

## Eye on the Environment

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# Squirrel Tales

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Several days ago, I had the good fortune of crossing paths with Blair Barthelmess at the Swan Valley post office. Blair had in her company an adolescent tree squirrel that had been discovered in a log that was delivered to a local log home building yard. The log craftsman who discovered it was Austin Vance who, seeing that the squirrel's eyes were closed, knew that it would perish without human intervention. The squirrel had been separated from its mother and there was no way to reunite them.

Caring for injured and sick animals comes naturally to Blair. Her mother Cindy has a long history of treating injured and sick animals, both wild and domestic. I found it heartening, but not surprising, that Blair knew so much about squirrels. She started in the outdoors at a very young age. In fact, one of my most vivid memories of Blair is her riding in her mother's lap into her father Mike's hunting camp in the Scapegoat Wilderness when she was only a toddler. Today she still works with the family outfitting business here and in Canada.

Our conversation covered the behavior, biology and ecology of the tree squirrel, also known as 'pine squirrel,' 'red squirrel' or 'chickaree.' She and I exchanged some fascinating tidbits about this little animal, facts that when understood might compel us to value the presence of this creature in our forests and its role as one of the keystones of the ecosystem's health and integrity.

One important thing about tree squirrels is that they, along with flying squirrels and forest voles, produce tiny pellet-like scats that are the building blocks of plant and animal communities in a forest. All forest ecosystems depend upon mycorrhizal fungi in the soil. These fungi look like spider webs and they make up vast underground networks that supply nutrients and water to the roots of plants much more efficiently than roots alone. By doing so, the fungi buffer trees and plants from normal environmental stresses such as drought, weather, disease, insects and animal damage. How do mycorrhizal fungi get introduced to the tree roots? Yep, through rodent scat.

Small mammals like Blair's tree squirrel love to eat mushrooms and truffles that are the fruits of the mycorrhizal fungi. The squirrels dig up the truffles or collect the mushrooms, consume the fungal spores, and then disperse them in the form of tiny 'ecological pills' all across the forest floor. The spores then inoculate the plant roots with the magic fungus that literally feeds everything, including humans, that has any dependence upon the productivity of forest ecosystems. The productivity supplied by mycorrhizal fungi and supported by tree squirrels can be measured in board feet of timber, quarts of huckleberries, or pounds of wild game meat.

That covers one of our topics of conversation, the important ecosystem service that squirrels provide on the forest floor. But what about what squirrels do up in the forest canopy? We've all observed them cutting cones from trees, but have you ever noticed squirrels pruning the round galls that build up on the branches of trees infected with Western Gall Rust? This is another tremendous service provided by these busy little animals, one that amplifies stand health and forest vigor. By pruning the galls, squirrels reduce the infection level on the trees, making them healthier.

Understanding these key relationships might compel you to ask the question what do squirrels need for habitat in the forest? If you were to



ask a squirrel to describe its preferred habitat in a word it would say 'natural.' Natural does not mean that a forest has to be unmanaged; it just implies that we need to provide for some things that we as humans don't always value.

Squirrels and other small mammals are heavily dependent upon dead wood, both standing snags and down-fall on the ground. Larger dead-wood habitats such as larch or ponderosa pine snags are tree and flying squirrel apartments complexes and can persist for decades as multi-generational habitats.

Natural forests have variable amounts of deadwood of different sizes on and off the forest floor. A recent study of red-backed voles in the Swan Valley showed just how important downed wood on the forest floor really is. The voles traveled almost exclusively along connected pieces of wood in order to forage and hide from predators. The downed wood was literally their lifeline. This is very similar for tree squirrels, who use downed logs as travel ways and as protection from predators and for their seed caches.

Important also to squirrels is tree species diversity. Not all tree species produce cones reliably every year. Sometimes several years pass between good cone crops for any given tree species. Squirrels need diversity to buffer them from a decline in any one seed type. Research is showing that lodgepole pine seeds are particularly important for tree squirrels, whose populations seem linked to the ebb and flow of cones on that tree species.

We humans tend to value standing live trees of certain species and sizes, and we like the forest floor tidy and park-like, a condition that if created on too large a scale can be very unfriendly to squirrels and other small mammals. What these sorts of animals need is a complex, diverse, natural forest. In fact, what we are learning is that tree squirrels act as a barometer for forest integrity. Where you find them, you are likely to find adequate complexity and diversity to support a whole host of other species.

As I stood visiting with Blair, my one year old daughter was fixated on the baby squirrel. Watching her made me realize how often we all think about wildlife as the deer, the elk, the lion or the bear. But what about the little critters out here? It turns out that they do a tremendous service for us, and we should think of them next time we contemplate our activities in the forest.