

Control of Floating Pennywort *(Hydrocotyle ranunculoides)* **on the River Waveney**

Development of an eradication plan

Paul Sims N.D.H.
Native Landscapes

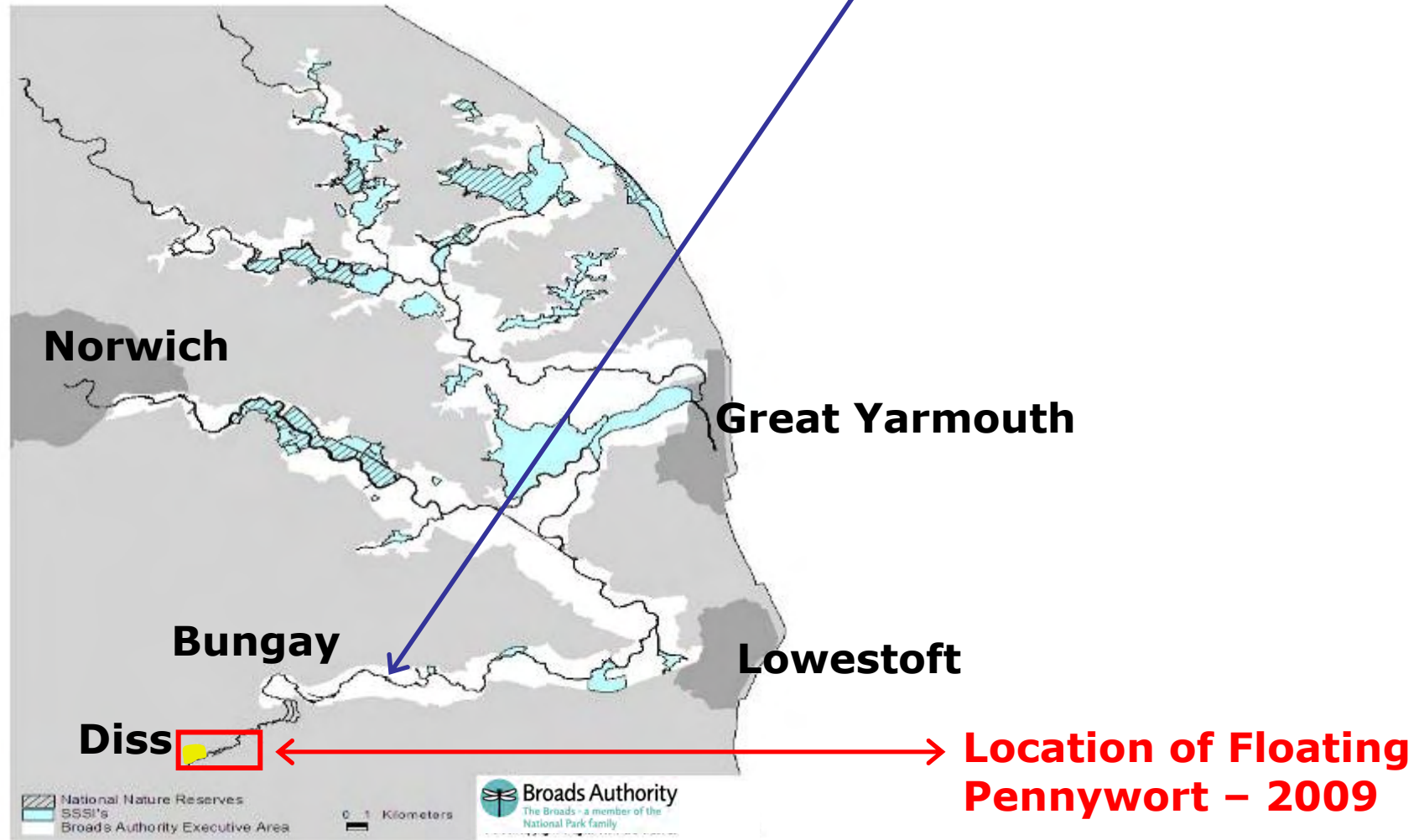


Reducing the Impact of
Non-native Species in Europe
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“Investing in your future”

Cross border cooperation programme 2007-2013 Part-financed by the European Union (European Regional Development Fund)

Where is the River Waveney ?



Why Worry ?



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What can Floating Pennywort do ?



Floating Pennywort



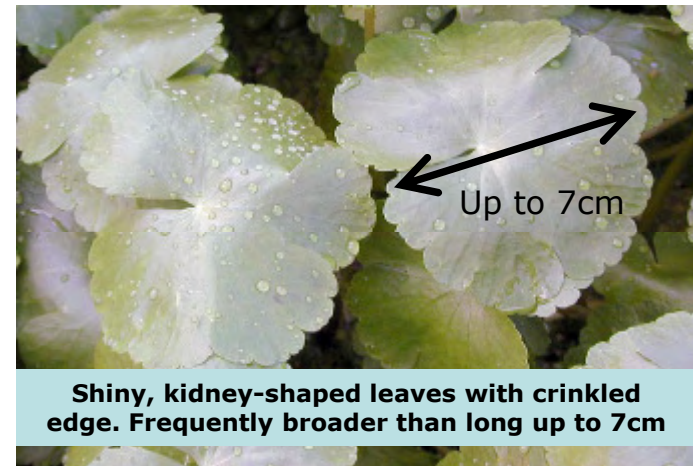
Key identification features

➤ **Fleshy stalks**

➤ **Fine roots**



Leaves can be floating or emergent



Shiny, kidney-shaped leaves with crinkled edge. Frequently broader than long up to 7cm



Who Am I ?



- **Paul Sims** N.D.H.
- Studied horticulture at **Hadlow College**
- Worked as **Head Gardener** for 10 years
- Keen interest in **Native Plants** and ecology
- Moved from Essex to Suffolk in 2001
- Started **Native Landscapes** in 2005
- Specialise in **Invasive Weed Control**



How did I end up here ?

➤ August **2009** – Just another phone call !



➤ **Beth Williams** from



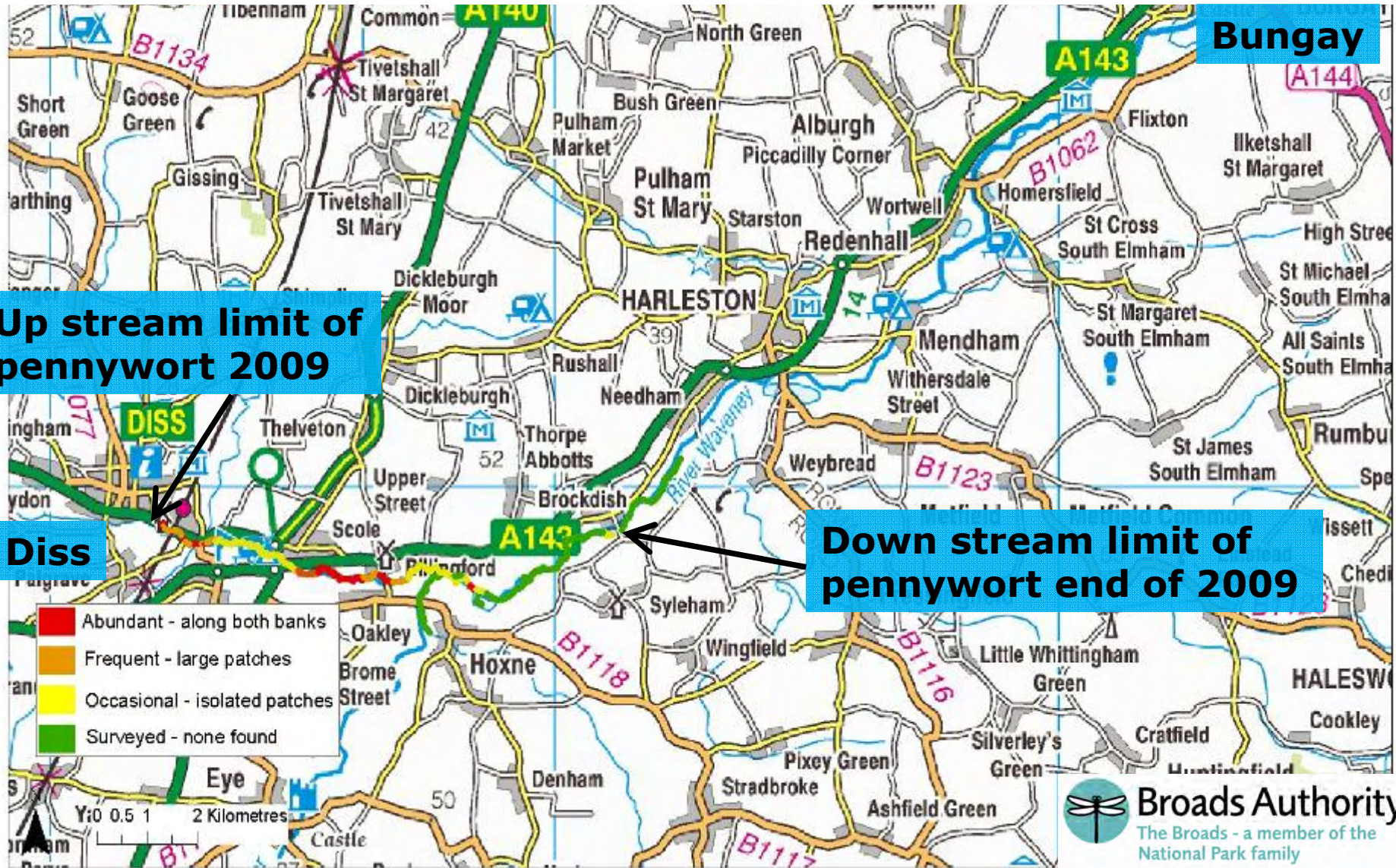
➤ Quotation for herbicide treatment of **Two Miles** of Floating Pennywort spoil heaps ?

➤ Following mechanical removal (**£££££**)

➤ 2 mile sounds like a lot – it was a lot !

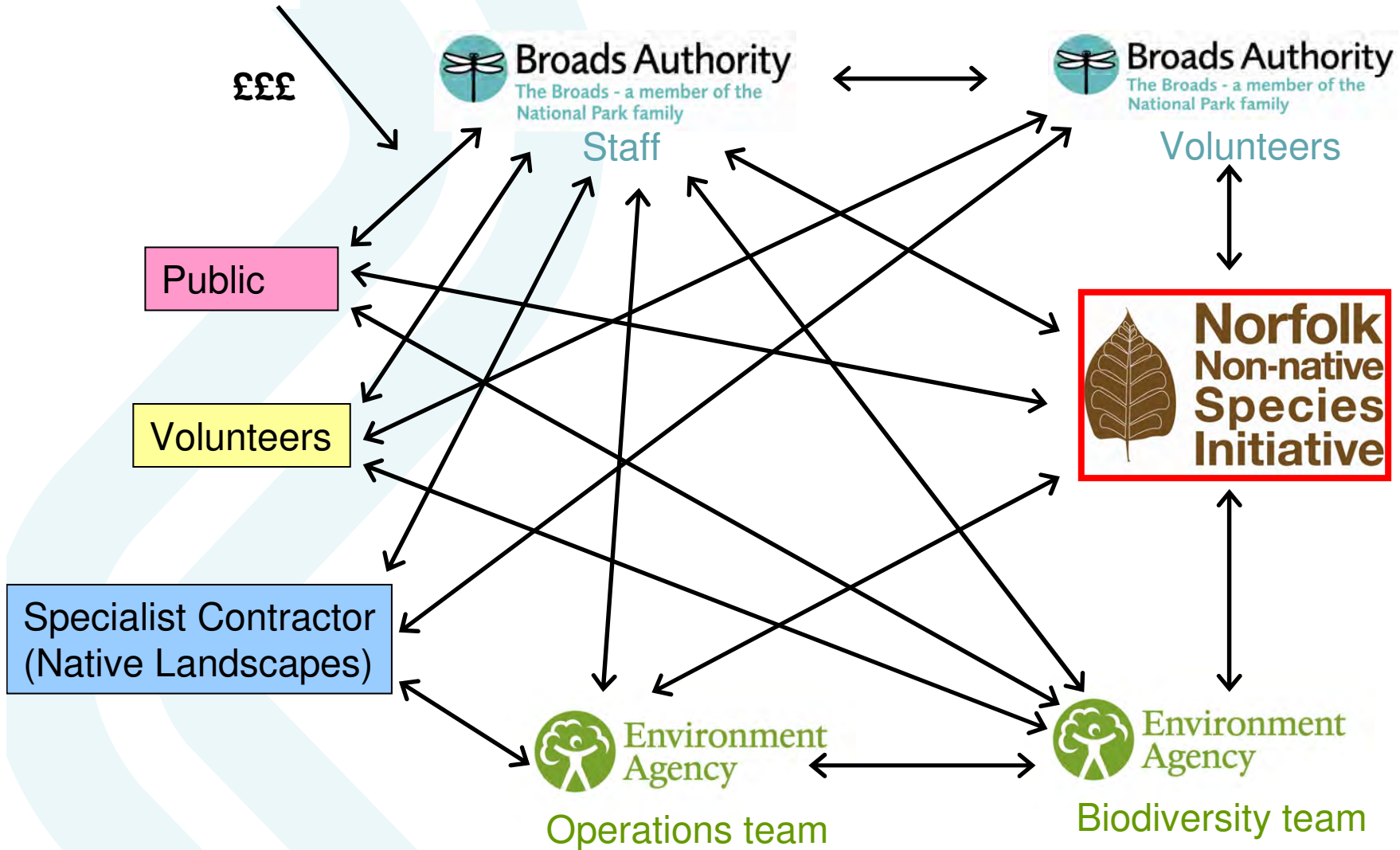
➤ And that was just the start

Control of Floating Pennywort on the River Waveney 2009 – Map Reference

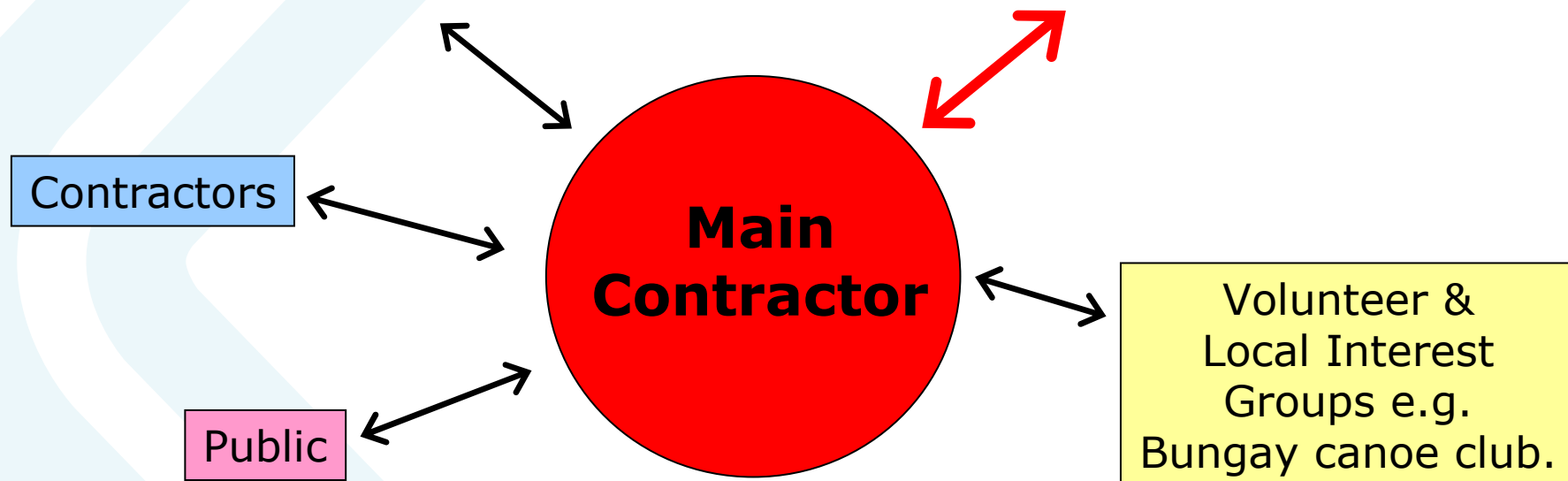





Coordination & Communication 2009



Coordination & Communication 2010



What happened next ?

- Another phone call !
- **Mike Sutton Croft** from the  **Norfolk Non-native Species Initiative**
- Quotation for the Control of Floating Pennywort on the River Waveney 2010 ?
- **Contract awarded to Native Landscapes**
- Steering Group / Management Plans / Method Statements / Risk Assessments / Access Points / Liaise with Landowners etc.



2010

Steering Group Members 2010

Norfolk Biodiversity Partnership	Scott Perkin
Non Native Species Initiative	Mike Sutton-Croft
Broads Authority	Beth Williams
Environment Agency	Julia Stansfield Jason Coombes Chris Adams Chris Strachan
Native Landscapes (Contractor)	Paul Sims



Control of Floating Pennywort on the River Waveney 2010



Key Tasks

- **Deliver an effective management programme**
- **Focus efforts on the worst affected areas**
- **Survey River Waveney regularly and record details**
- **Carry out manual removal of Floating Pennywort**
- **Apply herbicides when necessary and record details**





Timetable



Control of Floating Pennywort on the River Waveney 2010

- **May 2010 to November 2010**
- Contractor and assistant employed for **2 days a week**
- Manual removal / survey **upper** reaches **weekly**
- Manual removal / survey **lower** reaches on a **monthly** basis
- Herbicide applications to be carried out from **June** onwards



May 2010



Control of Floating Pennywort on the River Waveney

- **Surveyed the river from Diss to Bungay – 27 km.**
- **Manually removed from upper limit downwards.**
- **Develop manual removal techniques to avoid fragmentation.**
- **Spread removed plant material thinly on open sunny banks to die off.**
- **Spread at least 3 metres from the waters edge.**



Key points to remember

- **Spread removed plant material thinly on open sunny areas to die off**
- **Decomposition happens in as little as 1 – 2 weeks**
- **Avoid spreading Floating Pennywort in public areas**
- **Avoid spreading near cattle access points**
- **Carry out follow up surveys to ensure all plant material is dead**




(June and July 2010)



Results of using herbicide

- Initial results **POSITIVE.**
- Plant growth under the water was sometimes unaffected.
- Nodal joints appear to affect the translocation of herbicide.
- During die back live plant tip growth can become detached.
- Follow up surveys downstream prevent fragments re-growing.
- Follow up surveys required after 3 weeks to ensure all plant material is dead.





**Surveying
through
Water Fern !**

P.Sms 2010

(September and October 2010)



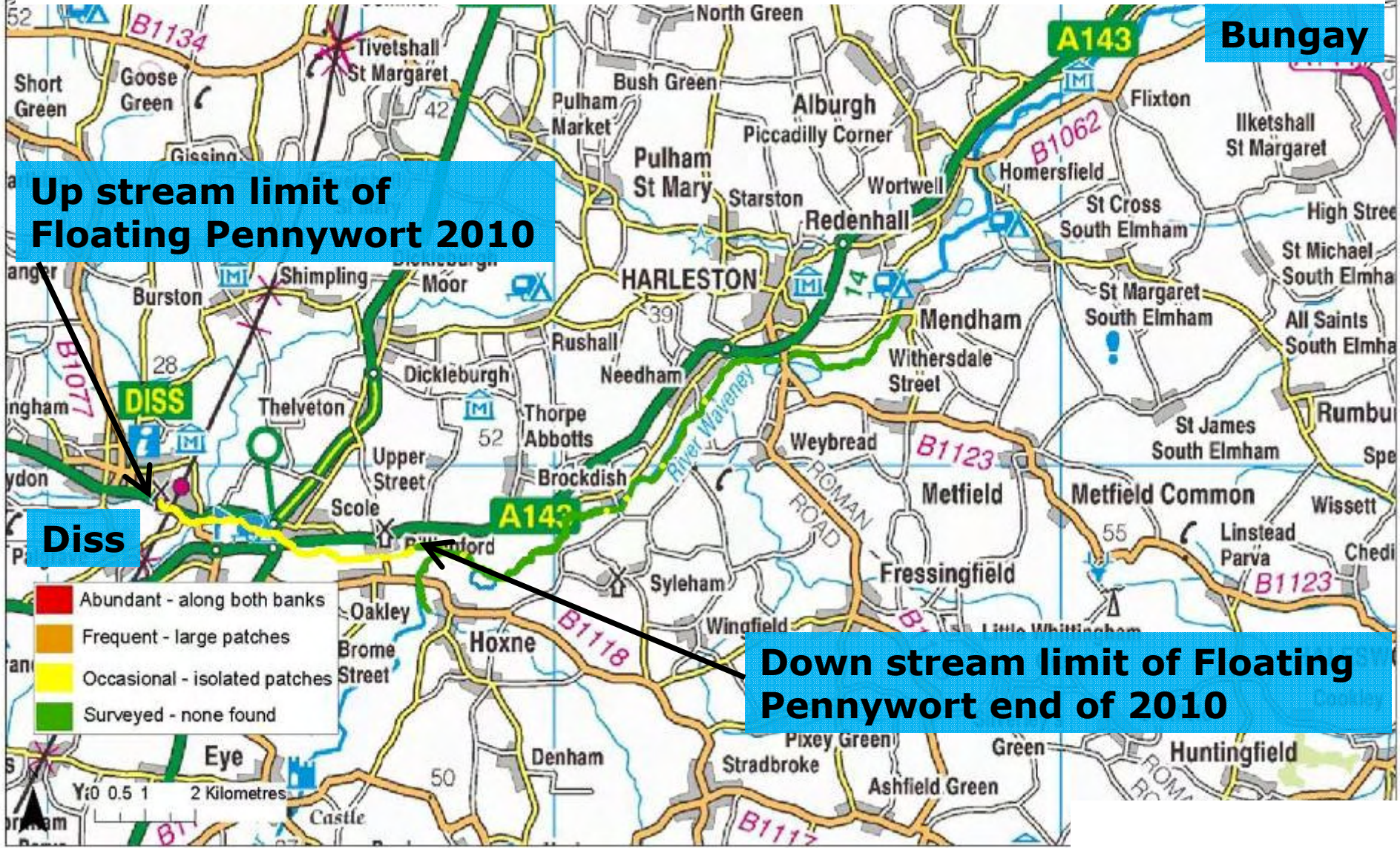
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Effectiveness of Late Herbicide Applications

- **Later herbicide treatments** were **not as effective as mid summer** applications.
- Temperature / growth rate decrease **slows down** the **translocation** process.
- With **large infestations** of Floating Pennywort late season applications of **herbicide** are still **worth considering** if manual removal is not possible.
- Growth in **marginal areas** **required spraying** despite decreased effectiveness **to ensure eradication**.



Control of Floating Pennywort on the River Waveney 2010 – Map Reference



Conclusions



Control of Floating Pennywort on the River Waveney 2010

- Floating Pennywort grows rapidly in open sunny situations
- Floating Pennywort will tolerate and grow in heavy shade
- Floating Pennywort regularly fragments in flowing water which then tend to settle in bends of the river and overhanging trees
- Floating Pennywort can be found growing in fast flowing water
- No mechanical extraction required during 2010
- Significantly reduced the severity compared to 2009
- Very small amounts found at the upper limit of infestation
- Floating Pennywort found slightly further downstream than in 2009 (possibly due to fragmentation from weed cutting)

Overall the contract was successful in reducing the extent and severity of Floating Pennywort during 2010



2011

Steering Group Members 2011

Norfolk Biodiversity Partnership	Scott Perkin
Non Native Species Initiative	Mike Sutton-Croft
Broads Authority	Dan Hoare
Environment Agency	Jason Coombes
Native Landscapes (Contractor)	Paul Sims



Timetable



Control of Floating Pennywort on the River Waveney 2011

- **May 2011 to November 2011**
- Contractor and assistant employed for **2 days a week**
- Manual removal / survey **upper** reaches **weekly**
- Manual removal / survey **lower** reaches on a **monthly** basis
- **Herbicide** applications to be carried out from **June** onwards



July 2011

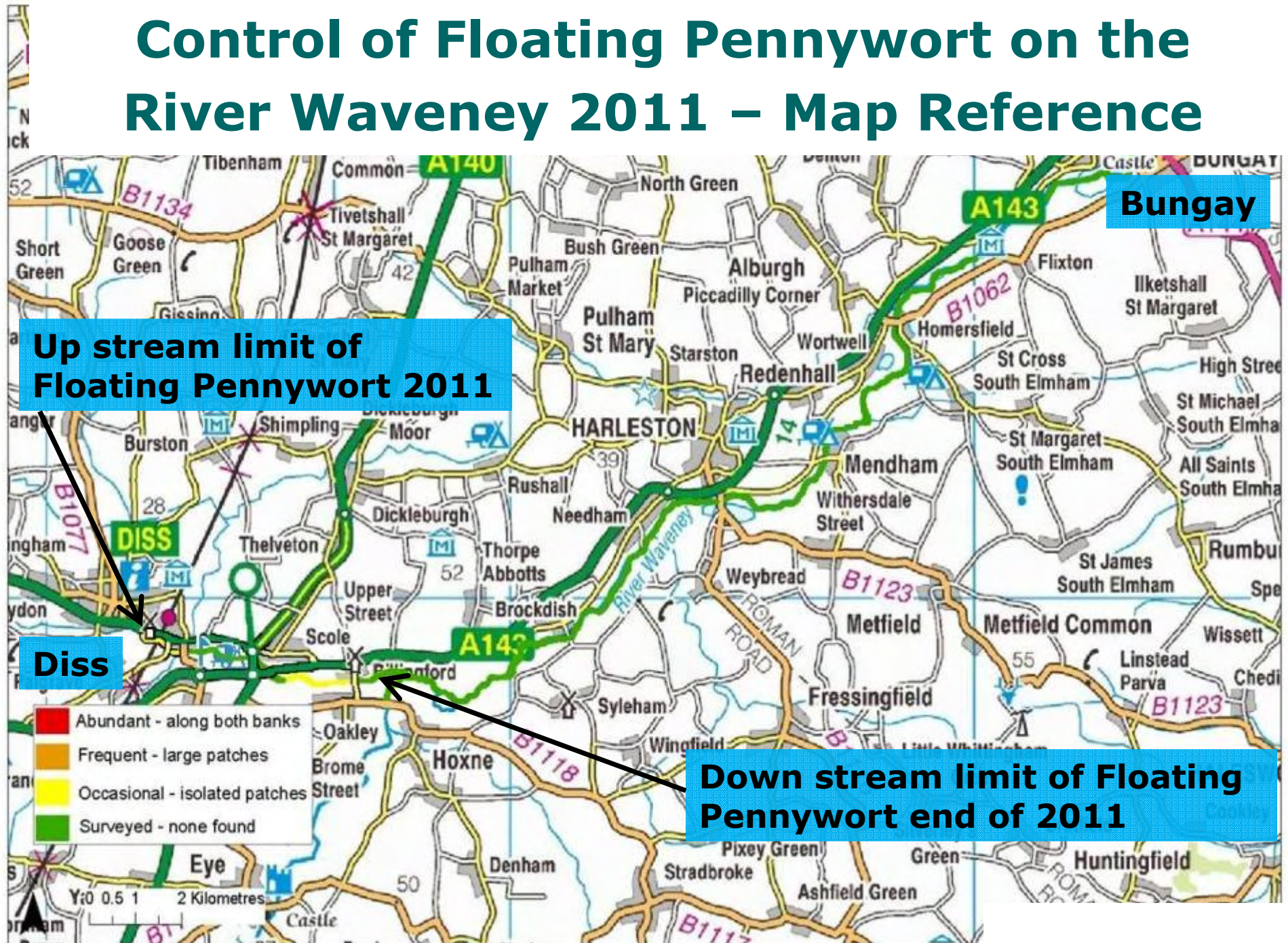


Control of Floating Pennywort on the River Waveney

- **Surveyed the River Waveney from Diss to Bungay – 27 km**
- **Floating Pennywort was manually removed from upper limit of the infestation downwards.**
- **Herbicide applications were carried out in areas where manual removal was not possible to ensure control and eradication.**
- **Removed plant material was spread thinly on open sunny banks at least 3 metres from the waters edge.**
- **Follow up surveys carried out to ensure control and eradication.**



Control of Floating Pennywort on the River Waveney 2011 – Map Reference



Conclusions



Control of Floating Pennywort on the River Waveney 2011

- Prolonged freezing temperatures on the river (Winter 2010/11)
- 75% reduction in Floating Pennywort found compared to 2010
- No mechanical extraction required during 2011
- Native aquatic weed growth covers the river in places
- Floating Pennywort established amongst native aquatic plants
- Very small amounts found at the upper limit of infestation

Overall the contract was successful in reducing the extent and severity of Floating Pennywort during 2011

Follow on with the success of 2011 by using the same approaches and resources !



2012

Steering Group Members 2012

Non Native Species Initiative	Mike Sutton-Croft
Norfolk Biodiversity Partnership	Haidee Bishop
Environment Agency	Mike Geymer
River Waveney Trust	Geoff Doggett
Native Landscapes (Contractor)	Paul Sims



Timetable



Control of Floating Pennywort and Himalayan Balsam on the River Waveney 2012

- **May 2012 to November 2012**
- Contractor and assistant employed for **2 days a week**
- Manual removal / survey **upper** reaches **weekly**
- Manual removal / survey **lower** reaches on a **monthly** basis
- **Herbicide** applications to be carried out from **June** onwards



June 2012



Control of Floating Pennywort on the River Waveney

- **Floating Pennywort source located behind "The Old Coaching Place, Diss".**
- **Surveyed the area and found Floating Pennywort growing amongst other native aquatic vegetation.**
- **Carried out manual clearance of Floating Pennywort and other native weed growth.**



June 2012



Control of Floating Pennywort on the River Waveney

The Old Coaching Place, Diss.
TM 122792 – June 2012 (Before)



The Old Coaching Place, Diss.
TM 122792 – June 2012 (Before)



June 2012



Control of Floating Pennywort on the River Waveney

The Old Coaching Place, Diss.
TM 122792 – June 2012 (During)



The Old Coaching Place, Diss.
TM 122792 – June 2012 (After)



July 2012



Control of Floating Pennywort on the River Waveney

**Floating Pennywort TM 157783
(Herbicide application carried out)**



**Floating Pennywort TM 160782
(Manual removal carried out)**



August 2012



Control of Floating Pennywort on the River Waveney

Surveys for Floating Pennywort continue with expert assistance !



Mechanical weed cutting causes fragmentation of Floating Pennywort



September 2012



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Control of Floating Pennywort on the River Waveney



- Floating Pennywort found upstream of Hoxne Weir following Environment Agency weed cutting between Scole and Billingford Bridge.
- Fragmentation is common following mechanical removal and probably caused Floating Pennywort to appear at Hoxne.

Control of Floating Pennywort on the River Waveney 2012 – Map Reference

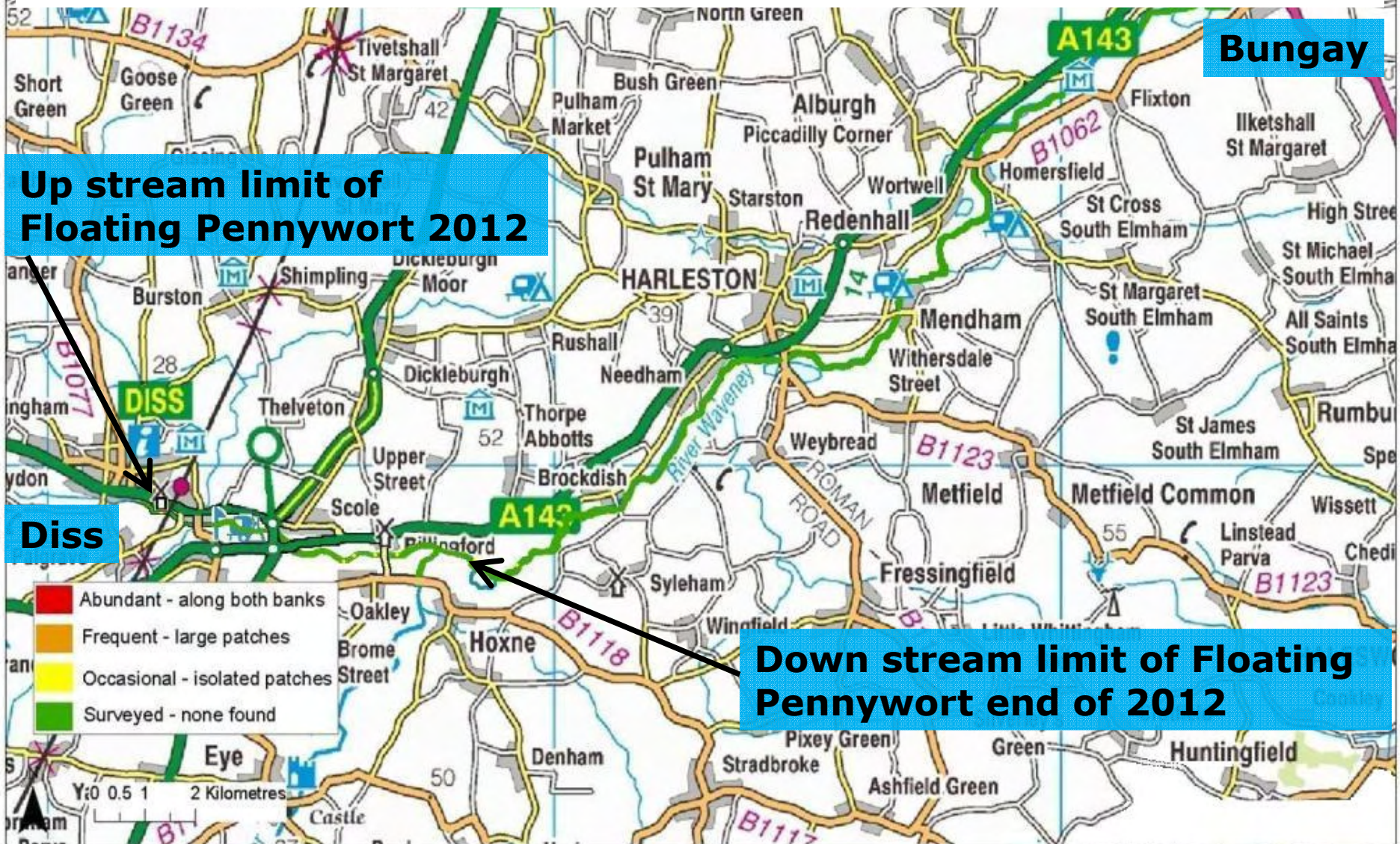
Bungay

Up stream limit of Floating Pennywort 2012

Diss

Down stream limit of Floating Pennywort end of 2012

- Abundant - along both banks
- Frequent - large patches
- Occasional - isolated patches
- Surveyed - none found



Conclusions



Control of Floating Pennywort on the River Waveney 2012

- Aquatic weed clearance at "The Source" was successful
- Weed Cutting carried out by E.A. caused fragmentation
- No Floating Pennywort found at the upper limit of infestation
- No Water Fern seen on the River Waveney during 2012
- Significantly reduced the severity compared to 2011

Overall the contract was successful in reducing the extent and severity of Floating Pennywort during 2012

Follow on with the success of 2012 by using the same approaches and resources !

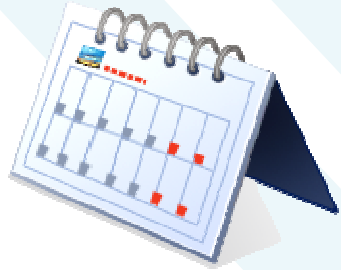
Eradication ?



2013

Steering Group Members 2013

Non Native Species Initiative	Mike Sutton-Croft
Norfolk Biodiversity Partnership	Haidee Bishop
Environment Agency	Helen Beadsley
River Waveney Trust	Geoff Doggett
Native Landscapes (Contractor)	Paul Sims



Timetable



Control of Floating Pennywort and Himalayan Balsam on the River Waveney 2013

- **May 2013 to November 2013**
- Contractor and assistant employed for **1 day a week**
- Manual removal / survey **upper** reaches **weekly**
- Manual removal / survey **lower** reaches on a **monthly** basis
- **Herbicide** applications to be carried out from **June** onwards



September 2013



Control of Floating Pennywort on the River Waveney



- **NO Floating Pennywort found during June 2013**
- **NO Floating Pennywort found during July 2013**
- **NO Floating Pennywort found during August 2013**
- **NO Floating Pennywort found during September 2013**

2013

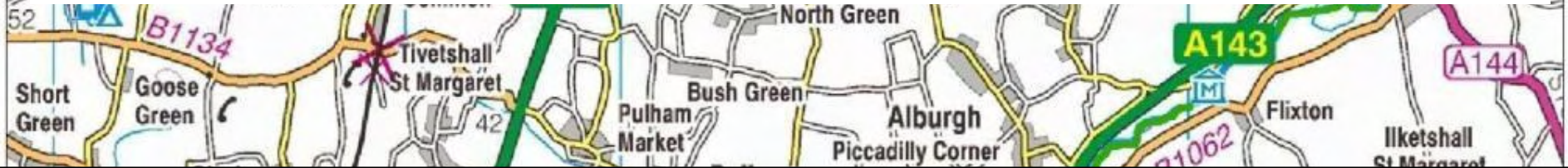


**Control of Floating Pennywort
and Himalayan Balsam on the River Waveney 2013**

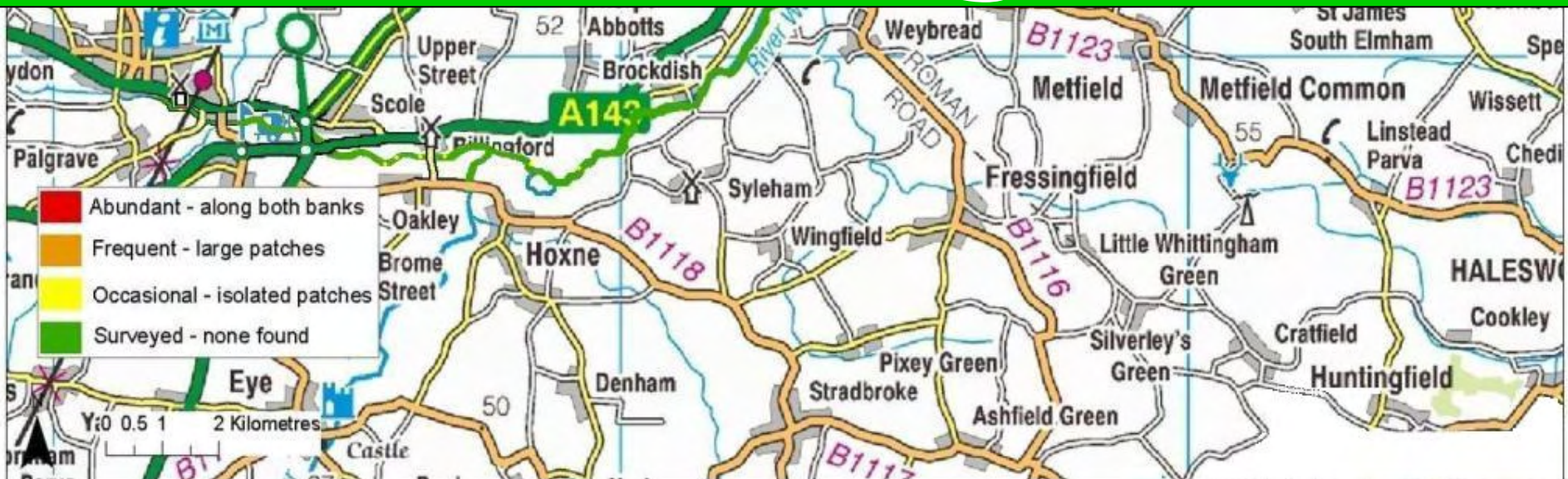
**NO FLOATING
PENNYWORT FOUND
DURING 2013**



Control of Floating Pennywort on the River Waveney 2013 – Map Reference



NO Floating Pennywort found during 2013



Conclusions



Control of Floating Pennywort and Himalayan Balsam on the River Waveney 2013

- **Steering Group agreed contract priorities in April 2013**
- **Regular surveys were carried out from May 2013**
- **Monthly Steering Group meetings from May to October**
- **Steering Group discuss possible eradication in August**
- **NO Floating Pennywort was found during 2013**
- **Landowner co-operation was vital in the project success**
- **Survey the River Waveney in 2014 to ensure eradication**

Overall the contract was successful in eradicating Floating Pennywort during 2013