

Amphibian Recolonization

By C. Richard Tracy and Linda Zimmerman

The dimensions of this overall project include: (a) A survey of the possible amphibians in the Lawn Lake area and their breeding requirements; (b) A time-dependent survey of the percentage of river course (including all backwaters and ponds) that is usable for amphibian breeding; (c) A time-dependent survey of the water chemistry (especially with respect to heavy metals) of the water course; and (d) Bioassays of the potential of water in the Lawn Lake system to support successful reproduction.

We have begun a survey of the waters in the Lawn Lake system for heavy metals and have found dramatic increases in the amount of iron in the waters of

the alluvial fan in Horseshoe Park. This is especially true in the backwaters that move slowly and accumulate a characteristic "surface scum." We have not completed all analyses of water sampled in 1983, but those analyses will be completed before the 1984 season. In 1984, we hope to expand the chemicals sampled to include O_2 , CO_2 , Nitrites, Nitrates, Ammonia, pH, and other standard indicators of water quality.

We have initiated bioassays of the potential of water from various parts of the Lawn Lake system to sustain healthy survivorship in the aquatic eggs and larvae of amphibians. These laboratory experiments include preparing serial dilutions of water taken from the Lawn Lake system (along with a control), and testing for percent mortality in eggs and tadpoles raised in these sample waters. The experiments on waters collected in 1983 were completed in spring 1984. The problems encountered so far have centered around the difficulty of inducing oviposition in amphibians (of any species) in fall. Since our project could not begin until fall, we have had problems getting viable material for the bioassays. In 1984 we should not have any problems completing the bioassays during the normal breeding season for amphibians that can be found in the Lawn Lake system.

In 1984 we will establish transects on experimental and control stretches of stream, which will be censused regularly to get a long-term time course of recolonization by amphibians. In addition, we will be collecting data on the abiotic factors of the environment that can be correlated to the pattern of recolonization.

Our findings in 1983 suggested that water in the alluvial fan created by the Lawn Lake flood was different from that of older stream beds. This difference in water quality could inhibit successful invasion of the backwaters of the alluvial fan area by amphibians. We have reoriented and expanded our original research to investigate these possibilities.

Clearly if our research finds that chemical changes in the water quality of the Lawn Lake system can inhibit successful reproduction in amphibians, these results would have profound implications that go beyond the scope of our current project. It is also important that permanent, long-term transects are established before the natural time-dependent changes that occur in impacted ecosystems progress beyond points that should be documented in order to understand the natural succession of this flooded system.

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