

The results of aquatic invertebrate surveys from two sites on The Millennium Link canal system in Scotland

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Abstract

This short paper reports on the results of aquatic invertebrate surveys carried out during April 2002 at two sites within the canal corridor, comprising of the Union Canal and Forth & Clyde Canal, in the Central Belt of Scotland.

Key words: corridor, Union, Forth, Clyde, Central

Introduction

Insect studies were included within the BATS and The Millennium Link (BaTML) project (Middleton *et al.*, 2004) to provide a better understanding of the potential prey of *Myotis daubentonii* (Daubenton's bat) using the canal network in the Central Belt of Scotland.

It is highly likely that insects that have aquatic larval stages will feature in the diet of Daubenton's bats feeding in these canal corridors (Vaughan, 1997). This species of bat has a strong affiliation with water and typically forages very close to the surface of calm water bodies in search of their insect prey (Jones & Raynor, 1988; Vaughan *et al.*, 1997; Rydell *et al.*, 1999; Siemers *et al.*, 2001). The insects they feed upon must either live on, or fly just above, the water surface. Fortunately, due to their sedentary nature, surveying for aquatic larvae is relatively simple.

A pilot study was undertaken at Fawnspark (OS Grid Ref: NT062767) on the Union Canal on 6th April 2002 and at Auchinstarry Basin (OS Grid Ref: NS721768) on the Forth & Clyde Canal on 13th April 2002. The purpose of this work was to assess the feasibility of using aquatic invertebrate surveys to build a picture of what potential prey items may be available to bats foraging in the area.

Materials & Methods

Surveys consisted of a systematic search of the marginal vegetation at each site followed by a scoop of the sediments on the canal bed. Due to the extensive marginal vegetation at these sites (up to two metres from the bank), continuous sweeping

with a standard pond net over a set time period was difficult. We therefore decided that surveying a pre-determined length of bank, using a standard pond net with a two-metre handle, would be more feasible.

At each site, a sample of sediment was also collected using a standard pond net. The sediment was extremely fine and once disturbed it took a long time to settle sufficiently to allow examination for any organisms present.

Results

The results of these surveys (Tables 1 and 2) show that these canals hold a healthy population of aquatic invertebrates. However the majority of the invertebrates collected live solely within the water and would therefore not be available to foraging bats. These included large numbers of orb mussels (Sphaeriidae), snails (Gastropoda) and water fleas (Cladocera), with lesser numbers of water hog-louse (Asellidae) and freshwater shrimp (Gammaridae).

Aquatic insects, the potential prey for foraging bats, were best represented at Auchinstarry Basin where eight separate families of insect were recorded (refer to Table 1 below). The most common were the non-biting midges (Chironomidae). These small insects are well known prey items of many species of bats (Vaughan, 1997) and it was expected that these insects would make up the majority of the specimens found. In addition to the Chironomidae; alderflies (Sialidae), caddisflies (Phryganeidae and Limnephilidae), damselflies (Coenagrionidae), aquatic beetles (Dytiscidae), pond skaters (Gerridae) and backswimmers (Notonectidae) were all found.

Table 1: Aquatic invertebrate families present at Auchinstarry (Forth & Clyde Canal) on 13th April 2002.

Family	Common Name
Asellidae	(Water hog-louse)
Chironomidae	(Non-biting midge)
Coenagriidae	(Damselfly)
Dytiscidae	(Diving beetle)
Gammaridae	(Freshwater shrimp)
Gerridae	(Pond skater)
Glossiphoniidae	(Freshwater leech)
Hydrobiidae	(Spire snails)
Limnephilidae	(Caddisfly)
Lymnaeidae	(Pond snails)
Notonectidae	(Backswimmers)
Oligochaeta	(Aquatic worms)
Phryganeidae	(Caddisfly)
Physidae	(Bladder snails)
Planorbidae	(Ramshorn snails)
Sialidae	(Alderfly)
Sphaeridae	(Orb mussel)

At Fawnspark (refer to Table 2 below), six aquatic insect families were found: alderflies (Sialidae), caddisflies (Limnephilidae), non-biting midges (Chironomidae), damselflies Coenagriidae), water crickets (Veliidae) and lesser water boatmen (Corixidae).

Table 2: Aquatic invertebrate families present at Fawnspark (Union Canal) on 6th April 2002.

Family	Common Name
Ancylidae	(Freshwater limpet)
Asellidae	(Water hog-louse)
Chironomidae	(Non-biting midge)
Coenagriidae	(Damselfly)
Corixidae	(Lesser water boatman)
Gammaridae	(Freshwater shrimp)
Glossiphoniidae	(Freshwater leech)
Hydrobiidae	(Spire snails)
Limnephilidae	(Caddisfly)
Lymnaeidae	(Pond snails)
Notonectidae	(Backswimmers)
Physidae	(Bladder snails)
Planariidae	(Freshwater flatworm)
Planorbidae	(Ramshorn snails)
Sialidae	(Alderfly)
Sphaeridae	(Orb mussel)
Veliidae	(Water crickets)

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