

Garrchoille Community Wood



Amphibian survey

February – April 2010

Report prepared for Gearrchoille Community Woodland Group 18th October 2010

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Introduction

Names for areas within the Gearrchoille can be found in the appendix to the 2007 report

In 2007 the amphibian population Gearrchoille was briefly surveyed in May. It was recommended that to properly assess the population a number of visits should be carried out between late February and early May (McAllister, 2007) permitting amphibian populations to be assessed:

- * **Frog spawning**
From spawn clump counts and/or spawn area a reasonable estimate of the number of breeding females can be made and from that an estimate population size. (Cooke, 1975; Griffiths & Raper, 1994)
- * **Toad spawning**
Toadspawn chains appear between 10 and 33 days after first frogspawn (Cooke, 1977).
- * **Frog and toad hatching and survival assessment**
Towards the end of the survey period, i.e. late April/early May.
- * **Newts and adult activity of frogs and toads**
Evening visit in the middle of the period to look for adult amphibian activity especially newts. Newt eggs in vegetation can be searched for on any or all of the other visits.

A full survey was carried out in spring 2009 giving provisional estimates of a total breeding population of about 48 to 60 frogs. No toad or newt activity was recorded. (McAllister 2009).

Further survey work was carried out in 2010 using the same methodology as 2009.

Survey work 2010

Procedure

Seven formal survey visits were made. On each of these a standard circular transect was walked following the same route as in 2009 and recording all amphibian activity. In addition on each visit one or more of the peripheral areas of the Gearrchoille was visited to record any additional areas where amphibians might occur and to assess the overall water flow and water levels within the wood. In addition several informal (dog walking) visits were made later in the year permitting a brief check on water levels throughout the summer and early autumn as this is often crucial to the early development of frog and toads.

Diary of events

From late December 2009 to the end of February 2010 there was one of the most severe winters for some time with 6 weeks of frost and a considerable period of lying snow. Temperatures dropped -10°C with 23cm snow in Tain and -11.5°C and 35cm at Oldtown, Ardgay immediately behind the Gearrchoille (pers.com. Phil Olson).

25th February – survey visit

Sunny, 2°C . A visit was carried out as daytime temperatures had risen to about 8°C and I had received information about frog movements elsewhere in south-east Ross. There was still ice in the drains and water flowing below the ice in the main burns. Both the spawning pool and the main spawning areas at the back of the curling pond had thick ice with some water beneath. Unsurprisingly no frogs or spawn were found.

7th March – survey visit

Sunny, 6°C . Frogs active in the Tain area. Ice amounts considerably less than on 25th February but some still present on spawn pool and curling pond areas. No spawn found. The upper areas of the wood still had considerable amounts of ice.

12th March

Phil Olson reported singing frogs and several clumps of spawn at Oldtown.

13th March

Brigitte Geddes photographed 3 spawn clumps in the spawn pool. Analysis of the photo indicates that at least five spawn masses were present.

15th March – survey visit

Sunny 12°C . 5 spawn masses found in spawn pool. In the still shallow area in the NE corner of the curling pond 2 very fresh masses of spawn were found and in the pools in the NW corner 1 mass and a clump with eggs of two ages probably representing the spawning of three females.

22nd March – survey visit

Light rain at first, 12-15°C.

Spawn pool – 5 old spawn masses identified.

Curling pond NE corner – 2 large clumps containing 3 or 4 spawn masses plus a very small spawn mass (8x5cm) with eggs of similar age. The latter may indicate predation breaking up one of the spawn masses, e.g. by a heron, or disturbance by humans.

Curling pond NW corner – Large clump with at least 4 spawn masses in it.

Green burn exit pond – A large double clump with 3 egg masses of two different ages.

4th April – survey visit

Sunny, light showers.

Spawn pool – 5 masses with tadpoles on the point of hatching.

Curling pond NE corner – 2 large clumps with mature embryos but some frosting.

Curling pond NW corner – A single large clump with mature embryos.

Green burn exit pond – Two clumps one with well matured embryos the other with embryos about half way through the developmental process.

7th April – survey visit

Spawn pool – Many tadpoles on point of hatch, a few hatched and on spawn.

Curling pond NE corner – Tadpole mass on spawn.

Curling pond NW corner – Tadpole mass on spawn.

Green burn exit pond – Not surveyed.

25th April – survey visit

Spawn pool – 1 tadpole seen. No other tadpoles found even with netting.

Curling pond NE corner – No tadpoles seen.

Curling pond NW corner – No tadpoles seen.

Green burn exit pond – No tadpoles seen.

July

Many of the areas used by frogs such as the pond near the green burn exit were dry.

13th & 17th October

Pools had not refilled despite recent rainfall.

The newly restored curling pond was holding water well.

Analysis of survey results and population estimates

Area Date	Spawn pool	Curling pond Still pool at inflow (NE)	Curling pond Pools in NW corner	Pool to SW of old dead pine	Pool above green burn exit	Cumulative total of spawning females
25/02/10	No spawn	No spawn	No spawn	No spawn	No spawn	0
13/03/10	5 clumps	No spawn	No spawn	No spawn	No spawn	5
15/03/10	5 clumps	2 clumps	1 mass & 1 clump (2-3)	No spawn	No spawn	10-11
22/03/10	5 clumps	2 large clump (3/4)	2 large clumps (4/5)	No spawn	Double clump (3)	15-17
04/04/10	5	3/4	4/5	0	4	16-18
07/04/10	Hatching	Hatched	Hatched	0	?	
25/04/10	1 tad	No tads found	No tads found	0	No tads found	

Table 1: Survey visits and cumulative estimates of the population of spawning female frogs.

Common Frog *Rana temporaria*

As outlined in last year's survey it is possible to estimate the number of breeding females from the number of spawn masses and from that estimate the breeding population (McAllister 2009; Cooke, 1975; Griffiths & Raper, 1994).

Table 1 provides a cumulative estimate of the numbers breeding female within suitable pools in the Gerrarchoille as between 16 and 18. This would give a total breeding population of about 32 to 36 frogs. The variations in the population structure and life cycle events between 2009 and 2010 are summarized in Table 2. The apparent decrease in the population between 2009 and 2010 should not be considered of great significance almost certainly being related to the severe weather conditions at the start of breeding season. Frogs are opportunist breeders greatly affected by temperature throughout their life cycle.

The very late start to the season relates is also directly related to the late winter weather conditions. It is interesting to note that the hatching and metamorphosis times are considerably shorter than in the previous year, almost certainly dependent on the warmer conditions prevailing as spawning had taken place later in the season.

In 2009 it was noted that the upper pond in the wood, near the large dead pine suffered from frosting effects. In 2010 this pond was not used possibly due to the colder conditions higher up.

Population and timing estimates	2009	2010
Number of breeding females	24-30	16-18
Adult breeding population	48-60	32-36
First spawning date	28/02/09	13/03/10
First hatching date	01/04/09	05-07/04/04
Leaving ponds	22/04/09	<24/04/10
Spawning to hatching time	29-32 days	23-25 days
Minimum metamorphosis time	21 days	<19days

Table 2: Population structure and life cycle events between 2009 and 2010.

Common Toad *Bufo bufo*

During the survey work no toads were seen and no toad spawn found. Peripheral areas of the wood where adult toads might be expected to be moving were searched but no toads were found.

Palmate Newt *Lissotriton (Triturus) helvatica*

The presence of newts was assessed using cold searches. No newts were found.

Future developments

The newly restored Curling Pond will for the first time provide an area suitable for breeding toads and newts within the Gearrhoille. The development of vegetation in the pond will be critical for this. In the first year or two spawning in this important area may be less than in the past if the vegetation has not developed sufficiently.

To breed toads require a relatively large area and a water depth of about 20-50 cm with suitable vegetation for their spawn strings (Cooke, 1975). Like toads, palmate newts require a large pond area with some water relatively clear of vegetation for their courtship display, they also need plants on which to lay their eggs. (Griffiths, 1995). Until now these conditions have not been met by any of the water bodies within the Gearrhoille.

For the smaller water bodies in the wood the recommendation in McAllister 2007 are still applicable. A major problem in the Gearrhoille is that the soil and surface are constantly damp, which could be of benefit to amphibians, however due to the sloping ground there are few water bodies which persist long enough for the full development of the juvenile stages. It might be possible to enlarge several pondage areas such as those opposite the picnic tables on the all abilities path and the crossing area of the green burn, neither of which are used at present.

The spawn pool and the pool to the SW of the large dead pine both have large amounts of vegetation which may be approaching the levels at which female frogs will not breed. This could be remedied either by careful "weeding" of some of the plants in the centre of each pool or by raising the water level by slightly obstructing the outflow. Such changes should be carried out with great caution until it is certain that frog spawning has re-established in the new curling pond.

I would be happy to walk around the area with members of committee to look at possible developments.

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