OVA Himalayan Balsam (HB) Report 2012

Background

In the past, the OVA has been much concerned with the Himalayan Balsam problem (HB hereafter). In 2007 there was a major input on the main river banks but it's effect was so disappointing in the following year that it was not continued thereafter. Individuals such as Diane Gee have put in heroic work since but it was not until 2011 that an OVA-sponsored sweep was again organized. This took place in liaison with EDDC Countryside section, Diane Berry and Jim Hunter leading (green tops in photo below). The location was adjacent to the cliff along the western margin of the flood plain above South Farm Road ie well away from the main river. The timing was deliberately before the seeding season: two outings on 6th and 16th of June. There were a dozen or so volunteers on the first but just 4 on the second outing. Impact was impressive but the area obviously was extremely limited spatially.



The June 6th 2011 "haul".

The HB was left to rot on the tarpaulin and then tipped in situ.



<u>Diane Gee triumphant! 6th June 2011</u>
The plant is massive but a couple of weeks short of flowering.

Also during June 2011, David Halls and I went up to Escot and joined a Tale Valley Trust (TVT) working party pulling HB in the lower part of that tributary, the longest in the catchment. It was an important experience as Mish Kennaway, their director, forcefully confirmed our suspicion that it was pointless attacking the main river banks of the Otter until the tributaries have

been cleared. The river acts as a giant conveyor, transporting seeds downstream, so tributaries must be tackled first. The implications for timescale are daunting of course. It will take decades to organize the clearing of all tributaries in the catchment. Since 2005, TVT have been pulling HB every year from source to the confluence with the Otter at Cadhay Bridge with small numbers of volunteers and they have almost controlled it. The lesson is that the OVA should be implementing such a policy "in our patch". On each tributary, the starting point should be the highest location of HB and work should then move downstream. Ideally, a small group, should look after each of our tributaries, following the TVT example. At this time (summer 2011) the only other interested groups in our patch were Clinton Devon Estate (CDE hereafter), the RSPB (Aylesbeare Common) and Newton Poppleford Parish Council, though the latter's efforts had been concentrated primarily in the village, ie low on the Back Brook rather than in the upper reaches.

Following this experience, the OVA Natural Environment Committee (NEC) took a decision in November of 2011 to follow the TVT example in 2012, but to use the winter to network throughout the catchment to see who else was thinking along the same lines. Setting up groups in every parish, on every tributary must be the goal. Accordingly, in December 2011, I went to the Environment Agency regional HQ in Exminster and discussed the matter with Nick Whatley, the Biodiversity Officer responsible for East Devon. Coincidentally, his mind was running along exactly the same lines and he was hoping that there would actually be a project in 2012. He was happy for me to network in the meantime. Accordingly I wrote emails to all parish clerks in the catchment and to all the groups on a short list of interested bodies, supplied by Nick Whatley. The response was patchy in the extreme. Only three parishes responded (Ottery St Mary, Luppitt and Gittisham) but the most interesting response came from Roy Coombs who performs two relevant roles: Project Officer at Otterhead Lakes Estate, where he has kept the topmost reaches of the Otter clear from HB for several years; and as the town councillor on Honiton town council with responsibility for keeping Otter tributaries within the parish clear of invasive plants. Later, a visit to Roy at Otterhead Roy was most gratifying. Are there others like him out there?

In mid-February 2012, the Environment Agency (EA) announced that they were going ahead with a bid to DEFRA for an HB project in the Otter Valley. A networker was appointed and I handed over my links to her. On the 8th of March a coordinating meeting was held at the EA in Exminster. FWAGSW (Farming and Wildlife Advisory Group Southwest) would implement the project with Roland Stonex in a lead role. Sadly, on April 18th DEFRA rejected our project. However, Nick Whatley assured us that a scaled-down effort would go ahead with Roland leading.

The Plan for the OVA; 2012

On 13th March, Nick Whatley and John Wilding (Clinton Devon Estates, hereafter "CDE") presented at an OVA NEC meeting. It was agreed that we would liaise with FWAG and with John. We would focus on our tributaries commencing at the highest upstream points and these would be determined

by lowerth Watkins (aka "Yog", contracted by FWAG from Westcountry Rivers Trust) who would implement a digital survey of HB along tributaries in the whole catchment (see 2 maps below). The tributaries are, from north to south:

Left Bank: the Otterton Brook

Right Bank:

The Back Brook into Newton Poppleford
The Colaton Raleigh brook
Bicton; lake and brook
The Budleigh Brook into East Budleigh
The Knowle Brook into Budleigh Salterton

On 2nd May I presented a 45 minute illustrated summary of our strategy at the OVA's AGM in Otterton. The reasons for the explosive expansion of HB in European river systems formed a focus. At this time, there was a major step forward with the emergence of two key volunteers:

Bob Wiltshire (our Assistant Minutes Secretary) volunteered a group from "Budleigh in Bloom" to look after the most southerly of our tributaries: the Knowle Brook that runs down from Squabmoor, through Dalditch and Knowle to Budleigh.

Rob Price, an OVA member (and keen angler) who lives at Hawkerland and volunteered to look after the more southerly of the two sub-tributaries of the Back Brook. He would monitor from Goosemoor, on the upstream edge of the Newton Poppleford village, right up to the commons at Canterbury Green. Rob would also check on the adjacent Colaton Raleigh Common where he walks his dog and where patches of HB were known to exist.

In early May, a sortie up the Otterton Brook produced (gratifyingly) a nil return, we presume because the lower sections are canalised so that seeds from plants on the main river banks, cannot easily lodge and migrate upstream along the river banks. It was also thought that the Budleigh Brook through East Budleigh was clear for the same reason. A badly infested wet area near Yettington was only discovered by John Wilding late in the summer. Bicton (lake and brook) was also thought to be clear (but later it emerged that this alsp was not quite so). This meant that the OVA effort should focus on the Colaton Raleigh brook. John Wilding was well aware that there was very serious infestation in the stretch above and below Stowford, a hamlet in the middle reaches of the valley, especially in a long block of woodland (Stowford Woods) below Lower Stowford Farm (GR061872) between Back Lane and the brook (See Map 1). (This is not marked green on the 25,000 map). Almost all of the time expended by OVA volunteers (and other groups) over 5 months in 2012 was within this strip.

Implementation 2012

Volunteers

The least satisfactory aspect of the 2012 experience was the mixed response to the plea for volunteers. This is a common experience, suffered by Ted Swann at Newton Poppleford and Bob Wiltshire on the Knowle Brook. Much has been achieved but it has required a disproportionate effort by a few. Perhaps it was ever thus!

I kept a rough record of volunteer time inputs on the Colaton Raleigh brook between 7th June and 21st October 2012 and the table below is a summary. Outings were of whatever length volunteers felt able to give but were usually 2 or 3 hours.

Outings; Frequency per person	Persons	Total Outings by group	Hours; Frequency per person	Hours per group
> 30	1	34	>40	91
10-15	2	26	21-40	66
5-9	1	7	16-20	19
2-5	6	18	5-15	51
1	8	8	<5	19
0	14	0		0
				-
Totals	32	94		234

As can be seen, 32 people volunteered to help although 14 of these did not manage to make it into the field (usually for perfectly good reasons). Of those who did make it, three people did 157 out of the 234 hours of work (final column) or 67%. There are obvious implications. If the 234 hours had been divided equally between the 18 volunteers who did make it into the field, they would each have needed to put in just 13 hours each ... perhaps 5 outings of 2-3 hours, spread over the 5 months from early June to late October. Interestingly, if all 32 had participated, we would have had a team corresponding in size to that of the RSPB whose volunteer squad has risen to this very level (30+) in recent years. We have a target! RSPB operate every Wednesday throughout the year.

In addition to the OVA volunteers, other organisations participated in the project "in our patch". Leaving aside Newton Poppleford Parish Council, who again worked the Back Brook within the village:

- The RSPB, organized by Toby Taylor, not only looked after Aylesbeare Common (which is managed by them) and the northern sub-tributary of the Back Brook which has its source there, but came down to help on one or two occasions in Hawkerland and Colaton Raleigh (Stowford) (maybe 20-30 man hours).
- The Probation Service also provided a team of 8-10 who helped on half a dozen occasions in Stowford in June (maybe 100 man hours).
- Carole Brown at Bicton College provided a team of 7-8 students with learning disabilities who operated twice in Stowford in September (some 30 man hours).

Conclusion:

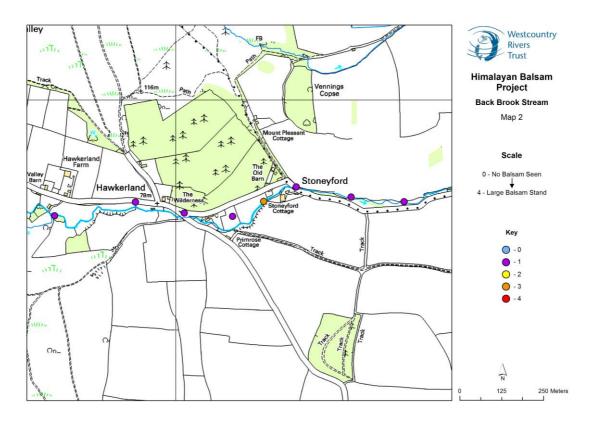
The principal point to be made about the above situation with regard to volunteers, is that it is not yet stable. It is of course wonderful that 14 did help and all contributions make an impact. But a system that depends upon just three people to do the lion's share is far too vulnerable to accident and ill-health, especially given our average age! For a long-term, stable project, it is essential that the base is widened and younger people should be involved, as on the Tale.

Spatially, the Ideal would be for each tributary to have a group of perhaps 6-10 people, preferably but not necessarily local residents who know the area well and can monitor HB infestation easily. Rob Jones is in just such a position and has been helped by some of the local residents in Hawkerland. The Newton Poppleford parish group is in a similar position. The lesson from badly infested places like Stowford and the swampy section at Knowle (see below) is that, in the first year at least, a large input of effort is needed, almost certainly necessitating groups such as the Probation Team. The longer the project continues however, the easier the work becomes as infestation is reduced, so that smaller groups should then be able to cope.

Spatial Progress

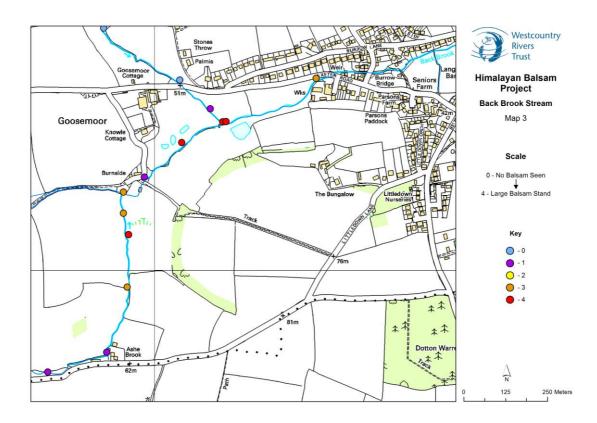
Knowle Brook. Bob Wiltshire had a difficult time both raising volunteers and coping with some awkward environments. The latter included sections where HB was mixed with brambles (near Dalditch) and a swampy area, very seriously infested, just below Knowle village. Bob continued manfully into the autumn and all areas received at least one sweep.

Back Brook Rob Jones, usually in waders, did several sweeps down from Hawkerland (Map 1 below) through Stoneyford to Goosemoor (Map 2 below), where infestation is worst. His Hawkerland tributary is thus more-or-less under control. Newton Poppleford again worked in the village and linked up to the difficult Goosemoor area. At the same time Toby Taylor of RSPB monitored the northern tributary coming down to Goosemoor from Aylesbeare Common. Rob also extended from the upper Back Brook south onto Colaton Raleigh Common, including Hawkerland Brakes.



Map 1 The Back Brook from Hawkerland through Stoneyford

The blue symbols are Yog's HB estimates. Purple is level 1 = low frequency. Orange is level 3 so that infestation is bad just west of Stoneyford.



Map 2 The junction of the northern and southern sub-tributaries of the Back Brook at Goosemoor just above Newton Poppleford village.

Red is the highest level of infestation. The Hawkerland tributary can be seen heading northwards from the SW corner of the map. As can be seen, it gets progressively worse towards the confluence (orange and red symbols)

The Colaton Raleigh Brook

Since this formed the focus for well over 90% of OVA volunteer input, the experience is examined in some detail.



<u>Himalayan Balsam in Stowford Woods on 2nd July 2012.</u>
As can be seen, these plants are not yet at the flowering stage. Only the tallest were on the verge of flowering at this time.

Timing It is generally assumed that HB has to be pulled before the plants seed in mid-late July (photo above).

Our experience this year has modified that assumption for two reasons:

 In areas cleared in June and early July, new seedlings appeared weeks later in some areas. When these were cleared, the same happened again, so that there were always some young plants in place right through into September and October.



HB seed pods about to burst by the Colaton Brook in the "swamp"; 21st October 2012

 Even when a plant is in seed with pods ready to explode (photo above), we, and Bob Wiltshire on the Knowle Brook, decided that it was worth taking scissors and plastic bags to the offending trusses which could then be taken to the Exmouth/Budleigh dump, making sure that they did not end up in the composting section!

Also, where seeds were not ready to pop, it is still worth pulling the plants and making a pile which could then be covered with vegetation to prevent exploding seed pods from scattering their seeds over a wide area (photos below). Seeds in these dumps will certainly germinate next year but will be concentrated in a small, accessible space and easily pulled.



A dump of seeding HB about to be covered with weeds; 21st Oct 2012



A small dump of HB covered with dead bracken; 21 Oct 2012

For these two reasons, it proved necessary to have not just one sweep but three, as follows:

- First sweep: 7th June to 31st July
- Second sweep 1st August to 21st September

• Third sweep 22nd September to 21st October After an initial outing of OVA volunteers on 7th June, the Probation team, under the aegis of FWAG, took over for the rest of that month. Thereafter the OVA volunteers did almost all of the pulling on this brook. Bicton students, led by Carole Brown, helped with two outings in September.

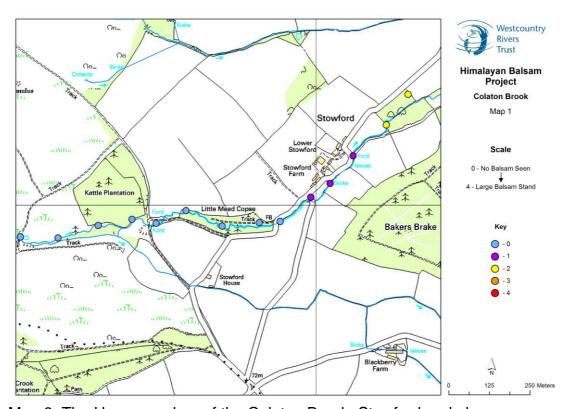
This timetable is in marked contrast to that of the Tale Valley Trust who, until 2012, had outings on only 3 days in June and July each year from 2005. Their man/days input per annum has been about a dozen ie 4 man/days on each of the three days (Mervyn Newman's 2011 report). The day was a full day of perhaps 5 hours (unlike our 2-3 hour outings) so the total man-hours per annum would have been some 60 or so. This is stunningly small compared with our 234 for individual OVA volunteers alone! The probation service and Bicton College may have added another 130! This will largely reflect the extent of heavily infested land in Stowford Woods but the hope is that when this block is brought more of less under control, the frequency of outings can be reduced dramatically.



Two volunteers with rueful smiles! 2nd July 2012 ie during the first sweep.

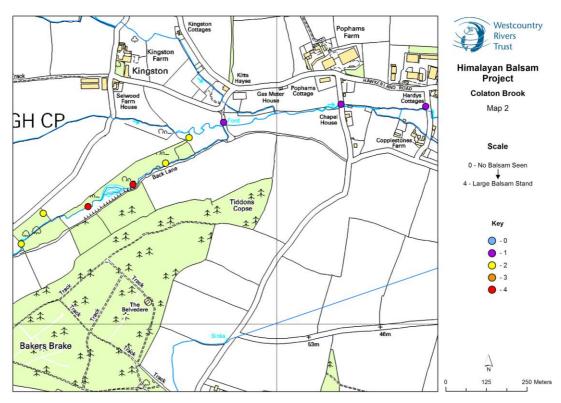
Spatial "Ecology"

The stretch of valley above and below the hamlet of Stowford is by no means uniform in terms of HB and the problems posed. Yog had established that the highest known location of HB was just above the topmost of four fords (Ford 1; See notes under Map 3 below). This therefore was our starting point.



Map 3 The Upper reaches of the Colaton Brook: Stowford and above.

Ford 1 (the uppermost location of HB) is at the easternmost of Yog's blue symbols (showing no HB); Ford 3 is at the most northerly of the purple symbols (showing Grade 1 (low) infestation). Back Lane takes off at this latter, and is named on Map 4.



Map 4 The lower section of Colaton Brook showing Back Lane and Ford 4 (purple marker).

There is no infestation in the huge areas of woodland south of Back Lane (up the hillside). The two red symbols on the brook in Stowford Woods show the highest level of HB infestation (level 4). The green shading in the strip is not accurate. By the westerly red symbol it should be green along the length of Back Lane. On the other hand, downstream of the easterly red symbol, the open "swamp" is not shown. It lies within the green shading in a block between the brook and the field to the north in the vicinity of the more westerly yellow symbol.

The brook, then, runs from SW to NE through this sector. Below our start point (Map 3), HB occurs in the following locations:

Arable field margins:

- On the SE side of the brook (Map 3) a sequence of fields runs down past the hamlet to Ford 3 which constitutes the top end of Back Lane (named on Map 4); and on along the SE side of Back Lane to end at the woodland block (Map 4). HB occurs in scattered clusters along the field verges closest to the brook or Back Lane. They are not too difficult to clear.
- To the NW of the brook there are two small fields, one within the hamlet and one below it (see Map 3). The latter is more difficult with HB often having to be searched for in tall thick grass and shrubs on the verge. Some is out in the field and easily visible.



The arable field below Lower Stowford Farm 30th June
The verge of this field lies adjacent to the brook. This, and the adjacent parts of the field itself, were cleared on the very first outing on 7th June.
23 days later significant numbers of stems that had simply been thrown down on the field were shooting (photo above). Although this practice ceased, this zone was continuing to shoot well into October. The small shoots (eg top right-hand corner) are a fiddle to remove!

 Lower down, there is a long field boundary bordering the woods on their NW flank which have some small clusters, some of which could be pulled from the wood itself, despite barbed wire.

In all three locations, HB returned again and again so that three sweeps were necessary.

River banks: From the start point at Ford 1 (Map 1) the banks
of the stream have moderate infestation down to Ford 3. There
is no impeding scrub or tree cover in the upper section above
Ford 2 (the most southerly purple symbol; at road junction) so it
is easily pulled from the water. Downstream the cover often
impedes, although infestation is mercifully modest.

As with the arable field margins, HB returned in scattered clumps throughout the summer and autumn so that three sweeps were necessary.

Woodland: There is just one area of woodland: an almost continuous block lying between Back Lane (which sits well above it and separated by an awkward steep drop) and the brook from Ford 3 for over a kilometre down almost to Ford 4 near Kingston. (The most westerly purple symbol on Map 4). For most of this length it also extends across the brook to the NW side. In early June, it was very heavily infested with HB and must have been feeding the brook with huge quantities of seed to transport downstream in previous years. On the other hand, most of this HB constituted a clear stand, with little undergrowth. It was easy to get at. Moreover the stems and root systems were straight, unlike those in the "swamp" which develop right-angled bends. They were also white in colour (see photo below), contrasting with the red rhubarb-like stalks of HB in other, more open environments. The latter were also tougher.

The reason for these clear stands over most of the woodland is not clear. In the bright sunlit (!) environments of the field margins, the riverbanks and the "swamp", perhaps there is more competition from other species than on the relatively bare, shady woodland floor. It will be interesting to see what species emerge on that woodland floor in 2013, assuming that HB does not regenerate there.



Single stand HB (just pre-flowering) in Stowford Wood, 4th July 2012. The two dumps on the right rotted in about 2 weeks.

Such clear stands of HB in the woodlands were cleared quite easily. Progress was rapid and, even better, once cleared the woodland floor stayed clear. In the second and third sweeps, it was only in awkward little hillocks, ridges or steep slopes within the woods, that HB returned. The flat sections of floor remained clear. The photo below was taken just two weeks after clearing but it remained in this state thereafter.



Two weeks later, 19 July 2012; an exhumed landscape!

The retreating wall of HB can be seen beyond the trees in centre and the cleared floor in the foreground remained clear throughout the summer and autumn.

• The "swamp": The location of the swamp is explained in the notes under Map 4. It proved to be a particularly problematic area and the problem has not been solved. The sense of accomplishment having completed the sweep down through Stowford Woods and emerging into the open, was soon dispelled by the sight of the sea of pink flower and strong red stalks. In the few, relatively dry spells, walking, standing and pulling was fairly straightforward. But after rain and particularly towards the downstream end, it becomes almost impassable. The same applies to an adjacent small open wet area on the SE side of the river butting up against Back Lane ("The Small Swamp"). The latter area was cleared quite effectively during the three sweeps. It was small. The large swamp is another matter.

Faced with this problem, John Wilding (CDE) experimented by sending in a strimming team on 26thJuly. The sea of pink was removed (see photo below):



Part of the strimmed "swamp"; 26th July 2012
Stems were cut into two or three pieces which then lay flat on the ground. View away from the brook to the NW. The edge of Stowford Woods is on the left.

Sadly the strategy did not work. A month later the pink flowers were once again much in evidence (see photo below):

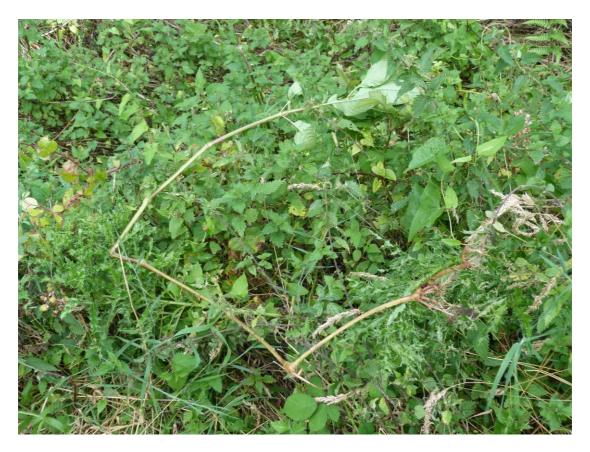


The SW margin of the swamp and the edge of Stowford Woods; 21st August

The photograph is thus taken almost a month after the strimming. Clearly the strimmed stems have sprouted and/or other seeds have germinated. This is quite difficult for pulling.

There are several difficulties posed for an HB puller in this particular ecological niche:

- Wetness underfoot has already been noted.
- The mix of plants (photo above). In contrast to the woodland floor where HB exists in clear stands so that the base of stems is easily seen and reached for pulling, in the swamp it is mixed with a great deal of strong grass and other leafy plants. The bases of stems have therefore to be searched for.
- Unlike those in the clear standing HB in the woods, the HB plants in the swamp have often developed one or more right-angled bends: sometimes at the base of the stem so that a horizontal then runs across the surface before another right-angle and the root shoots vertically downwards. If pulled above the right-angles, the stem/root breaks, leaving the base in the ground. Sometimes also roots shoot out from the nodes on the stem which again make it essential to ferret out the whole plant (see 2 photos below). This was seen to have happened on some of the strimmed stems.





These two photographs were taken on the 24th August (in the small swamp SE of the brook) and on 7th October in the main swamp. They illustrate the points made above with regard to the difficulties of pulling these "multi-segmented plants" (first photo) and rooting taking place from nodes on a very long root system (second photo), all of which has to be recovered.

There is no doubt that, with a volunteer force of 30, the swamp could be cleared by pulling. Given the reality of the situation, however, we opted for a compromise. The priority was to prevent HB seed pods from exploding anywhere near the brook. It was also desirable to prevent them from reestablishing HB in the flanking blocks of Stowford Wood upstream and downstream, which had been cleared. In October therefore, a "cordon sanitaire" some 9m wide was put in place; a cleared zone which, it was hoped, would limit the spread of HB. (See photo below and the lower photo above which was taken during the clearing of the "cordon").



7th October; the "cordon sanitaire" along the riverbank in the "swamp".

The brook is behind the trees on the right and ahead. The centre of the swamp lies to the left. The corridor has been cleared between the two for a distance of about 9 metres, the reputed range of exploding HB seed pods. The HB in this photograph was cleared to widen the corridor.

This piece of land will be revisited in 2013 with great interest to see how effective the cordon has been. The search for a solution to this problematic wet zone will be continued in 2013. It is matched by others, notably in Bob Wiltshire's equivalent at Knowle, another at Goosemoor on the Back Brook and yet another at Yettington on the Budleigh Brook (through East Budleigh).

Colaton Raleigh Brook: Outlying Areas

- Downstream to Popham's Farm: Downstream from the edge of the wood to Ford 4 (See Map 4 above), the brook runs through a meadow and continues then to the bridge opposite Popham's Farm. There a few clusters of HB in both meadows along the river banks. From the latter bridge to the road at Popham's farm itself there is bad infestation in the deep roadside ditch. This was cleared twice.
- The Minor Tributary running east-west south of Kingston Farm (Map 4) was missed out but thought not to be a problem.
- The tributary north of Kingston Farm and running east to Kits Hayes
 House (Map 4) is deep and seriously infested. Three quarters was cleared
 but it could not be finished. There was also bad infestation on the steep,
 deep road bank opposite Kingston Farm itself. This was cleared twice but
 the highest parts of the bank are inaccessible without a ladder.
- The brook in the village: The parish clerk, Neville Bennett (who is also the OVA NEC Secretary) looked after this section of the brook. Obviously it is crucial that the upstream areas are thoroughly cleared to ensure that these lower reaches down to the confluence with the Otter are not re-infected.

Conclusion

The aim, it will be remembered, was to clear all of our 5 tributaries of Himalayan Balsam. This aim has not been achieved in 2012 and it was never likely that it would be. The Tale Valley Trust are still discovering infected patches in their valley even after 8 consecutive years of pulling. So what was has been achieved?

Strictly in terms of the principal aim, there has been substantial progress. On the Back Brook, Rob Jones has, with modest help, cleared the Hawkerland tributary. The upper stretches are in good shape and neighbouring common land has also been monitored. Lower down below Goosemoor, Ted Swann has had a good deal of success in keeping HB under control following efforts in several recent years. Goosemoor wetlands remain a problem.

Meanwhile at the southern end of our patch, Bob Wiltshire did a similar job to Rob on the Knowle Brook with the "Budleigh in Bloom" team, the first time that that tributary had been tackled. Again the upper reaches are now in good shape, but the swamp at Knowle has proved a bugbear. The same comment applies of course to the Colaton Brook. A massive effort has been expended and both the upper reaches and the formerly seriously-infested wood land

block are in good shape. The problem once again is a troublesome wetland area.

Of the other two tributaries that had been thought to be clear: the valley of the Otterton Brook is still, as far as we know, clear. Sadly the Budleigh Brook through East Budleigh, as noted is not. That lately discovered wetland at Yettington is yet another that awaits a solution in 2013. Can it be contained even if not conquered?

A lesson in all of these areas, as noted, is that the progress that has been made, has depended far too much on a few individuals and it is essential that a system is put in place to ensure that there are sufficient volunteers to staff teams that will keep going in the long-term, as on the Tale, and in the RSPB. This is an organizational challenge.

There have been other lessons learned. Mid-July is by no means the end of the pulling season. As we have seen, young HB plants keep breaking through throughout the months of August, September and October and we leave them untouched at our peril! Nor is it impossible to do something about plants that have not only flowered but have seed pods, some of which are ready to burst. As explained, it is well worth attempting to trap the seeds in plastic bags and bury the rest of the plant under bracken or any other available vegetation. It is better than leaving them to explode.

Looking further afield, in the medium term it would be hugely gratifying if the cleared Tale Valley could be linked down to our patch to create a large HB-free zone. This would mean tackling the four or five tributaries in Ottery St Mary parish eg Fluxton and Venn Ottery. In fact a start was made this year when I was asked by Roland Stonex of FWAG if I could pop up to Fluxton Farm from which a request had been received to help with an acute HB problem. Having seen the scale of the problem, FWAG then sent in the Probation Service team and a start was made. Could this be a step on the way to a tributary-clear catchment? To be followed by a combined assault on the Otter itself? I hope that I live that long!

PS:



Where we came in? Ornamental Garden in the drive into Fluxton Farm,
Ottery St Mary; 8th August 2012

Himalayan Balsam was imported into Britain from India as an ornamental plant in 1839; along with Japanese Knotweed. Its beautiful pink flowers were regarded as the "poor man's" orchid and were in seed merchants' catalogues until very recently.

Patrick Hamilton OVA Natural Environment Committee. 14th February 2013

Acknowledgements

Some photographs were taken for Clinton Devon Estates by the professional photographer, Guy Newman (His name appears on them). Thanks are due to Clinton Devon estates for contacting Guy to ask if the OVA could have copies; and to Guy himself for sending them. All the remaining photographs are my own.

The four maps are the property of FWAG SW (Farming and Wildlife Advisory Group South West) and the Environment Agency. Thanks are due to them for making them available.