

SUCCESS OF RECLAMATION PRACTICES TO SUPPORT AMPHIBIAN POPULATIONS¹

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Abstract: Many semi-aquatic organisms often require multiple ecotopes for reproduction, hibernation, aestivation, metamorphosis and/or feeding. For example, numerous salamanders and anurans breed in temporary wetlands yet maintain juvenile and adult populations in the surrounding uplands. The primary goal of this study was to assess the ability of modern restoration practices to support sustainable populations of native amphibian species, particularly anurans. The Powell River Project's Education Center (PRP-EC) in Wise County, Virginia, was used as the principle study site because of its diversity of terrestrial and wetland habitat types, and history of mining and restoration. Anuran call surveys and point-quarter surveys of vegetation for each of fourteen distinct wetlands/ponds were used to understand the effects of the distribution of habitat types within the landscape on resident amphibian populations, the characteristics of restored habitats conducive to reestablishment of these populations, and the sustainable nature of native amphibians in restored habitats. The PRP-EC is home to constructed and accidental wetlands/ponds, as well as retained settling ponds, that differed markedly in characteristics that affected species diversity. Importantly, some species did well in relatively deep, permanent ponds (e.g., *Rana catesbeiana*, *R. palustris*), whereas others required relatively shallow, temporary ponds (e.g., *Bufo* spp., *Hyla chrysoscelis*). In addition to the differences in permanence of ponds, the presence and structure of vegetation in and around ponds correlated with anuran diversity. A restoration plan that fails to account for these differences ultimately would support fewer amphibian species than one that does. Further, current methods of restoring mined lands (whether for productivity or suburban development) often do not design landscapes (e.g., connected wetlands and uplands) to accommodate future populations of the species formerly inhabiting the site.

Additional Key Words: wetlands, amphibians, biodiversity.

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