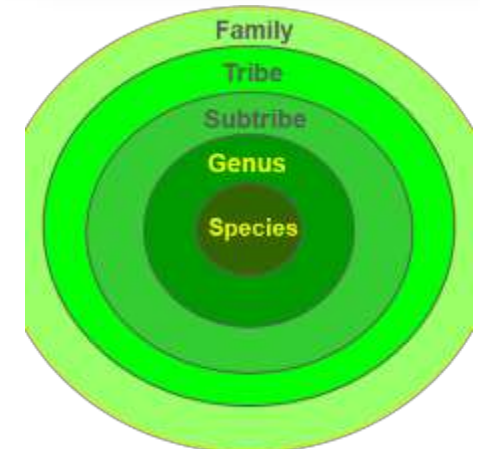
Eggs (exposed inset)



Larva mining the stem and pupa inset

The research process: Host range testing

- From 2013-2019 **host specify** testing of 78 spp. completed with in quarantine using weevils from Argentina and Paraguay
- Testing is based on phylogeny - more closely related species are more likely to be attacked than more distantly related ones – **international codes of practice**
- Feeding damage, oviposition and development is significantly higher on *H. ranunculoides* than on non target plants
- Climatic models suggest *L. elongatus* could achieve 1 or 2 generations per year under UK climate conditions
- **Pest Risk Assessment** compiling all the research, the cost:benefits and likelihood of establishment reviewed by experts, stakeholders and the public (2020/2021)
- **Ministerial approval** granted in September 2021!
- Releaser's licence issued and subject to conditions (monitoring plan, deposit of voucher specimen, focus on key non target spp.)





Collaboration with FuEDEI

**Since project initiation
Export of weevils to the UK
in 2013, 2014, 2019 (used
for testing) and 2021/2022
and 2023 (rearing stock for
mass releases)**

Molecular characterisation

- Funding from Natural England used to undertake molecular characterisation of populations of pennywort from England and Argentina
- Replicated samples received from 26 locations (4 from Argentina) + commercial *Hydrocotyle vulgaris* included (still processing new sites)
- Analysis of Dutch material also completed with funding from Dutch waterboards
- High levels of genetic similarity between all populations
- One large main group in the UK is a match for Dutch populations
- Weevil shows no discernible preference



Credit: Charles Hughes (CRT)



Mass rearing for releases

- Supported by large healthy supplies of floating pennywort collected at a number of volunteer events and by helpful collaborators
- Hands on technique, harvesting successional generations of adults as they emerge from rearing boxes
- Releases made by dropping weevils straight into the mat (x100-250 at a time and at several points depending on size of infestation)
- **First release made in November 2021 on the Colne in Denham**
- National roll out of biocontrol trials and ongoing support from a range of sponsors including Defra, EA, CRT, Thames Water, Affinity Water/CVFC, Yorkshire Water, Medway Valley Partnership, Folkestone and Hythe Council and Elmbridge Council
- With landowner approvals from Natural England, private individuals, farmers, County Councils, Sailing Club, Housing Association and British Airways, wildlife trusts and notifications sent to neighbours as courtesy



Weevil releases to date

- 12 sites in 2022 and 6 to date in 2023
- Top-ups at 8 old sites and 1 more to be done this week
- Sites include canals, rivers, drainage ditches, ponds and streams
- Approx 150-250 adults released at each site depending on size of infestation, multiple points per site where needed
- Most Northerly site= Barnsley; Pevensy Levels most Southerly
- Project development –Cam Washes, Marsh Dykes (Thamesmead Catchment), Dutch and Northern Ireland (2024/25)





KNOWLEDGE FOR LIFE

Results to date

- Best results observed at more southerly sites, high impact and spread
- Weevils found developing at all release sites on first monitoring
- Overwintering at Pevensey Levels-multiple overlapping generations in summer 2023 and heavy damage
- Overwintering in the Midlands at one sheltered site, young larvae in late August 2023
- No obvious signs of weevil activity at Northerly sites and other sites in the Midlands /South in 2023
- Release dates, very cold and prolonged winter, high flows / pennywort mat movement all play a significant part
- Aim to build populations over the summer to build resilience and support multiple generations

Pevensey Sept. 2022



River Colne, October 2022

Colne Valley- Results to date

Release sites :

- 2021 River Colne, Denham
 - 2022 River Colne, Harmondsworth Moor; New Denham; Rickmansworth
 - 2023 River Misbourne, Higher Denham; one other tbc
-
- Scoping visits and landowner discussions take time and effort (thanks Tony Alex, Laura and others)
 - Overwintering on the Colne (2 years) at the first release site, larvae found in July 2023, reduced plant population?
 - Topped up weevils at existing sites –**monitoring all sites summer + later in the Autumn** to assess survival, impact and spread (funding running until 2025)
 - Useful to have eyes on the ground/water in the intervening periods!

New release 2023



Monitoring for signs of overwintered weevils

Collaborations and communications

- Press releases by Defra during Invasive Species Week (17.05.22) and Yorkshire Water (15.11.22 and 24.08.23) help generate interest from the public and stakeholders
- Also fuelled some media coverage (BBC Farming Today, New Scientist)
- Public engagement at volunteer events opportunity to explain the biocontrol work (thanks to British Canoeing and Angling Trust)
- ODK app updated and streamlined by Data Team and new flyer produced by CABI marketing team
- Collaborators/sponsors- So much support provided with site selection, landowner tracking/permissions, monitoring and field collections...thanks to you all!



Finding natural solutions to control

Floating pennywort



The invasive floating pennywort (*Hydrocotyle ranunculoides*) is a **strong contender** for the title of **worst aquatic weed in the UK**. It spread rapidly into our waterways as a result of being discarded from domestic ponds. Regenerating from the tiniest fragments, floating pennywort **can grow up to a whopping 20cm a day** to form dense mats across whole waterbodies.

Conclusions

- Classical biocontrol can provide a long term, safe solution but it is not a quick fix nor is it straightforward
- Collaborations are essential both in the native and invaded range
- Floating pennywort national strategy aims to bring all players together for more effective and strategic control and biocontrol provides an additional tool
- The weevil is showing early promise but may take a few years to establish in large enough numbers to show measurable impacts across all parts of the country
- UK and European projects are helping to raise awareness of biocontrol as a complementary and sustainable strategy
- Need a success to get buy in to biocontrol in Europe....but raising awareness of INNS and their impacts will help build support and maintain momentum for all groups active in their prevention, detection and management

**And there's more... See CABI website
for other Biocontrol projects**





CABI is an international intergovernmental organisation, and we gratefully acknowledge the core financial support from our member countries (and lead agencies) including:



Ministry of Agriculture and Rural Affairs, People's Republic of China

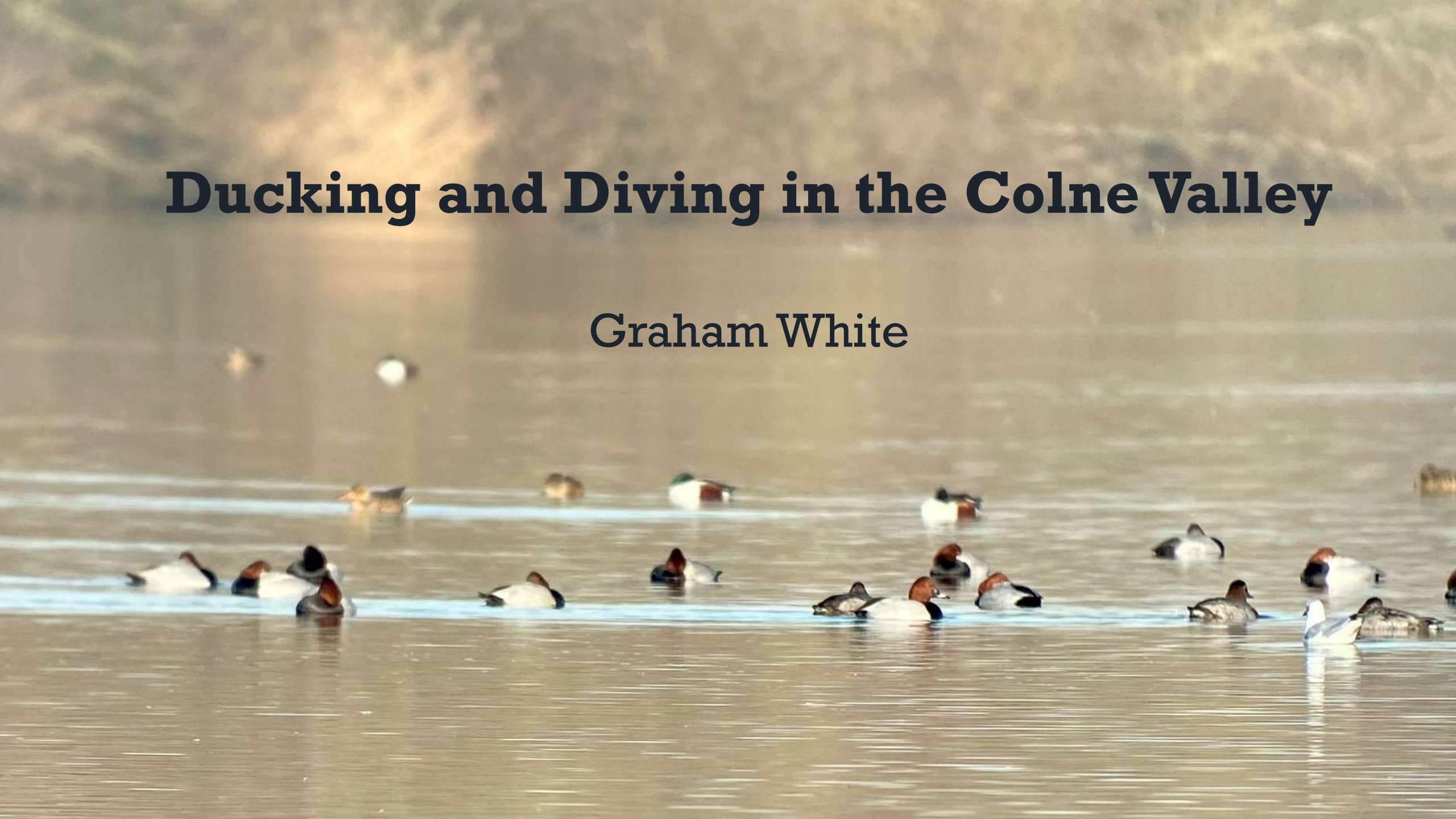


 Agriculture and Agri-Food Canada



Ducking and Diving in the Colne Valley

Graham White



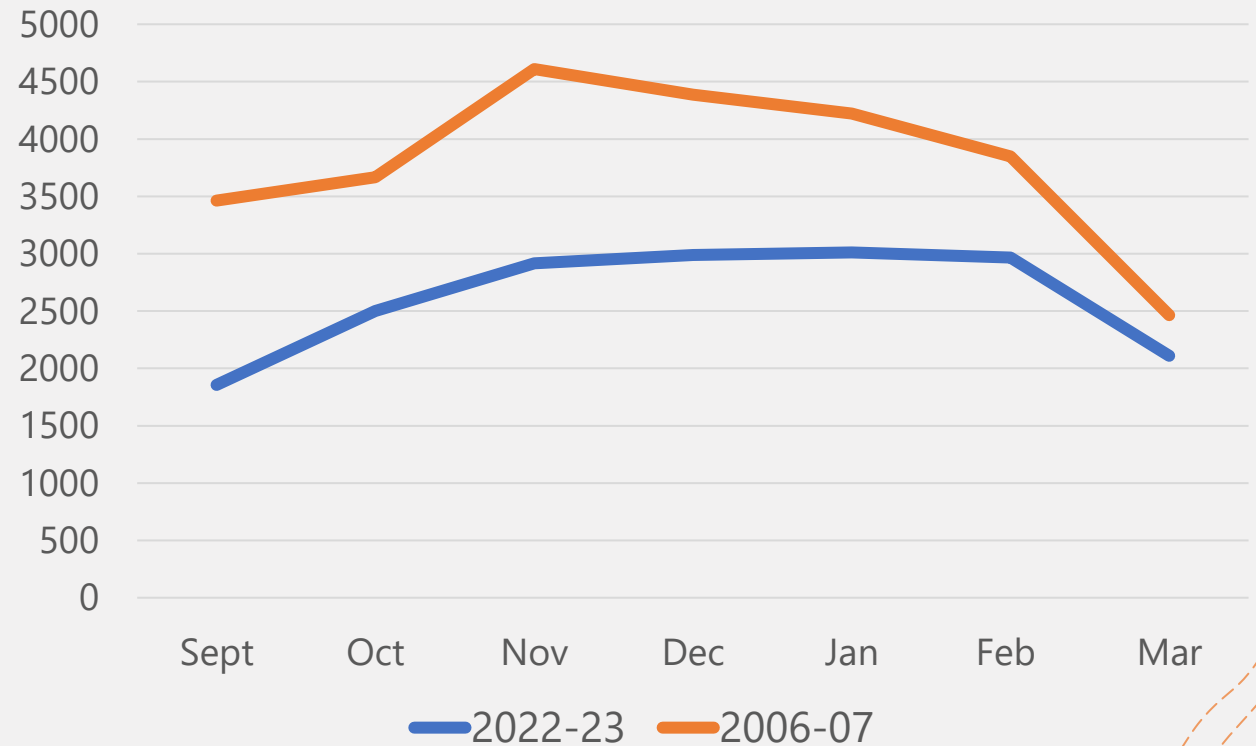
The wetland resource of the Colne Valley: a re-assessment of its importance to nature conservation, with special reference to waterbirds

+ Project outputs

- 1. An assessment of the last 10 years of WeBS data to ascertain if there have been any notable changes in waterbird populations.
- 2. Dedicated counts of waterbirds through the Colne Valley from Rickmansworth to Denham throughout the 2022-23 winter.
- 3. An ecological evaluation of the importance of Colne Valley water-bodies, notably for waterbirds.
- 4. Assess if issues such as habitat change, disturbance, or changing water levels have affected waterbird communities and numbers.
- 5. Based on the assessment and site evaluation, make recommendations for future habitat management of the water-bodies.

Overview - total birds

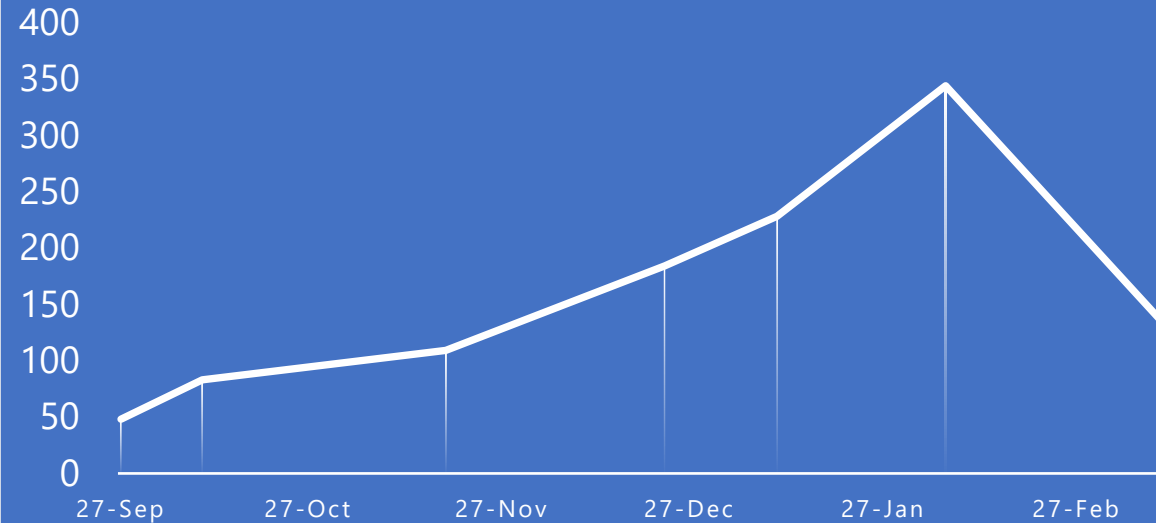
- In 2022-23, the study area supported up to 3,000 waterbirds.
- In a previous study in 2006-07, the peak count was 4,600 birds.
- Wintering populations of 2 species (Shoveler and Pochard) were above the level of National Significance.
- Coot and Tufted Duck formed 60% of the total.



Shoveler

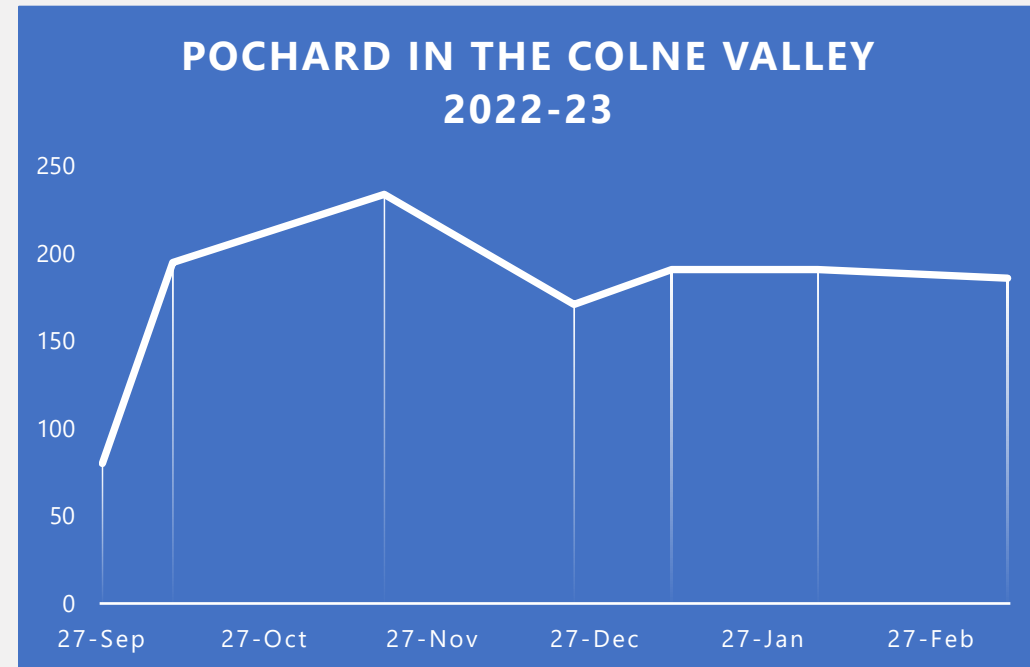
- Peak count of 344 in February 2023. Key sites: Broadwater Lake and Stocker's Lake.
- Has favoured roosting areas, often feeds at night.
- Feeds on surface zooplankton with specialized bill.
- Increasing in UK as a wintering bird, level of National Significance 190.

SHOVELER IN THE COLNE VALLEY 2022-23



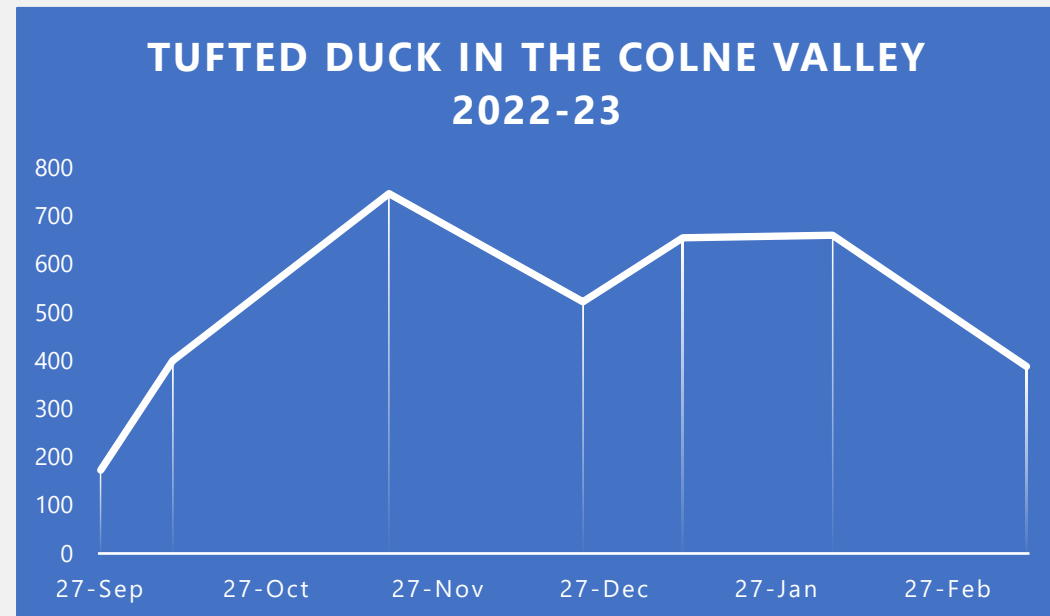
Pochard

- Peak count of 234 in November 2022. Key site: Broadwater Lake.
- Dives to feed on insects, snails, plants and seeds.
- Gathers on favoured roosting sites, often flying out to feed at night.
- UK trend steady decline (-73% over 25 years), level of National Significance 230.



Tufted Duck

- Peak counts of 746 in November 2022. Key sites: Broadwater Lake.
- Dives to feeds on invertebrates, especially molluscs.
- Spreads out to feed on all waters at quieter times. Moulting gathering in late summer.
- UK trend very slight decline. Level of National Significance 1300.



Cormorant & Grey Heron



Figure 1. Cormorant breeding pairs in the Colne Valley (no counts in 2022)

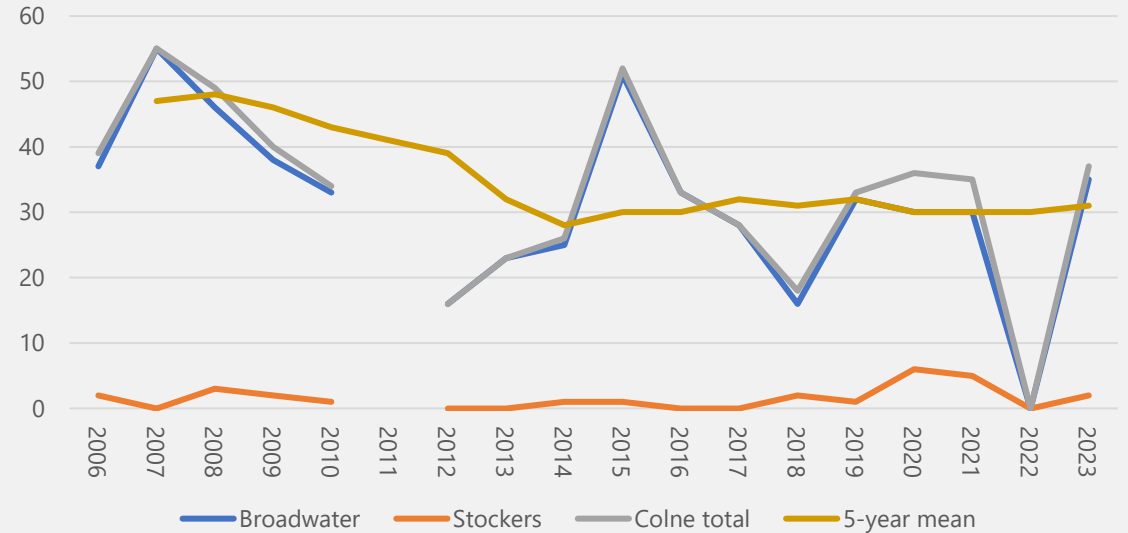
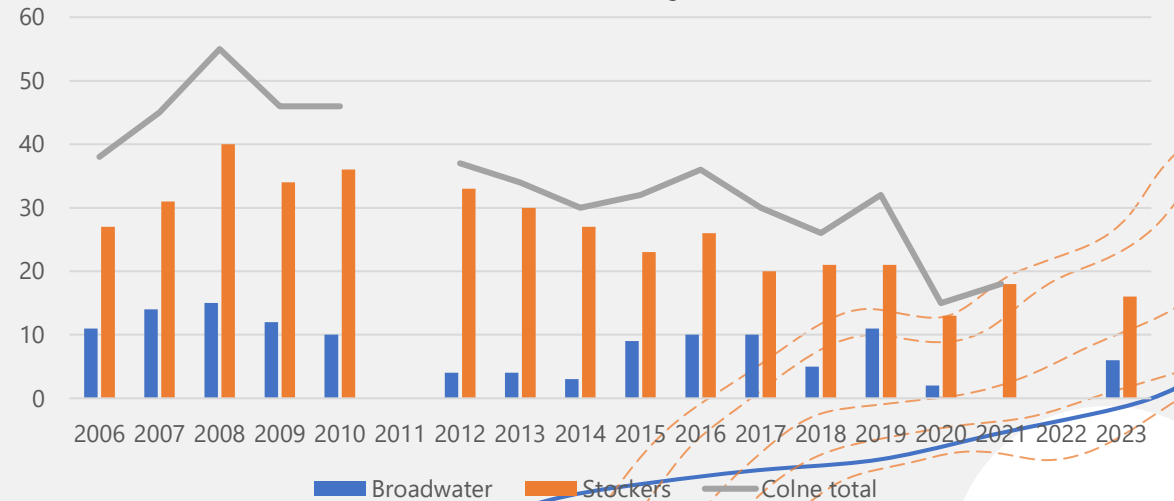


Figure 2. Grey Heron breeding pairs in the Colne Valley



Other species



Counts of waterbirds in the Colne Valley 2022-23

	27 Sep	10 Oct	18 Nov	23 Dec	10 Jan	06 Feb	13 Mar		Peak Count	Level of national significance
Great Crested Grebe	79	103	92	54	69	75	72		103	170
Cormorant	54	53	109	86	70	100	90		109	620
Mute Swan	20	18	28	64	55	49	31		64	500
Canada Goose	185	194	12	24	134	167	305		305	N/A
Greylag Goose	100	108	12	0	13	2	4		108	N/A
Wigeon	14	20	7	107	46	62	82		107	4500
Gadwall	40	49	53	184	100	102	46		184	310
Teal	3	7	18	22	20	12	7		22	4300
Mallard	92	113	86	146	85	91	53		146	6700
Shoveler	48	83	109	184	228	344	132		344	190
Red-crested Pochard	0	0	0	32	13	22	4		32	N/A
Pochard	80	195	234	171	191	191	186		234	230
Tufted Duck	173	400	746	522	655	660	388		746	1300
Goldeneye	0	0	7	15	13	13	15		15	190
Smew	0	0	1	1	1	1	0		1	1
Goosander	0	0	2	0	0	1	0		2	150
Coot	969	1158	1400	1379	1318	1075	695		1400	2000
TOTAL	1857	2501	2916	2991	3011	2967	2110		3011	

Waterbird totals at sites in the Colne Valley

	27 Sep	10 Oct	18 Nov	23 Dec	10 Jan	06 Feb	13 Mar		Peak count	Peak Count 2006-07
Stocker's complex	663	756	722	684	842	717	544		834	1431
Springwell	8	8	6	11	18	45	60		60	276
Maple Lodge	10	17	48	77	75	87	55		87	151
Lynsters	87	259	283	263	290	278	205		290	662
Pynesfield	154	178	225	332	298	240	159		332	263
North Troy	50	46	78	291	95	91	38		291	107
Troy Mill	208	198	391	334	364	273	210		391	369
Tilehouse	28	36	58	62	52	47	36		62	226
Broadwater complex	459	557	589	443	560	784	501		784	1160
Savay	34	46	56	50	41	59	45		59	395
Harefield No 2	19	98	143	132	109	100	84		143	95
Denham complex	137	302	316	309	266	245	173		316	303
TOTAL	1857	2501	2916	2991	3011	2967	2110		3011	4618

Broadwater Lake

- Key site for most important species: Shoveler, Pochard, Tufted Duck, supporting around 800 birds at peak.
- Key breeding site for Cormorant and Grey Heron.
- Key refuge site, enables birds to feed over a much wider area. Significant movement between here and Stocker's Lake.



Stocker's Lake

- Key site for most important species: Shoveler, Pochard, Tufted Duck.
- Key breeding site for Cormorant, Grey Heron, Little Egret, Common Terns and Black-headed Gulls.
- Key refuge site, enables birds to feed over a much wider area. Significant movement between here and Broadwater Lake.



Maple Lodge

- Key site for Teal, Gadwall and shallow water species. Summer moult site for Gadwall.
- Diverse breeding waterbirds in small numbers.
- Key refuge site, well managed with strong volunteer team.



Patterns of distribution

- Tolerant species (Mute Swan & Coot) remain on a site until the food resource is depleted.
- Most species flight out from 'refuges' to find food, remaining until disturbance forces them back. Some nocturnal feeders.
- Some species gather in nightly roosts after spreading out to feed by day
- All sites are important.

Summary of trends

- Shoveler, Red-crested Pochard, Greylag Goose and Canada Goose



- Wigeon, Gadwall, Teal, Mallard, Pochard, Goldeneye, Goosander, Smew, Cormorant, Grey Heron and Coot



Why are so many species declining?

+ **Wigeon, Gadwall,
Teal, Mallard,
Pochard, Goldeneye,
Goosander, Smew,
Cormorant,
Grey Heron and
Coot.**

- The impact of climate change; milder winters and 'short-stopping'.
- The impact of natural succession; the loss of early succession habitat & shallow water.
- The impact of declining food resource; aquatic plants and the impact of fish populations.
- The impact of disturbance or conflict with human activity.



Climate change – milder winters

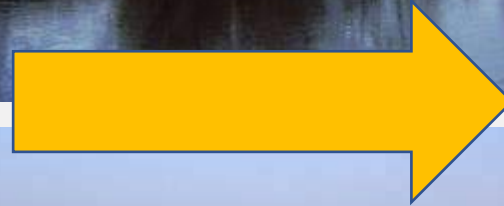
- + The impact of climate change; milder winters and ‘short-stopping’.
- + A contributory factor to the decline of several species (**Wigeon, Gadwall, Teal, Mallard, Pochard, Goldeneye, Goosander and Smew**) is likely to be reduced numbers arriving due to ‘short-stopping’ in recent milder winters.

Gravel pit ecology

- Often 'simple' waterbodies.
- Natural succession to mature tree-lined lakes can be rapid.
- There is a complex inter-relationship between birds, fish, aquatic invertebrates and the nutrient-status of the lake.



Natural succession – gravel pits



Declining food resources - aquatic weeds



Signal Crayfish and Carp



Carp: One study found 100kg/ha reduced aquatic plants and waterbirds by 50%.



Signal Crayfish: increased sediment increases turbidity, reduces aquatic plants

The future - climate change etc

Climate change adaptation:

- Manage pollutant loads to minimise impact on natural nutrient status.
- Restore and maintain natural hydrological regimes – good dynamic management.
- Structural and species diversity in vegetation types, for example, shorelines with a mosaic of trees and emergent vegetation.
- Maintain early successional habitats, marginal aquatic vegetation and wet grasslands in good condition.
- Good biosecurity to slow the spread of invasive non-native species.
- Predict increasing and colonising species and implement beneficial management.

The future – management actions

Overarching actions:

- + Maintain key refuge areas (Broadwater Lake, Stocker's Lake, Maple Lodge).
- + Maintain early successional habitats – shallow water, wet grass, marginal emergent vegetation. Identify and manage appropriately and as a priority, key early successional habitats.
- + Reduction of tree cover to enhance marginal aquatic vegetation and structural diversity. Identify and manage tree cover in key areas to create structurally and species diverse lake margins.
- + Natural fish populations.
- + Reduction of Signal Crayfish populations.
- + Management plans & monitoring.



- Thanks to.....
- All the WeBS counters over the years, especially Paul Lewis.
- To Tony Booker for expert advice, and the Angling Clubs for allowing access (and already undertaking some good management).
- Heritage Lottery Fund for funding, as well as Colne Valley Regional Park and HMWT.