▲ *Billy Goat near Pondsbury, May (photo: Paul Dean).*

Goat *Capra aegagrus*
The mid-March stock count found 43 individuals, comprising 19 nannies, 8 billies, and 16 kids (P Hamlyn). The only other double-figure counts were of 15 in the Quarries on 25 Mar (anon) and 22 on the West Side near Jenny's Cove on 16 Aug (M Williams). Goats continue to be actively discouraged south of Quarter Wall to reduce grazing pressure on the slow-growing woody vegetation in Millcombe and St John's Valley. One nanny was culled in September and 2 billies in October, although it is possible that the main herd was not located by the stock management team.

Rabbit *Oryctolagus cuniculus*
The slow recovery in Rabbit numbers appears to be continuing, with no significant outbreaks of disease (Rabbit Viral Haemorrhagic Disease or Myxomatosis), although a few carcasses were reported. Individuals or small groups were reported from 21 locations across the island; from Castle Hill to the North End and on both the east and west coasts. The highest counts were of 10 in Southwest Field on 25 Apr (K Waterfall) and 14 across the island on 29 Apr (S Cossey). All records of this formerly common species are welcomed to allow its status to be assessed.

▲ *Rabbit by the Lower East Side path,May (photo: Paul Dean).*

FRESHWATER INVERTEBRATES

Jennifer George

Introduction

In 2023, the freshwater records are, as in previous years, mainly from the research of Alan Rowland, who has been continuing with his detailed study of the Lundy streams and several ponds. The organisms discussed are from St John's Stream, Millcombe Stream and Cascade, Brambles Pond, Quarry Pond, and Pondsbury. 31 different species were identified in these freshwater habitats.

Platyhelminthes (Flat Worms)

The white **Flatworm**, (*Phagocata vitta)* which occurred in St John's and Millcombe streams is typically found in cold fast flowing streams in Europe and the UK. It feeds particularly on small oligochaete worms and Chironomid larvae. The black flatworm, (*Polycelis nigra)* with similar feeding habits, also occurred in St John's Stream.

Oligochaeta (Segmented Worms)

The Millcombe Stream, as in previous years, contained the **Square-tailed Worm**, (*Eiseniella tetrahedral)* and the **Sludge Worm**, (*Tubifex* sp.). The latter species, which was also found in St John's Stream and Brambles Pond, lives in mud tubes from which their posterior ends function as gills when protruded into the water.

Hirudinea (Leeches)

The **Horse Leech**, (*Haemopis sanguisuga)*, which has body length of up to 60mm, was found in Millcombe stream above the confluence. This leech has been found in several areas of Lundy and in October 2023 it was observed in a puddle by Quarter Wall gate by Maggie Bowden where it has been frequently seen in previous years. Despite its name, it does not attack horses but feeds on other invertebrates, both freshwater and terrestrial, which it swallows whole (see photo).

▲ *Horse Leech,* Haemopis sanguisuga *collected from Millcombe stream (photo: Alan Rowland).*

Mollusca (Snails, Limpets, Mussels etc)

The **Jenkins Spire snail**, (*Potamopyrgus antipodarum)*, occurred again as in previous years in Millcombe Stream and in St John's Stream where it was found in large numbers near Square Cottage (500) in March 2023. This small black snail was originally confined to brackish water but since the late 19th Century has successfully colonized freshwater habitats throughout Europe and the UK. The **Wandering Pond Snail** (*Peregriana peregra)*, was found in the two streams and also in Brambles Pond.

Crustacea (Shrimps, crabs, crayfish, water fleas, copepods, ostracods)

Crustacea were represented by the small **Seed Shrimps** (*Ostracoda)* and the ubiquitous **Water Slater**, (*Proasellus meridianus)*. Ostracods (size 0.5 – 3mm) which occurred in Brambles Pond and St John's Stream near Square Cottage are typically found amongst vegetation or in the upper layers of the sediments. *P. meridianus*, the slater species which commonly occurs on offshore islands, is found in many of the Lundy ponds and streams, where it crawls amongst dead leaves and debris on the bottom sediments. It cannot swim in open water.

▲ *Crane fly* Dicranota sp. *larva, Millcombe stream (photo Alan Rowland).*

Insecta (Insects)

Fly & Midge Larvae

Insect fly larvae were well represented in the streams in 2023. Several **Midg**e species of the Families *Ceratopogonidae* and *Chironomidae* (**Biting Midges**) and *Dixidae* (**Meniscus Midge**) were found in large numbers in March. **Mosquito** larvae (*Culicidae*) occurred in St John's Stream above Brambles and at Square Cottage. These larvae spend much of their lives at the surface, where they filter-feed with their brush-like mouthparts. Other fly larvae e.g. **Crane fly** *Dicranota* (see photo) and a species of *Dolichopodidae*, the **Long-legged Fly**, were found in the Millcombe Stream. The Crane fly larva, which can grow to a length of 20mm, lives in the mud and feeds mainly on the Sludge worm (Tubifex), which occurs in the same habitat. The **Trickle Midge** larva (*Thaumaleidae*) was found in Brambles Pond; this little-known family of midges has larvae similar to those of the more common Chironomid larvae but lack the paired thoracic prolegs. They have snout-like beaks and spiracles on the thorax. Larvae occur mainly on wet rock faces where they feed on diatoms in the surface film.

▲ *Mayfly larva,* Cloeon dipterum *from Pondsbury (photo: Alan Rowland).*

Ephemeroptera (Mayflies)

A mayfly nymph (larva), the **Pond Olive Mayfly** (*Cloeon dipterum*) was found in Pondsbury in July (see photo). This species is typical of small lowland waters and has previously been recorded in Pondsbury by Clabburn in 1993 and by George & McHardy in 2003. This nymph is very active and exhibits very good swimming movements by means of its abdomen and hairy cerci (tails). Adult mayflies which often emerge from the water in swarms can be seen between April and September. They only live for a few days and mating takes place on the wing.

▲ *Emperor Dragonfly* Anax imperator *nymph from Pondsbury (photo: Alan Rowland).*

▲ *Blue-tailed Damselfly* Ischnura elegans *nymph from Quarry Pond (photo: Alan Rowland).*

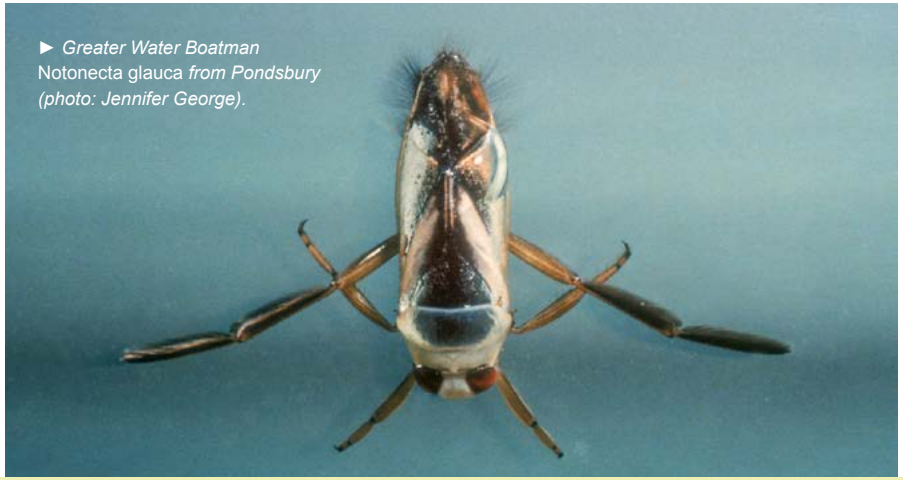
Odonata (Dragon and Damselflies)

In July. the nymphs (larvae) of the **Emperor Dragonfly** (*Anax imperator*) and nymphs of the **Blue-tailed Damselfly** (*Ischnura elegans)* were found in Pondsbury, with the latter species also occurring in Quarry Pond. (see photos). The *Anax* nymph has internal gills in the abdominal cavity. Water is passed into the cavity, and the nymph moves by jet propulsion, passing the water out backwards through the anus by contractions of the abdomen. They are active predators feeding on other invertebrates, tadpoles, and small fish. The *Ischnura* nymph has three leaf-like lamellae that function as gills and as fins for swimming. It is usually found amongst water plants.

Adults of *Ischnura* were seen in May and early June flying around both Pondsbury and the Quarry Pond areas. Adult *Anax* were observed in various Lundy areas and details are given in the Terrestrial Invertebrates Report by Alan Rowland.

Hemiptera (Water Bugs)

Water Bugs were seen in the same two ponds as in previous years. The Pond Skater (*Gerris lacustris*) was seen on the surface of Quarry Pond, and the large Greater Water Boatman (*Notonecta glauca*) was seen swimming in Pondsbury. This Water Boatman (up to 16mm long) swims vigorously on its back using large hair-fringed back legs as paddles. (see photo). It comes up to the surface regularly to renew its air supply that is carried between hairs on the abdomen. This voracious predator which feeds on other invertebrates and even small fish, is a good flier and can move easily between ponds.



► *Greater Water Boatman* Notonecta glauca *from Pondsbury (photo: Jennifer George).*

▲ *Caddis* Tinodes assimilis *larva from Millcombe Stream (photo: Alan Rowland).*

Trichoptera (Caddis flies)

The larva of the cased caddis *Micropterna sequax* occurred in St John's Stream above Brambles living in a vegetation case, where also a pupal case of *Limnophilus vittatus* was found. The caseless caddis larva *Tinodes assimilis* was found in the Millcombe Stream above the confluence (see photo). *Tinodes* larva is small (up to 11mm in length) and has short strong legs and the last abdominal segment has a pair of jointed appendages. This larva lives in a narrow tubular gallery of silk, often covered in debris, which is attached to stones.

Coleoptera (Water Beetles)

Two species were seen in Brambles Pond in March: the adult Dytiscid, *Hydroperus* sp., and a Dytiscid larva as yet unidentified.

Conclusions

The freshwater invertebrates in 2023 appear to have recovered well from the severe drought of 2022 when many of the ponds and streams dried up. Many species survive dry conditions by burrowing into the sediments or aestivating amongst the roots of aquatic plants. It is likely that the UK will face more droughts in the future due to climate change, and aquatic animals will have to adapt or become extinct.

Alan Rowland would like to thank Dr Ian Wallace who confirmed the identification of the Caddis species Tinodes assimilis.

TERRESTRIAL INVERTEBRATES

Alan Rowland

▲ *A Silverfish* Lepisma saccharina *found in the Dairy in May (photo: Alan Rowland).*

Unless otherwise stated, all sections were compiled by Alan Rowland. The majority of these records have been extracted from the LFS Logbook stored in the Marisco Tavern where those visiting Lundy have shared their findings. Some sightings were not used as the recorder left neither name nor contact information to enable us to verify them. These records are supplemented by observations submitted to iRecord by other visitors to Lundy. Additional records have been sent to me directly by those who left their properties on their last day and made observations but did not return to the Tavern to record them. Not all records can be verified without descriptions or photographs. However, some photographed species have been shared with national or regional experts who have verified or determined them.

Thysanura (Silverfish)

A single **Silverfish** (*Lepisma saccharina*) was reported by Alan and Sandra Rowland when they were staying in the Dairy on 31st May.

Mollusca (Slugs and Snails)

2023 was a good year for records of slugs and snails. The larger species were most obvious, but diligent searching for other species is made more difficult by their quite small size. Eight species of terrestrial snails have been recorded.

▲ *Brown-lipped Snail* Cepaea nemoralis *in St.John's Valley, September (photo: Mandy Dee).*

Brown-lipped (*Cepaea nemoralis*) and **White-lipped** (*C. hortensis*) **Snails** were recorded between March and September in Millcombe, St John's Valley, around Rocket Pole, the Village, Upper East Side Path and the Castle area with up to 12 Brown-lipped snails being seen In Millcombe by Alan and Sandra Rowland and Mandy Dee. The other large species, the **Garden Snail** (*Cornu aspersum*) was recorded from March to September in Millcombe and around Hanmers by the same people with up to six in Millcombe.

▲ *White-lipped Snail* Cepaea hortensis *on Castle Hill, September (photo: Mandy Dee).*

A single *Balea heydeni* was recorded in the walls of the Nook in May. A **Glass Snail** (*Vitrina pellucida*) was seen on 21st March at Government House. This was last reported in 2011. The walls around Millcombe House were good hunting grounds