

***Trillium ovatum* in western Montana**

Implications for conservation

by Tarn Ream*

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Those of you who walk along the forested streams and seeps of western Montana in the spring are likely to encounter the white-flowering herbaceous perennial *Trillium ovatum*. *Trillium*, a name that refers to three leaves and three petals, has many common names including Wake-robin, because it blooms early in the spring, and Bethroot (Birthroot), in reference to traditional medicinal use of the rhizome by Native Americans for childbirth. There are many species of *Trillium* in North America, but only Western Trillium, *Trillium ovatum* (*ovatum* describes its egg-shaped leaves), occurs in Montana.

Trilliums mature slowly and live a long time. One plant was aged at more than 72 years! Their life starts with a two-year germination cycle—the first year a root grows, the second year a cotyledon sprouts. For several years the plant has only one leaf, then graduates to a three-leaf nonreproductive stage. It takes at least 19 years before *Trillium* reaches its three-leaf reproductive (flowering) stage in Montana! Plants do not reproduce clonally—recruitment of offspring is exclusively dependent upon sexual reproduction.

Insects play important roles in the life of *Trillium*. Plants are self-incompatible, and cross-pollination by insects is necessary for seed production. *Trillium* flowers do not produce nectar, although several insects, such as beetles and bees, forage for their pollen. Seed dispersal is also dependent on insects—each seed bears a conspicuous, yellow food-body, called an elaiosome, which is attractive to ants and yellow jackets. The insects transport seeds to their nests where they eat the oily food-body and discard the seeds.

Western Trillium is sensitive to disturbance, particularly in the harsh, dry conditions of Montana, where it grows at the eastern edge of its range. Removal of rhizomes, the medicinal portion of the plant, for commercial use is often

skewed toward the less common large, reproductive-age plants. There is concern that market-driven, unsustainable harvest of native medicinal plant species, such as *Trillium ovatum*, could decimate populations in a very short time. I began a research project in the spring of 2001 to provide documentation in order to help in conservation of what Klaus Lackschewitz referred to as “perhaps the most elegant spring wildflower in our area.”

Conservation of populations requires an understanding of the dynamic aspects of the population in its environment. Demographic monitoring can be used to assess if populations are maintaining themselves under current conditions. The demographic structure of a population—the distribution of individuals in each age class (juvenile, nonreproductive, and reproductive)—can give clues to the status of a population. Western *Trillium* populations that I am studying are considered “regressive”—meaning they have a low percentage of reproductive plants that tend to be older and very few juvenile plants. Demographic structures such as these generally describe a declining population. It is difficult to determine the decline of a population in a short-term study, but if these data support the argument, then harvest of reproductive plants could have a large impact on the reproductive rate of *Trillium* in western Montana.

Survival of any given population depends on its vital rates (plant fecundity, seedling recruitment, and survival) and mortality rates, and data describing these rates will provide critical information for conservation planning and sustainable use of this species.

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**Tarn Ream is an Interdisciplinary Studies graduate student at the University of Montana. She is studying Trillium and hopes that her work helps the development of management strategies for conservation of this fascinating plant.*