ACAP's Science Linkages Initiative: A Sound Investment in Science & Community

1997-2002

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EXECUTIVE SUMMARY

The Science Linkages Initiative (SL) is a key component of the Atlantic Coastal Action Program (ACAP). It is administered by Environment Canada's (EC) Atlantic Region and has proven to be a sound investment in science and the community since 1997. Under this initiative, EC scientists and ACAP organizations work together on common science priorities within local ecosystems. It also maximizes EC's ability to carry out its programs and initiatives.

The following are highlights from the report:

- Over the past six years, EC has invested $1,070,674 to fund 95 scientific projects.
- The total value of the projects was $4.5 million. Of this, only 23.5% came from EC. The rest was leveraged from other government departments, industry, local businesses and other partners. This demonstrates the success of the Initiative and the strength of the ACAP organizations to access resources.
- ACAP organizations leveraged as high as 70 to 1 for a project, but on average leveraged 4.25 to 1 with local partners, most of which was in the form of in-kind services.
- A total of 60 EC scientists from various branches worked with the ACAP organizations and communities on scientific research. Sixteen additional scientists participated in the proposal review process.
- Science Linkages projects support all of EC's Business Lines either directly or indirectly:
    - 41% for Clean Environment
    - 51% for Nature
    - 8% for Weather and Environmental Prediction
    - No direct projects under Management, Administration and Policy
- In 2002/2003, ACAP organizations will deliver 26 projects valued at $1,136,160. EC's commitment of $266,000 is leveraged at 4.30 to 1.
- Ten ACAP organizations are working on a common project this fiscal year: the Canadian Aquatic Biomonitoring Network run by EC's National Water Research Institute.

Science Linkages fosters true partnerships between ACAP communities and EC scientists whose working relationships are built on mutual trust and respect. The tangible benefits include the sharing of one another's skills, equipment, information, knowledge and connections. The science is relevant, credible and produces data useful in heightening the understanding of local ecosystems. The enriching experiences from these projects are immeasurable.

1. INTRODUCTION

In 1997, the Atlantic Coastal Action Program (ACAP) launched its Science Linkages Initiative (SL) to broaden and strengthen the partnerships between Environment Canada (EC) and ACAP communities and invest in science at the community level. Since its inception, SL projects have produced a wealth of credible scientific data and built strong government-community relationships. These projects contribute to a better understanding of Atlantic Canadian ecosystems and the impact of human activity on these ecosystems. The program links the 14 ACAP organizations to the work of EC scientists, engineers, economists and vice versa.

2. WHY SUPPORT SCIENCE LINKAGES?

Linking the science within the Department to that of the ACAP communities was an innovative concept in 1997. Originally, the idea was not fully accepted by the Department's scientists. There was skepticism on whether communities and volunteers could do "good" science. The opinion was that community volunteers did not have the necessary training and/or formal education to complete the necessary research. Similarly, the communities were concerned that the federal government was downloading their environmental responsibilities for clean up and remediation onto them. Over the course of the Initiative, these attitudes have changed. Environment Canada scientists have provided training and education on proper scientific methodologies and practices to the ACAP organizations and their community volunteers, who in turn were instrumental in the success of the scientific research. Equally fruitful was the access to the local people and their knowledge about the environment and ecosystems within their watershed areas. Through this experience the focus has shifted to recognise the value and credibility of the research. Scientists are now approaching the ACAP organizations to find mutual interests and areas of collaboration.

> … "The science that has been done is often uniquely practical even though it is also of highest scientific quality. This is because of the close linkage, from the inception of a project, between the community need and the EC science…"
>
> W. Barchard, EC-EPB

The Initiative produces the following benefits:

Environment Canada	ACAP Organizations	EC & ACAP
▪ Builds support and raises awareness within the ACAP communities for EC's science and priorities ▪ Communicates departmental goals, objectives and priorities which are built into community programs ▪ Ensures that science is valued and utilized by decision makers at all levels ▪ Delivers departmental programs and initiatives in a cost effective manner ▪ Provides access to established community contacts ▪ Allows EC scientists to collaborate with and provide advice and analytical support to the ACAP organizations	▪ Builds scientific capacity within communities ▪ Promotes holistic research: natural, social and economic sciences ▪ Ensures effective communication of science: by community to the community ▪ Provides training for staff on proper sampling and research techniques ▪ Creates an awareness of EC science and priorities and who is doing what within the Department ▪ Ensures publication, documentation and promotion of the benefits derived and the results achieved through Science Linkages	▪ Fills in knowledge gaps on science and local issues/concerns ▪ Allows for leverage of resources and builds partnerships on many levels ▪ Enlists others in validating and communicating science ▪ Builds credibility and respect among peers – community members, fellow scientists, industry and business partners ▪ Provides training for local volunteers and students at all levels of education ▪ Provides mutual access to project and program summaries and data ▪ Allows for continuous improvement of criteria and administrative process ▪ Results in good, credible science

With access to the local community (the people, environment, resources, local knowledge and local leadership) EC builds support for its science priorities and interests as well as the delivery of its programs. As part of the community, ACAP organizations are able to communicate research results to community members much more effectively than EC could. This is a powerful vehicle to not only get the science done, but to get the information out and into the hands of the people it affects.

> "The initiatives we have undertaken through the Science Linkages program has given us and our partners a much clearer picture of our local marine environment and the impact level of current discharges of municipal wastewater. This data has been the driving force in the recent positive steps forward towards sewage treatment for the City of Corner Brook."
>
> Sheldon Peddle, ACAP Humber Arm

3. WHAT ARE WE LINKING?

Science Linkages has, and will continue to build on and incorporate experience gained and lessons learned over its six-year history. The Initiative has grown considerably since its launch in both funding and profile. The projects have resulted in a wide range of useful data and numerous publications. Through SL, EC scientists have the means to collaborate with the ACAP organizations on research. According to one scientist:

> "… Most of us have areas of responsibility that do not directly overlap with the ACAP program. A-Based budgets are tight. However, by providing some seed money, EC has facilitated the interaction of EC scientists with the ACAP sites. In my own area of experience, the Science Linkages Initiative has made it possible for the ECB Toxicology Laboratory to work with 5 ACAP sites in three provinces on eight different projects over the years. *None of this would have happened without Science Linkages funds*. By providing the funding for our supplies, we have been able to contribute in-kind support to all of the projects." (emphasis added)
>
> K. Doe, EC-ECB

Projects conducted under SL contribute to a better understanding of Atlantic Canadian ecosystems and/or the impact of human activity on the ecosystem. The Initiative links the issues and priorities identified by ACAP organizations in their comprehensive environmental management plans (CEMPs), or annual work plans, to the scientific priorities of EC scientists, engineers, and economists. Working together on common goals and areas of scientific interest is reported as a mutually beneficial and rewarding experience for all those involved. Many of the ACAP organizations engage additional local/regional partners, thus broadening the network of science-based research at the local level.

These collaborative projects help to build long-term working relationships and provide opportunities for scientific outreach initiatives. The social, economic and natural scientific research is helping to build a solid foundation of capacity and knowledge within the communities. The research provides credible information to answer complex questions and provides additional information for management purposes.

4. FINANCIAL SUPPORT AND LEVERAGE

The ACAP organizations have marketed themselves very well in all of the program's project areas (knowledge generation, capacity building, and action). As shown in Table 1, it is clear that this capability has also been demonstrated through SL. An indication of this capability is the level of funding the organizations obtain in addition to the SL funding. Over the past six years of the Initiative, the ACAP organizations have obtained an average of $4.25 from other funding sources for every dollar that EC has invested. This clearly shows that SL provides the seed for the organizations to build successful partnerships with EC, other government scientists, local businesses and industry to undertake credible scientific research.

In recognition of this accomplishment, EC has steadily increased funding for SL from $45,000 in 1997/1998 to $266,820 in 2002/2003. An impressive 80% of the proposed projects have been funded over the course of the program with the highest number of projects funded in 2002/2003.

Table 1: Financial Support and Project Leverage 1997-2002

Fiscal Year	Submitted		Approved		Total Value of Projects	Range of ACAP $ / project	Range of Project Value	Leverage
	Projects	Funding	Projects	Funding				
1997/ 1998	12	$117,225	7	$45,500	$246,375	$5,000 - $16,100	$9,750 - $92,000	5.4
1998/ 1999	20	$273,037	15	$174,887	$524,268	$7,150 - $15,000	$9,987 - $132,600	3.0
1999/ 2000	18	$183,828	17	$150,583	$930,758	$500 - $17,000	$12,869 - $283,500	6.2
2000/ 2001	20	$292,228	14	$198,384	$761,179	$8,000 - $20,856	$12,000 - $143,450	3.8
2001/ 2002	22	$416,200	16	$234,500	$946,524	$8,000 - $18,000	$18,250 - $128,000	4.0
2002/ 2003	26	$238,164	26	$266,820*	$1,136,160	$1,000 - $20,600	$11,000 - $177,648	4.3
Totals	**118**	**$1,520,682**	**95**	**$1,070,674**	**$4,545,264**	**$500 - $20,856**	**$9,750 - $283,500**	**4.25**

* **Note**: $250,000 was originally set aside for SL in 2002/2003, but only $238,164 was requested. The remaining funds were pooled and divided by 13 (one organization did not submit). The supplementary funds were then rounded to an even number. Thus, the total funds committed were slightly more than the original budget. (See Section 7 for more detail).

5. PARTNERSHIPS BUILT AND MAINTAINED

One of the most unique and important aspects of ACAP is its *Windows* approach wherein each ACAP organization is paired up with an EC staff person. The Window (whether a scientist, engineer, policy person, economist, biologist, habitat manager or provincial manager) and the ACAP organization build a working relationship thus gaining access to each other's knowledge base, contacts, resources and expertise. Under SL, departmental scientists work with ACAP organizations on specific projects and issues, and act as an informal "Science Window" into the Department. As shown in Table 2, a total of 60 EC scientists from various branches have been involved with SL.

> "… EC has found in all of our partnerships with communities that science is the basis of decision-making. Fundamental to the community-based approach to environmental management is that the science be under the control of ALL the stakeholders. This has often taken the form of a technical subcommittee, made up of community members with a science or technical background, providing advice to the stakeholders for their consideration in the context of the broader set of interests represented by the community. The Science Linkages Initiative formalizes this

requirement…"

W. Barchard, EPB

In the last six years, SL has matured and established itself as a highly respected and effective way of getting departmental science-based programs out into the community through credible and well-established organizations. Equally important, the relationships built between the organizations and EC scientists have matured and the apprehension about communities' abilities to undertake credible science is not as strong. Apart from the relationships built with EC scientists, ACAP organizations work with local citizens, other government programs and departments, industry, foundations, institutions, academia and local businesses. These formal relationships enable the science to be carried forward.

Table 2: Environment Canada Scientists Involved in Science Linkages

Branch	Scientific Contacts (Windows)		Fiscal Year	Total
Corporate Affairs	Yves Bourassa Peter Eaton Eric Hundert	Kelly MacDonald Colleen McNeil Dave Sawyer	1997/1998 to 2002/2003	6
Environmental Conservation	Diane Amirault Jacqueline Arsenault Andrew Boyne Guy Brun Neil Burgess Dan Busby Art Cook Frank Cruickshanks Jean-Guy Deveau	Ken Doe James Doull Tony Lock Colin MacKinnon Tom Pollock Joe Pomeroy Francine Rousseau Peter Wells	1997/1998 to 2002/2003	18
Environmental Protection	Dave Aggett Joe Arbour Wayne Barchard Chris Craig Dave Curtis Sinclair Dewis Bill Ernst Peter Hennigar Gary Julien John Keefe	Paul Klaamas George Lindsay Amar Menon Rita Mroz Roy Parker Wayne Pierce Brian Power Chris Roberts Randy Simmons Kok-Leng Tay	1997/1998 to 2002/2003	20

Branch	Scientific Contacts (Windows)		Fiscal Year	Total
Meteorological Service of Canada	Jim Abraham Steve Beauchamp Bill Brimley Michael Howe Gary Lines	Martha McCulloch Hal Ritchie Dave Wartman Dave Waugh	1998/1999 1999/2000 2001/2002 2002/2003	9
National Water Research Institute	Don Bennie Joseph Culp Craig Logan Kelly Munkittrick	Tim Pascoe Trefor Reynoldson Janice Smith	1998/1999 2000/2001 2002/2003	7

"… Science Linkages has been extremely helpful in letting us effectively deliver projects and programs related to our mandate. Without the funding and partnership link we just wouldn't be able to conduct some of our projects... I hope social science and agricultural science will be viewed as bonafide Science Linkages projects as for BBEMA, these are critical parts of the ACAP approach for us…Please keep recognizing the flexibility ACAP respects among the different groups…We respect the science our links bring to the projects. We have built up a better rapport with a number of scientists as a result of these Science Linkages projects. This makes life a lot easier when you are collaborating over the long term and in any future projects, as trust and some familiarity has been built up. It also leads to better collaboration and hopefully better science. But it is difficult having scientists here for such a short period of time (geography is always challenging but everybody does their best)…."

B. Penak, BBEMA

6. GETTING DOWN TO BUSINESS

Environment Canada has four Business Lines that guide departmental planning and management: Clean Environment; Nature; Weather and Environmental Prediction; and Management, Administration and Policy (MAP). The Atlantic Coastal Action Program is managed under the Nature Business Line, however, SL research feeds into all of the Business Lines either directly or indirectly as in the case of the MAP Business Line (Table 3). In doing so, SL helps the Department deliver on a large number of its programs and initiatives.

Table 3: Summary of Projects by Business Line 1997-2002

Business Line	Total Number of Projects	Total Value of Projects	Total ACAP Contribution
Clean Environment	32	$1,434,450	$413,940
Nature	40	$2,797,897	$595,457
Weather and Environmental Prediction	6	$327,917	$67,277
Totals	**78***	**$4,560,264**	**$1,076,674**

* Multi-site and multi-year projects are taken into account to derive this number. Therefore, it does not reflect the total number of projects for 1997-2002.

6.1 CLEAN ENVIRONMENT: *"Working to achieve the long-term outcome of protecting Canadians from domestic and global sources of pollution"*

Over 40% of the SL projects fall under the Clean Environment Business Line. Pollution, poor environmental practices and unsustainable activities have led to the contamination of many waterways and ecosystems throughout Atlantic Canada. The ACAP organizations are committed to healthy communities and as such, a portion of their research is directed towards investigating sources of contamination, remediation options and the impacts of pollution on local ecosystems.

The effect of toxins in the environment, particularly the aquatic environment, was the subject of many projects. For example, la Société d'aménagement de la rivière Madawaska et du lac Témiscouata inc. in northern New Brunswick undertook a project to determine levels of mercury in fish living in the Madawaska River.

This year, the Humber Arm Environmental Association Inc. in western Newfoundland undertook the following project which was designed to teach students about monitoring water quality in a practical, hands-on approach.

Trading Books for Boats - A Student-Based Water Sampling Initiative

The goal of this project is to lay the foundation for a long term, student based water quality monitoring program based on the learning objectives as set out by the Newfoundland and Labrador Department of Education. These objectives may then be expanded to other grade levels both within the local watershed and throughout the province with results communicated to the community at large.

ACAP Humber Arm Environmental Association Inc. (ACAP Humber Arm) has conducted numerous science projects in the Humber Arm area. The Association wanted to build on their successes and experiences in both the areas of education and research by

combining them into a unique learning experience for local students. Seeing the need to expose students to the "other" side of science (the fieldwork), ACAP Humber Arm proposed an innovative and fun way to teach local students about the importance of water quality. The project proposed to involve approximately 400 grade nine students from all of the high schools in the region. A steering committee of a dozen government, academic and local organization representatives would administer the initiative.

After completing their in-class studies, students would visit a local coastal area and be led through a shoreline assessment process by local experts from ACAP Humber Arm and various government departments. Students would then board a chartered boat and travel to a predetermined area of the Bay of Islands where they would be instructed in and then carry out various water quality tests. Therefore, the students would have the unique experience of collecting water samples, recording water quality parameters and conducting shoreline assessments.

Both projects address a common issue and speak to the importance that communities place on clean and safe water.

6.2 **NATURE**: *"Working to achieve the long-term outcome of conserving biodiversity in healthy ecosystems".*

Over 50% of the SL projects fall under the Nature Business Line. These projects contribute to a better understanding of ecosystems to ensure their continued health and sustainability. For example, the Clean Annapolis River Project (CARP) in Nova Scotia proposed to identify sources of fecal coliform pollution in the Annapolis River through DNA analysis. The technique, commonly referred to as DNA fingerprinting or bacterial genotyping, is used to determine the relatedness of individual bacterial isolates. The isolates can then be sorted into distinct groupings and traced back to the source. This is cutting edge science and one of many such projects undertaken by ACAP organizations.

The Pictou Harbour ACAP organization has, along with their partners, carved a path to determine the impacts of various effluents on the harbour. Highlighted below is the culmination of three years worth of scientific study and research.

Immunological Biomarker Project

Since 1999, the Pictou Harbour Environmental Protection Project (PHEPP) has participated in an innovative research project aimed at developing a new indicator for evaluating marine environmental health. Pictou Harbour, Nova Scotia, is a multi-use body of water receiving municipal sewage, pulp mill effluent, thermal power plant cooling water, and contamination from shipbuilding and metal fabrication. To date, three years of fieldwork and supporting laboratory studies have been completed. Each summer, cages containing blue mussels were deployed at 13 locations around the harbour. Following retrieval, several measurement endpoints were determined. These included immune response parameters, survival and growth rates. A sub-sample of the mussels received a bacterial challenge test to evaluate their ability to protect themselves from harmful pathogens. Other partners in the study include Kimberly-Clark Nova Scotia, the East

River Pollution Abatement System and the Department of Fisheries and Oceans.

6.3 MANAGEMENT, ADMINISTRATION AND POLICY: *"Working to achieve the long-term outcome of strategic and effective departmental management to achieve environmental results."*

This Business Line applies directly to EC and how the Department should manage itself. By its very nature, none of the SL projects can fall under this Business Line. However, parallels can be drawn between the objectives of the MAP Business Line and ACAP. One of these is the emphasis placed on building and maintaining partnerships. Without these partnerships, the delivery of a project is impossible. The type and nature of the partnerships are varied with each ACAP organization having their own focus. Rarely has the importance – or urgency – for partnership building been so apparent than in St. John's, Newfoundland. The primary focus of ACAP St. John's is to raise the awareness of the tragic environmental state of St. John's Harbour. As shown below, the organization's hard work has paid off and progress has been achieved.

Challenges to a Clean Harbour

Since the beginning of the program, ACAP St. John's has focused on improving the quality of St. John's Harbour. A significant challenge was the lack of awareness within the community of the environmental and sewage treatment issues. Approximately 120 million litres of untreated sewage and stormwater run-off enter the Harbour per day. Science Linkages was an important tool for ACAP St. John's to achieve their goals. They have received just over $72,000 from the program and leveraged an additional $180,000 for six research projects. The projects include: research on water, sediment and toxicity monitoring; and determining impacts of pollution from surface run-off, industrial wastewater and raw sewage on human health and the Harbour's ecosystem.

Partnerships have been and continue to be critical in the resolution of this problem. Obtaining commitments from the three levels of government, various interest groups, industries and users of the Harbour was a challenge. However, through persistence and objective presentation of the scientific and technical information, ACAP St. John's has achieved its goal. In October 2002, the federal government formally announced its financial commitment of $31M to support the $93M harbour clean up project, which will include building a sewage treatment facility. The provincial and municipal governments will provide the matching funds.

6.4 WEATHER AND ENVIRONMENTAL PREDICTION: *"Working to achieve the long-term outcome of helping Canadians adapt to their environment in ways which safeguard their health and safety, optimize economic activity and enhance environmental quality."*

Eight percent of the SL projects fall under the Weather and Environmental Prediction Business Line. Although this percentage is lower than under the other Business Lines, these projects are no less important within the ACAP communities. Projects include research on climate change, sea-level rise, air quality and smog.

In 1999, the Miramichi River Environmental Assessment Committee (MREAC) in northwestern New Brunswick, along with an EC atmospheric scientist in Fredericton, set out to deliver on one of the Department's air quality programs. The following is a great example of how an ACAP organization can take a program, localize it and ensure its success.

Air Quality Smog Prediction Knowledge and Awareness Initiative

Environment Canada established the *Air Quality Prediction Program* (AQPP) in 1996. The motivation for this initiative was due in part to the medical studies that linked an increase in hospital admissions with deteriorating air quality. Recognizing its environmental prediction capabilities, EC developed and implemented the *Smog Prediction Program.* This involved a daily forecast of smog (ground-level ozone) concentrations along with educational and public health messages for the southwestern regions of New Brunswick. In May 1999, the New Brunswick Weather Centre in Fredericton, in partnership with MREAC, expanded this program to include the Miramichi. This partnership facilitated the delivery of educational and awareness/health benefits as a result of degrading outdoor air quality.

The principal objectives of EC's *Smog Prediction Program* are: to increase public awareness of the air quality issue; to increase public understanding of the health effects attributed to smog; to take expected pollution levels into account in day-to-day planning; and to take action to protect the environment. The program met all these objectives. It had a listening audience of about 30,000 people within a 25-mile radius from the city of Miramichi. The smog forecast went on for the best part of the summer and was a spin off of the Air Resource Management Area (ARMA) report MREAC did with the province of New Brunswick to define "airshed" issues that MREAC and other partners might like to engage in. The real value of this service was for those people with asthma or other breathing challenges who planned their daily activities around the quality of the air.

This project also implemented a *Ventilation Coefficient Forecasting Program* in New Brunswick in September 1999. Ventilation coefficients are an indication of air pollution

dispersion potential. This program allowed the user to take appropriate action to reduce the generation of particulate matter into the atmosphere e.g. wood stove burning.

7. IN THE YEAR 2002/2003

In previous years, ACAP organizations competed against one other for a set amount of funding. In 2002/2003, the ACAP coordinators agreed to move SL from a "competitive" to a "non-competitive" process. In true ACAP style, EC's ACAP office worked collaboratively with the coordinators and selected EC staff to ensure the review and submissions process was legitimate and that it would reflect credible science. This process proved to be successful. In December 2002, the ACAP organizations decided to continue on with the non-competitive process for 2003-2004.

The first order of business was to ensure that projects were funded not simply because they were proposed, but because they undertook and communicated credible scientific research. A team was set up to review the SL process, the call for proposals, selection criteria, executive summary form and the proposal form. The following EC staff made up the review team:

Suzie Dech	CAB, ACAP (Dartmouth)	Wayne Barchard	EPB (Dartmouth)
Zal Davar	MSB, RSCC (Dartmouth)	Roy Parker	EPB (Fredericton)
Steve Beauchamp	MSC (Dartmouth)		

This team, with the input from ACAP staff and coordinators, solidified the criteria and the proposal form (Appendix A).

The Regional Science Coordinating Committee (RSCC) has played an important role in SL since its inception. The committee members were eager to take part in all aspects of the initiative, such as participating in the annual project proposal review, providing ACAP staff expert advice on the Department's science and scientists, and reviewing the SL process. A complete list of all reviewers for each year of the program can be found in Appendix B.

The proposal process proceeded as follows:

- A call for proposals was issued December 7, 2001 with a closing date of February 15, 2002.
- Proposals received were required to have an EC science contact who was active in all aspects of the project i.e., proposal development and reporting activities.
- A Review Committee was assembled by the end of February to review the proposals and assign funding based on the established evaluation criteria.
- Committee feedback and recommendations were communicated to each organization and their science contacts during a two-week period. There was an opportunity to respond either through

amendments or re-submissions as needed.

- Final proposals were accepted until late March – the review team did not feel it necessary to hold a second meeting to approve final versions of the proposals and offered their responses via e-mail.
- Preparation of deliverables for the Letters of Agreement Appendices were completed by April 2002.

No limits were set on the number of proposals submitted per ACAP organization. Each site had access to a maximum of $18,000 for scientific work in their community. Not all of the $250,000 set aside for SL was used. The ACAP coordinators decided it was best to take what was left and top-up the proposed project contributions. This raised the total maximum for each site to $20,600.

This year saw an historical project. For the first time, ten ACAP organizations agreed to participate in the common project described below.

CABIN Fever

Dr. Trefor Reynoldson is heading up the Atlantic Canadian version of the Canadian Aquatic Biomonitoring Network (CABIN) out of Acadia University. Environment Canada proposed this collaborative program to develop a network of reference sites available to all users interested in the biological health of streams. The program was very well received and prompted the ACAP organizations to submit a proposal to SL and participate in this Network. The proposal outlines a regional, volunteer-based, invertebrate stream biomonitoring network, with a sound basis in science. The ultimate goal is the delivery of the Atlantic component of CABIN which is a mechanism for developing in-stream biological criteria and periodic reporting on the health of rivers in Atlantic Canada. Initial discussions with ACAP organisations resulted in a consensus on the benefits of:

- developing an integrated network
- developing a standard suite of protocols
- conducting field methods and taxonomic training workshops
- establishing a regional database and data management system, and
- developing predictive models of community structure and site specific stream health targets

A four-day training workshop was held in mid-June 2002. The Field Methods Training was a combination of classroom and fieldwork where participants learned the aspects of site selection, invertebrate collection and habitat descriptor measurement. The Taxonomic Training was conducted with the support of the NWRI benthic invertebrate taxonomy laboratory.

EC's total contribution to this project was $59,160, which the ACAP organizations leveraged at 3.25 to 1. This project highlights the collaborative and community-oriented philosophy embraced by ACAP and SL.

8. CONCLUSION

The Science Linkages Initiative is a sound investment for EC. Not only does the Department have access to the community and its resources, but it has a means to carry out programs and initiatives with a fraction of the financial and human resource investment which would normally be required. On average, the ACAP organizations leverage 4.25 to 1 with local partners, most of which is in the form of in-kind services. Over the past six years, EC has invested $1,070,674 to fund 95 scientific projects. A total of 60 EC scientists have worked with ACAP organizations and communities on scientific research. An additional 16 scientists supported SL through the proposal review process. The ACAP organizations and communities have proven they are first-rate organizers, scientists and partners on addressing a variety of environmental issues. This initiative fosters true partnerships between ACAP communities and EC scientists who are beneficiaries of one another's skills, equipment, information, knowledge and connections. The enriching experiences from these scientific projects are immeasurable.

APPENDIX A: SCIENCE LINKAGES CRITERIA AND PROPOSAL FORM 2002/2003

Project selection was based on the extent to which a proposal met the following criteria:

1. CEMP Goals

The project links directly with, and contributes toward progress in one or more of the community-derived goals outlined in the Comprehensive Environmental Management Plan (CEMP) or the annual work plan.

____ no - do not proceed ____ yes – proceed

2. Environment Canada Scientific Authority

2a. The proposal is jointly submitted by an ACAP organization(s) (including the window), and an Environment Canada natural or social scientist, engineer, or economist. The project involves work by both EC staff and ACAP organizations.

____ no - do not proceed ____ yes - proceed

2b. The proposal clearly identifies contributions to EC science.

____ no - do not proceed ____ yes - proceed

3. Leverage

3a. Proposals dealing with broader scope projects whose results may be widely applicable are desirable and therefore projects involving more than one organization are encouraged. Linkages to other major ecosystem initiatives (e.g. Gulf of Maine, Bay of Fundy, S.Gulf of St. Lawrence, EMAN, N.B. Sustainable Development Sites, etc., etc.) are encouraged.

High Medium Low

3b. Leverage potential - the amount of funding and other resources contributed from other sources, including major stakeholders.

High Medium Low

3c. The project includes a broad range of partners and facilitates shared ownership within and among one or more of the following:

__ the public __ the private sector
__ Environment Canada staff __ other government departments
__ NGO's __ Environment Canada science programs
___First Nations ___Youth

High Medium Low

4. Environmental Assessment

Project requires an environmental assessment under the Canadian Environmental Assessment Act

Unsure No Yes

5. Goals and Deliverables (Total 30 points)

The project produces identifiable, high quality, qualitative/quantitative deliverables and clearly shows how they link to stated CEMP goals.

N/A 6 12 18 24 30 ___/30

CONTRIBUTIONS TO SCIENCE

6. Scientific / Technical Merit (Total 40 points)

6.a. Project objectives, scope and design are clearly stated.

N/A 3 5 8 12 15 ___/15

6.b. The project is scientifically and technically sound.

N/A 2 4 6 8 10 ___/10

6.c. The project has the potential to advance understanding of the impact of human activity on the environment, or advance understanding of technologies and methods that reduce the impacts of human activities within the ACAP communities.

N/A 2 4 6 8 10 ___/10

6.d. The project concept and science is transferable and specific actions are included to broadly distribute results and lessons learned to an identified target audience.

N/A 1 2 3 4 5 ___/ 5

7. Formation of Partnerships (Total 20 points)

7.a. The likelihood that the proposal will lead to increased linkages between ACAP organizations and EC scientists, engineers, or economists and the likelihood that the proposal will lead to increased capabilities among both EC staff and ACAP organizations. The EC scientist is fully engaged in this project and there is a working partnership between the ACAP organization and EC staff.

N/A 2 4 6 8 10 ___/10

7.b. Outreach Component: The project engages the community and the ACAP organization.

N/A 2 4 6 8 10 ___/10

8. Environmental Impact (Total 10 Points)

The likelihood of the proposal resulting in changes in human activity as evidenced by the degree of involvement of major stakeholders in the study, the practicality of solutions that are likely to result from the proposal, etc.

N/A 2 4 6 8 10 ___/10

Total Project Score	
Goals and Deliverables	___ /30
Scientific and Technical Merit	___ /40
Formation of Partnerships	___ /20
Environmental Impact	___ /10
Total Points:	**____/100**

Amount of Funds Requested

The total allowable amount of funding for any one ACAP organization is $18,000.

- ❑ *Project Accepted without revisions*
- ❑ *Project Accepted subject to minor revisions*

- ❑ *Project Accepted subject to major revisions*
- ❑ *Project Not Accepted due to the following reasons*

APPENDIX B: REVIEWERS FOR SCIENCE LINKAGES PROJECTS 1997-2002

1997/1998

Steve Szabo	ECB, ACAP manager
Jean-Guy Deveau	ECB, SARMLT window, SARMLT did not submit an application
Victor Li	EPB, engineer
Richard Elliot	ECB, science
Tom Pollock	ECB, science
Bob Christie	External: PHEPP Coordinator - did not submit a project application
Michael Richard	External: Past President ACAP Saint John

1998/1999

Steve Szabo	ECB, ACAP staff
Hugh O'Neil	ECB, former ACAP Window, science
Rodger Albright	EPB, engineer
Tom Pollock	ECB, science
Richard Elliot	ECB, science
Andy George	AEB, business background
Kate MacQuarrie	External: PEI, Executive Director, Island Nature Trust, science

Note: Each ACAP organization had submitted at least one proposal and therefore did not participate in the selection process.

1999/2000

Allan Kindervater	ECB, ACAP staff
Zal Davar	CAB, economics
Roy Parker	EPB, science - removed himself for project he was involved in
Sarah Hall	ECB, science
Dave Wartman	AEB, science

Note: Science Linkages was a part of a larger funding category - Knowledge Generation. Proposal reviewers were solely from EC

2000/2001

Suzie Berneshawi	ECB, ACAP staff
Zal Davar	CAB, economics
John Clarke	EPB, engineer - removed himself for project he was involved in
Colin MacKinnon	ECB, science
Les Rutherford	EPB, science
Ray St. Pierre	MSC, science
Tony Burry	ISB
Judy White	External: NS Department of Environment & former Coordinator of ACAP Cape Breton

2001/2002

Suzie Dech	CAB, ACAP staff
Gary Lines	MSC, Climate Change
Mike Milloy	CAB, economics
Peter Eaton	EPB, biological/natural sciences, departmental priorities
Marc Bernier	ECB, chemical sciences and lab work
Lorrie Roberts	External: NS Department of Environment and Labour & former Executive Director of Bluenose ACAP

2002/2003

Suzie Dech	CAB, ACAP staff
Steve Beauchamp	MSC, science
Kay Kim	EPB, monitoring
Ken Doe	ECB, labs
Bob Christie	External: Executive Director of PHEPP - did not submit a project application