

# Fire in the pines

Don Gayton

The Trout Creek Ecological Reserve, near Summerland, B.C., is a 75-ha parcel set aside in 1971 as a good example of Okanagan ponderosa pine and bunchgrass habitat (*see right*). The deep gorge of Trout Creek carves around the periphery of the Reserve, and the rocky spine of Conkle Mountain ends there. The Reserve sits within the Ponderosa Pine dry hot (PPxh1) biogeoclimatic subzone, which means that its vegetation has an intimate relationship with fire.

The ponderosa pine is a creature of fire. Juveniles burn easily, but the tough, thick-barked veterans are virtually fireproof. Ponderosa pine forests are sustained by frequent, low-intensity fire, which performs the two vital roles of fuel reduction and stand thinning.

I recently completed a basic fire history study of the Reserve, with assistance from the Okanagan-Shuswap Ecological Restoration Committee and the B.C. Ministry of Environment. This project involved first traversing the steep and folded topography of the Reserve and recording the locations of fire-scarred (“cat-faced”) trees using a GPS unit. A cat-face is created when a fire burns



*Benchland ponderosa pine/bluebunch wheatgrass community on the Trout Creek Ecological Reserve.*

through a portion of the bark but does not kill the tree. The exposed wood of the cat-face is then scarred by subsequent fires that pass through the area.

With the assistance of a qualified faller (*see left*), I cut cross-sectional “cookies” from 18 carefully selected trees. Next came a lengthy sanding process to bring the surface of each cookie to a mirror-smooth finish. Lastly came the dating, which involves counting (and recounting, and recounting!) annual growth rings with the aid of microscope and hand lens. The outcome of this laborious process of dendrochronology is a record of the years in which fires occurred.

The analysis yielded some very interesting results. The earliest recorded fire on the Trout Creek Reserve occurred in 1755, and the most recent in 1978. In between these dates, a fire occurred every 26 years on average. If we take that interval—and the date of the last fire—as a crude baseline, then the Reserve has missed one full fire cycle and is one-quarter of the way through a second cycle. These results are fairly typical for dry forests throughout the ponderosa pine’s range; some areas have not seen fire for two and even three cycles.

The paradox of forest fires is that the more often they burn, the less damage they do. This is because forest fuel accumulation, in the form of dead needles, branches, and trees, is a continuous process; the longer fire is



*Certified faller Terry Schmidt taking a cookie from a fire-scarred snag.*

postponed, the more intense the eventual fire event becomes. First Nations people understood this well, and prescribed burning was a tool they used frequently. Weather, of course, plays a major role. Combining a hot, dry summer with excess fuel accumulation can produce extraordinary fire years, like the Interior witnessed in 2003, and again in 2009.

We began to actively suppress forest fires in the 1930s and have been extremely effective at it. But now the province is faced with massive fuel accumulations along the urban-wildland interface, which encompasses much of the Ponderosa Pine zone. Some of the fierce wildfires in the Okanagan over the last two decades are largely due to this excess fuel accumulation.

Thinning is a vital service that fire also provides in the Ponderosa Pine zone. With a frequent (5–35 year) historical fire return interval, much of the tree regeneration is thinned out, leaving an open, well-spaced stand of healthy, veteran trees. When fires are shut off, this thinning process stops and open forests become crowded (ingrown) with too many young trees competing for too little water, growing space, and nutrients. Once the regenerating trees reach pole size, their growth slows dramatically, and the stand begins to stagnate. Many of the wildlife and plant species common to open forests either leave or die out. This is the default future for the Trout Creek Ecological Reserve and many other dry forests in the Southern Interior (*see below*). Fortunately, groups like the Okanagan-Shuswap Ecological



*A forest in transition: the sun-loving grasses and forbs in the foreground will drop out if ingrowth proceeds unchecked.*

#### **Citation –**

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*Author Don Gayton brings out a backpack full of fresh tree cookies.*

Restoration Committee, headed by its energetic chair, Ministry of Natural Resource Operations forester **Bernie Kaplun**, are meeting the ingrowth challenge head-on with carefully planned and executed prescribed burns.

I hope to expand the baseline fire history study at the Reserve, linking it with other fire histories in the region, and harvesting the data contained in old, fire-scarred stumps. Utilizing stumps demands a complex dendrochronological process called cross-dating, in which a stump of unknown age is fixed in time by comparing and matching its ring patterns to a known reference tree.

Fire history work is a tedious but essential step in developing management plans for the dry ponderosa pine forests, which have high biodiversity values and are habitat for many species at risk. I think it's time we get out ahead of the game and proactively manage these forests. It's a perfect opportunity to employ the ecosystem management techniques that we all talk so much about.

#### **Contact Information**

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