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Desiccation rates of *Rana sylvatica*, *Rana clamitans*, and *Bufo americanus* in a fragmented forest

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Habitat loss and fragmentation are the primary causes in the declines of amphibian populations. Farming, urban sprawl, and logging have created a mosaic of developed and undeveloped land that may create barriers between aquatic breeding sites and terrestrial refuges. While ponds and wetlands are important in early development and breeding, many species spend their adult lives foraging in the terrestrial environment surrounding a breeding site. An amphibian's ability to move and forage in a terrestrial environment is determined by their capacity to remain hydrated. We compared desiccation rates of wood frogs (*Rana sylvatica*), green frogs (*Rana clamitans*), and American toads (*Bufo americanus*) juveniles in different microhabitats of a forest and a clear-cut to determine how they might affect the terrestrial activity of amphibians. Using the experimental arrays created by LEAP (Land use Effects on Amphibian Populations) at Daniel Boone Conservation Area we set up cylindrical wire mesh enclosures in forest drainages, forest ridges, brush piles in clear cuts, and open areas in clear cuts at two ponds. Animals were placed in the enclosures during the evening and weighed every six hours for twenty-four hours. Soil moisture, and soil temperature were also measured every six hours. Analysis of variance with repeated measures was used to compare percent water loss in the habitat treatments. All frogs lost water; however, water loss was greater in the day compared to night. Brush piles within the clear cut slowed water loss compared to open areas in the clear cuts, and animals on forest ridges lost more water than those in forest drainages. Our results reinforce the need to protect forest drainages as terrestrial refuges and illustrate that clear cutting, even with brush piles as cover, may negatively affect the delicate balance of mortality and survivorship in juveniles, therefore threatening the future of a population.