In addition to establishing patterns of disturbance and recovery once a cutblock has been harvested, the EMEND project in Alberta also included research into harvesting costs, silviculture systems and tree genetics.

An end to EMEND?
The Ecosystem Management Emulating Natural Disturbance (EMEND) project in Alberta—said to be the world’s largest forestry experiment—is in danger of coming to an end, unless financial support is found soon.

By Tony Kryzanowski

The groundbreaking Ecosystem Management Emulating Natural Disturbance (EMEND) project—the world’s largest forestry experiment—is in grave danger of folding after just 10 years. Established in Alberta’s northern boreal forest, the project was slated to last a full growth cycle, or between 80 to 100 years, but funding from the Canadian forest industry is drying up.

There is enough money to operate the program for one more year, but the future looks grim unless more financial support can be found. The project’s management committee, chaired by Christine Kreibom Quinn, the Grande Prairie planning superintendent for forest company Canfor, has launched a campaign asking industry and government to provide the $350,000 needed annually for EMEND.

That amount covers operating the camp, employing two full-time research co-ordinators, and maintaining the core crew that takes regular measurements to establish patterns of disturbance and recovery among a variety of plant and animal species once a cutblock has been harvested. It was industry that initially requested the EMEND project, so that it could gather specific ecosystem management data to help in its forest management planning.

To date, primary funding has been supplied by forest companies as part of their stumpage fees to the Forest Resource Improvement Association of Alberta (FRIAA), as well as major contributions from Canfor and Daishowa-Marubeni International (DMI). Canfor and DMI are involved because the research site is within both companies’ forest management areas. Canfor
has the right to harvest the area’s softwood and DMI the hardwood.

However, the research being done at the site will benefit all Canadian forest companies operating in the boreal forest. “Everyone’s budgets are tight and that’s the issue we’re facing,” says Kreibom Quinn. FRIAA funds have dwindled because the Alberta stumpage rate is tied to the price of lumber. With lumber prices extremely low, less money is going into the FRIAA account. Also, considerable research funds are now in jeopardy—the industry’s financial support was used to obtain matching research grants from other sources to operate a graduate program at the University of Alberta. It would be a shame if the project folded due to a lack of funding, Kreibom Quinn says. The research results are just starting to trickle in on the impact of different levels of forest retention, and how long it takes for different species to re-establish themselves in harvested areas.

Based on EMEND research findings, Canfor has changed some of its forest retention practices from single tree to tree clumps. EMEND research is also filling in ecosystem knowledge gaps.

“EMEND is really not geared toward larger animals, which we already understand quite well,” says Quinn. “It looks more at the decomposers, the arboreal type species like birds, and the flower pollinators like bees and how they are being affected. It’s providing information about that level of the forest ecosystem where there hasn’t been a lot of work done on such a large scale prior to EMEND.”

Essentially, EMEND is attempting to scientifically determine how much disturbance in the boreal forest—by commercial logging operations—is too much disturbance, before it starts to impact on maintaining a balanced ecosystem.

Dr John Spence, chair of the renewable resources department at the University of Alberta and EMEND scientific co-leader, lauds the EMEND project work. This is in spite of initially having some misgivings about taking it on because of his view of Canadian forest management. “Until this started, I never worked very closely with industries that were environmental exploiters, so to speak, and I had kind of a dim view of it to be honest,” he says. “EMEND is the best thing that ever happened to me. Not only did I find out that these guys have their hearts in exactly the same place as mine, it’s just been an amazing experience as far as our ability to learn things and get them applied.”

The other EMEND scientific co-leader is Jan Volney from the Canadian Forest Service (CFS). One way that CFS has made a major contribution to EMEND is by establishing a publicly accessible database with core research findings, as well as a lot of the research that’s been done by visiting scientists. It’s accessible on the Internet at www.emend.rr.ualberta.ca.

The EMEND research area consists of 1,000 hectares in the Clear Hills, about 90 kilometres northwest of Peace River. It was chosen in 1998 because it was relatively untouched by industry activity, and because it contained four different forest types.

EMEND research is being conducted in the areas of biodiversity monitoring, forest primary productivity, silviculture systems, forest fire ecology, soils and nutrient cycling, forest hydrology and microclimate, tree genetics, and socioeconomics/ harvesting cost analysis.

To date, over 30 researchers and 15 graduate students from six universities have taken part in research projects. Researchers have a list of more that 1,300 plant and animal species that they will monitor over the time horizon of the experiment to evaluate the impact various amounts of forest extraction have on their natural lifecycle.

There are about 100, 10-hectare experimental blocks, and of particular interest to the forest industry is the impact and economics of harvesting more or less fibre at one time. The commercial harvesting was done in 1998, the first year of the experiment. Treatments in each of the forest types included clear-cut and forest retention harvesting where 75, 50, 20 or 10 per cent
The harvesting method involved treelength logging using a conventional feller buncher and conventional skidding to a roadside landing. Two elliptical patches of undisturbed forest were retained in each experimental block to create a zero disturbance benchmark that the harvested areas could be compared against.

All harvesting operations were completed in five-metre-wide machine corridors spaced 20 metres apart, leaving a 15-metre wide retention strip between each corridor. All strips were oriented north and south, perpendicular to the prevailing winds to avoid wind throw.

Estabrook Logging of Grimshaw, Alberta, conducted the logging operations. Company owner Miles Estabrook says it wasn’t as daunting a task as he thought it might be, considering the mixed retention amounts required by the researchers. The company learned a lot through its participation, he adds, particularly on how to do a better job with understory protection when extracting merchantable trees, as well as managing skid trails.

The experiment is definitely worthwhile, he says, but the economics of what may eventually be proposed remains to be seen. There is no doubt that the most economic way to log a cutblock from the contractor’s standpoint is to clear cut.

Making any adjustments to retain a significant amount of fibre would generally be financially onerous—especially in today’s market. However, it could have value and work economically particularly where understory protection is a concern.

Dr Spence believes researchers are developing models that maintain an ecologically balanced environment while also being economically feasible. “I am now firmly convinced that if done carefully and properly, forest management can be sustainable and ecologically sensitive, and I believe I can convince anybody that it is possible to do this,” he says. “There are companies that are trying their hardest to do this. There are models that one can develop that are economically feasible with respect to timber extraction that will preserve the fundamental dynamics of the forest.”

However, without consistent financial support, he says he will probably have to set EMEND down in two to three years. “I’d be very disappointed to see this one go away because it’s important to show the public that forests recover, and that 35 to 40 years down the road you can’t tell the difference between a forest that was cut and one that was burned.”