BIOCAP Canada Foundation





"BIOCAP creates a win, win, win situation: a win for government in meeting our international obligations; a win for universities, making them world leaders in this area of research and a win for corporations, bringing scientific certainty to their climate change offset investment decisions."

> Bob Page, BIOCAP Board Chair

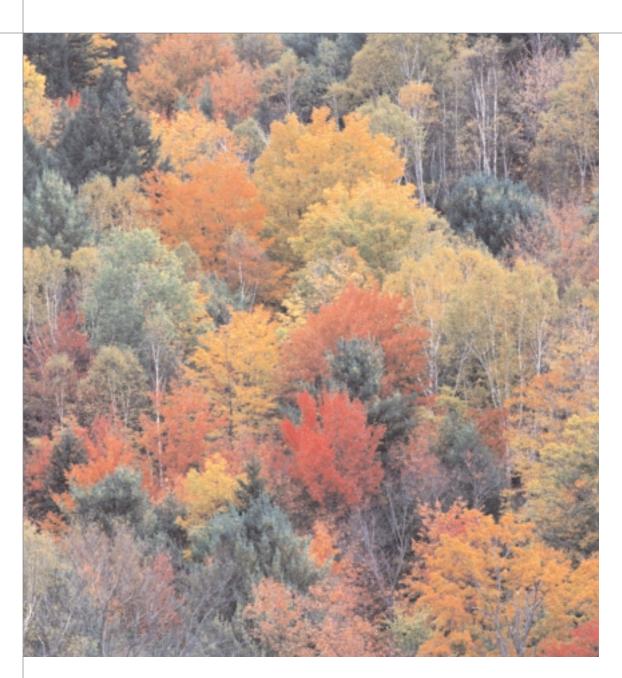




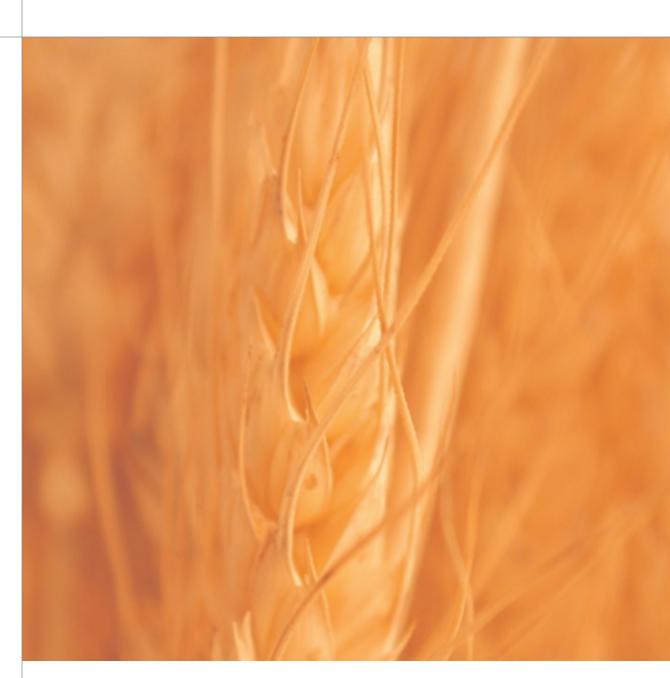
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"BIOCAP is an idea whose time has come because we're facing a global struggle, the struggle to alter a climate trend that will affect all life."

Samy Watson, Deputy Minister, Agriculture and Agri-Food Canada

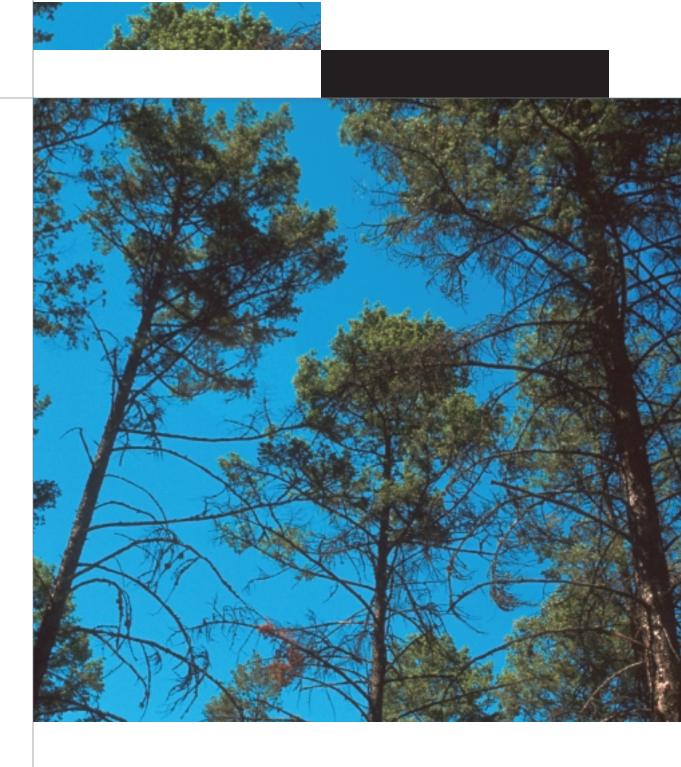






 can help in the fight against climate change.







Chair's Message

The BIOCAP Canada Foundation is a national research organization committed to understanding how Canada's biological systems, including forests and farmlands, can help fight climate change while generating both environmental and economic rewards.

The foundation recognizes Canada's unparalleled capacity to capture greenhouse gases in the forests we manage, the crops we grow and the soils we farm. These biological systems, in turn, can be used to generate valuable products and renewable energy that will stimulate the rural economy and create real investment opportunities in emissions offset and carbon sinks projects for Canadian industry.

This is Canada's "green advantage" in the fight against climate change. But a national, integrated program of research – in science, technology and social science – is badly needed if we are to make the most of it.

Spearheaded by leading plant biologist David Layzell, BIOCAP was initially helped to its feet in early 1999 by Queen's University and the generous sponsorship of TransAlta Corp., Shell Canada and Suncor. The initiative quickly gathered momentum with backing from three provinces, several other industries and

non-government groups. Most recently, the federal government pitched in with a five-year, \$10 million funding commitment announced earlier this year.

BIOCAP is helping to build partnerships, while funding and communicating work by university, government and industry researchers in the areas of carbon cycle science, afforestation and agroforestry, agricultural greenhouse gas management and bio-based products.

These researchers are addressing the questions we need answered to reveal cost-effective solutions to the challenge of managing carbon dioxide emissions and other greenhouse gases. BIOCAP research could shape the way we live and do business in Canada.

In many ways, BIOCAP is an uncommon act of common purpose for industry heads, government leaders, environmentalists and university researchers. This unique partnership is generating new opportunities for Canadians while making this country an international leader in the science and technology of using biological systems in the fight against climate change.

Sincerely,

Bob Page Chair BIOCAP Board of Directors

"There are a great number of individuals who have been instrumental in getting BIOCAP to the point where we can have this launch. BIOCAP's success now and into the future belongs to them."

David Layzell, Executive Research Director, BIOCAP Canada Foundation







Directors' Message

For more than 350 million years, plants have been capturing the sun's energy while managing the greenhouse gases that contribute to climate change. In today's world, hungry for clean, sustainable energy and a solution to the climate problem, plants have much to teach us, and we have much to gain from them.

This is the philosophy behind the BIO-CAP Canada Foundation. BIOCAP is exploring the science, social science and technology behind biology-based approaches to the three Rs of greenhouse gas management:

- Reduce emissions of agricultural greenhouse gases
- Remove carbon dioxide from the atmosphere and store it in soils, wetlands and trees
- Relieve, where possible, fossil fuel demand with biomass as a source of energy, chemicals and materials

With 10 percent of the world's forests and seven percent of its landmass, Canada has a "green advantage" in the fight against climate change.

The waste biomass alone from agriculture and forest production has enough

energy to provide more than 25 percent of Canada's fuel demands – a potential almost 2.5 times greater than that of the United States. Our farmlands, forests and other biological systems can help manage greenhouse gases by providing sinks for carbon in the short term and providing energy and raw materials for a biobased economy in the long term.

BIOCAP is building partnerships between government, industry, non-government groups and universities to explore how biological systems can help us fight climate change. BIOCAP is also working to communicate this work and educate the public.

As a unique model for national research, BIOCAP is an idea whose time has come. Already it is beginning to bear fruit. The coming year only promises a richer harvest.

Sincerely,

David Layzell, Executive Research Director

Holly Mitchell, Executive Managing Director

BIOCAP History

1997

KYOTO

Canada joins other nations in pledge to reduce greenhouse gas emissions.



1999 continued

Networks of Centres of Excellence (NCE) Application

BIOCAP submits a letter-of-intent, followed by a full proposal to be funded under this Natural Science and Engineering Research Council (NSERC) program.

1998

BIOCAP Concept

An informal group of university researchers begin discussing ways to enlist the nation's biological resources - Canada's Green Advantage – to fight climate change.

- **Queen's University Provides Support**
- **Discussions With Industry Leaders**

1999

Sponsors Fund BIOCAP

Led by energy giants TransAlta Corp., Shell Canada and Suncor, a small group of industries along with the Alberta and Ontario governments provide operating funds to get started.

BIOCAP Research Workshops Begin

2000

NCE Application Rejected

\$1 Million NSERC Funding

The national research funding agency provides \$1 million and some funds to match industry contributions to help BIOCAP pay for some early research initiatives.

First Research Overview Committee Established

First Board of Directors' Meeting

BIOCAP Incorporated

Fluxnet-Canada Letterof-Intent

BIOCAP helps one element of its earlier NCE research proposal prepare a letter-of-intent for funds from NSERC and Canadian Foundation for



for funds from NSERC and the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS). Fluxnet-Canada is expected to monitor greenhouse gas fluxes in Canadian ecosystems.

Bio-based Economy Workshop
BIOCAP participates in an Industry
Canada workshop on the bio-based
economy and presents a paper on
"Canada's Green Advantage." The
study profiles elements of the
country's unique capacity to use
biological resources to help meet our
current energy needs and our
international commitments on
greenhouse gas reductions.

Fluxnet-Canada Workshop

Government of Canada
Commitment
Environment Canada,
Natural Resources
Canada and Agriculture
and Agri-Food Canada

agree to jointly fund the organization \$10 million over five years. Negotiations of the terms of the agreement begin.

Research Partnership Building
Efforts intensify to engage research
communities in government, industry
and universities and to identify
research gaps and priorities that will
lay the groundwork for future
BIOCAP university research networks.

Federal Contribution Agreement Signed

The Government of Canada and Queen's University (for BIOCAP) sign Phase One of an agreement for \$6 million over three years.

2002

BioProducts Canada MOU
BIOCAP signs a Memorandum of
Understanding with BioProducts
Canada Inc. to cooperate in
complementary efforts to move
towards a bio-based economy.

Fluxnet-Canada Submits NSERC/CFCAS Proposal

BIOCAP Official Launch
BIOCAP staff, board
members and more
than 100 guests
celebrate the
organization's launch at a
well-publicized event at the Museum
of Nature in Ottawa, March 19, 2002.

Fluxnet-Canada Decision Pending

"These

kind of

partnerships encourage the

environment in which Canadians can respond together to the

challenges of

opportunities

these challenges

into the

present."

climate change, and they will tap

Sponsors



Government of Canada Gouvernement du Canada















Government of Saskatchewan











The miracles of science







Resources Canada





Who We Are

The BIOCAP Canada Foundation is bringing together the nation's leading researchers and decision-makers to explore how Canada's biological systems, including forests and farmlands, can help in the fight against climate change while improving the environment and the economy.

BIOCAP is a nationally incorporated, not-for-profit organization for building partnerships while funding and communicating research in science, technology, economics and social science. BIOCAP is exploring how Canada's biosphere – its plants, animals and other living organisms – can help reduce greenhouse gases at their source, remove them from the atmosphere, and, as much as possible, replace fossil fuels with alternative, environmentally friendly sources of energy and materials.

BIOCAP's research committees bring together experts from a wide range of sectors to:

- Identify research gaps and priorities
- Explore strategies to address these research questions
- Bring together researchers from universities and other sectors to

- develop research proposals aimed at finding answers
- Build partnerships of sponsors, researchers and stakeholders to create national research networks or funding programs in strategic research areas
- Communicate research results, insights and advances to researchers, industry and producer groups, government and the general public

Located at Queen's University in Kingston, Ontario, BIOCAP is governed by its sponsors and supporters drawn from the academic, public, private and non-government sectors. BIOCAP members are sharing and learning about the science, technology and social science that will shape the way we live and do business in Canada.

Operations

BIOCAP staff coordinate and manage the foundation while helping to fund and integrate with research partners.

Holly Mitchell

Executive Managing Director

Communications and Outreach

BIOCAP staff promote increased awareness of BIOCAP and its work among the research community, decision-makers and the public. Provide communications support to partnered networks.

Board of Directors

David Layzell

Executive Research Director

Research Support and Network Facilitation

BIOCAP staff build partnerships of leading researchers from all sectors in each of the four key research areas: Canada's Carbon Cycle, Afforestation and Agroforestry, Agricultural GHG Management and Bio-based Products. With help from these communities, BIOCAP funds and facilitates university networks to fill research gaps and champion research priorities. Provide logistic support to research networks as required.

Research Overview Committee (ROC)

13-member, multi-sector council helps identify research priorities and facilitate university research networks while advising the board of directors on research issues.

Research and Development Advisory Councils (RDACs)

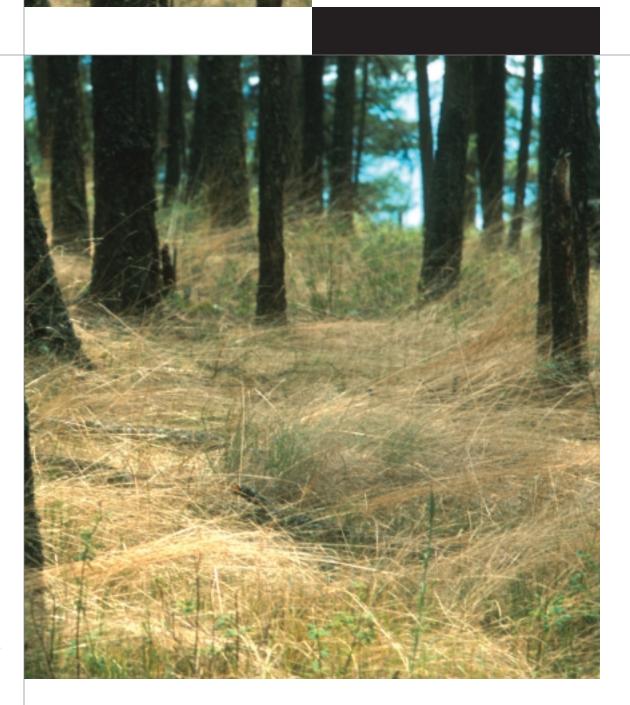
Councils with representatives from government, industry, academic and non-government researchers and decision-makers in each of the four key research areas: Canada's Carbon Cycle, Afforestation and Agroforestry, Agricultural GHG Management and Bio-based Products. Advisory bodies that provide the larger research communities' perspectives on BIOCAP research initiatives.

National University Research Networks

Several individual networks of university researchers addressing research gaps and priorities in each of the four research areas. Network research directions are identified by the ROC and the RDACs, and research efforts are facilitated and funded by BIO-CAP with other leveraged funding support from granting councils and others.

"I congratulate
BIOCAP Canada
for bringing us all
together in this
endeavour. I urge
you all to spread
the word about
this new model for
a cooperative
project to meet
national targets
and to assist the
planet."

Alan Nymark, Deputy Minister, Environment Canada





Year in Review

The 2001-2002 fiscal year was more than a landmark for the BIOCAP Canada Foundation. Although the organization began operations in 1998 and was incorporated two years later, 2001-2002 might still qualify as the year BIOCAP was born – a birth that followed some 36 (attimes-harrowing) months of gestation.

The year began with news that the Government of Canada would become a partner and ended just four months after the signing of Phase One of a \$10 million, five-year federal contribution agreement. In the meantime, BIOCAP demonstrated all the vigour of new life.

BIOCAP quickly established a Memorandum of Understanding with Queen's University to allow it to operate in close association with the university, hired its capable staff, moved its offices and celebrated its well-publicized launch at an Ottawa gala on March 19, 2002.

In the closing days of the financial year, BIOCAP learned that its three-year effort to set up Fluxnet-Canada, a research network to monitor carbon fluxes in Canadian ecosystems, had finally paid off. With a \$1 million commitment from BIOCAP, Fluxnet-Canada attracted another \$11.7 million from the Natural Science and Engineering Research Council (NSERC) and the

Canadian Foundation of Climate and Atmospheric Sciences (CFCAS).

Research networking efforts, meanwhile, helped build a database of more than 5500 key researchers, experts and other stakeholders and led to the formation of a multi-sector, multi-disciplinary Research Overview Committee (ROC). The ROC began of selecting the members of the four Research and Development Advisory Councils (RDACs) that will represent BIOCAP's four research areas. BIOCAP also hosted a national workshop as part of a five-part Pollution Probe series on forest carbon management.

Membership expansion efforts during this period yielded a new industry partner (Alberta-Pacific Forest Products) and a new provincial member (Saskatchewan). BIOCAP also signed a Memorandum of Understanding with BioProducts Canada to cooperate in efforts to move towards a bio-based economy.

BIOCAP communications and outreach efforts resulted in a comprehensive plan aimed at increasing awareness of BIO-CAP and its research. Work began with the publication of a bilingual brochure and research leaflets. The first phase of BIOCAP's print and Web site program was nearing completion as this document went to press.

Canada's Carbon Cycle

BIOCAP's program studying Canada's Carbon Cycle is working to understand more about carbon sources and sinks in Canadian ecosystems and how they are affected by human and natural disturbances and by climate change itself.

Highlights of BIOCAP's year-one efforts in this area include funding for the foundation's first university research network. Late in the year, Fluxnet-Canada used BIOCAP's \$1 million commitment to help attract a \$11.7 million, five-year award from the Natural Science and Engineering Research Council (NSERC) and the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS). Fluxnet-Canada will expand and integrate a network of towers to monitor greenhouse gas fluxes in forests and peatlands across Canada.

To identify other research priorities related to the forest carbon cycle and to create strong links with related initiatives in government and industry, BIOCAP organized a national workshop on "Enhancing, Quantifying and Verifying Forest Carbon Stock Changes: Kyoto and Beyond" in Ottawa on Jan. 17-18, 2002. A final report from the workshop will provide useful direction for the Research and Development



Advisory Council in this area when it is set up in the new financial year.

BIOCAP's Research Overview
Committee meeting in March identified
other priorities for research in this area,
including climate change and disturbance
effects in the arctic, sources and sinks
for greenhouse gases in hydroelectric
reservoirs and carbon flow through
other water-covered lands. Initiatives in
these areas will be developed over the
next year along with efforts to expand
BIOCAP's research focus on forest
carbon management.

Afforestation and Agroforestry

BIOCAP research in the area of Afforestation and Agroforestry is focused on exploring the science, technology and policy issues associated with growing trees on agricultural and other unforested lands to provide sinks for carbon, to improve biodiversity and to increase the supply of fibre.

Among the objectives of this research program is the identification and selection of optimal tree species or genotypes for afforestation and agroforestry. Research is also needed to develop and assess silvicultural and forest-management strategies that reduce greenhouse gases while providing other benefits and limiting costs. To deliver on these objectives, BIOCAP's Research Overview Committee (ROC) appointed members to a Research and Development Advisory Council (RDAC) in this area in late March.

The RDAC is charged with identifying research gaps and priorities and helping BIOCAP staff to build partnerships to expand existing national research networks and form new ones. BIOCAP is discussing support for research in the areas of tree-improvement and pest-control technologies as well as setting up a network of afforested and agroforestry sites across Canada to test and evaluate management practices,



assess their greenhouse gas impacts, develop practical tools for measuring carbon stock changes, and explore strategies for large-scale implementation.

The RDAC will also find useful direction from a BIOCAP workshop on "Enhancing, Quantifying and Verifying Forest Carbon Stock Changes: Kyoto and Beyond" held in Ottawa on Jan. 17-18, 2002. The workshop was attended by 60 experts drawn from government, university, industry and non-governmental groups and was one of the five workshops in a Pollution Probe series on forest carbon management.



Agricultural GHG Management

BIOCAP research in Agricultural Greenhouse Gas (GHG) Management is working to understand how changes in farm practices and innovative science and technology can help make agriculture part of Canada's climate change solution. At the same time, research in this area will help create new markets and economic opportunities for rural Canadians while improving water and air quality.

To deliver on these goals, BIOCAP has begun the process of building partnerships among government and university researchers, producer groups, industries, and non-government organizations. With help from John Hastie of Valdrew Environmental Services, BIOCAP is engaging producer groups and agricultural research organizations to identify strategic roles for university research in an emerging national research effort in this area. In addition, BIOCAP has joined the Canadian Agricultural Research Council's Expert Committee on Greenhouse Gases and Carbon Sequestration (ECGHGCS), and Agriculture and Agri-Food Canada's Greenhouse Gas Mitigation Advisory Council to ensure university research efforts supported by BIOCAP are coupled to other national initiatives.

In March 2002, BIOCAP's Research Overview Committee (ROC) appointed a Research and Development Advisory Council (RDAC) in this area to help BIOCAP staff build strategic partnerships between university, government and other researchers. These partnerships will work to understand the sources and sinks of agricultural greenhouse gases, to develop and test tools for verifying agricultural greenhouse gas emissions and soil carbon stock changes, to develop biotechnologies for reducing these emissions and enhancing soil carbon sinks, and to assess the environmental, economic and social impacts of strategies or technologies for managing agricultural greenhouse gases.

Over the next year, BIOCAP will work with researchers and decision-makers from a variety of sectors to build dynamic research networks to help deliver the science, social science and technology needed to meet these objectives.



Bio-based Products

BIOCAP's Bio-based Products research program is working to develop the science, social science and technology needed to use Canada's biomass and biological systems as a renewable source of clean energy, industrial chemicals and other materials.

BIOCAP is building partnerships among universities, industry, producer groups, governments and non-government organizations. BIOCAP's Research Overview Committee (ROC) has identified members from among these sectors to serve on a Research and Development Advisory Council (RDAC) in this area. The RDAC is expected to meet in the new year.

BIOCAP research in this area will identify and assess the technological, economic, legal, social and policy barriers and bottlenecks associated with moving to a bio-based economy. It will also identify gaps and priorities for university research and develop technologies to support the cost-effective, sustainable use of biomass and biological systems as a source of energy, commodity chemicals and materials.

Early in the year, BIOCAP produced "Canada's Green Advantage," a report exploring the magnitude of the opportunity for using the nation's vast biological

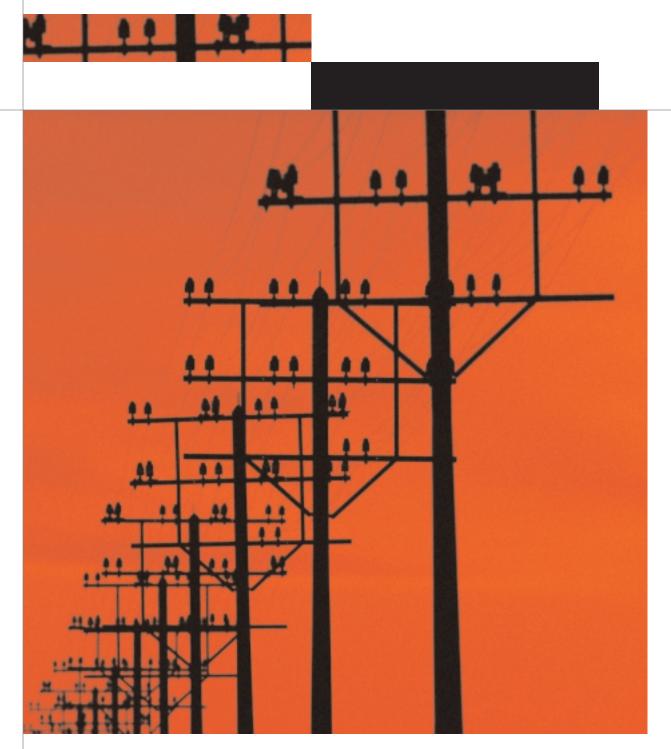
resources as a sustainable source of raw materials for a bio-based economy. BIOCAP was also co-organizer for two meetings in this area, including the "Climate Change Technology" meeting with the Canadian Nuclear Society in Toronto in October 2001, and the "Bioproducts Leaders Forum" in Ottawa in March 2002.

In January 2002, BIOCAP signed a Memorandum of Understanding (MOU) with BioProducts Canada Inc., an industry-focused, not-for-profit group that shares BIOCAP's goal of moving towards a bio-based economy.

In the next year, BIOCAP will be working with the research community and its partners to build national research networks in areas such as plant and microbial genomics, chemical engineering for biomass processing, and the economic, environmental and policy dimensions associated with moving to a bio-based economy.

"BIOCAP has an opportunity and a responsibility to increase the public's awareness and scientific literacy about Canada's unparalleled capacity to use our biological resources in the fight against climate change."

Holly Mitchell Executive Managing Director, BIOCAP Canada Foundation





Communications and Outreach

Through communications and outreach, BIOCAP is engaging partners, generating an awareness of BIOCAP research, and creating a science-based understanding of the environmental, economic and social impacts of using Canada's forests, farmlands and other biological systems to help fight climate change.

BIOCAP assembled its communications team in February 2002 and immediately began developing a comprehensive communications plan for fiscal 2002-2003. The plan focuses on four target areas – public relations, scientific communications, community building/stakeholder relations and public education – and includes a variety of tools aimed at audiences among the BIOCAP community and the general public.

Among these tools are a comprehensive, fully functional web site to be launched in summer 2002, a quarterly newsletter, quarterly proactive media campaigns, print communications materials, and media and public communications tools such as backgrounders, fact sheets and news releases.

Meanwhile, efforts in the area of stakeholder relations yielded a new industry partner (Alberta-Pacific Forest Products Inc.) and a new provincial sponsor (Saskatchewan). BIOCAP also signed a Memorandum of Understanding with BioProducts Canada Inc. and established membership on the Board of Directors of the Canadian Forestry Association, on the Executive Committee of the Environmental Education & Communication Network (EECOM) and on the Agriculture Greenhouse Gas Mitigation Advisory Council.

BIOCAP has continued to forge ties with a variety of non-government organizations, including Pollution Probe, Pembina Institute, the Northern Climate Exchange, the New Directions Group, the National Round Table on Environment and Economy, and the Green Budget Coalition. The foundation has also participated in and presented at a number of national and regional conferences such as the Pollution Probe Forest Carbon Management Workshop Series, Climate Change Technology Conference, "Climate Change - GHG Sources and Sinks" workshop, EECOM's Annual Conference, "Sustainable Futures 2002," "GLOBE 2002," and various workshops regarding the bio-based economy.

In February 2002, BIOCAP also presented an overview of its research and public education program at a meeting of the Climate Change Action Fund's Hub Pilot Advisory Team in Hull, Quebec, and participated as a member of a science advisory committee for a Discovery Channel TV series on climate change.



"We at Queen's are proud to have had a role in the evolution and birth of this wonderful cooperative venture which brings together scientists from every corner of our country, the private and public sector and the universities to work towards a resolution of a very significant problem."

William Leggett, Principal, Queen's University





Our Home

The signing of the federal contribution agreement in December left BIOCAP with only a few short months to become fully staffed, equipped and operational in fiscal year 2001-2002.

Nevertheless, the organization's board and executive directors succeeded in bringing aboard three highly qualified research network facilitators, a business manager (to complement the work of the existing office and financial administrator), an executive assistant to David Layzell, two communications personnel, and a part-time resource centre and information assistant.

In the same period, the organization moved to its new permanent home in the former manse of the St. James Anglican Church at 156 Barrie Street, on the campus of Queen's University in Kingston, Ontario. The new building – which also required new furnishings, phone lines and computers – now boasts a large, fully equipped boardroom and a resource centre.

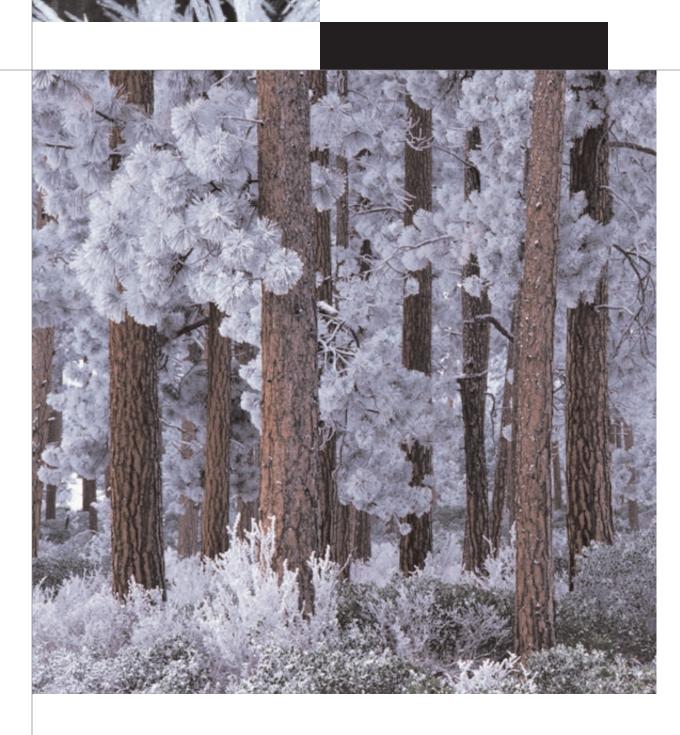
Among the early administrative tasks was the organization's public launch that BIOCAP hosted and helped to coordinate on March 19, 2002. The well-publicized event took place at the Canadian Museum of Nature in Ottawa and featured speeches by William Leggett,





principal of Queen's University, Alan Nymark, deputy minister with Environment Canada, Samy Watson, deputy minister with Agriculture and Agri-Food Canada, and Irwin Itzkovitch, assistant deputy minister with Natural Resources Canada. The entire BIOCAP staff was on hand for the event.

Meanwhile, the lively atmosphere of the BIOCAP office continues to encourage a growing collegial atmosphere and with it the promise of a dynamic team spirit to forge cooperative excellence among BIOCAP's eager staff.





Financial Highlights

BIOCAP Canada Foundation manages the BIOCAP Canada – Queen's University at Kingston funds. As at March 31, 2002 the Foundation did not have any revenues, expenses, assets, liabilities, or net assets of its own.

BIOCAP Canada's unique partnership model is mirrored in its accounting structure. Money received for the fiscal year ending March 31, 2002 primarily reflected either funds from corporate sponsors or revenue from Phase One of our \$10 million, five-year contribution agreement with the Government of Canada. The financial activity for 2001-2002 is thus divided into three funds: the Unrestricted General Fund (i.e. Sponsor funds), the Externally Restricted Fund (i.e. Contribution Agreement Account), and a third fund, the Capital asset fund which records the original cost of purchased capital assets less amortization over the estimated life of the assets.

Thanks to the continued strong commitment of our sponsors, BIOCAP received \$462,639 in the general fund during fiscal 2001-2002. This account's net assets at the beginning of the year were \$142,255. Meanwhile, expenditures from this account were \$407,572 between April and November 2001. After November 2001, most operating costs were paid for from Federal Contribution Agreement funds. After a inter-fund transfer of \$18,975 for the purchase of

capital assets, there was \$178,349 net assets balance in this account as at March 31, 2002 which was carried forward for use in the new fiscal year.

In December 2001, the Government of Canada signed an agreement with Queen's University to award BIOCAP \$6 million over three years as Phase One of a \$10 million, five-year funding commitment. From these federal funds, BIOCAP was advanced \$877,958 and incurred operating expenditures of \$404,222, plus \$25,385 for capital assets, to March 31, 2002 as it hired staff, renovated and equipped its offices, launched the organization, and began gearing up its research networking and communications efforts.

Expenditures from the contribution agreement account were less than anticipated primarily because of the timing of funding for BIOCAP's first major research network – Fluxnet-Canada. Thus \$448,351 was recorded as the fund balance as at March 31, 2002, which will be largely disbursed after funding Fluxnet \$400,000 in June 2002.

Sponsors who require an official charitable donation receipt will continue to give their funds to Queen's University for the 2002-03 fiscal year.

Complete financial statements for all funds (accounts) are audited by KPMG LLP, Chartered Accountants and are available upon request. See page 26 for contact information.



Contact Information

BIOCAP Canada Foundation

Queen's University 156 Barrie Street Kingston, Ontario K7L 3N6

Phone: (613) 533-2315 Fax: (613) 533-6645

info@biocap.ca www.biocap.ca

