

An Amphibian Farm in Tennessee

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For some seventeen years now, we have been putting in and aggressively managing ponds for amphibians on farms that sit in the foothills of the Cumberland Mountains. In this part of Tennessee, the ground falls fairly rapidly. This causes all natural waters to flow, and, as they are filled with fish, they barely tolerate amphibians. Consequently, a pond can put amphibian populations into an area that otherwise would have few or none. While in an environmental sense this is nice, for us a pond is an intention to make a profit, and we like to feel at home with the bottom line. So if we assert that we have learned a lot about the affinity of amphibians for standing water, we have not really admitted to much.

Easy to understand that some amphibian species require deep ponds while others shallow, some want sun, others shade. Yet often-times their breeding congresses evade our attempts to guide their behavior. One pond, which is easy to seine, remains our best newt pond year after year. Another, a few feet away and of similar depth, attracts few newts, but is one of our most popular ponds for tiger salamanders, and we counted more than sixty of their egg clutches there this past winter. In sorting these things out, there is one certainty: All ponds, shallow or deep, sunny or in shade, iron-bottomed (hold well) or incontinent, will be home to several types of amphibian, and even in the hottest days in summer will yield some larval forms. This is true for a pond hardly more than ankle deep that has a surface temperature of well over one hundred (old style) degrees, and frog eggs that have been laid on the surface will not die.

A newly dug pond in the middle of an open field and with the clay not yet settled will draw breeding leopard frogs like Pharoah's curse. Tiger and spotted salamanders will follow, and with a little fringing habitat, this attraction extends to the wood frog, the toad, the tiger and spotted salamanders, and to the grey treefrog, all of which will abandon long-established breeding sites for a chance to reproduce in relatively sterile, muddy water. The larger ranid frogs are more parochial, de-

manding higher grass and cover. Newts have no choice; their singly-laid eggs must adhere to something, and in a new, silt-laden pond these, apparently, will smother.

In placing ponds, we cannot dig into our fields, as the opportunity to cut hay pulls in local farmers, who then bushhog our pond banks and roads. Without these services the farms would be brushed-up and unmanageable in less than five years. Consequently, the ponds must run along woodlines or else sit in hillsides that are too steep for the farmers' machines. In time, then, the inevitable—we needed more ponds, but we had run out of places to put them, and this led to the climb up Roundtop.

Our Roundtop farm takes its name from Roundtop Mountain, into which it backs and up which it extends. A TVA map tells me that the mountaintop, some twelve hundred feet above sea level and only five hundred above our valley ponds, is hardly a heroic climb, but with its steep slope and thin soil, it aghasts the pond-builder, who expects to work in deep earth showcased as flat ground. Despite this, for some years we had argued the possibility of putting ponds into the mountainside, in order to bring into some sort of production land that evades practical use in this part of Tennessee.

Roundtop Mountain is sharply pitched, and the push to the top required an approach road a half mile long; but, after the climb, the dozer managed to get three narrow ponds into the thin soil of the steep slope, just short of the crest. Here, the rapidly falling ground forces the trees, bearing vines heavy enough to pull them down, to grow surprisingly tall and uniformly thin as they compete for space and for sun. Visually, to those minds that run in a certain way, a picture is allowed of a tropical jungletop, and, as we like a little something in our lives, we call this area the tops. And now to the plan that we had put together after years of figuring out how amphibians and their breeding ponds work. We had concluded that on these steep slopes and at this elevation only newts would feel at home and soon would populate the tops, where we might collect them in summer, as only then could our vehicles make the climb. In the wet and winter months we would run the valley ponds for the other amphibians, and especially for the egg clutches of the ranid frogs and the tiger salamanders that are the strong support of our embryology market.

Eighteen months after our plan went in,

our tiger breeding run along the base of Roundtop Mountain was off. With one amphibian species or another, this is always happening to a pond, or to a farm, or to a season, and is merely a moment in a series of interacting cycles that we'll never be able to figure out. But by chance, this winter the ground was dry on the road up Roundtop, and we made it to the first pond under the crest. In memory, the picture still is pretty clear—eggs as concentrated as ever we had seen, and from their stagings clear evidence of three runs, and so now we have tiger salamanders at the top.

But we had given these animals reasonable accommodation! Below! We do not play at modesty here. Without us there would be no ponds and no layings, and in this rocky, fast-run, intermittent-stream-over-rock county, few tiger salamanders altogether. Invited to express wonder at yet another example of Nature's irritating inscrutability, we chose to be indignant, and we remain so.

But beyond this, what made them climb so far, so many at one time to come together in a space less than a small-sized room? Do tiger salamanders call like frogs in order to congregate? We never heard that they do. Do they

move on summer nights in order to learn the land? We've seen them on the roads, but only just ahead of the breeding runs of winter. Yet, in a climb that broke us of the ponding habits of fifteen years, they followed like hounds.

That summer we seined the tops. We got breeder bullfrogs and masses of leopard frog, green frog and hylid tads—and, I think, some newts. In time we found that everything that breeds in the valley also was at home in the tops.

And so we are left to gaze out from our folly. For the dozer, in setting the pond banks under the crest, here and there broke through the canopy, and it opened in long, horizontal perspective a startling panorama of Tennessee's mountains, billowing east and ever rising into the Cumberland Plateau. And as far and as wide as we can see are the real Tops, long ago cut over, but too high and too steep to farm or to graze, and now regrown and defaulted back into the forest. Overlooked for their value and unappreciated as to their purpose, each a stronghold for creatures like those that we propagate, in a slow two hundred mile roll to the Appalachians, the Tops secure the return one day of all their wildlife to the valleys, and to us.

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