Amphibian Pond Survey

National Trust Holnicote Estate

Minehead, West Somerset

Spring 2017

Surveyors

RAGS members Adrian Ludlam, Lucy Wood, Maria Slade, Russ Towler

Background

In April 2017 the above volunteers attended “PondNet” training in pond surveying for amphibians and Great Crested Newts provided by Freshwater Habitats Trust (FHT) and Reptile & Amphibian Group for Somerset (RAGS).

Having completed training the volunteers were subsequently issued with a licence to survey for Great Crested Newts by torching, egg seaching and netting.

Water quality (dissolved nitrate and phosphate levels) test kits were obtained from FHT in order to check ponds for pollution.

The volunteers approached the National Trust (NT) Holnicote Estate to obtain permission to carry out pond surveying for amphibians ans water quality tests. Permission was granted and the team carried out several surveys of each of 7 ponds located on the estate during May and June 2017.

Methodology

A daylight visit was made to each of the 7 designated ponds on the estate prior to surveying for a number of reasons:

- to accurately record pond location using gps
- carry out a risk assessment for surveys to be performed during the hours of darkness including safe access routes to each pond site and to identify appropriate positions from which to torch and net the pond
- to assess the flora and fauna present at each pond, especially the depth of water in the pond at its edges, the nature of the pond bed and vegetation growing in the pond and its margins

Each pond was visited and surveyed during the hours of darkness four times between May and June 2017 by a minimum of two volunteers at each visit.

Torches were used to illuminate accessible parts of the bank around each pond, its margins and the water surface, subsurface layers and pond bed.

Records were made of the number and species of any amphibians seen in the torchlight.

Appropriate aquatic vegetation was searched for signs of newt egg laying activity (folded and glued leaves).

Appropriate long-handled nets were used to catch a number of live specimens seen within range in the torchlight and deposit them in water-filled trays on the bank for closer examination. Specimens were returned alive and unharmed after a few minutes.

Water samples were taken from each pond and used to determine water quality. Ponds were classified as polluted if tests revealed dissolved nitrate and phosphate at levels high enough likely to be detrimental to aquatic flora and fauna.

Ponds

Pond 1

Field west of Tivington Farm

Pond 2

Blackford Wood

Pond 3
The Paddocks

Narrow Shallow pond

Pond 4
The Paddocks
Square Pond

Pond 5

Piles Mill Study Centre

Pond 6

Piles Mill Waterwheel Pond

Results

Pond	GCN	GCN eggs	Common Frog	Common Toad	Palmate Newt	Smooth Newt	Newt eggs	Polluted
1. Field Pond West of Tivington Farm	No	No	Adults Immature Tadpoles					No
2. Blackford Wood	No	No	Tadpoles	Tadpoles	24 (m&f)	Yes	Yes	No
3. The Paddocks narrow shallow pond	No	No	Tadpoles		2 (m)			Yes Phosph 0.1-0.2ppm
4. The Paddocks square pond	No	No	Tadpoles		25 (m&f) Efts			No
5. Piles Mill Study Centre pond	No	No	Adults Tadpoles		39 (m&f)			Yes Nitrate 0.5-1.0ppm
6. Piles Mill waterwheel pond	No	No	No	Adult	1 (f)			No
7. Piles Mill car park pond	No	No	Tadpoles		1 (f)			No

1. **Great Crested Newts** in any life stage (adults, immature, efts or eggs) were absent from all ponds during our survey.
2. **Palmate newts** were found in all ponds except in the field west of Tivington Farm. Males in breeding condition (webbed back feet and tail filament) were found in 5 of the 7 ponds.

3. Newt efts were found in only one pond (The Paddocks square pond). It was not possible to identify which species these were and have been included in the results table as palmate (the most numerous newt species found during our survey).
4. **Smooth newts** were found only in one pond (Blackford Wood).

5. **Newt eggs** were found only in one pond (Blackford Wood).

6. **Common frogs** (adult and immature life stages) were found in 2 ponds. Evidence of breeding (swimming or shoaling tadpoles) was found in all ponds except the Piles Mill waterwheel pond.

7. **Common toads** A single sighting of a lone adult individual was made at the Piles Mill Waterwheel pond. No evidence of adult toads was found at any other pond. Toad tadpoles were identified at one pond (Blackford Wood).

Water Quality Test Results

1. Five ponds (Tivington Farm Field Pond, Blackford Wood, the Paddocks square pond, Piles Mill waterwheel pond and Piles Mill car park pond) tested clear of nitrate and phosphate at levels detrimental to aquatic wildlife.

2. Two ponds revealed water nutrient levels likely to be detrimental to aquatic wildlife and plants. **The Paddocks** narrow shallow pond (Pond 3) had **phosphate** at between 0.1-0.2ppm. **Piles Mill dipping pond** (Pond 5) had **nitrate** at between 0.5-1.0ppm.

3. High nutrient levels lead to excessive growth of algae, fungi, bacteria and some more tolerant water plants. Native wildlife and aquatic flora struggles to compete with a small number of tolerant species which flourish in the conditions. Duckweed may cover the surface of ponds blocking light and reducing dissolved oxygen. Aquatic fauna may die.

Conclusion

1. No evidence of **Great Crested Newts** (adults, immature, efts or eggs) was found at any pond site during our survey.

2. **Common frogs** (adult, immature or tadpoles) were present in 6 of the 7 ponds (Piles Mill waterwheel pond being the exception). Common frogs are breeding in all but 1 of the ponds (Piles Mill waterwheel pond) evidenced by the presence of tadpoles.

3. **Common toad** tadpoles were identified in only 1 of the 7 ponds (Blackford Wood). The sighting of a single adult toad in the Piles Mill waterwheel pond may have been a spurious event.

4. However, during our first survey visits to the Piles Mill Study Centre, Piles Mill car park and Blackford Wood ponds (first and second weeks of May 2017) tadpoles were observed but we were unable to determine whether they were frog or toad at that time due to their small size and indeterminate colour. It is possible some of these tadpoles were in fact toad although none were positively identified at following visits.

5. Subsequent survey visits revealed toad tadpoles in the Blackford Wood pond. Accordingly, we can be sure this pond is a breeding site for **common toads**.

6. **Palmate newts** were the most common and numerous newt species in our survey being found in numbers in 3 of the 7 ponds (Piles Mill study centre, The Paddocks square pond & Blackford Wood). Evidence of breeding was found in 2 of the 7 ponds with efts in The Paddocks square pond & newt eggs in Blackford Wood pond.

7. **Smooth newts** were only found in 1 of the 7 ponds (Blackford Wood) with a single individual being positively identified after netting. It is possible further colonies exist on the estate. Future surveys are required to prove or disprove this assertion.

8. **Blackford Wood** pond produced evidence of breeding in common frogs, common toads, palmate newts and smooth newts. As such, it is considered to be the most important pond on the estate in terms of amphibian occupancy.

9. **The Paddocks** narrow shallow pond has **high levels of nutrient pollution** ie dissolved phosphate. A much reduced variety of aquatic flora and fauna is likely to result due to this level of pollution.

10. **Piles Mill dipping pond** has evidence of **some nutrient pollution at levels damaging to wildlife** ie dissolved nitrate. Wildlife will survive but up to half the species of plants and animals that could be present may be lost.

11. Continued water sampling and testing to monitor the pollution level and reporting of such to the land managers would enable any corrective actions deemed necessary to be implemented in order to reduce adverse impacts on wildlife.

Adrian Ludlam

Volunteer for National Trust, Reptile & Amphibian Group for Somerset, Freshwater Habitats Trust

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