

## **THE COMMON FROG *RANA TEMPORARIA*: SOME NOTES ON ITS SUCCESSFUL HUSBANDRY AND BREEDING**

**DAVE BILLINGS**

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### **INTRODUCTION**

I suppose most of us acquired our initial interest in herptiles at a very early age with the collection of that first clump of Common Frog spawn from the local pond and the pleasure derived from watching the development through to tiny froglets.

The Common Frog is nearly always the first British Anuran to emerge from hibernation, sometimes arriving at its breeding grounds as early as mid-January in the south-west of England. Even in the more northern and eastern counties spawning does not often take place later than early April. Actual spawning dates vary with the mildness or severity of the spring weather. The earliest and latest spawning dates I have for East Anglia (based on personal observations over the last 12 years) are 12th and 31st March respectively.

The males usually arrive at the breeding sites first where they soon commence their familiar whirring mating-call. The females arrive a few days later but are seldom seen in the water except when actually in amplexus with a male. The males, on the other hand, are much in evidence as they swim excitedly about looking for a female. Amplexus is axillary and can last for several days or even weeks as spawn is not laid until there is sufficient algal growth in the water for the tadpoles to feed upon. A sudden cold spell after the frogs have coupled will prolong amplexus and retard disposition of spawn.

Spawning usually takes place at night but can occur during the day, especially early morning. The frogs leave the water soon afterwards although males quite often remain in the pond for some time, calling to attract another female.

### **DISTRIBUTION & HABITAT**

The Common Frog is still such a familiar and commonplace creature that I will not attempt a detailed description in this article. Indeed, it is the most widespread European amphibian, extending from North Scandinavia to northern Spain and the northernmost tip of Italy. Eastwards it occurs throughout central Russia but is absent in central and southern Iberia, most of Italy and the Balkans. It is also found in central Siberia, northern China and north Japan.

Frequenting a variety of habitats this frog thrives even at high altitudes; in the more southern parts of its range it is virtually confined to mountainous regions because of its intolerance of heat. Habitats most favoured are those which provide a measure of moisture and shade such as woods, field-margins, meadows, marshland, hedgerows or gardens. The sites usually chosen for spawning are smaller bodies of water, ponds, ditches, disused canals or garden pools.

Although the Common Frog is still fairly numerous throughout its range it has suffered a severe decline in status over the last thirty years due to the insidious but systematic destruction of its habitat by urbanisation and agricultural "improvement". These two factors have contributed to a shrinking countryside increasingly devoid of trees, hedgerows, ponds and ditches resulting in a barren, featureless landscape completely hostile to frogs and many other forms of wildlife. The increased use of herbicides and pesticides has accelerated the decline of frogs in rural areas, depriving them of food and contaminating the few remaining ponds or ditches in which they breed.

The picture is not universally bleak however, as the boom in garden pond ownership during recent years has provided the Common Frog with a new spawning medium while the garden itself has proved to be a most satisfactory sanctuary where natural enemies are at a minimum. A recent nationwide survey of Britain indicated that 69% of breeding sites used by Common Frogs

were garden ponds. A similar survey conducted in Norfolk during 1982 produced a figure of 60%. Thus it can be seen how important garden ponds are becoming for the future survival of this species.

### HUSBANDRY & BREEDING

The ease in which a breeding colony of Common Frogs can be established, even with the smallest garden pond, renders it unnecessary to keep any adults in permanent confinement unless for scientific study or some other special reason. Personally, I have not found this species to be an ideal vivarium inhabitant as by nature it is rather secretive. It is also intolerant of dry conditions or high temperatures and does not seem to breed so readily in captivity as other species of the genus *Rana* such as *R. esculenta*, *R. ridibunda* or *R. dalmatina*. Its strong migratory instincts in the spring usually condemn it to fruitless attempts at escape from the vivarium, the pond of which will be used only as a last resort.

In my opinion it is far better to establish a colony of wild frogs in the garden than to subject them to confinement; the vivarium can then be used to accommodate more amenable species while a programme of practical conservation is embarked upon in the form of a viable, garden population of Common Frogs. Equal success is likely whether the garden is situated in an urban, suburban or rural area provided the conditions therein are to the frogs liking.

I wish to emphasize at this juncture that the indiscriminate release of adult frogs in the hope that they will remain in the same vicinity is almost certainly doomed to failure, (unless the garden is walled completely and therefore escape-proof). If the frogs do not disappear without trace immediately (which is highly probable) they will definitely do so at breeding time when they try to find their original spawning grounds.

Newly metamorphosed froglets released in damp vegetation at the pondside will usually settle well, but fairly large numbers would need to be released in order to ensure that a few ultimately reach maturity. The best time to release froglets is late evening or during rain when the herbage is damp, this will prevent dehydration resulting in the rapid death of the unfortunate creatures.

By far the most successful way of starting a colony is to begin with frogspawn; this should not be collected from the wild unless the source is contaminated or threatened with imminent destruction. Spawn can always be obtained from B.H.S. members by placing an advertisement in the "Wanted" section of the Bulletin or by contacting the local country Naturalist Society. Once the spawn has been obtained it should be placed in the garden pond without delay because if left in a small container a large proportion will perish due to lack of oxygen in the water.

With the advent of moulded fibreglass pools and butyl plastic liners a pond can be installed quickly, easily and relatively cheaply without the backbreaking labour required for the construction of a cement one. The design and size of the pond is largely a matter of personal choice, but of course, the larger it is the more satisfactory in every respect. Remember to site the pond in a position which receives a fair amount of sunlight away from overhanging trees, this will ensure a good growth of underwater plants and algae.

Pond fish of any description are not compatible with frog tadpoles as they will consider the tadpoles a welcome addition to their menu. I usually overcome this problem by dividing the pond with very fine meshed netting (obtainable from garden centres) while the tadpoles are developing. In a tiny pond it is advisable to remove the fish altogether, replacing them after the tadpoles have metamorphosed.

It is surprising just how many tadpoles can result from a fairly small clump of spawn and overcrowding must be strictly avoided or the tadpoles will fail to develop properly. I have found the optimum number is about 12 tadpoles per square foot of water surface; it is far better to rear a comparatively few healthy tadpoles to metamorphosis than to have vast numbers of sickly, undeveloped individuals of which most will fail to develop at all. If it is discovered that there are too many tadpoles present for the size of the pond which do not appear to be growing normally, the surplus can always be used to populate nearby natural ponds or given to other garden pond owners.

In larger ponds the tadpoles will find their own food; in smaller ones their diet can be supplemented with goldfish flakes/pellets and raw or cooked fish and meat. Complete metamorphosis from egg to froglet generally takes about 12 weeks, so the main time of emergence from the water is during the month of June. Ensure there is adequate cover at the pondside in the form of low growing vegetation to minimise predation by blackbirds and thrushes, both of which are arch-villains where baby frogs are concerned. The vegetation can be allowed to trail over the edge of the pond into the water, this will assist the emergent froglets to gain egress onto dry land.

Although the froglets rapidly scatter far and wide on leaving the water, a few should take up residence in the garden; most neighbours will probably welcome the "overspill" frogs into their own gardens. Lawns should be kept short otherwise the froglets will seek food and shelter in the long grass where they are likely to be chopped to pieces by the mower when the grass is eventually cut. A garden can be kept neat and tidy while still proving hospitable to frogs, there is usually enough invertebrate food and cover among the herbaceous borders, shrubberies or vegetable plots. The frogs will help to keep insect and other garden pests under control without recourse to insecticide sprays, slug pellets and suchlike which could ultimately poison them as well as the pests they feed upon.

Common Frogs appear to require two years to reach maturity, by which time the first adult pairs will probably start arriving at the pond to spawn. If not, fresh spawn can be introduced into the pond each year until success is achieved.

The table below shows the results in setting up a common frog colony in a garden pond in Essex which measured 8ft x 5ft x 1½ft deep

Year:	1976	1977	1978	1979	1980
Approximate amount of spawn (eggs) introduced	250	300	500	—	—
Amount of spawn	—	—	2	4	7
Approximate number of tadpoles reaching metamorphosis	210	250	* not known	* not known	* not known
Number of adult frogs returning to spawn	—	—	6o 2o	8o 4o	15o 7o

\*Numbers involved were too large for even a rough approximation to be given.

It can be seen from the above table that results can be achieved from very small beginnings; by 1979 my pond had reached "saturation point" and tadpoles were transferred to a suitable pond nearby which was, at the time, devoid of tadpoles.

When we moved to our present address in 1980 we were fortunate enough to "inherit" a farmyard pond which despite being overshadowed by trees and heavily polluted with effluent from a septic tank overflow nonetheless had Common Frogs visiting it to breed. This meant I was unable to start from "scratch" to compare with the results shown in the table; however, after the trees around the pond had been thinned and the pollution stopped there was a remarkable transformation in water quality and plant growth. The following year a far greater number of tadpoles were seen in the pond and the overall population of adult frogs has increased by almost 300% since 1980.

We can all help to swell the depleted ranks of the Common Frog by establishing a colony in our garden thereby helping to ensure its continuing existence in an increasingly hostile world.