

FROG MASS MORTALITY: SCURRILOUS DISEASE OR PANIC ATTACK?

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There can be few naturalists who have not heard by now about the problem of disease in British Common Frog populations. The subject has featured in many popular press articles over the past few years, appeared on television, and received scientific study supported by the RSPCA. Frog disease in its worst outbreaks is a horrible spectacle and fully warrants serious investigation, but my concern is that, paradoxically, the results of all this attention may not be in the best interests of frog conservation. Over the past couple of years, the main advice emerging on how to cope with frog disease has amounted to a moratorium, or at least a substantially reduced effort, in moving frog spawn between ponds. I wonder whether this is really a sensible way to proceed in light of the evidence now available.

The pertinent facts about frog disease include the following:

1. Outbreaks became particularly noticeable in the late 1980s, with many reports in the early 1990s. Anything from a few to a few hundred frogs were found dead or dying at each locality, almost always in or near ponds in garden environments and usually during summertime. Frog mortality is commonly high during the early spring breeding season from a variety of other natural causes, and sometimes also in winter when ice persists for a long time on ponds where frogs are hibernating; in neither of these circumstances should frog deaths be confused with those due to disease.
2. The disease has not struck everywhere equally, but has been particularly concentrated in southern and eastern England.
3. Within a year of an outbreak, it is usually still common to find good numbers of frogs in or around the same areas where the mortality occurred, although some may bear lesions characteristic of the disease.
4. The primary cause of the disease remains uncertain, though Dr Andrew Cunningham's study at the Institute of Zoology indicates that there may be two forms, one characterised by high infestation with red-leg bacilli and the other possibly with infection by pox or iridoviruses.

Perhaps equally important as these basic facts are other less well-discussed aspects of frog disease. These are:

1. There is no epidemiological evidence to suggest that frog diseases are devastating in the way that, for example, myxomatosis has been to rabbits. Outbreaks of frog disease are sporadic and very localised, even though frog populations in suburban areas are generally high and often linked between dozens or hundreds of small ponds spread over several kilometres.
2. There is no evidence to suggest that disease is or can be spread by the movement of spawn or tadpoles.

3. There is no evidence to suggest that an outbreak of disease has anything but the most transient of consequences, with populations generally recovering quickly after such an episode.

Taken together, this does not seem like the effect of a dangerous novel pathogen but much more like a natural population-regulatory process. Such occurrences are well documented in other species, a notable example being ulcerative dermal necrosis (UDN) in Atlantic salmon. Outbreaks of this disease, with its characteristic skin lesions, caused great concern among fishery managers all over Britain in the late 1960s. However, because salmon fishing has a long and well-documented history, it was quickly discovered that the disease had struck before and may recur in its most severe form every 60-70 years or so; salmon stocks subsequently recovered from disease attacks, but not unfortunately from multiple other problems such as pollution and overfishing.

There could be an important message here for frog conservation. The disease struck at a time when frog populations might have been particularly vulnerable to stress, because numbers in many suburban gardens had become extremely high. I estimated that there were more than 400 rather emaciated adults per hectare in my part of Sussex in the mid 1980s, and the summers of 1989, 1990 (and 1995, with another outbreak) were especially hot and dry. This could have precipitated a crisis for frogs, particularly in the south and east where the weather was at its most extreme, manifest as outbreaks of disease in animals already in very poor physical condition.

What we do know is that efforts to promote garden ponds and their use by amphibians during the 1970s and 1980s proved extraordinarily successful as a conservation tool. During this period, frogs recovered from what was perceived as a national crisis following agricultural intensification in the post-war countryside to a situation in which built-up areas as far apart as Brighton and Sunderland maintained thousands of populations as a reservoir from which open countryside could be (and is being) repopulated. Now there is a risk that overreaction to frog disease might reduce this conservation gain, by urging us not to move spawn around (or, bizarrely, to confine movements to within an arbitrary 1 kilometre radius) and to leave new garden ponds to populate naturally - passive rather than active conservation. In my opinion the facts simply do not warrant such a cautious response that may discourage people from an interest in conservation as well as putting the brakes on an unmitigated urban success story. Of course new facts may come to light that justify the present panic measures, but it seems to me that at the moment the balance is wrong. Moving frogspawn works wonderfully well; frog disease is patchy and inconsequential. Keep up the good work, I say.