



## Natural Sciences and Engineering Research Council

Supporting Research on  
Our Forests, Sources of Life



Gouvernement  
du Canada

Government  
of Canada

Canada

# Our Mission

NSERC invests in people, discovery, and innovation to build a strong Canadian economy and to improve the quality of life of all Canadians.

We support research in universities and colleges, research training of scientists and engineers, and research-based innovation.

# About NSERC

NSERC invests in people, discovery, and innovation

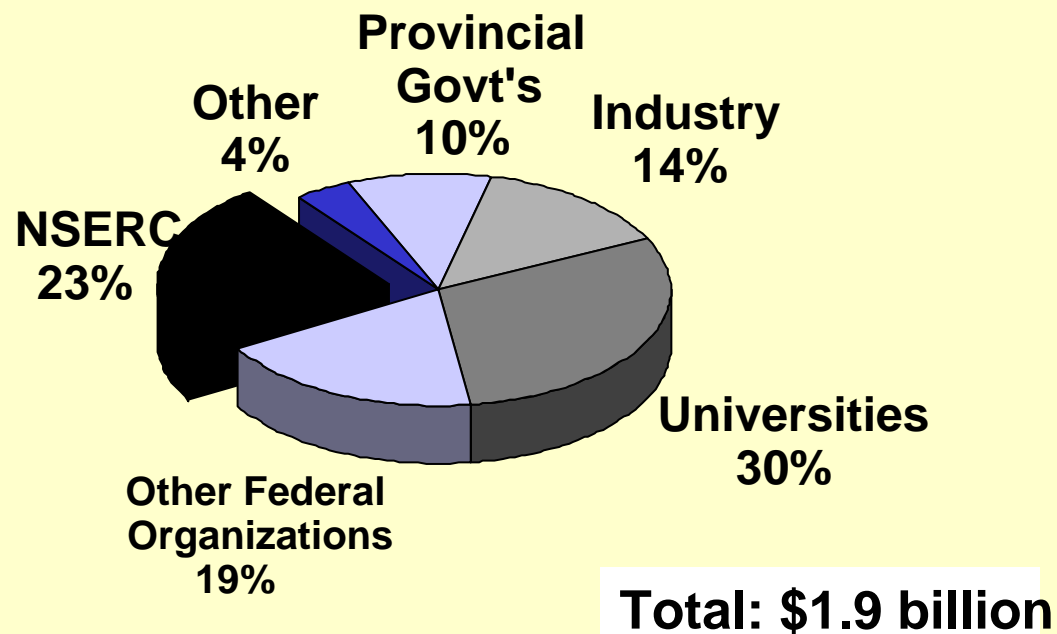
We are Canada's largest university research funding body, investing over \$678 million annually in natural science and engineering research.

Every year, NSERC supports over 9,600 university researchers and nearly 17,700 students.

All NSERC grants are awarded through a competitive process, with the help of over 10,000 volunteer experts.

# NSERC Has Impact....

## University Research and Development Funding in the Natural Sciences and Engineering (2000)



Source: Statistics Canada

# Our Programs

# Our Programs

NSERC Discovery Grants support ongoing programs of research. The grants foster research excellence and provide a stimulating environment for research training. More than 9,600 university professors have been given a Discovery Grant, with the average totaling about \$30,000 per year.

NSERC also offers a variety of Research Partnerships Program (RPP) grants that foster collaborations between university researchers and other sectors, including government and industry, in order to develop knowledge and expertise, and to transfer this knowledge and expertise to Canadian-based organizations.

## Our Programs

NSERC's Industrial Research Chairs program provides funding for infrastructure, research tools and instruments, and covers the salary of distinguished researchers. These prestigious awards often exceed \$1 million (over 5 years).

The Research Network Grants program funds large-scale, complex research proposals that involve multi-sectorial collaborations. NSERC is currently supporting thirteen research networks at a cost of \$18 million per year. One network is working to reduce the use of pesticides in agriculture and forestry, while another is gaining a better understanding of how carbon cycles through Canada's forests and peatlands.

## Our Programs

NSERC's Research Partnerships Agreements (RPA) aim to build strong linkages between the private sector and researchers in universities, and federal institutes to create synergy among the partners. NSERC has signed formal agreements with several departments, and its agreement with the Canadian Forest Service and the Social Sciences and Humanities Research Council provides over \$1 million annually for forestry research.

Collaborative Research and Development (CRD) grants support projects undertaken by university researchers and their private-sector partners. NSERC pays for up to half of the project costs, with the industrial partner(s) covering the balance. NSERC invests approximately \$27 million in the CRD program and funds some 170 new projects every year.



# Our Programs

Overall, NSERC has partnered with more than 817 organizations (687 companies) on nearly 700 research projects. In a sample of 134 first-generation companies, created in part by NSERC-funded research, it was found that they employed over 12,000 Canadians and generated over \$2.4 billion in annual sales.

NSERC also helps over 17000 students annually by offering a variety of Undergraduate Student Research Awards, Postgraduate Scholarships and Postdoctoral Fellowships.

# Success Stories

## Research Networks – Better Biological Weapons



Mountain Pine Beetle

With chemical pesticides fast falling out of favour, scientists are under pressure to develop safe, biological alternatives for controlling the pests that threaten Canada's **\$74 billion forestry industry**. That's why NSERC invested **\$6.6 million** to establish the Biocontrol Network in 2001.

This group of 40 scientists from across Canada is developing environmentally friendly ways to control pests that plague our forestry and agriculture industries. The goal is to reduce pesticide use in greenhouses, tree nurseries, managed stands and natural environments by getting the pests' natural enemies – other insects, bacteria, fungi and viruses – to do the dirty work.

## Research Networks – Better Biological Weapons (cont'd)

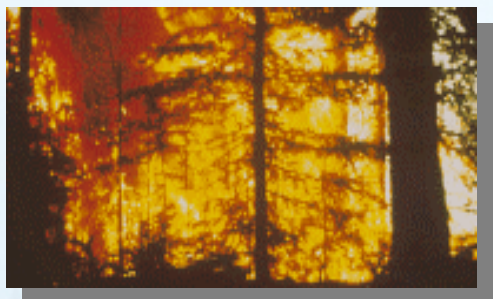


Laprade and Schwartz

The Biocontrol Network is headed by Université de Montréal professors Raynald Laprade and Jean-Louis Schwartz. Other members of the network include University of Guelph microbiologist Peter Krell and the University of New Brunswick's Dan Quiring. They are harnessing insect viruses to kill the spruce budworm and balsam fir sawfly, both highly destructive pests that kill conifers.

With NSERC's support, Laprade, Schwartz, Krell, Quiring and the other Biocontrol Network scientists are making Canada a world leader in environmentally benign pest control.

## Discovery Grant – Spark of Inspiration

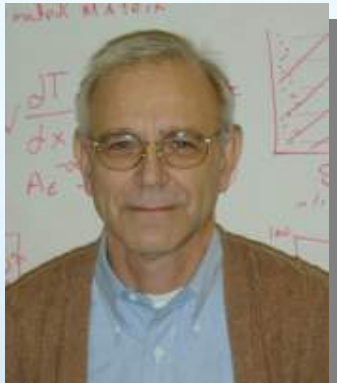


The future of Canada's forest industry depends on how well we manage our forests. But who would have thought that fire could show us how? Edward Johnson would.

The University of Calgary ecology professor studies wildfires and forest tree dynamics so he can help the industry develop sustainable forestry practices.

Most boreal tree species are dependent on fire for regeneration, because it removes the underbrush and duff – rotting leaves and other plant material – from the forest floor, replenishing nutrients and clearing the way for seedlings to take root.

## Discovery Grant – Spark of Inspiration (cont'd)



E. Johnson

Johnson, director of the Kananaskis Field Stations in Alberta, is exploring the causal connection between fire's physical behaviour and its ecological effects on individual trees and tree populations.



A better understanding of this complex relationship allows more precise predictions of various forest management models that mimic natural processes.

## Research Partnership Agreement – Preserving Our Safety



Wood treated with chromated copper arsenate (CCA) has been a popular material in playground equipment and other structures for the past 30 years.

However, health concerns have now been raised because of small amounts of arsenic that may be seeping out of the wood.

University of Toronto wood scientist Paul Cooper is researching ways to prevent preservatives from leaching out of the wood. He's also exploring methods of reusing and recycling large amounts of Canada's old treated lumber to help divert it from landfills.

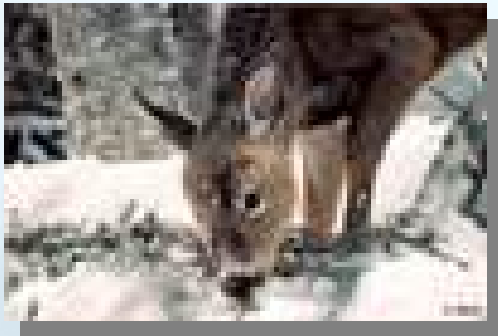
## Research Partnership Grant – Preserving Our Safety (cont'd)

Both approaches will help minimize the impact of chemicals like CCA – the most widely used preservative in Canada – on our health and the environment.

Cooper's research has been funded through the Research Partnership Agreement with the Canadian Forest Service and the Social Sciences and Humanities Research Council. It is an example of how scientists can reconcile Canadians' concerns for the environment and our need for practical, economical and sustainable wood products and solutions.



## Industrial Research Chair – Integrated Management of the Biological Resources on Anticosti Island



Deer and other non-indigenous mammals were introduced to Quebec's Anticosti Island in the late 1800s. With no natural predators, the deer population grew steadily and eventually stabilized at about 130,000.

The high density of deer has made Anticosti Island a destination of choice for big game enthusiasts, and much of the island's economy depends on such recreational uses.

Logging operations are also an important economic activity on the island. Unfortunately, overgrazing by deer is preventing re-growth of balsam fir, a preferred species for both deer and loggers. The problem is further compounded by the advanced age of the old growth forests on the island which are decaying and hindering renewal.

## Industrial Research Chair – Integrated Management of the Biological Resources on Anticosti Island (cont'd)



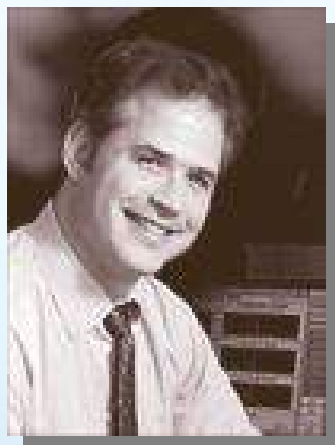
Over the next 5 years, NSERC is providing **\$1.25 million** to the Department of Biology of Université Laval to support research on the integrated management of the biological resources on Anticosti Island. Produits forestiers Anticosti is also providing **\$1.25 million** over the 5-year period.

The research, conducted by Jean Huot of Université Laval, will allow for the development of forestry and wildlife management practices which will lead to a more integrated management approach and a more balanced use of the forest.

## Postgraduate Research – IntelliMap



Guy Dumont



Greg Stewart

Another paper jam? While most of us may blame the copy machine, Honeywell Industry Solutions in Vancouver, the University of British Columbia's Professor Guy Dumont and NSERC Industrial Postgraduate Scholarship recipient Greg Stewart decided that better quality control in the paper production process may be the solution.

Collaborating with Honeywell, Stewart created software that improves the quality and productivity of paper-making machine control systems. His IntelliMap 3 software, made commercially available in January 2002, now represents the industry standard for tuning automatic control systems. It is expected to save the paper manufacturing industry **\$24 million** annually and the earth about one-quarter million trees.

# Contact Information

For more information on how NSERC supports forest research, please consult our website at:

[www.nserc.ca](http://www.nserc.ca)

Or contact us at (613) 995-5992