



Discussing community forest management in the Sierra Norte.

Everything Under the Sun: Selkirk College Forestry

MANY STUDENTS UNDERTAKE SELKIRK COLLEGE'S FOREST TECHNOLOGY program after spending a few formative years going to university, working or travelling the globe, so an increased desire to broaden their international perspectives on environmental challenges develops.

In early December 2012, this natural curiosity translated into concrete action when students and staff decided to focus efforts on researching, coordinating and fundraising in hopes of creating a unique international experience. Generous donations of logs from several local businesses meant that the students were able to convert those logs to firewood and sell enough to cover most of the trip expenses. The Ike Barber International Scholarship fund was a major source of funding as were donations from several other local individuals and businesses. The students worked tirelessly throughout the winter and on March 15, 11 students and two instructors from Selkirk College's School of Environment and Geomatics Forestry Program set out for an 11-day visit to several very special communities in the Sierra Norte mountains in the state of Oaxaca, Mexico.

Daniel Klooster, a professor at Redlands University in California and an expert on social and community forestry in the developing world, helped us establish contacts with regional community forests. He recommended three diverse communities for us to visit but suggested that we focus much of our trip on one community forest in the small town

of Capulalpam de Mendez. Capulalpam, known as "El Pueblo Magico," or "the magical town," and described as "utopia" by Professor Klooster, lies in the Sierra Norte mountains at an elevation of about 2,500 metres. Like most of the region, the area around Capulalpam is dominated by

ecologically-rich pine and pine-oak forests featuring moist and dry montane tropical ecosystems. The community is primarily inhabited by indigenous Zapotec peoples. Capulalpam has a long history of outside exploitation of its local resources but late in the 20th century, that exploitation began to meet with increasingly stiff and ultimately successful resistance. Eventually, this led to community control of the surrounding forest resources. Now, the federal government allows Capulalpam to manage its



Older but relatively effective two-drum yarders.

community forest area relatively unimpeded and virtually all of the area timber that is cut is milled and used locally.

A complex traditional system centering on the concept of volunteerism is used to govern the community's social and administrative structure. Integral to community function, this system extends to all areas of community life, including management of Capulalpam's community forest. For example, when a special task needs to be performed, like fighting a forest fire or slashing in a new location for a forest road, members of the community simply band together and complete that task. Their individual reward is little more than the



Small openings that rely mostly on natural regeneration as the primary means of stand re-establishment. Slash is piled and used as a natural erosion control fence.

Students Study Community Forestry in Mexico's Sierra Norte

opportunity to share a cold drink together in the town square after a hard day's work. According to the townspeople themselves and based on our own observations, their collective reward is far greater.

The extent to which the people of Capulalpam have resisted outside influences and managed to retain their Zapotec traditions is especially remarkable in light of the fact that they invite rather than shun interaction with the outside world. For example, they are currently in the process of establishing a burgeoning ecotourism business. Outside learning is also encouraged, with community members who show special skills and interests in a particular field being sent away to places like Oaxaca City and Mexico City for formal training. However, the citizens of Capulalpam carefully guard their traditions, culture and heritage, allowing only direct descendants of community members to be provided parcels of land or employment opportunities within their community. The community points to this strong link to their heritage as a key to their solidarity and success.

Timber harvesting in the Sierra Norte is accomplished using one of two methods. Uphill logging is completed using crude and rather old but relatively effective two-drum yarders, while downhill logging is accomplished by rolling the logs manually to the lower road. The heavy reliance on manual labour was somewhat shocking

at first to our industrially-trained Canadian eyes. However, when examined from the perspective of their own socioeconomic system, the combination of their emphasis on community employment and availability of relatively cheap labour reveals it to be a logical and cost-effective operational technique.



All Photos: Carol Andrews, RPF

Selkirk College Forestry Class in Capulalpam de Mendez. Capulalpam is known as "El Pueblo Magico," or "the magical town".

Capulalpam's forest health management strategy demonstrates not just the heavy reliance on manual labour already noted but a general propensity for intensive fieldwork. There was a species of bark beetle that had attacked some of their pine forests in the area but which did not appear to have ravaged those forests to any significant degree. Their primary management tool to deal with this pest is an extremely simple yet remarkably successful example of the use of direct control tactics to control bark beetle

populations. They simply employ a team of four forest guards to patrol the community forest area throughout the year, monitoring for new attacks and other forest health problems. When freshly attacked trees are found, the bark is often stripped or the trees cut and burned before the beetle populations can expand.

Although Sierra Norte pine forests look similar to our own pine forests at a distance, there are notable distinctions that lead them to

Salmon Forests continued from Page 10

the watershed. Other factors include stream size and the predominance of red alder, a nitrogen fixer. This means that salmon subsidies do not always have a strong effect, particularly when the background productivity of a site is already high, when the water is too deep for bears to access the fish, or when watershed morphology or flow regimes limit nutrient retention.

The role of salmon in influencing riparian function is thus often greatest along low gradient, small to medium-sized streams. Conversely, we know that forests also have the strongest influence on the function of streams along smaller streams and headwaters compared to large downstream areas. Streamside vegetation strongly affects streams including the amount of light that reaches the channel, water temperature, the rate and kind of organic matter inputs, bank stability and channel structure. All of these factors affect salmon.

Under the *Forest and Range Practices Act* (FRPA), riparian areas around large (>1.5m) fish bearing streams are offered some protection from harvesting. These 40-100 metre wide buffers include a riparian reserve zone, with no harvesting permitted, and a riparian management zone with restrictions on harvesting. In contrast, small headwater and non fish-bearing streams (S4-S6 streams) are afforded less protection. These streams receive smaller buffers and only management zones, which in practice are often completely harvested. Ironically, this can negatively affect salmon populations because harvesting headwaters can influence stream flow, sedimentation and channel structure in the downstream reaches for 10-20 years or more post harvest. These effects have been studied at Carnation Creek, Stuart-Takla and others as a part of BC's Fish-Forestry interaction research (<http://www.for.gov.bc.ca/hre/ffip/>).

Since harvesting headwaters can negatively affect salmon in downstream reaches, this leads to several management questions: 1) Is it possible to increase protection of headwater streams and still maintain profits from forest harvesting? 2) Does it make sense to reallocate harvesting opportunities from headwaters back to productive downstream reaches?

In the Great Bear Rainforest, I think it makes the most sense to build community based forest economies. Local First Nations are reasserting their rights to their traditional territories and are engaged in government-to-government negotiations in resource management. Some feel that the current industrial forest model and tenure system may not be working. Profits for companies are poor, local jobs are few and costs will increase with more pressure for better environmental standards under ecosystem-based management. These local communities have extensive knowledge of salmon, their streams and ecological links such as the salmon-forest association, and thus are possibly in the best position to devise management strategies that balance the full range of forest values. An option to consider could be smaller-scale community-based forest economies with more local processing of wood products and a focus on high quality, fast growing trees subsidized by healthy populations of salmon. 🐻

Morgan Hocking, PhD, is a community ecologist currently working as the science coordinator for the Central Coast First Nations. Much of his research has centered on how spawning Pacific salmon affect terrestrial and aquatic food webs in the Great Bear Rainforest in British Columbia.

1 Husack, C., Harte, M and Chan, S., 2009. The Economics of Invasive Species. University of Oregon, Corvallis, Oregon.

Community Forestry continued from Page 21

emphasize different options in their choice of silviculture systems. Despite the high elevation, long growing seasons allow them to capitalize on rotations approximately half the length of our own. Capulalpam's community forest managers focus on small openings and rely on natural regeneration as the primary means of stand re-establishment. Artificial regeneration was generally only used to fill gaps where natural regeneration had failed to sufficiently re-stock the stand. Sustainable forest practices are a constant in both their short and long-term planning.

The trip exceeded all expectations for the

11 Selkirk students, who shared their experience with fellow students, faculty and members of the public during a slide show presentation several weeks after the trip. "It was really eye-opening to see such a different approach to forestry," enthused Nick Rothenburger in summing up his thoughts on the trip.

Stefanie Bulmer concurred with her classmate's assessment, adding, "It will definitely influence future management decisions that I'll make in my forestry career." It required a remarkable cooperative effort between administrators, instructors, students and sponsors to make the trip happen but we now know

that with the proper effort and a little luck, an educational experience like this can transform from dream to reality. 🐻

Carol Andrews, RPF, is an instructor in the forest technology program at Selkirk College in Castlegar. Carol has a master's degree in interdisciplinary studies with a focus on global change. She worked as a forestry consultant for over 20 years before joining the college.

Jesper Nielsen, RPF, worked as a forest manager in Nakusp for 20 years before joining the forestry faculty at Selkirk in September 2012. Jesper has a degree in international relations from UBC, but gravitated back to his logging town roots and completed his forestry degree from UBC in 1993.