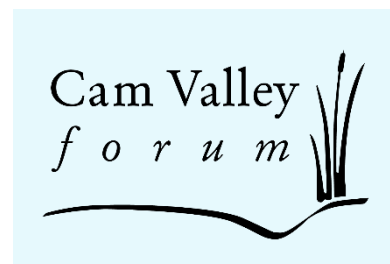


SURVEY OF HIMALAYAN BALSAM IN THE CAM CATCHMENT 2019



Summary

At a Cam Valley Forum (CVF) meeting in September 2018 with the local Environment Agency coordinator, it was decided that a catchment-wide survey of Himalayan Balsam was needed in order to update the records database and to record abundance, so that any options taken up to remove Balsam in 2020 and beyond would be based on sound information. The CVF survey's primary objective was to locate the uppermost incidence of Balsam in the Cam, Granta, Rhee and their tributaries. It is believed this was successfully achieved, with the caveat that observer records from other, significant locations may yet be received although this is unlikely.

On the Cam, huge stands of Balsam were located at Sparrow Hill (TL521364) north of Newport, and on the Madgate Slade and in adjacent overspill ditches at Saffron Walden (TL531383). On the Granta, huge numbers in the SSSI site 'Alder Carr' were confirmed at Hildersham, and a few small patches were located on the river just upriver of this site. Most of the Bourn Brook is under the aegis of the Wildlife Trust BCN, CCV (Cambridge Conservation Volunteers and the CRT (Countryside Restoration Trust) and the distribution is fully known. CVF survey and mapping on the Bourn Brook stopped at the point upstream where their operations cease, and between there and the Cam (Byron's Pool) there were extensive stands. Balsam on the Bin Brook could not be found above the Coton Nature Reserve at TL414582. Within the reserve plants were abundant. Balsam appears to be absent from the Rhee.

Balsam was located at many more sites than are currently recorded in the CPERC and NBN databases, and in which abundance was noted for only 27% records (excluding Bourn Brook) submitted to CPERC and for none to NBN from Essex. Significant records from the survey will be added to the databases.

Further surveying in 2020 is required to ensure that a significant stand of Balsam has not been overlooked.

Those with professional expertise in Balsam removal state that the uppermost plants in a watercourse must first and foremost be removed before any major attempts are made to reduce incidence further downstream. With good survey data now at hand, the options to target any or all significant Balsam locations with resources can be discussed.

A status map is available on the Cam Valley Forum website here
<https://camvalleyforum.uk/balsam-status/>

Background

Himalayan Balsam is an extremely invasive non-native annual plant. It grows well in moist and semi-shaded damp places, predominantly on the soft banksides of slow-moving watercourses. Where it becomes dominant it can cause environmental problems:

- reduces biodiversity
- can choke waterways leading to flooding
- competes with native flowers for pollinating insects—especially bees.
- killed by frosts, it leaves ground bare and vulnerable to erosion leading to bank loss and unwanted sediment in the water.

A workshop on invasive plants was organised by Sam Sweeney of the Environment Agency on 5th September 2018 so that CVF could put its views forward on management of alien invasive plants in the Cam catchment, with Guy Belcher, Dan Weaver, Anne Miller, John Terry, and Mike Foley attending. CVF, already involved in management of Floating Pennywort (*Hydrocotyle ranunculoides*), suggested that Himalayan Balsam (*Impatiens glandulifera*) would be a good candidate for action in parts of the catchment where the Wildlife Trust BCN, the Wildlife Trust Essex and others were not currently involved. It was agreed that Balsam would be surveyed in 2019. Based on the findings, CVF would liaise with catchment partnerships and other organisations, and local volunteer groups, with the intention of stimulating removal at targeted sites, within the constraints of funding and volunteer worker resources.

The incidence, and especially the abundance, of Balsam are poorly documented except for Ruth Hawksley of the Wildlife Trust's BCN (WTBCN) ongoing project on the Bourn Brook. Both WTBCN and WT Essex (Darren Tansley) state that Balsam needs first and foremost to be removed from the uppermost incidence in a watercourse, because long-distance dispersal occurs by seed carried down the watercourse. It is important therefore that any survey should locate the uppermost plants.

Method

The survey was done mostly by Mike Foley (CVF) with inputs from Ruth Hawksley, Rob Mungovan (Wild Trout Trust), and Charles Burret (English Heritage). The start date was 19th June, most of the survey was in August / mid-September and a few sites were visited in October. Below is a map of the major rivers and tributaries in the Cam Catchment

Cam Catchment – main watercourses



Of the above, the following rivers and tributaries were surveyed, Clayhithe (TL501644, near Waterbeach) being the furthest point on the Cam downriver.

Cam from Clayhithe up to Widdington (head), Wicken Water, Debden Water, Wendon Brook, Madgate Slade, King's Ditch (Saffron Walden), Fulfen Slade, unnamed watercourse through Wendens Ambo to Building end (TL435375), unnamed watercourse (Ickleton), Bin Brook, Bourn Brook (lower end to Byron's Pool), Coldham's Brook.

Granta, confluence with Cam at Stapleford up to Castle Camps and also the watercourse Bartlow to Streetly End (also named 'Granta' on some maps), River Bourn (various).

Rhee, Hauxton Junction (confluence with the Cam) up to Ashwell Springs (infrequent point surveying with telescope upriver from Haslingfield), Mel, Shep, Hoffer Brook. More extensive coverage of the Rhee and its tributaries is undertaken by Rob Mungovan during his Wild Trout Trust and conservation activities.

Away from public footpaths, bridges and other public areas, permission was first sought from riparian landowners before walking along watercourses, a necessary course of action as some stretches on which Balsam was found were on private land and not observable from public areas. Up to c.2km stretches were walked before returning to the car to resume surveying further along. Along some sections of the Cam, Debden Water and Wicken Water plants were looked for by walking on their dry beds.

The use of binoculars and telescope was necessary to confirm the identity of some more inaccessible plants; however confirmation of Balsam or the main confusion species Great Willowherb (*Epilobium hirsutum*) sometimes relied on closer observations.

The abundance of Balsam was assessed by the number of plants / size of stands / dominance (approaching a monoculture) along a stretch of watercourse. A reduced form of the "ACFOR" scale was used.

AbundantA few stands > 5m long or many stands per 100m
Common..... Several patches each of 20+ plants per 100m
Occasional.....One or two small stands of c. 6-20 plants per 100m

Results

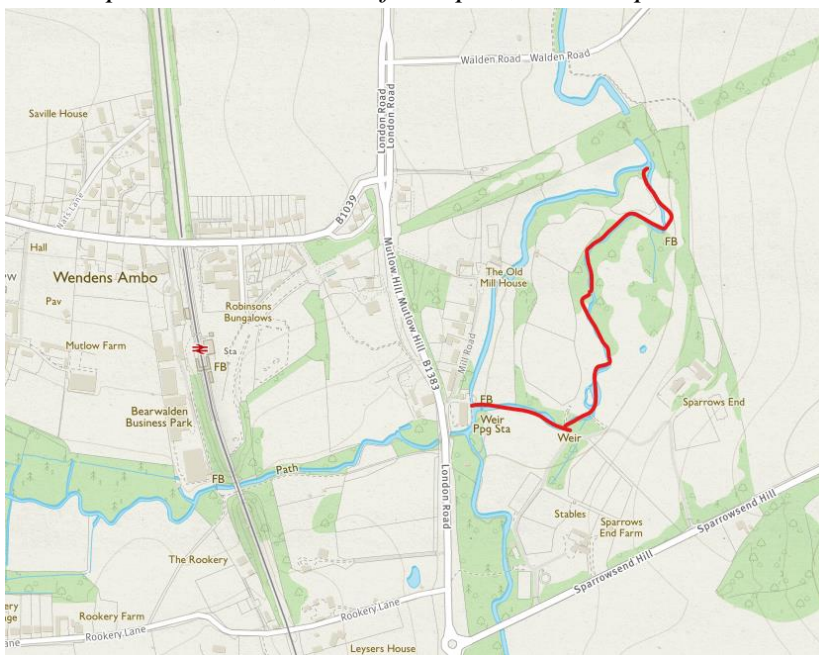
An interactive Google Map of the Cam Catchment survey can be viewed via this link.

<https://camvalleyforum.uk/balsam-status/>

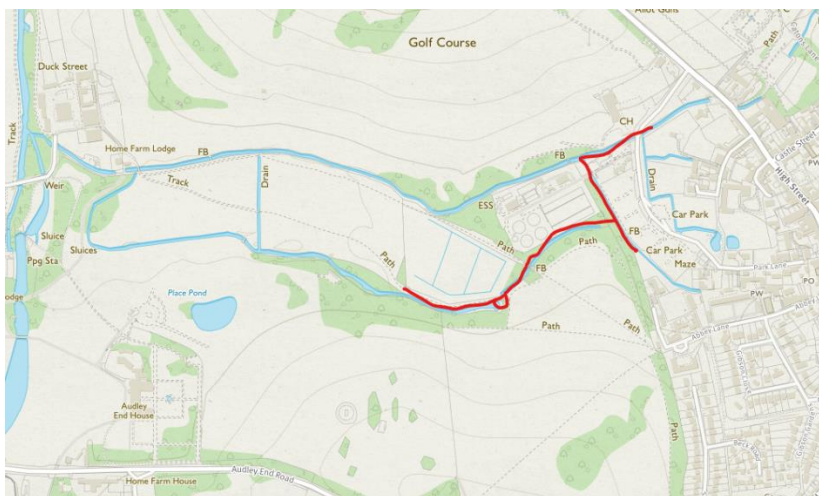
The abundance is colour coded. Balsam is distributed and patches are maintained by self-seeding along many kms of the Cam and Granta. This was generally known already from database records.

The uppermost incidences of Balsam in the various watercourses are shown below.

Cam: Sparrows End, north of Newport, Cam loop



Cam: Madgate Slade, Saffron Walden and Audley End overspill loop ditch



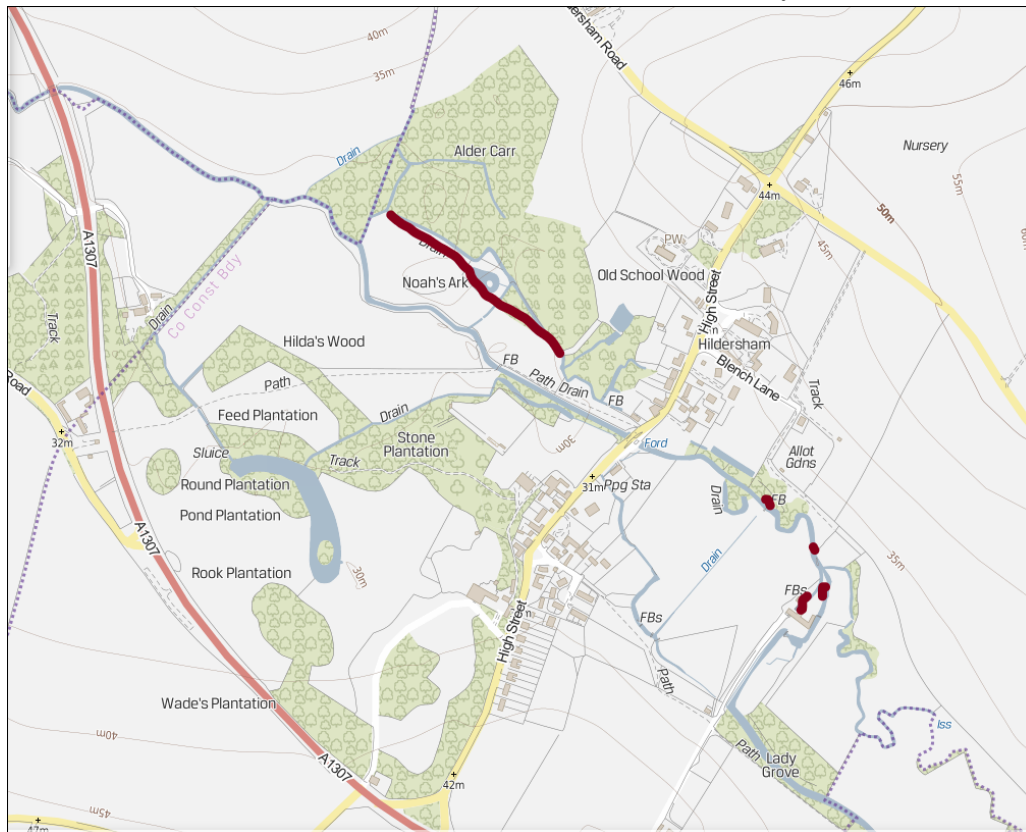
Audley End overspill loop ditch, 24th June 2019



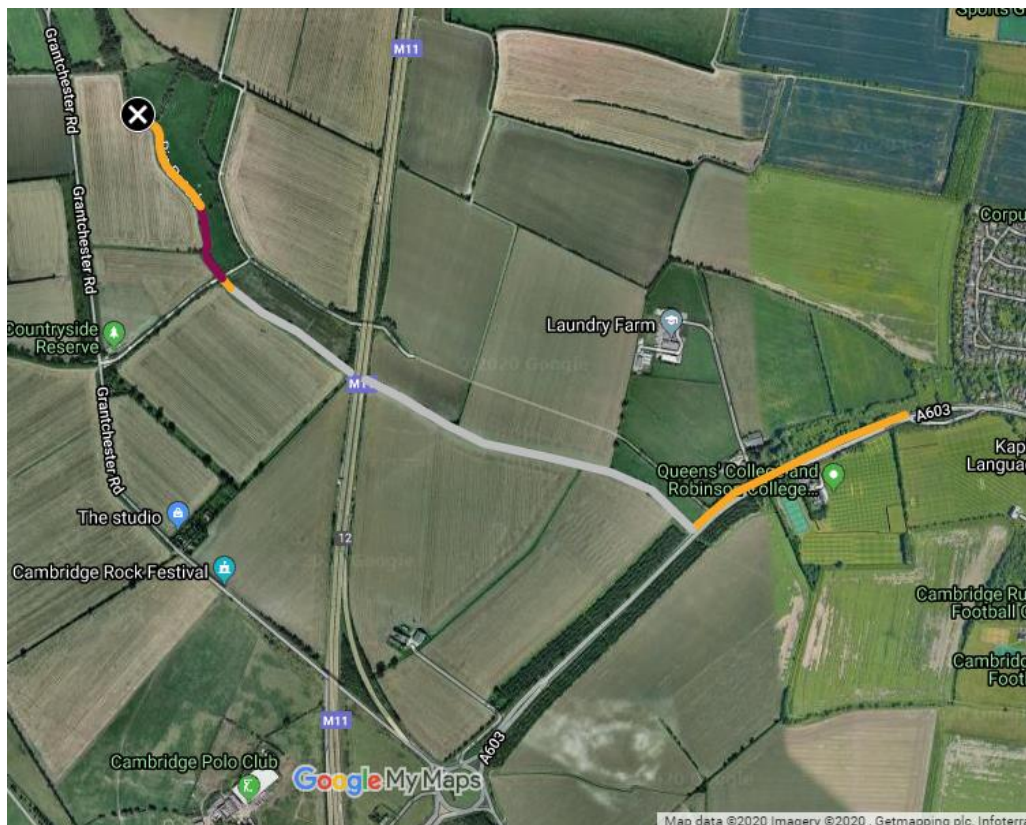
Audley End overflow loop ditch, more open section. Note lady of normal height in distance



Granta: Hildersham – Alder Carr SSSI and a short section of river above the road bridge



Bin Brook: Coton CPPF Nature Reserve



Purple – abundant distribution; orange – common; grey - occasional

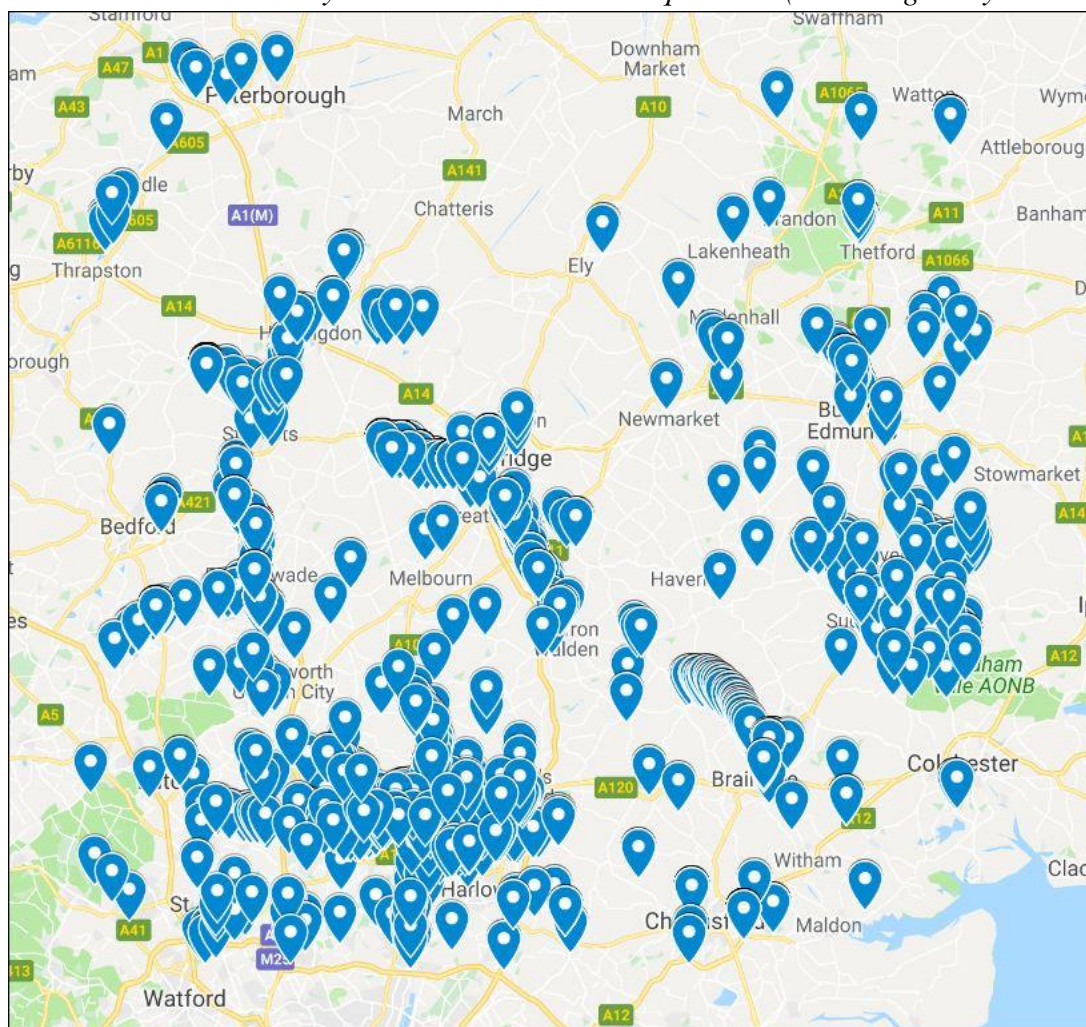
Discussion

The survey records have yet to be submitted to CPERC and NBN. The CPERC and NBN records in the following maps were obtained in November 2018 and February 2019 resp. In a recent extraction from the NBN database, no additional records have been noted for the Cam section in Essex. CPERC records in Cambs were more extensive than those at NBN.

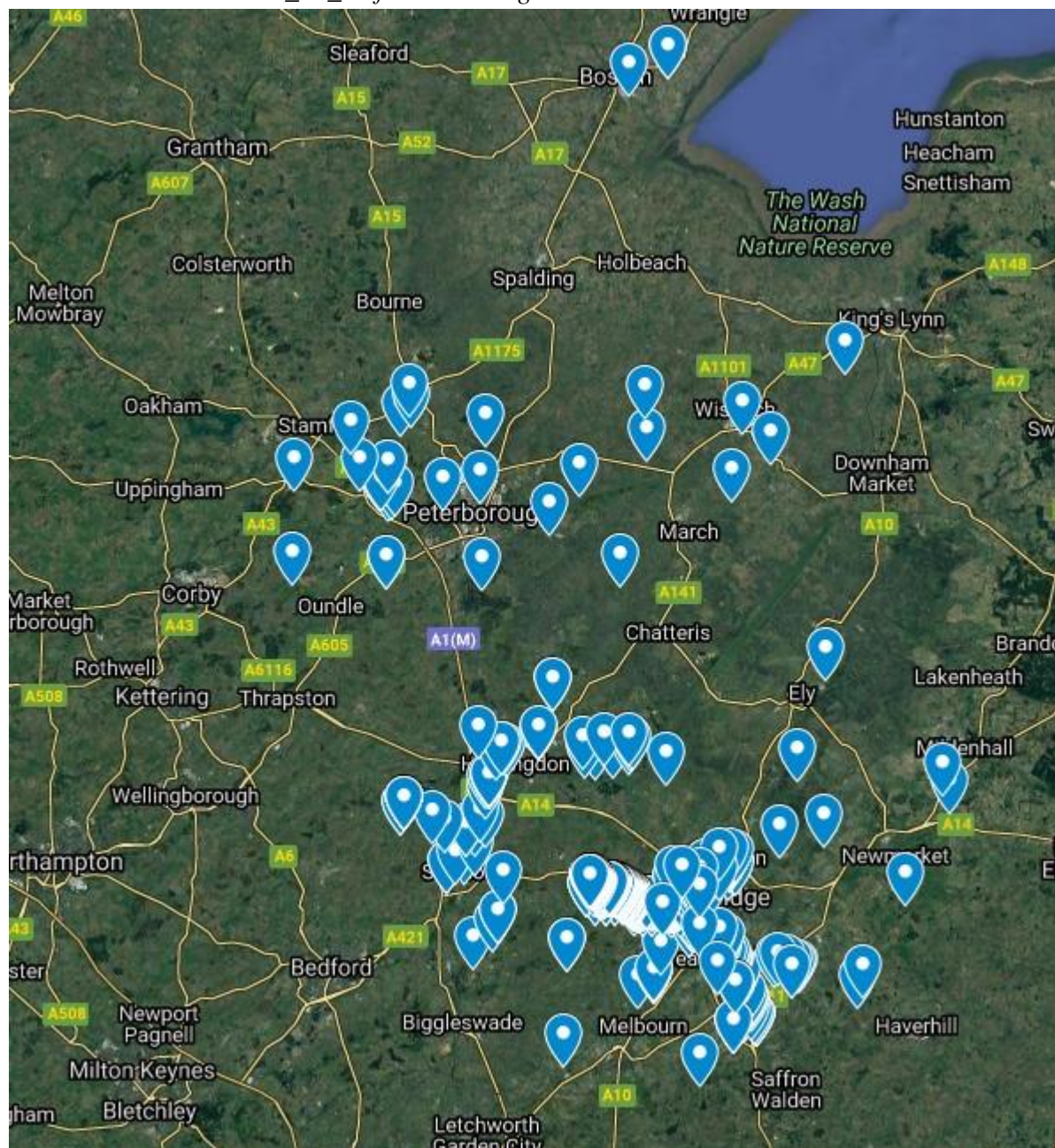
Some records appear to be well away from watercourses. The reason for a record not being located precisely on a watercourse is that many locations have been recorded at the tetrad level or higher. It is important when viewing the interactive maps to check the precision of each record, as it varies from 10m to 10km. Some records were submitted at a monad level so that a section of the river could be commented on rather than just a single point.

The incidence and abundance of Balsam in the Cam Catchment can be put into context by mapping all NBN records from the 100km square TL (many records from Beds were excluded to simplify formatting the map).

NBN records at February 2019 within the 100km square TL (excluding many Beds records)



CPERC records at 2018_11_30 for Cambridgeshire

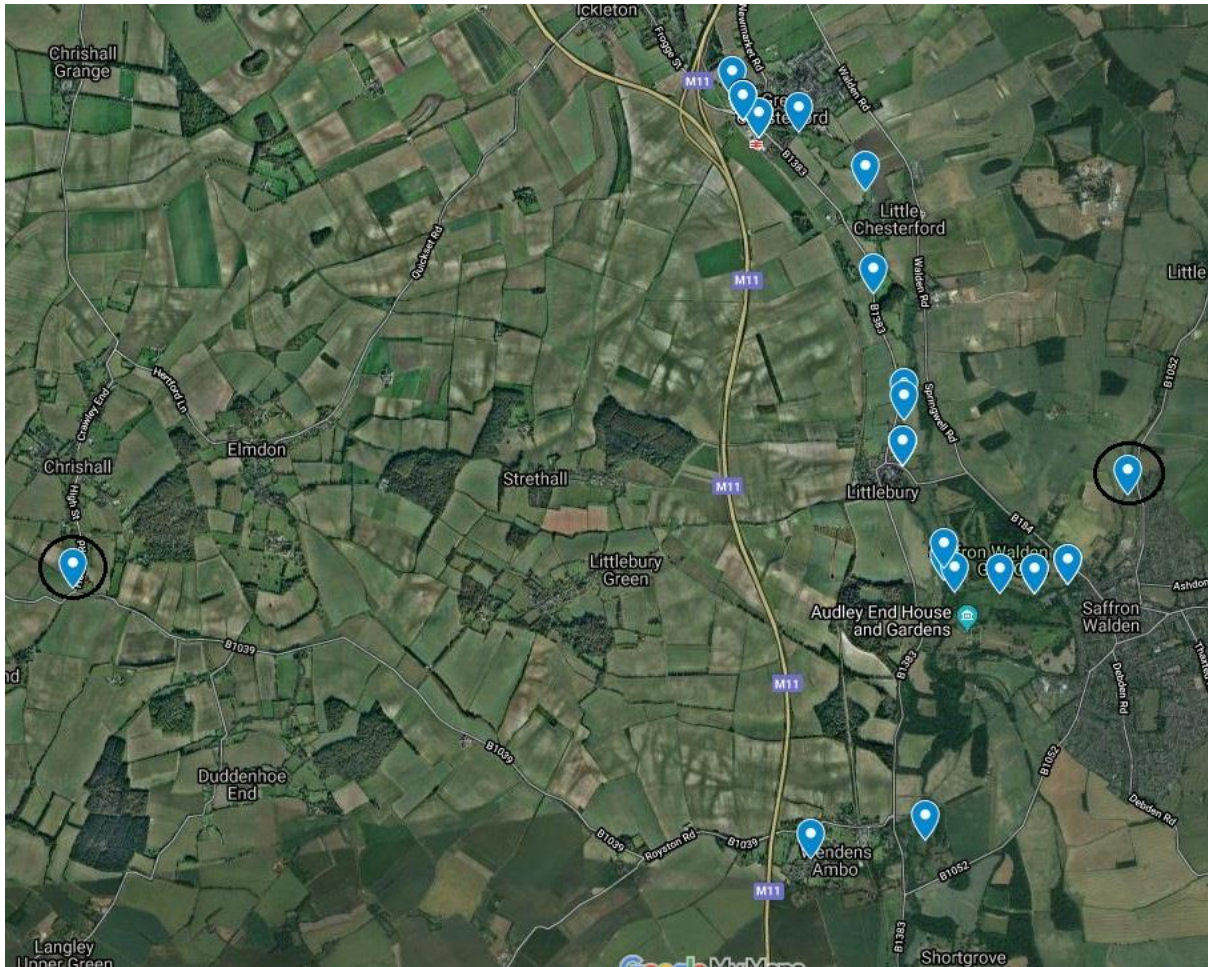


<https://drive.google.com/open?id=1hy66CzXoA4MHL3jSbLgFzqiOzYAWRFeE&usp=sharing>

Within Cambridgeshire including the unitary authority of Peterborough, 1061 records had been submitted to CPERC by 2018, including 722 from the Bourn Brook many of which were Ruth Hawksley's GPS point-site surveys. Very few were located on the Cam north of Cambridge.

Some CPERC records are pre-2000 and many are around 9 nine years old.

Map of records in NBN database at 2019_02_18, in hectad TL43, 53, and part-54



https://drive.google.com/open?id=1PHVZrQGt0G_Y8ylZkPPNVczh9mDWMt-__&usp=sharing

These NBN records are mostly from 2006 to 2011, with none after 2013 and none show abundance. Following up on the two records encircled on the map, the areas were searched but no Balsamorhiza hederifolia was found.

Practical fieldwork to remove Balsam – 2020 and beyond

- The growth stages of the Balsam plant dictate when bashing can take place without causing more harm than good.

Late February and March: many Balsam seedlings emerge, some late germinators

May–June: rapid shoot extension

Late June - late September: flowering period

August: start of seed pods ripening; explosive release of seeds mainly to September / mid-October, usually most have been released by the first frost.

The period of bashing is mostly early June to early August. Plants can be successfully pulled when small but at least two visits must be made in a season.

- It is necessary to focus first on the uppermost incidence only, and work down. After two or three years there should be a real reduction – and a psychological boost to volunteers which enthruses them to do repeated years, not to be underestimated.
- Eight years of bashing at Bourn Brook have been needed to reach a stage where it is close to eradication in long stretches of the upper and middle part.
- It may be necessary to manage large patches downriver in specific areas if they have local ecological importance and there are good volunteer resources; however, expect to find resurgence due to recolonisation from seed sources further upstream.
- Glyphosate applications may be useful in some situations.
- Employment of professional contractors to remove dense stands using brush cutters should be considered.
- There is no point in bashing at a site for a single season. At least three years' effort and, more likely 8+ years, will be needed to achieve acceptable results to make the project over a reasonable stretch of watercourse time- and cost- effective.
- Even if successful, removing the uppermost Balsam must be part of a planned approach to the entire river.
- Some casual bashing once or twice in a season without properly removal the plants can actually increase the problem for the next year, as does bashing too late in the season when too many seed pods are formed (seed can continue to ripen on plants severed from the roots and left on the bank).
- In 2020 WTBCN will continue to focus on Balsam control on the Bourn Brook, and with CCV, will extend it further towards the Cam, where CVF will join in and continue the removal to Byron's Pool.

Mike Foley 19th January 2020 mfpfoley@gmail.com docref 19033

Relevant publications

Review of the Work on the Non-Native Invasive Species Himalayan Balsam (*Impatiens glandulifera*) along the River Flit during 2011

<https://www.bedscape.org.uk/BRMC/newsite/docs/bedslife/species%20docs/balsam%20report%202011%20abridged%20version.pdf>

Himalayan Balsam and Other Non-Native Invasive Species on the River Flit [2017]

https://www.wildlifebcn.org/sites/default/files/2018-05/2017_anglian_water_report_beds.pdf

Bourn Brook Water Vole and Invasive Plants Survey Spring 2019 Ruth Hawksley, Irena Przeczko, Siân Williams, Lucy Wilson

https://www.wildlifebcn.org/sites/default/files/2019-06/Bourn%20Brook%20Survey%20Report%202019_0.pdf

River Rhee Invasive Plants and Water Vole Survey, Section 1, Spring 2013

<https://www.guildenmorden.gov.uk/wp-content/uploads/2017/12/RheeSurveyReport2013Sect1Email.pdf>

No invasive plants were found on the River Rhee or the River Shep. There is also a garden with Himalayan balsam near the River Mel (but not on the banks).

CPERC records with comments attached

Location	Date		Comments
Barnwell Pit CiWS	31/08/2005	TL471593	Grassland
Barnwell Pit CiWS	31/08/2005	TL471593	Pond at southern end of pit
Benwick (TL 39)	21/07/2008	TL346907	Rough ground near road in village, clearly casual
Bin Brook CiWS	06/10/2005	TL4457	Adjacent to Selwyn meadow
Bin Brook CiWS	06/10/2005	TL4457	Alongside Queens' Road
Bin Brook CiWS	06/10/2005	TL4457	Gough's Way area
Bin Brook CiWS	06/10/2005	TL4457	Robinson College
Bin Brook CiWS	06/10/2005	TL4457	St John's College playing field
Byron's Pool LNR	August 2013	TL4354	. TL436546record submitted via telephone after Wildlife Trust magazine article.
Cambridge The Backs	17/04/2011	TL4458	Bin Brook
Cambridge The Backs	31/10/2014	TL4458	The Backs
Cambridge, Empty Common	01/10/2013	TL4556	A couple of plants in an allotment
Cambridge, Trinity College	22/07/2016	TL4458	Near and on bank of Bin Brook
Coldham's Brook	04/06/2013	TL4759	Often dominant along the Brook below road bridge
Coldham's Brook CiWS	06/09/2005	TL477587	Section D
Coldham's Brook, Barnwell Junction Pastures	04/08/2010	TL47235949	30-35m left bank downstream of A1303 infestation, sporadic on right hand bank over same distance.
Coldham's Common CWS	July 2005	TL474586	North-west block, western drain
Coton Countryside Reserve	01/07/2003	TL4157	Coton Baseline surveyin bourn brook, along ridge&furrow meadows
Coton Countryside Reserve	01/07/2003	TL4157	in bourn brook, along ridge and furrow meadows
Diddington Brook, Buckden	07/09/2010	TL213671	About 15m of patchy coverage on both banks near mouth of brook.
Diddington Brook, Buckden	20/06/2011	TL213671	Present around footbridge and approx 20m upstream
Ditton Green to Ditton Park Wood green lane, Woodditton	08/10/1996	TL657580	northern end
Ditton Meadows CiWS	22/09/2005	TL476600	Coldham's Brook and overflow drain, banks and in-channel vegetation
Eastfield, Peterborough	09/06/2013	TL196991	Bottom of garden
Eynesbury, St Neots	26/08/1999	TL1758	Ouse bank to Eaton Socon Lock
Gamlingay Cinques Common CWS	14/07/2017	TL2252	South corner
GM Lamppost meadow	28/06/2016	TL440568	Removed from river bank

Grantchester	August 2013	TL4355	Mill Pond. TL435551record submitted via telephone after Wildlife Trust magazine article.
Great Abington	03/08/2011	TL5249	River bank
Hen Brook, St Neots	30/06/2011	TL1959	Sparse Himalayan Balsam on the Hen Brook in St Neots between NGR TL1981158825 to TL1899059387.
Hildersham	21/04/2011	TL5448	Alder Carr
Kingston	06/08/2013	TL35665569	big stand seen in field, not pulled
Kingston	30/06/2013	TL347560	Not done last year - lots
Kingston	27/10/2001	TL358553	several plants
Little Eversden	30/08/2008	TL35	Bourn brook
Lode	02/09/1993	TL522627	Ditch bank. 1 or 2 plants.
Logan's meadow	30/06/2013	TL464592	One plant, which was eradicated
Maxey Cut, Maxey	17/08/2010	TF121069	both banks
Melbourn	14/08/2004	TF3844	probable escape from garden
Meldreth	30/05/2013	TL37614629	RMRG has asked owner to keep HB at top end of garden away from river
Over	10/09/2010	TL363714	Overcote. Right bank of drain on landward side of flood bank.
Over	04/10/2009	TL364715	Side of drain
Pampisford	27/06/2011	TL4874847464	Numerous plants on both banks 50m each side of this point
Paradise LNR	19/07/2005	TL445571	Swamp clearing and surrounding willow carr, and alder carr
Parson Drove	09/08/2012	TF366084	L shaped ditch covered in Himalayan. TF36680843
River Cam	28/06/2016	TL4355	Most removed from river bank
River Cam, Duxford	27/06/2011	TL4823546190	Numerous plants all along drain 90m each side of this point (TL4817546124 to TL4830646237)
River Cam, Duxford	27/06/2011	TL4817646133	Numerous plants on left bank 20m each side of this point
River Cam, Duxford	27/06/2011	TL4851246832	Sporadic plants on both banks 200m each side of this point (TL4845846666 to TL4840046932)
River Cam, Great Chesterford	28/07/2010	TL5039642674	20m downstream of Footbridge on both banks, continuous on right, semicontinuous on left.
River Cam, Great Chesterford	14/06/2011	TL5039442673	Large stands of Hb along both banks both upstream and downstream of the footbridge, extensive.
River Cam, Great Chesterford	27/06/2011	TL5020442884	Numerous plants on both banks 60m each side of this point
River Cam, Great Chesterford	12/10/2010	TL5039442672	Present on both banks

River Cam, Hauxton	21/09/2010	TL429529	Lots along river banks 50m either side of this point
River Cam, Hinxton	20/07/2010	TL4946844548	Lots along river banks 50m either side of this point
River Cam, Hinxton	06/09/2010	TL4951144624	Lots along river banks 50m either side of this point
River Cam, Hinxton	24/06/2011	TL4932045161	Numerous plants all along drain (50m each side of this point)
River Cam, Ickleton	27/06/2011	TL4972244277	Left bank
River Cam, Ickleton	27/06/2011	TL4959444364	Left bank
River Cam, Ickleton	27/06/2011	TL4985643247	Numerous plants on both banks 150m each side of this point (TL4987043119 to TL4985943380)
River Cam, Sawston	27/06/2011	TL4654449649	Both banks
River Cam, Sawston	06/09/2010	TL467506	Lots along river banks 50m either side of this point
River Cam, Sawston	27/06/2011	TL480484	Numerous plants on both banks 40m each side of this point
River Cam, Whittlesford	01/09/2010	TL477484	Footbridge at Whittlesford. Intermittent patches, mainly on right bank, and downstream for at least 100m.
River Cam, Whittlesford	27/06/2011	TL4763048733	Left bank
River Cam, Whittlesford	27/06/2011	TL4716449268	Left bank
River Cam, Whittlesford	06/09/2010	TL4780148562	Lots along river banks 50m either side of this point
River Granta, Hildersham	03/08/2010	TL5468548484	Uniform distribution along length of right hand bank for approx 20m
River Granta, Little Abington	13/09/2011	TL524491	From TL524491 to TL526492 a couple of plants seen. Local Group to target next year in conjunction with WT.
River Granta, Stapleford	10/05/2010	TL4751	From Bury Farm in Stapleford (grid ref) to Linton Road Bridge (TL560469). Patchy distribution
River Great Ouse, Brampton	05/09/2010	TL227706	Multiple plants on left bank from lock to old rail bridge (approx. 1km)
River Great Ouse, Brampton	10/08/2010	TL226706	Upstream GOBA mooring Brampton left bank
River Great Ouse, Buckden	20/06/2011	TL214672	Patches of HB on both banks, intermittent from road bridge upstream for approx. 100m
River Great Ouse, Fenstanton	20/08/2010	TL3256070298	Present on the right hand bank just upstream of the new guided bus route bridge (Ouse viaduct)

River Great Ouse, Godmanchester	10/08/2010	TL2306670547	Single plant. 100m downstream of rail bridge on right bank.
River Great Ouse, Great Paxton	30/09/1986	TL205634	abundant
River Great Ouse, St Ives	22/06/2011	TL313705	Lock at St Ives invert site, on right hand bank
River Kennett	24/08/2017	TL7068	River bed dry
River Nene, Ailsworth	17/08/2012	TL108976	Approximately 10m stretch along river bank
Shepreth	2012	TL39314706	Reported by unknown member of the public at the Bourn Free/River Rhee project open meeting 2013-02-21
Shepreth	14/07/2011	TL393470	Small bank of himalayan balsam alongside ditch at corner of road.
Shepreth	30/09/2004	TL393470	well-established in ditch on E side of road close to houses
Stourbridge Common TL46q	14/07/2009	TL4760	In Coldham's Brook - pulled up
Streetly End	13/08/1994	TL615481	2 large plants 1 pink; 1 purple. S side of rd.with Urtica.
The Swards, Kingston	14/09/2001	TL355557	plentiful along Bourn Brook
Toft	06/08/2013	TL35655572	Few plants in the ditch
Toft	06/08/2013	TL35655576	More HB upstream not cleared, first field bashed.
Toft Golf Course	July 2013	TL36645498	Balsam removed from ditch, visible from track on the way in.
Wenden Brook, Chrishall	21/07/2011	TL445383	Along approx. 80m of bank
West Cambridge	19/07/2014	TL4358	Bin Brook by Sylvester Road