

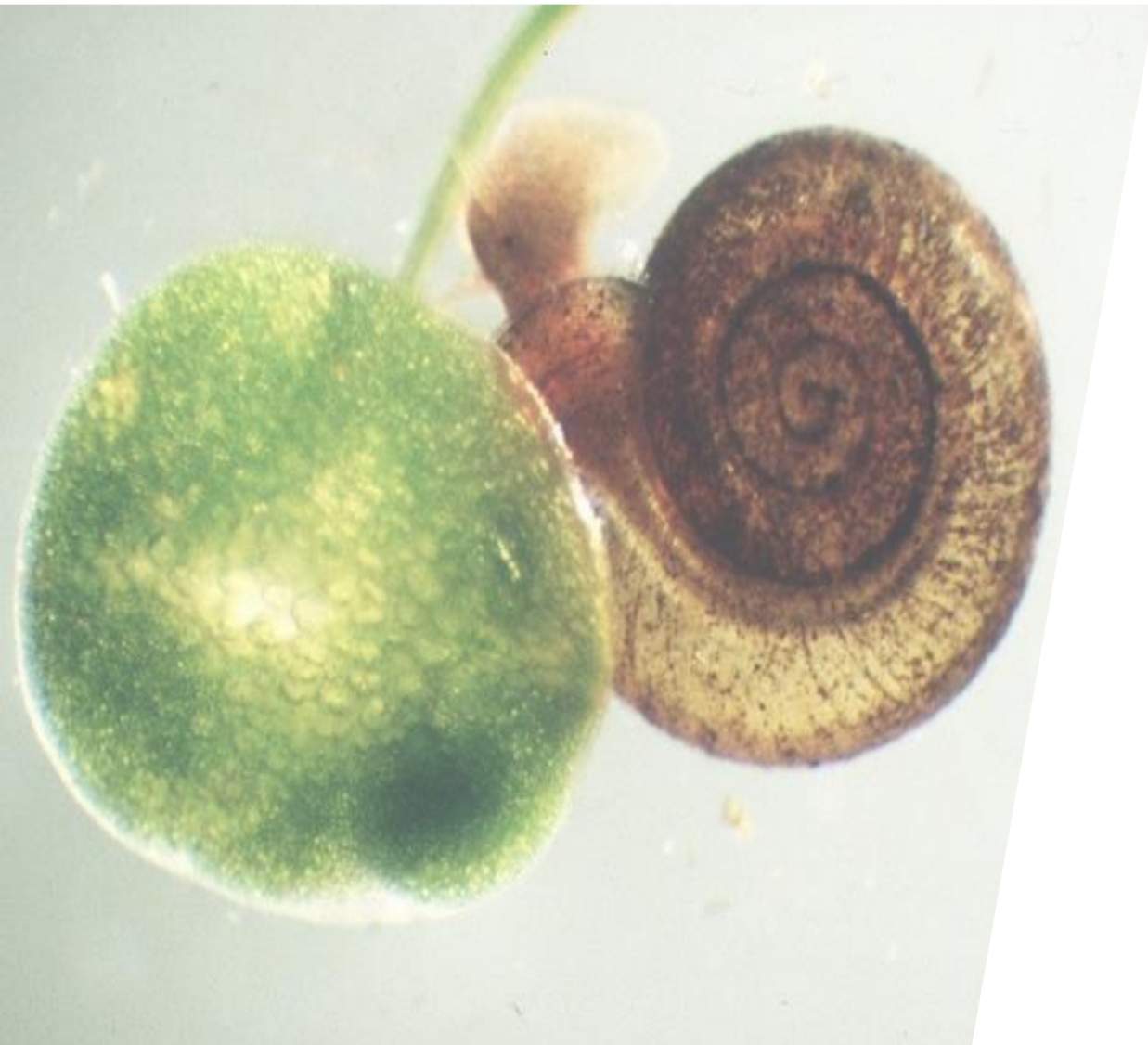
**LITTLE
WHIRLPOOL
RAMSHORN SNAIL
UPDATE MEETING**

AECOM

abrehart
ecology

 **highways**
england

HOUSEKEEPING



NATURAL
ENGLAND

**WELCOME –
MEETING
OVERVIEW**



1

AGENDA

- | | | |
|---------------|---|----------------------------|
| 10:30 – 10:35 | HOUSEKEEPING | - <i>Natural England</i> |
| 10:35 – 10:45 | WELCOME – MEETING OVERVIEW | - Highways England |
| 10:45 – 11:05 | PROJECT BACKGROUND | - Highways England |
| 11:05 – 11:15 | ECOLOGY OF LITTLE WHIRLPOOL
RAMSHORN SNAIL | - AECOM |
| 11:15 – 11:30 | THE FEASIBILITY STUDY | - AECOM - [REDACTED] |
| 11:30 – 11:45 | SCOPING STUDY | - AECOM - [REDACTED] |
| 11:45 – 12:05 | SITE SURVEY | - Abrehart Ecology |
| 12:05 – 12:15 | THE NEXT STEPS | - Abrehart Ecology / AECOM |
| 12:15 – 12:30 | Q&A | - Open Forum |
| 12:30 | Lunch | |



AECOM

A47/A12 Corridor Feasibility Study

Stage 3: The Case for Investment

A Report by AECOM for the Highways Agency

February 2015



**PROJECT
BACKGROUND**

2

ACLE STRAIGHT

– *A47 Feasibility (Feb 2015)*

- Reported that to widen or make the road a dual carriageway could require significant environmental constraints to be overcome
- Recommended appropriate mitigation measures that may be required be investigated

– *No Economic appraisal was carried out*

– *Highways England plan to carry out work to improve safety at collision sites*

ACLE STRAIGHT

- Department for Transport

*Road Investment Strategy:
Investment Plan
December 2014*

The A47/A12 corridor

A47 Acle Straight measures –

Addressing safety concerns by making short-term and long-term improvements, potentially including installation of safety barriers, junction improvements, road widening and capacity improvements. These will be subject to appropriate mitigation, working with Natural England and the National Park Authority at all stages



***ECOLOGY OF
LITTLE
WHIRLPOOL
RAMSHORN SNAIL***

3

ECOLOGY OF ANISUS VORTICULUS

THIS SECTION:

- An overview of the Literature Review from the translocation feasibility study in relation to species ecology
 - The range of documents used
 - The species itself
 - Its preferred habitat
 - Known range, worldwide, UK & in Norfolk
 - Conservation status

LITERATURE REVIEW

SOURCES OF INFORMATION

Internet Searches
Peer Reviewed Journals
National Biodiversity Network (NBN)
Norfolk Biodiversity Information Service (NBIS)
Academic Studies
Other Reports

Consultation:
Individuals
Organisations
Natural England

EXAMPLES OF PUBLICATIONS

English Nature Reports
Reports to RSPB
Buglife Reports
Example Journals:
Journal of Conchology
British Wildlife
*Aquatic Conservation: Marine and
Freshwater Ecosystems*
The Malacologist
Conservation Biology
Biological Conservation
Ecology and Evolution
Restoration Ecology

LITTLE WHIRLPOOL RAMSHORN SNAIL

Anisus vorticulus

SPECIES DESCRIPTION (Terrier, 2006)

- Little whirlpool ramshorn snail is a small aquatic snail with a flattened spiral shell 0.5-0.8 mm high and 4-5 mm in diameter
- The shell is pale, yellowish-brown and has longitudinal micro-ridges.
- 5-6 convex whorls with the penultimate whorl only slightly smaller than the last.
- The functional upper side (i.e. that of the crawling animal) is flat to slightly concave, whereas the lower is more distinctly, but not deeply, concave.
- The aperture is oval-elliptical with a depressed outer margin.
- Often confused with whirlpool ramshorn snail *Anisus vortex*
- Life cycle

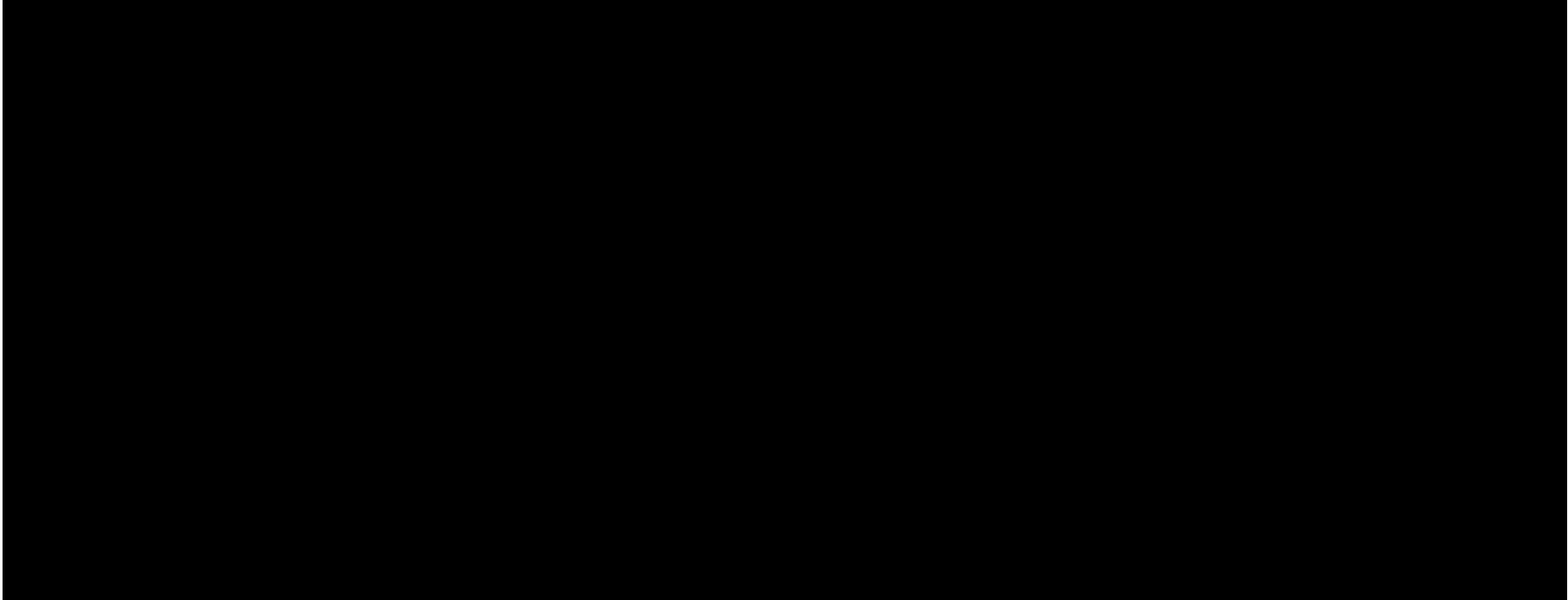


PREFERED HABITAT

- Ditches – particularly grazing marsh
- Clean, calcareous water
- Dense vegetation
- Submerged vegetation
- Emergent vegetation
- Both submerged and emergent vegetation
- Other molluscs
- Shallow margins
- Not over shaded
- Naturally mesotrophic
- Appropriate Management
- If conditions are right it can be present in high numbers – habitat specialist, with ability to establish quickly.

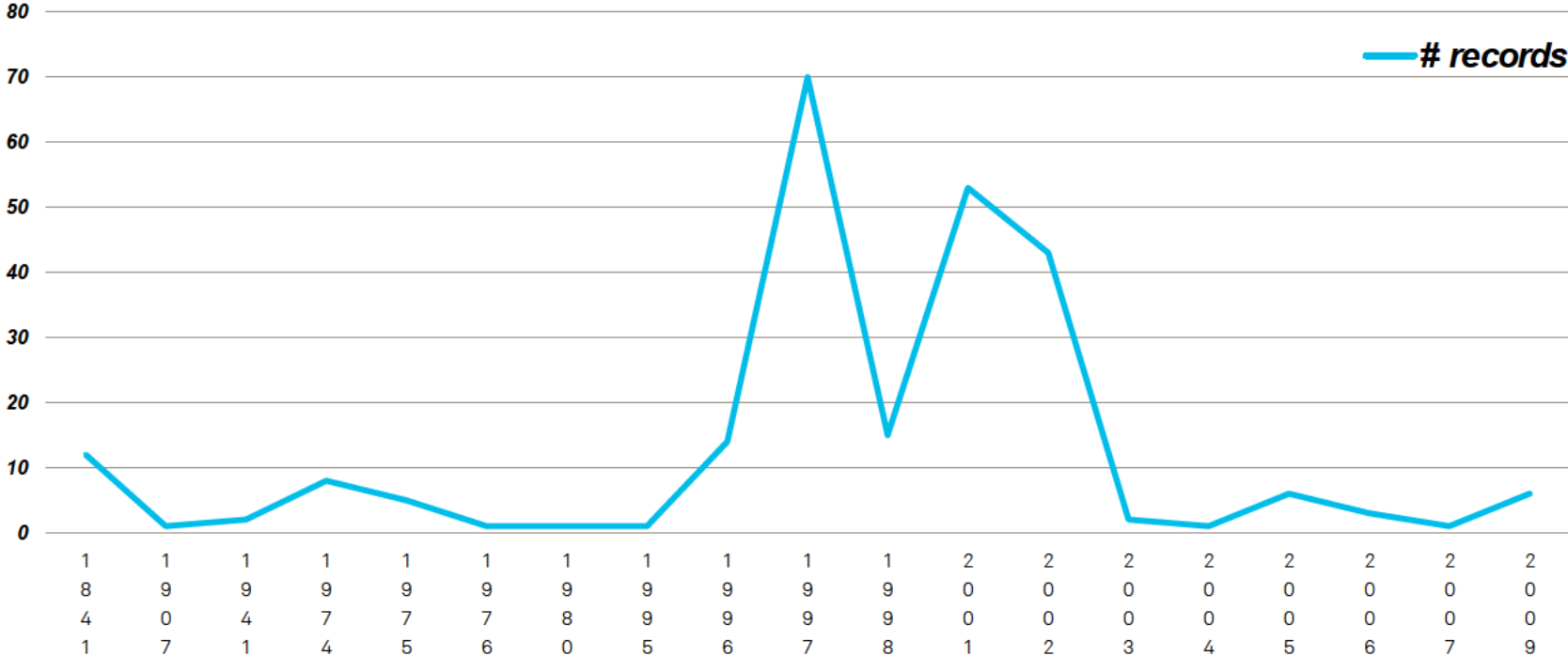
No one over riding factor, conflict in studies

SPECIES RANGE



LOCAL RECORDS

Distribution of Records (note X axis)



CONSERVATION STATUS

- Since 2004, the little whirlpool ramshorn snail has been listed in the EU Habitats and Species Directive as a species of community interest, requiring special areas for conservation (Annex II) and strict protection (Annex IV).
- It is further listed as Red Data Book: Vulnerable, threatened by drainage, over-frequent dredging and eutrophication.
- Little whirlpool ramshorn snail is a UK Biodiversity Action Plan Priority Species and the only British non-marine, aquatic snail which is a European Protected Species.

THREATS & MANAGEMENT

THREATS

- Lack of knowledge
- Drainage
- Over frequent dredging
- Intensive methods of dredging
- Eutrophication
- Erratic water supply
- Rising sea levels

- Dispersal (the paralysed snail!).

MANAGEMENT

- Not cleared more frequently than every 7 years
- Assessed, whether clearance is absolutely necessary
- “Stagger” clearance
- Consider cutting rather than excavation
- Timing – conduct clearance in Autumn
- Light grazing

Conservation status assessment for Species: S4056 - Little whirlpool ramshorn snail

Future prospects for the species:

Poor prospects. Species likely to struggle unless conditions change





THE FEASIBILITY STUDY

4

THE FEASIBILITY STUDY

PURPOSE TO INVESTIGATE THE FEASIBILITY OF CONDUCTING A CONSERVATION TRANSLOCATION

- Baseline – literature review and consultation
- Constraints
- Translocation Protocol
- Post Translocation Requirements
- Feasibility Determination

- ***THIS PRESENTATION:***
- What is Conservation Translocation?
- Look at Previous Studies
- The Hypothesis of the Feasibility Study
- CL14 Class Licence
- Consultation
- Constraints
- Outputs and the next steps

What is Conservation Translocation?

“conservation translocation is the deliberate movement of organisms from one site for release in another, with a measurable conservation benefit at above individual level achieved, thus conservation translocation must benefit the levels of a population, species or ecosystem”.

IUCN Guidelines (2013)



PREVIOUS STUDIES

MANY CALLS FOR STUDY - LARGELY UNHEEDED

Work carried out by Willing (2005 – present)

- [REDACTED]
- Described by author as small scale
- Results described as “inconclusive”

Relocating of ditches

- Desktop study in Acle Area



Hypothesis:

Little whirlpool
ramshorn snail can be
translocated under a
Class License as a by-
product of ditch
management.



THE CL14 CLASS LICENCE

WML CL14: To permit the maintenance of ditches and other water bodies inhabited by the Little Whirlpool Ramshorn Snail.

Any actions that cause the little whirlpool ramshorn snail to be:

killed, taken, injured, disturbed, owned or sold, or destroy its resting or breeding places would be a breach of legislation.

Furthermore the possession, sale, transportation or control of live or dead little whirlpool snails either in whole or in part would constitute a breach of legislation

This licence allows maintenance of drainage ditches inhabited by little whirlpool ramshorn snails.

However, these actions may only be taken to:

- conserve wild animals
 - preserve public health or safety
 - prevent serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, timber or any other property.
-
- The purpose of the licence is to allow necessary maintenance as long as the management complies with a management protocol that forms part of the licence.

CONSULTATION

CONSULTEES

- Natural England
- RSPB
- Suffolk Wildlife Trust
- Norfolk Wildlife Trust
- The Conchological Society of Great Britain and Ireland
- Broads Authority
- Norfolk and Norwich Naturalist's Society
- Norfolk Biodiversity Information Service
- Broads Authority
- Specialist Consultancies
- Individuals

QUESTIONS:

Where possible all consultees were contacted by phone and subsequently sent a list of questions.

Questions related to records held, potential sites for survey, donation and reception, various elements of the biology of the little whirlpool ramshorn snail, its habitat requirements and management, impacts of climate change and legislation.

Importantly opinion on the premise of conducting the Translocation under the CL14 licence was also requested.

CONSULTATION

RESULTS

- Most people responded
 - Especially those first contacted by phone.
 - Although not all questions were answered by all – as was anticipated.
- General support for study.
- Most responses were in line with published literature.
- Gaps in knowledge were highlighted, as a constraint.
- Lack of recent survey & unknown quantities of baseline were recurrent themes.
- Need to follow the The International Union for the Conservation of Nature (IUCN) / Species Survival Commission (SSC) guidelines (IUCN, 2013).
- Inputs were carried forward into the assessment.

APPROACH

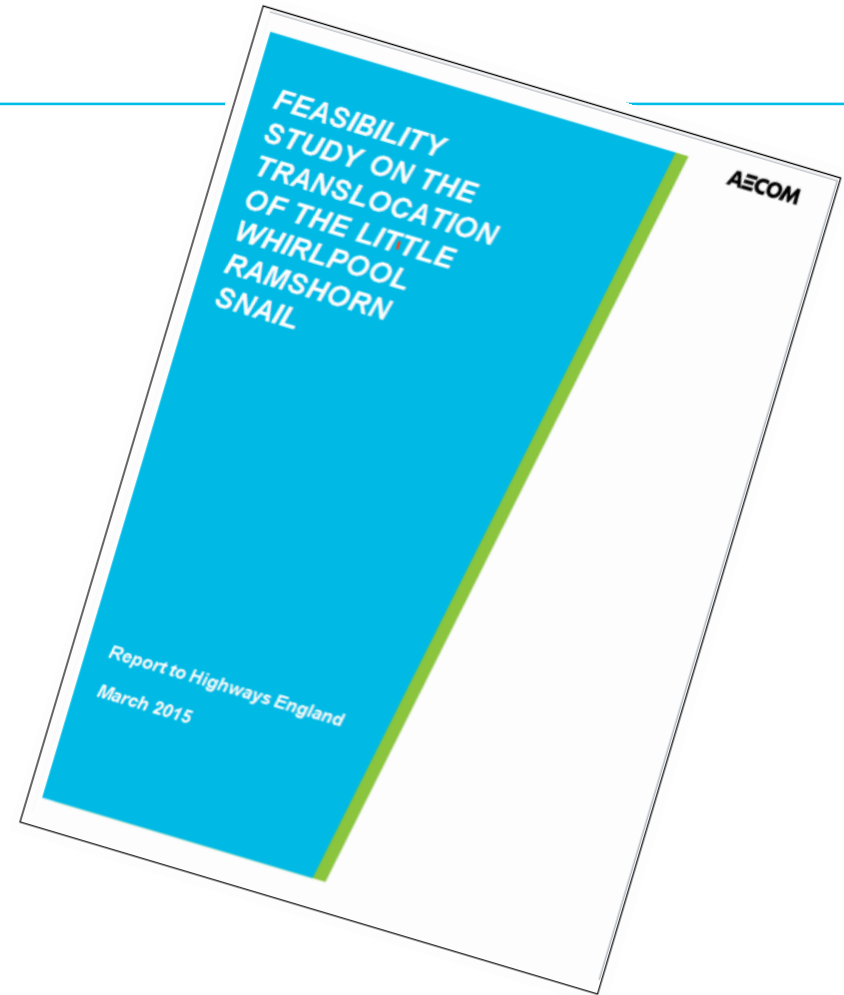
IDENTIFIED ISSUES:

- Legislation
 - Basic Biological Knowledge
 - Habitat
 - Receptor sites
 - Management
 - Climate
 - Founders
 - Source
 - Genetic Origins
 - Animal Welfare
 - Exit Strategy
- Biosecurity
 - Invasive plant species
 - Pathogen transference
 - Social Feasibility
 - Alternatives
 - Do Nothing
 - Relocate existing dykes
 - Dig new ditches
 - Implement Pilot Schemes

THE FEASIBILITY STUDY

RESULTS OF THE FEASIBILITY STUDY :

- A detailed report – source of information and reference.
- It would be **legal** to move species in this way – but not informed mitigation.
- Recommendation of a pilot study
 - Outlined methods, protocols, identification of constraints and best practice.
- Offered a way forward
 - Identified sites for study based on vegetation classification.
- The following presentations have taken the findings of this report forward.





Scoping Survey

5

Scoping Survey – General and Method

First stage of survey of donor/receptor ditches

- *Donor – healthy population of species*
- *Receptor – LWRS absent, identified for translocation*

Aims

- Investigate if adequate potential receptor and donor sites within study area
- Select which are the most appropriate receptor/donor sites for detailed surveys
- Eliminate sites with little potential
- ‘Fine tune’ detailed survey method



Scoping Survey – Survey Areas

Survey Areas

- Five land parcels within [REDACTED]
- Each of the areas understood to be characterised by slow flowing ditches within grazing marsh
- Area 1 – identified as a potential donor site (records of presence)
- Area 2 – 5 land plots within the [REDACTED] selected because land access secured and potential receptor ditches
- More than 34 km of ditch to be appraised!

Scoping Survey – Survey Method and Appraisal Criteria

Survey method/approach

- Site walkover survey and habitat appraisal to inform subsequent surveys
- Appraisal based on set criteria/habitat suitability

Habitat suitability criteria based on expert knowledge & habitat data in literature

+

- Relatively late succession
- Diverse & abundant emergent and floating-leaved macrophytes
- Presence of shallow marginal habitat
- Low density grazing
- Appropriate management
- Not polluted

-

- Highly eutrophic (significant algal growth)
- Heavily shaded ditches, or with few macrophytes
- Arable landuse, high cattle densities
- Regularly managed or intensely dredged
- Evidence of pollution

Scoping Survey – Appraisal Criteria & Classification

Habitat Suitability
5 – Very good potential
4 – Good potential
3 – Good/moderate potential
2 – Moderate potential
1 – Low potential
0 – No potential

Scoping Survey – Appraisal Criteria & Classification

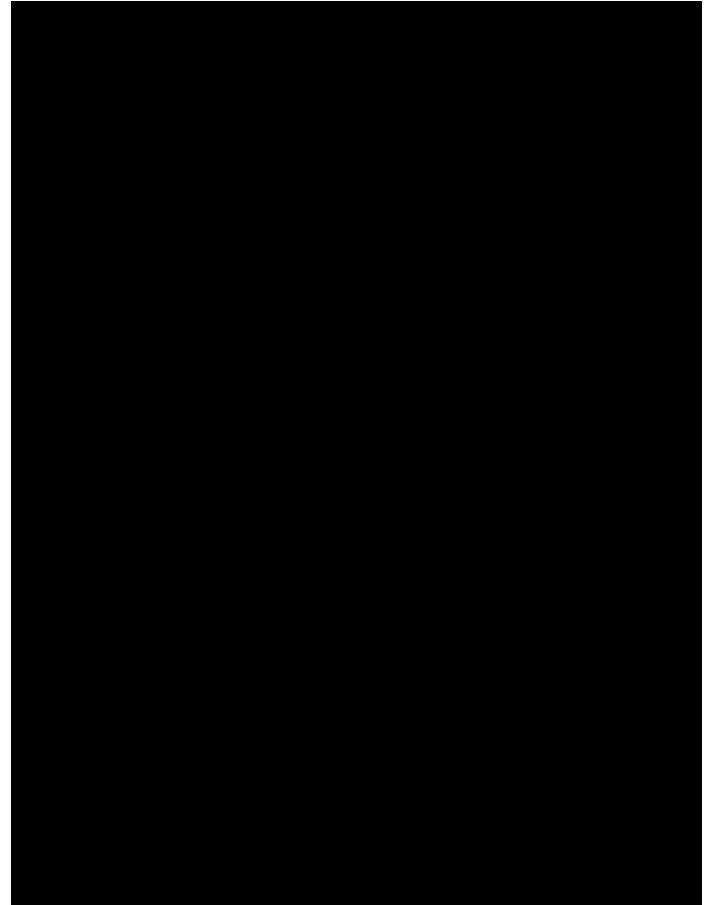
Ditch of good/very good potential

- Ditch with rich & abundant emergent and floating leaved vegetation
- Presence of extensive poached, shallow marginal habitat
- Relatively late successional
- No sign of recent management and appropriate surrounding landuse...

Scoping Survey – Appraisal Criteria & Classification

Ditch of low /no potential

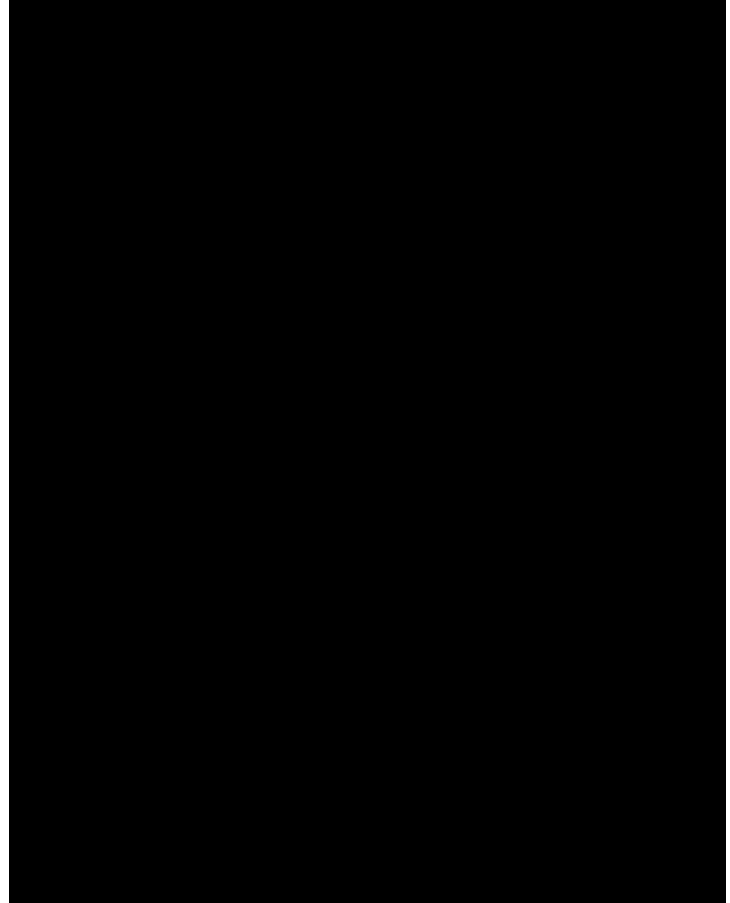
- Ditch with few floating leaved plants,
- Steep sided, no shallow marginal habitat
- Eutrophic, presence of extensive algae, *Enteromorpha* etc.
- Adjacent landuse arable, use of pesticides?
- Or heavily shaded so devoid or aquatic vegetation



Scoping Survey – Appraisal Criteria & Classification

Ditch of Moderate potential

- Ditch with some floating leaved and emergent plants
- Steep sided, but with some shallow marginal habitat due to cattle poaching
- Slightly eutrophic, presence of some algae, *Lemna minor* etc.
- Some evidence of recent management/dredging
- Overall habitat has lower potential relative to 'good' or 'very good' ditches



Scoping Survey - Findings

Areas 1, 2 and 3

Area 1

- Area 1 (observed from vantage points) deemed to be all of 'good'
- In total 4 km of 'good' habitat

Area 2

- 3 ditches all of 'low' potential (320 m) and 1 'moderate' (50 m) ditch
- Generally quite eutrophic (nearby STW?)

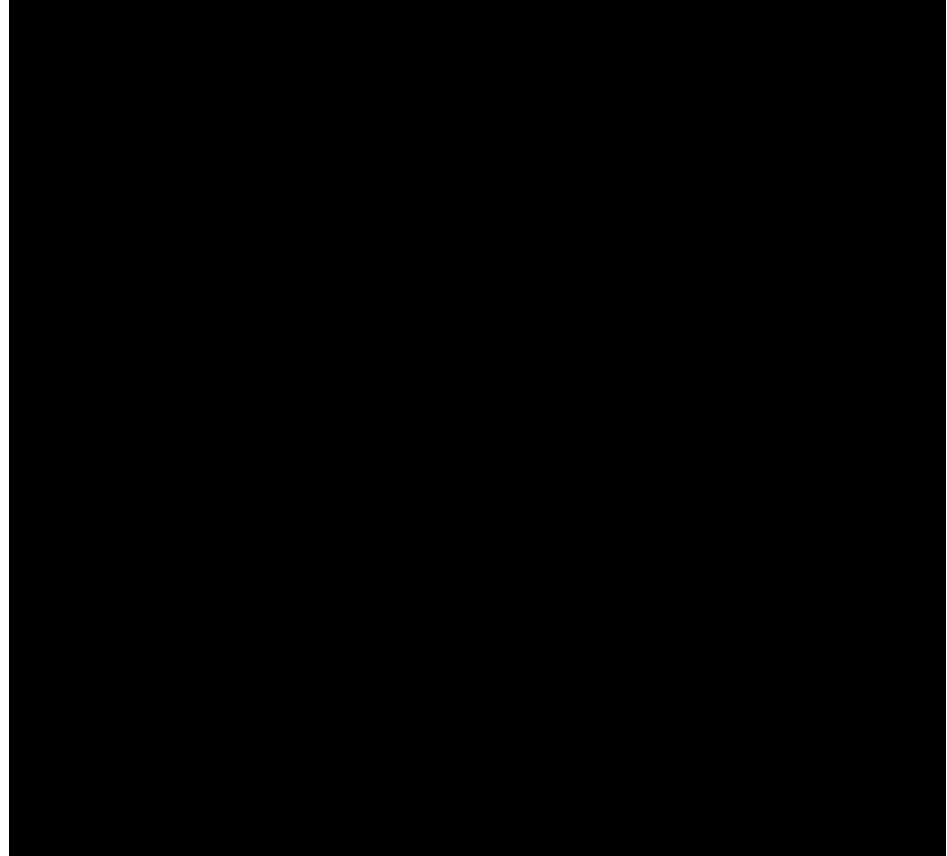
Area 3

- Majority of sites of 'good' potential
- In total 1,300 m of 'good' habitat and 360 m 'moderate'
- Some 'low potential' areas (800 m), for example eutrophic or too late successional ditches

Scoping Survey - Findings

Area 4

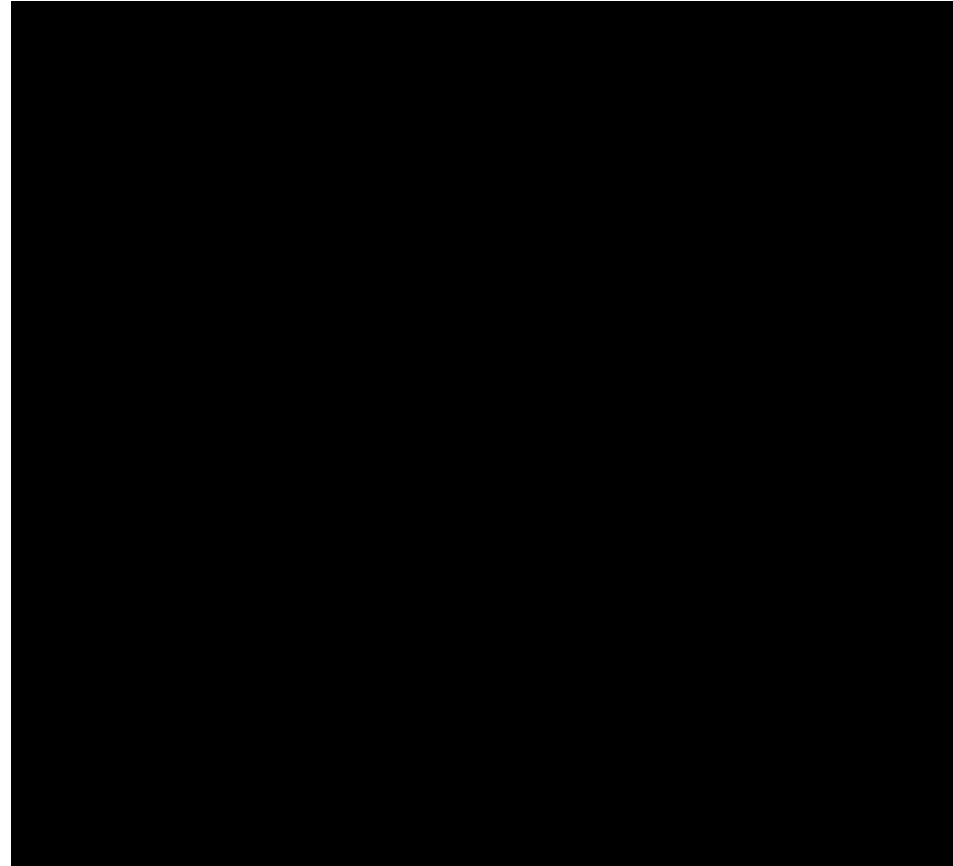
- Ditches in [REDACTED]
- Most ditches of low/no potential (2.6 km)
- Low potential, mostly due to being highly eutrophic
- 650 m of 'moderate' potential ditch
- On the whole, the land parcel deemed to be suboptimal, little potential as donor and receptor sites



Scoping Survey - Findings

Area 5

- Variation across the different ditches throughout the site...
- Ditches to northwest generally of better potential, less eutrophic, better habitat, greater abundance & diversity of floating leaved/marginal flora and not shaded
- 4.0 km of 'good/very good'
- 3.9 km 'moderate'
- 15 km 'low' or no potential (mostly eutrophic, but some ditches dry)
- The site presents opportunities for potential receptor and donor ditches



Scoping Survey – Conclusions

Conclusions

- 9.1 km of good/very good and 5.5 km of moderate – for potential further surveys
- Areas 1, 3 and 5 had ditches with highest potential for further detailed survey
- 19.5 km scoped out of further surveys
- Several ditches could have potential to act as receptor or donor ditches... depending on presence/absence of *Anisus vorticulus*
- Survey helped understand how we could practically survey the ditches and ‘fine tune’ detailed survey method (how many ditches/day etc.)

SITE SURVEY



6

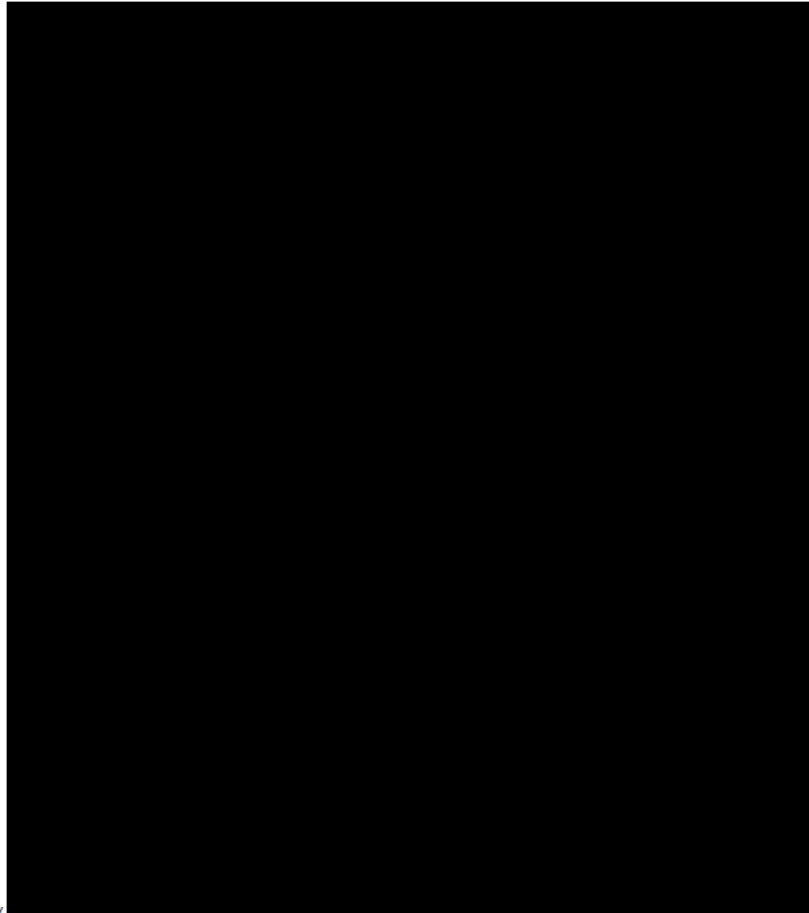
WHO ARE WE? ABREHART ECOLOGY



We are an independent multi-disciplinary consultancy, based in Suffolk, with a specialism in molluscs.

SITE DESCRIPTION

SURVEY SITES



Sites

We originally scoped five areas and chose four for further work

Area 1 – Potential donor site

Area 2, 3 and 5 – Potential receptor sites

SITE DESCRIPTIONS

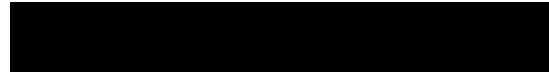
AREA 1



Donor site:



- Suitable donor site because holds a known population of *Anisus vorticulus*



SITE DESCRIPTIONS

AREAS 2 AND 3

Potential receptor site:

[REDACTED]

[REDACTED]

- Suitable receptor site because;
- Holds suitable habitat
- Rich invertebrate community
- Close to donor site
- Past records are from [REDACTED]

SITE DESCRIPTION

AREA 5

Potential receptor site:



- Extensive area of grazing marshes
- Suitable receptor site because;
- Holds a rich diverse flora and rich invertebrate community
- Scarce plant species present; water soldier, water violet, whorled milfoil, pondweeds greater water parsnip and frogbit.

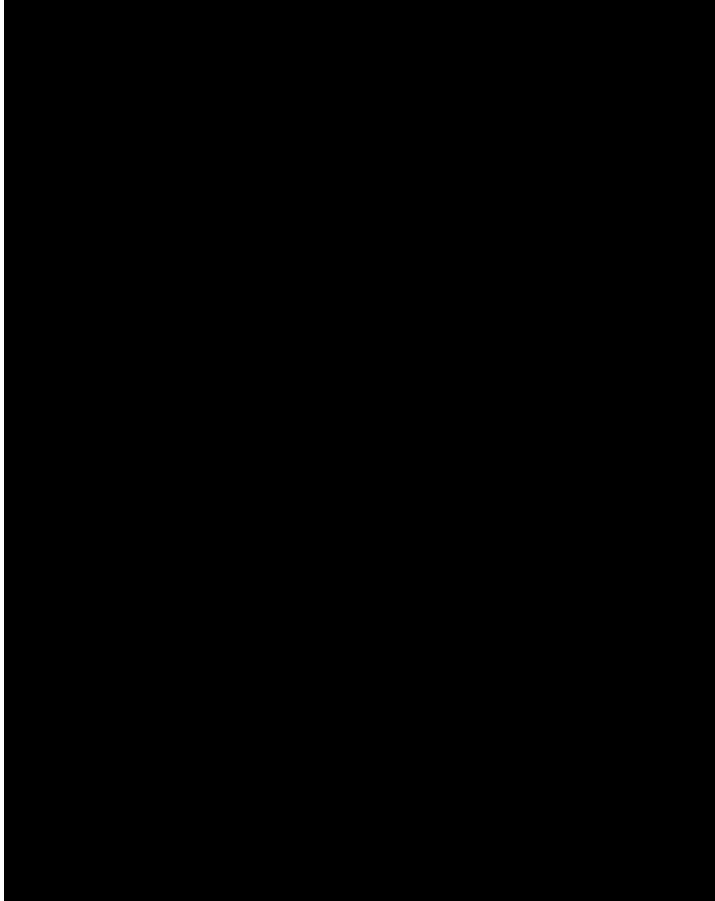
METHODS IN THE FIELD

Sampling

Sampling was undertaken by two teams

- Sample site approximately every 50 metre
- Consisting of three sub samples – 15 metres apart
- Three ten second sweeps were made at each sub sample
- Combined into a single sample in a white tray
- Agitated and surface material poured off *Lemna* and silt
- Retained mollusc concentrations examined
- Species recorded

METHODS IN THE FIELD



Abiotic and botanical

Wide range of abiotic factors were also recorded

Following an adapted grazing marsh recording form from Buglife

- Water features
- Adjacent land use
- Bank vegetation structure
- Ditch features
- Management

Botanical species recorded for each sub-sample

Bank side, emergent and aquatic flora

METHOD

DISTRIBUTION OF SAMPLE SITES

Sample sites

Samples were taken from four areas

Good to very good scoped ditches first

Added potential ditches for completeness of areas

About 100 samples were taken

300 sub samples

RESULTS

LITTLE WHIRLPOOL RAMSHORN SNAIL



Area 1

Holds a populations across most of the ditch system

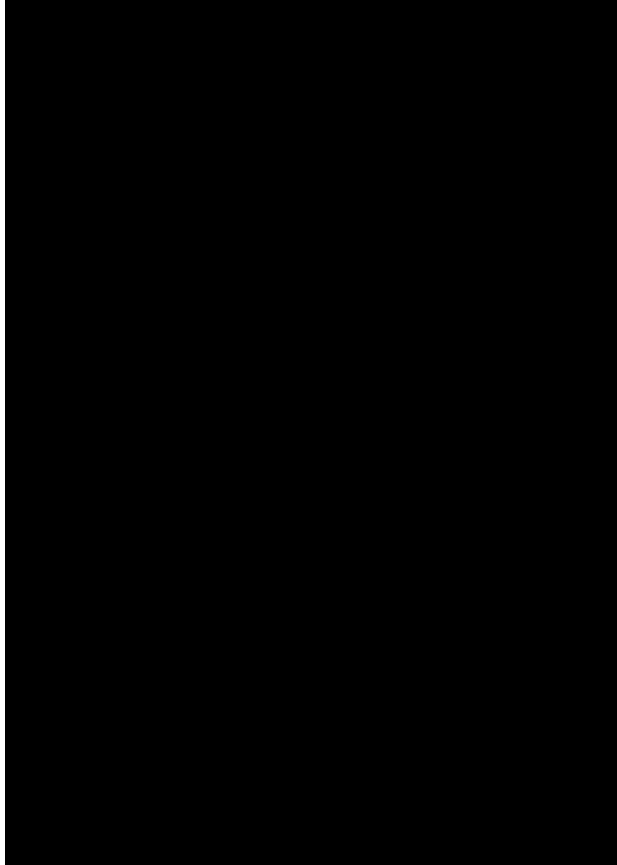
So far 10 ditches held *Anisus vorticulus*

High densities were found scattered across the site



RESULTS

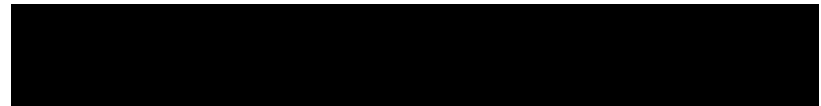
LITTLE WHIRLPOOL RAMSHORN SNAIL



Area 1

Holds a populations across most of the ditch system

So far 10 ditches held *Anisus vorticulus*



Area 3

New unknown population was discovered

Six ditches held *Anisus vorticulus*

RESULTS

PRESENCE OF LITTLE WHIRLPOOL RAMSHORN SNAIL

Area 1

- Main habitats with highest abundances were in later successional ditches
- High density vegetation ten years or older
- Often holding high percentage of *Lemna minor*, *Lemna trisulca* and *Hydrocharis morsus-ranae*
- Heavily poached margins
- Generally there was poor botanical diversity

RESULTS

PRESENCE OF LITTLE WHIRLPOOL RAMSHORN SNAIL

Area 1

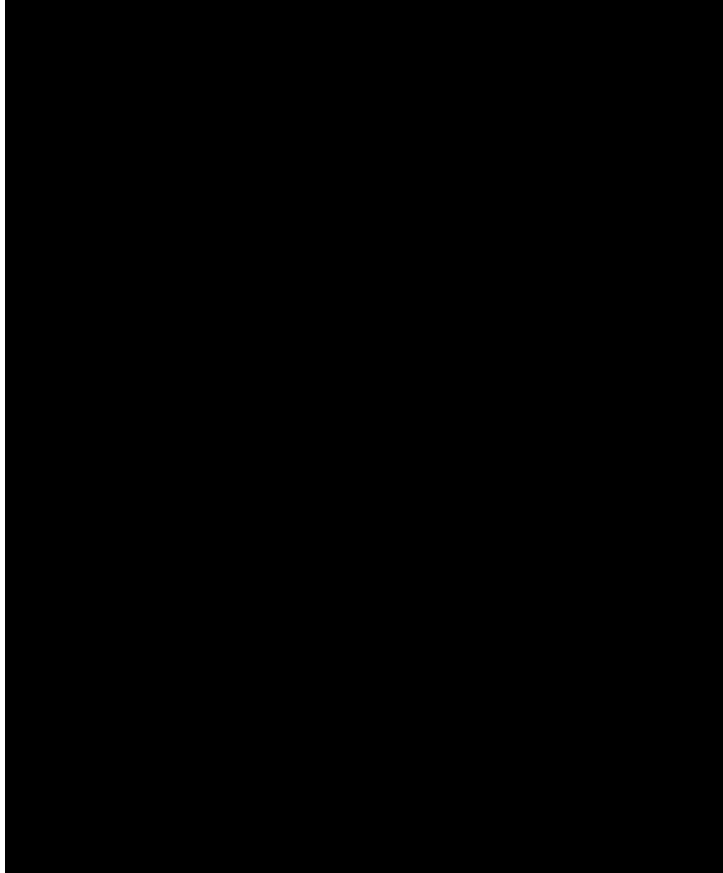
- Main habitats with highest abundances were in later successional ditches
- High density vegetation ten years or older
- Often holding high percentage of Lemna minor, Lemna trisulca and Hydrocharis mosus-ranae
- Heavily poached margins
- Generally there was poor botanical diversity

Area 3

- Main habitats were mid successional ditches, mostly dominated with *Stratiotes aloides* and *Hydrocharis mosus-ranae*
- Deep ditches
- Heavily poached margins
- Flooded poached shelf
- High botanical diversity

RESULTS

ABSENCE OF LITTLE WHIRLPOOL RAMSHORN SNAIL



Area 5

- Main habitats were early succession stage ditches
- Wide, deep, clean and cleared in last 5 years
- Solid substrate base
- Limited poached margins, often steep sided
- Botanically very rich
- High potential with relaxed management

RESULTS

DISCUSSION OF DISTRIBUTION



Preliminary thoughts

Hard to fully determine the exact requirements

Complex and not fully understood

Mid to late successional ditches of moderate to good botanical diversity

Good silt within the ditch

Associated with rich and diverse mollusc community

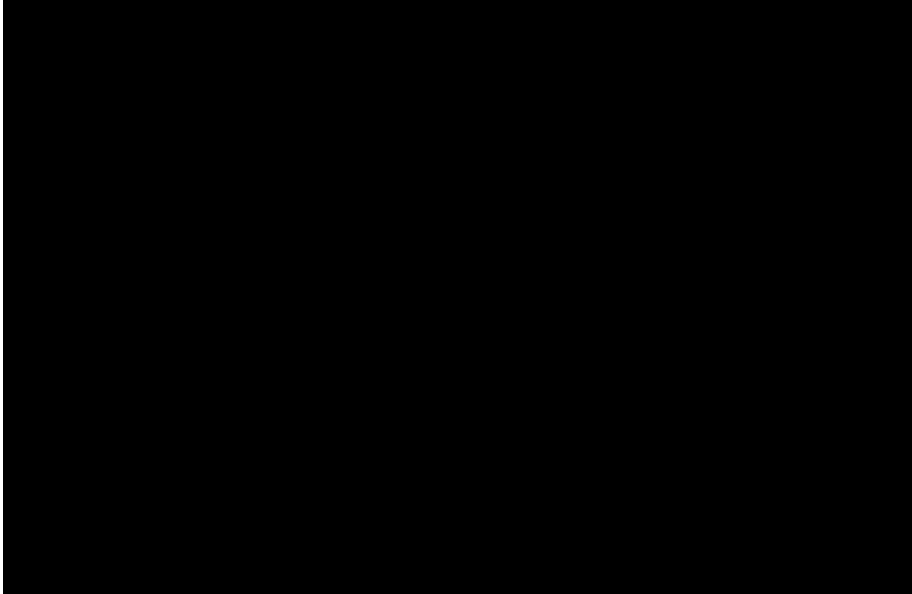
RESULTS

OTHER RDB SNAILS



RESULTS

OTHER RDB SNAILS



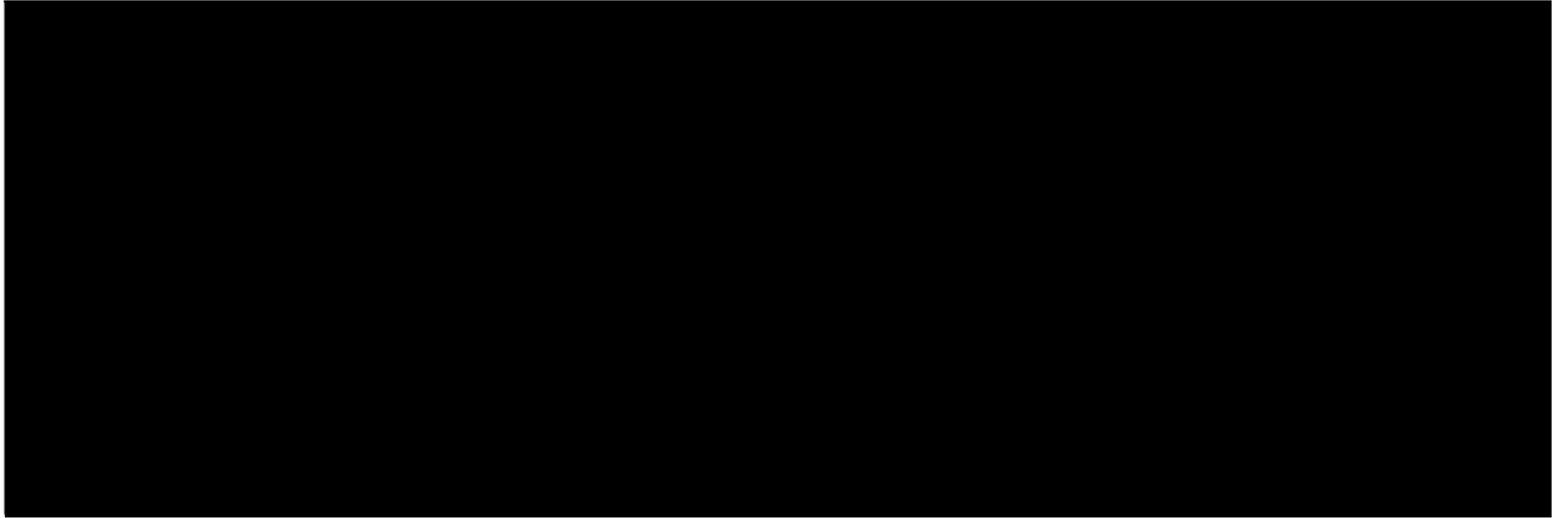
RESULTS

OTHER RDB SNAILS

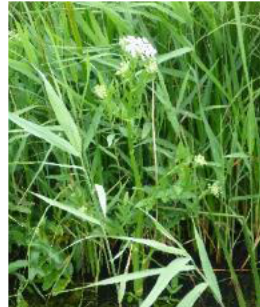
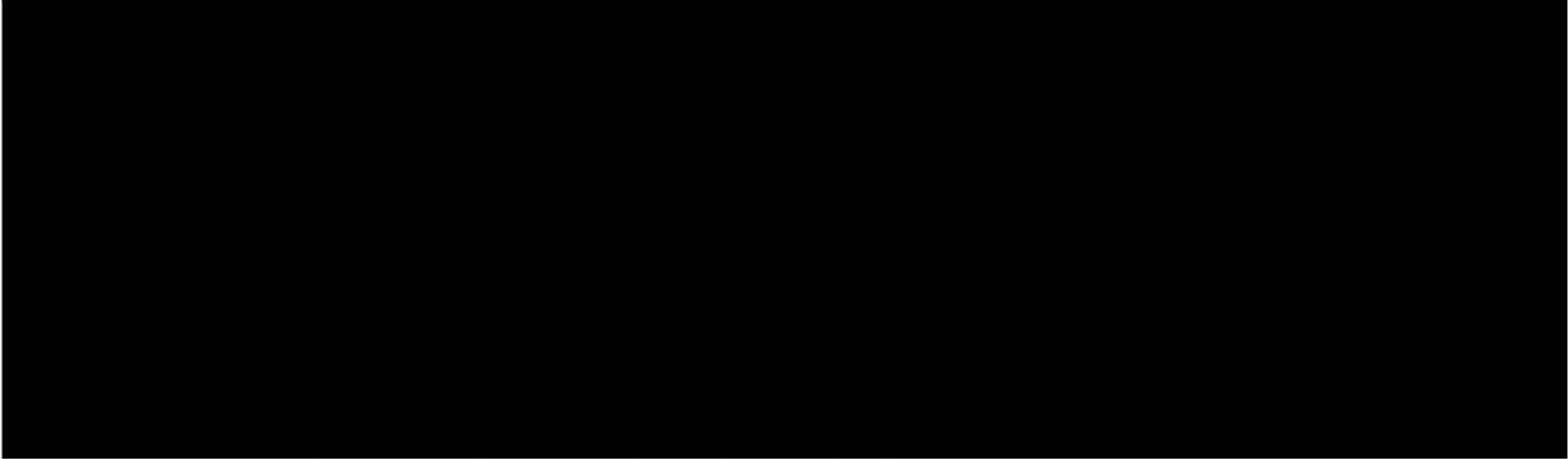


RESULTS

OTHER RDB SNAILS



OTHER RDB SPECIES DISTRIBUTIONS



RESULTS

OTHER SPECIES



DISCUSSION

SUMMARY OF WHAT WE FOUND



Produced approximately 10,000 unique records of flora and fauna

Discovered a new large population of *Anisus vorticulus*

Mapped many RDB species across all sites visited

Helped determine the quality of the SSSI

Found potential receptor sites

DISCUSSION

WHAT WE STILL HAVE TO DO – SITE SURVEY



Data analysis

Water chemistry

Review of feasibility and scoping studies

Translocation Planning
How and where?

THE NEXT STEPS

7

PROJECT OUTPUTS

- **SUITE OF REPORTS FOR INFORMATION AND REPLICATION**
 - The feasibility study
 - The scoping survey
 - Site survey results
- **IMMINENT**
 - Translocation & monitoring
- **OTHER APPROACHES**
 - Additional trial ideas to inform mitigation
- **By Product**
 - Presence data for a range of invertebrates

TRANSLOCATION

– *THE NEXT STEPS*

- Site Selection
- Constraints
- Management Implications
- Programme 2015
- Monitoring

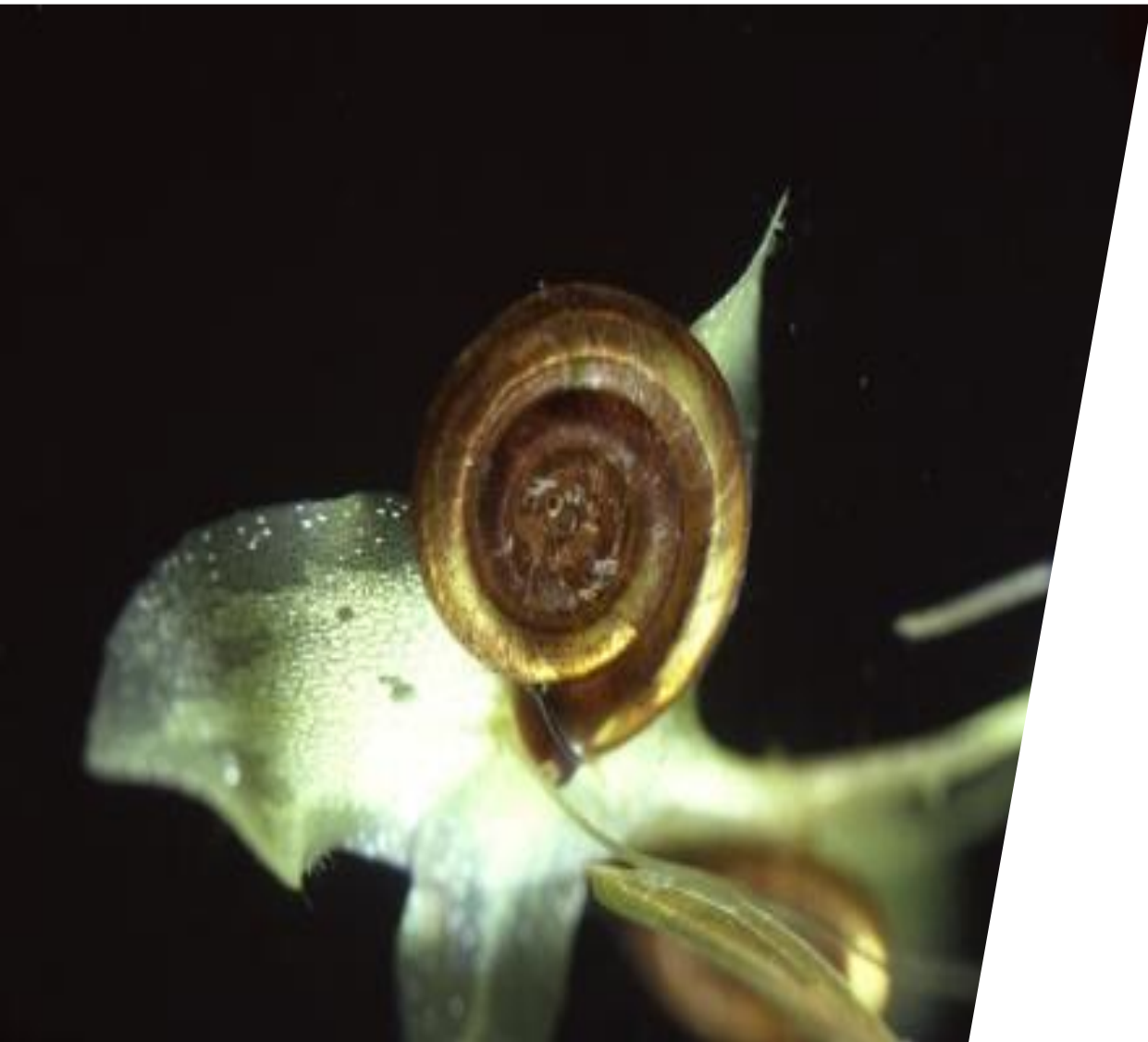
ADDITIONAL TRIAL IDEAS TO INFORM MITIGATION

– Alternatives outside of the current scope

- Incorporation of additional sites – the phased approach
- Habitat manipulation
- Translocation through management (WML CL14)
- Creation of new sections of ditches - spurs

- Faecal analyses
- Diatom analyses
- DNA Analysis for presence / likely absence

Q&A



8



LUNCH

9

***WE HELP
CLIENTS TO
SEE FURTHER,
GO FURTHER***

THANK YOU

AECOM

abrehart
ecology