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A SURVEY OF THE AQUATIC MACROINVERTEBRATES OF THE GREAT TRILL STREAM
AND THE BRUCKLAND STREAM, DEVON

A REPORT TO ALCONBURY ENVIRONMENTAL CONSULTANTS

POND ACTION

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c/o Biological and Molecular Sciences
Oxford Polytechnic
Headington
Oxford OX3 0BP

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SUMMARY

Surveys were undertaken of aquatic macroinvertebrates at single sites on the Great Trill Stream and Bruckland Stream, Devon. Surveys were designed (a) to establish an NRA monitoring site and (b) to determine whether species of high nature conservation interest were present.

The Great Trill Stream site supported a community rich in macroinvertebrates (75 species) including 7 local or uncommon species. The BMWP score and ASPT (241:6.5) indicated that the stream was relatively unpolluted. The macroinvertebrate community at the survey site was of very high conservation value.

The Bruckland Stream site supported a more impoverished community with only 41 species recorded, including only one/two local species. (CHECK WHICH IS THE RIGHT ANSWER - see 3.2.2). The BMWP score and ASPT were both lower than for Great Trill Stream (149:5.3) suggesting that the water quality was lower. However, the occurrence of one/two local species suggests that the macroinvertebrate community at this site should still be regarded as being of moderate to high conservation value.

Adjust to comparison.

26.5/4
6.6

1. INTRODUCTION

This report describes the results of a survey of the aquatic macroinvertebrates at single sites on the Great Trill Stream and the Bruckland Stream, Devon.

Great Trill Stream SY X23456
Bruckland Stream SY X54321

SY 2866 9583 - 572884 9583
572753 9288 - 572773-9292

The survey had two main objectives:

- i) To set up a standard NRA monitoring site in each stream.
- ii) To determine whether either site supported taxa (or groups) of high nature conservation interest.

2. METHODS

Survey work was undertaken on 30th April 1990. The aquatic macroinvertebrate groups recorded are listed in Table 1. The report does not consider chironomids, oligochaetes or Pisidium spp. These were removed from samples and retained but have not been identified. A list of the keys and guides used in identification of macroinvertebrates is given in Section 4 (see page X).

2.1 SURVEY METHODS FOR THE ESTABLISHMENT OF STANDARD NRA MONITORING SITE

A 50m reach of each stream was surveyed. In the Great Trill Stream the 50m reach was immediately upstream of the road bridge. In the Bruckland Stream the 50m reach was immediately downstream of the track.

2.1.1 Physical features

The average width and depth of each stream was calculated from 10 transects, each transect being 5m apart. Depth measurements were taken at 1/4, 1/2 and 3/4 of the stream width.

Composition of the bottom substrate was assessed by eye and classified using the Wentworth scale.

2.1.2 Macroinvertebrate sampling and sample processing

A standard IFE RIVPACS macroinvertebrate sample was collected from a 50m reach of each stream by sweep netting in vegetation and kick sampling of stony substrata. A standard pondnet was used (Freshwater Biological Association pattern, 1mm square mesh).

The three minutes sampling time was divided between microhabitats so that sampling time was proportional to the area which the microhabitat occupied. A brief search was made for additional taxa

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84 53
c

which would not readily have been collected with a pond net.

The 3-minute timed sample was live sorted using the standard RIVPACS procedure. All individuals were removed from a subsample of this sample. The remaining portion of the 3-minute sample was sorted quickly for extra species. Each sample was sorted for about 2hrs.

2.2 SURVEY METHODS FOR ASSESSMENT OF THE NATURE CONSERVATION VALUE OF THE MACROINVERTEBRATE COMMUNITY

2.2.1 Macroinvertebrate sampling and sample processing

A 200m reach of each stream was sampled. In the Great Trill Stream the 200m reach lay upstream of the roadbridge. In the Bruckland Stream the 200m reach lay downstream of the track.

50m of the reach was surveyed, and samples sorted and processed, using the standard RIVPACS procedure (see Section 2.1 below). This sample generated estimates of the abundance of commoner taxa and also about 75% of the species recorded in the 200m reach. To obtain a fuller species list for the site, the whole of the 200m of the survey site was searched for about 2 hours. During this search macroinvertebrates were collected by kick and sweep sampling, turning of stones and logs and by examination of marginal vegetation. Material was sorted on the bankside and preserved in 70% Industrial Methylated Spirits for identification in the laboratory.

In addition In order to maximise the number of species recorded at each site the 3-minute RIVPACS sample (see Section 2.1.2) was re-sorted thoroughly (as opposed to being quickly sorted in about 2hrs).

2.3 ASSESSMENT OF THE NATURE CONSERVATION INTEREST OF THE MACROINVERTEBRATE COMMUNITIES IN THE STREAMS

The conservation value of the aquatic macroinvertebrate communities was assessed using the system described in Table 2 (see page X).

Note In this report the assessment of the conservation value of the macroinvertebrate communities has been made using data from a single season. Collecting in two or three different seasons of the year (ie spring, summer and autumn) usually results in the recording of 30-50% more species than are found in a single season. It is possible that, amongst these new species, further uncommon species could be recorded.

TABLE 1. GROUPS OF MACROINVERTEBRATES RECORDED IN THE WYMONDHAM PONDS,
RIVER AND FEN. *Car. Adams*

GROUPS IDENTIFIED TO SPECIES LEVEL

Tricladida	(Flatworms)
Hirudinea	(Leeches)
Gastropoda	(Snails and limpets)
Bivalvia (excluding Pisidium spp.)	(Bivalves)
Malacostraca	(Shrimps and slaters)
Ephemeroptera	(Mayflies)
Odonata	(Dragonflies and damselflies)
Heteroptera	(Water bugs)
Plecoptera	(Stoneflies)
Megaloptera	(Alderflies)
Trichoptera	(Caddis-flies)
*Coleoptera	(Water beetles)

*Adults from the following families of Coleoptera were recorded:
Gyrinidae, Haliplidae, Dytiscidae, Elmidae, Hydraenidae, Hydrophilidae,
Noteridae.

TABLE 2. SYSTEM USED FOR ASSESSING THE NATURE CONSERVATION VALUE OF
AQUATIC MACROINVERTEBRATE COMMUNITIES

CONSERVATION VALUE	DESCRIPTION OF COMMUNITY
VERY HIGH	Supporting a rich community of macroinvertebrate species, including local species and/or rare (ie Red Data Book) species. Note that some sites with rare species may be relatively species-poor.
HIGH	Supporting a rich community of common macroinvertebrate species. A small number of local species present. No rare species.
MODERATE	Supporting only common macroinvertebrate species. No rare or uncommon species.
LOW	Supporting an impoverished community of common macroinvertebrate species.

Within the two higher categories individual sites can be ranked on the basis of numbers of rare and uncommon species, provided that a constant amount of effort in sampling has been made.

3. THE AQUATIC MACROINVERTEBRATE COMMUNITIES OF THE TWO STREAMS

A list of the species found in the two streams is given in the Appendix.

3.1 Great Trill Stream

3.1.1 Physical features of the survey site

Great Trill Stream at the survey site is a small stream with an average width of 1.3m and depth 0.09m. The substratum was composed of gravel (10%), pebbles (60%) and cobbles (30%).

3.1.2 Assessment of the conservation value of the macroinvertebrate community

X75 species of macroinvertebrates were recorded including X7 local or uncommon species. These were XXXXXXXX XXXXXXXX etc etc. No nationally rare species were recorded at the time of the survey.

Three orders, Ephemeroptera, Coleoptera and Trichoptera, contributed two thirds of the species recorded in the stream. The fauna was dominated numerically by the riffle beetle *Elmis aenea* was common.

With a large number of common macroinvertebrate species and a good number of local species the nature conservation value of the macroinvertebrate community should be considered to be very high (see Table X).

3.1.3 NRA monitoring site data

The BMWP score and ASPT for the stream are high (241X and 6.5X respectively) and suggest that the stream is relatively unpolluted. *BMWP score sheet was presented in App 4*

3.2 Bruckland Stream

3.2.1 Physical features *of the survey site*

The Bruckland Stream is a small stream with an average width of 1.1m and depth 0.13m. The substratum was composed of sand (10%), gravel (10%), pebbles (60%) and cobbles (20%).

3.2.2 Assessment of the conservation value of the macroinvertebrate community

X42 species of macroinvertebrates were recorded including X2 local species. These were etc. No nationally rare species were recorded at the time of the survey. Four species, the freshwater

shrimp Gammarus pulex, two mayflies, Ephemerella ignita and Baetis rhodani, and the water slater Asellus meridianus were found in abundance (NOTE WHAT 'ABUNDANCE' MEANS) *where?*

As with the Trill Stream the majority of the species recorded were in the orders Ephemeroptera, Coleoptera and Trichoptera. (There was a considerable degree of similarity between the faunas of the two streams.)

The total number, and number of local, species recorded in the Bruckland Stream indicates that the macroinvertebrate community should be considered of moderate to high value for nature conservation (see Table X).

3.2.3 NRA monitoring site data

The BMWP score and the ASPT for the Bruckland Stream were much lower (149 and 5.3 respectively) than for the Great Trill Stream. Given the physical similarities of the streams, the lower scores probably reflect a lower water quality in the Bruckland Stream.

3.3 - Comparison of the two streams.