



**The Institute for  
Resources,  
Environment and  
Sustainability**

**Annual Report  
2002—2003**

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## Directors Message

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The year was filled with rewarding accomplishments. The merging of the Sustainable Development Research Institute into the newly created Institute for Resources, Environment and Sustainability (IRES) has resulted in a vibrant, innovative and rewarding place to be. The excitement of developing and fostering innovative and integrative academic programs that focus on interdisciplinary and transdisciplinary scholarship and generation of knowledge of the highest calibre, and addressing issues of local to global significance, is an enviable challenge. To develop a culture of collaboration among students, staff and faculty is an ever-continuing endeavour and one that is most rewarding. It is these constitutes that define a University.

Graduate student interest continues to grow. The number of enquires and applications far exceed our capacity. Increasingly more difficult decisions must be made as we review the quality applicants. Our graduate students continue to be in demand. This is most reassuring in the dynamics of the reality of the workplace. We will need to focus our attention over the next short period on the selection process of applicants, especially international students and to review our graduate program. A major concern remains the provision of adequate financial support for graduate students and their programs.

Faculty members' productivity and accomplishments remain high. Some projects are winding down

while others are either initiated or at high levels of activity. It is most rewarding to be engaged in academic activities with a community of internationally recognized scholars. Their expertise is sought and respected and their influence is indeed global. Our new international initiatives will need to be nurtured with care and enthusiasm.

The year saw stability in terms of staff. The Institute has a compliment of innovative, responsive and enthusiastic people. The sharing of tasks and responsibilities, the eagerness to work to achieve our common goals and their dedication to the ideals of the Institute, Faculty and University is exemplary.

Environment Canada's Adaptation and Impact Research Group (AIRG) continues to make positive contributions to the Institute, especially to the RMES program. For this I am most grateful. In a similar view the Canadian Climate Impact Adaptation Research Network (C-CIARN-BC) has evolved to become a positive influence on community involvement in the dynamic area of climate change and adaptation.

We will be reviewing the activities and accomplishments of the Institute and the Resource Management and Environmental Studies during our next year. This will result in working documents that will help shape the way we do things. This will be a most intriguing challenge for us all.

I am grateful to all the graduate students for their enthusiasm, great ideas, inspiration and congeniality. In a similar fashion I acknowledge with sincere gratitude the positive support and advise from all the faculty and staff. I would be remiss not to thank Dean Frieda Granot for her continued support

Directors  
Message

for all activities of the Institute. Frieda's concern for individuals as well as for the Institute as a whole is a cherished talent.

I thank Cynthia Hampton for her patience and perseverance in collecting the information for this report

Lastly, I thank Jaimie Dickson for taking on the challenge of preparing this document from all the assorted submissions. She is, of course, accustomed to this activity, as she deals with me on a daily basis.

Dr. Les Lavkulich  
Director  
Institute for Resource, Environment and  
Sustainability  
August 2003

## Introduction

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The reporting year has been one of challenges and accomplishments. The merger of the former Sustainable Development Research Institute with the Institute for Resources and Environment and the creation of the Institute for Resources, Environment and Sustainability (IRES) was formally approved by the Senate of the University of British Columbia on September 18, 2002. The merger of budgets, staff and administrative procedures is largely complete. The merger of two vibrant academic units has, in fact, resulted in a synergy whose effects, influence and potential is greater than the individual units. The IRES strengthens the University's expertise and reputation in the environment, resource and sustainability cluster recognized as an area of concentration by the Faculty of Graduate Studies and one of its positive contributions to the goals of TREK 2000.

As reported last year (2001-2002) the Institute was fortunate to attract Dr. Hadi Dowlatabadi and Dr. Terre Satterfield to strengthen the academic goals of the Institute and the Resource Management and Environmental Studies graduate program.

It is with enthusiasm that the Institute welcomed Dr. Milind Kandlikar as Assistant Professor. Milind brings expertise to integrative approaches to address complex environmental and social issues, within the context of sustainability. In the short period (September 2002) that Milind has

been at UBC, he has been involved in two graduate courses and has been invited to serve on several graduate student supervisory committees. He has willingly accepted committee responsibilities at the Institute. He is chair of the Aquatic Ecosystem Research Laboratory, Users Committee (IRES) and a member of the RMES Admissions Committee. His presence has been positive and his area of expertise compliments the academic interests of several faculty members.

Through a concerted effort and thorough process by Leslie Stephenson, the IRES has achieved the full compliment of support staff and has developed an effective administration framework. This is of particular significance as members of the Institute are located, physically, in four separate locations, the graduate student program continues to grow and develop, the IT needs and facilities are expanding, curriculum and research activities have expanded and significantly the responsibility for the planning and implementing the construction of the new AERL building are facilitated by the IRES office. This is in addition to the coordination that is provided for Environment Canada's Adaptation Impact Research Group, the Canadian Climate Impact and Adaptation Research Network and the International Internship program. The administrative office has implemented and continues to evolve innovative procedures to respond to the diverse demands and expectations received.

Graduate student interest continues to expand. The number of enquiries has increased. Selection of graduate students is a demanding procedure. The quality of applicants is high; the requisite research proposals are creative, but space, availability of supervisors and financial assistance

are constraining realities. The Institute plans on reviewing the RMES graduate program during the forthcoming academic year. A survey of alumni conducted this year was most revealing. Although the response rate was disappointing (24%), it was heartening to learn that the majority of respondents were pleased with their graduate experience at UBC and interestingly the vast majority of the alumni were employed in areas of their expertise and training. To this survey will be added additional curriculum information to be collected over the next several months. This information will provide the background for the RMES program and curriculum review.

Scholarly activity including publication and graduate student supervision and mentoring continues as a priority for the members of IRES. During fiscal 2002 – 2003 members of the IRES attracted over \$3,900,000 for research. Faculty members and their students published in appropriate venues including refereed articles, chapters in books, and technical articles. Two books were published during the year. Electronic publication of graduate theses continues, as does the presentation of information for both students and the non – UBC community.

During 2002 – 2003, there were a total of 89 graduate students enrolled in the RMES program, almost equal numbers of Masters (42) and Ph.D. candidates (47). There were 7 students enrolled in the M.A. compared with 35 in M.Sc. Of the total of 47 students on the Ph.D. program, slightly less than one-half (21) were women.

A total of 14 students graduated during the reporting year of this report. One graduated with the M.A., 9 with the M.Sc., and 4 with the Ph.D. Graduates

have gone onto jobs or further educational pursuits.

Faculty members approach their teaching and mentoring responsibilities with enthusiasm. They contribute to the University beyond the Institute. Faculty contribute regularly to provide lectures and seminars in other programs, including those at other Universities. As may be gleaned from the statement highlights of each faculty member, there is continual innovation in both the manner of interacting with students and in delivery, discussion and assimilation of subject matter. It is through this deliberate action that the RMES is recognized as both an inter- and a trans-disciplinary program.

The RMES program continues to enjoy the valuable contributions of our Faculty Associates, Adjunct Professors and others affiliated with the Institute. They serve on graduate student committees and give generously of their time to the graduate student programs, including serving as University (external) examiners for Master's theses defences. And, once again, Dr. Stewart Cohen offered his Climate Change course, one that is receiving greater attention on the campus. We are, of course, most appreciative of this dedication and support from our Associates and Adjuncts to the programs of the Institute.

Through the efforts of Dr. Terre Satterfield the IRES was successful in obtaining a Cecil and Ida Green Visiting Scholar award for Dr. Elinor Ostrom. Dr. Ostrom, known for her pioneering research on common property (pool) resources, is the Arthur F. Bentley Professor of Political Science and co-director of the Workshop in Political Theory and Policy Analysis and the Centre for Study of Institutions, Population and Environmental Change at Indiana University (Bloomington). She has an international reputation, and her book "Governing the Commons" (1990) is best known. She presented a Vancouver Institute lecture as well as three lectures to the University community. It was a most inspiring event.

After a delay in initiating the building of the CFI/BCKDF sponsored Aquatic Ecosystem Research Laboratory (AERL), Les Lavkulich was asked to champion the process leading to the construction of this novel facility. The AERL will provide the new home for the IRES; the RMES graduate program, the associated activities of AIRG, C-CIARN-BC and the International Internship Student program. The AERL will be shared with the Fisheries Centre, including the Sea Around Us Initiative, Project Seahorse, the Marine Mammals Research Unit and the provincial government personnel with the Research and Development Section of the Fisheries Branch. The project is well on track. Architects, planners, and engineers are working along side of the academic users of the facility. In addition to faculty and staff offices, the facility will provide a variety of working environments

for graduate students, the option of research cluster for collaborative research and opportunities for the application of the latest information technology. In addition to a research laboratory, there will be facilities for state-of-the-art visualization, electronic communication, interactive model building and expert systems and a geographical information system laboratory. A major challenge for the planning team is to integrate and incorporate the latest information technology into the AERL. An outline of the AERL committee structure is appended.

The enthusiasm and renewed commitment resulting from the relevance of the IRES/RMES program, the collaborations that have been initiated and developed, the sense of community, the sharing of goals, the new facility and a sense that what we do makes a difference here at UBC, as evidence by our alumni survey, provide the synergistic and rewarding environment that is the University.



## Report on Activities

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It has been a busy but most rewarding year.

### I. Administration

During the year, the Institute for the first time since its establishment has a full compliment of staff. The physical separation of offices and research activities places an additional workload of the staff, as some must, by the nature of their responsibilities move among activity centres. The implementation of the planning process for the AERL has given new challenges to the administration. The learning curve is steep; yet exciting. Appendix A provides an organizational chart for the IRES.

As indicated, the Institute is located in four separate buildings. The central office is in the Library Processing Centre (fourth floor); the Sustainable Development Research Initiative is located in the Old Auditorium Annex and the Fisheries Unit in Hut B-3. The AIRG offices and research space remain in the Ponderosa Annex. Members of IRES and RMES await the construction of the new AERL for the obvious synergies and anticipated effectiveness the facility will provide.

Two sets of committees were established during the year. The first was to aid in the administration and communication for the newly established Institute. The second is to aid in the planning and design for the AERL. Some duties and responsibilities necessarily overlap between the two activities. The complex coordination of these activities is the responsibility of the Assistant Director. Appendix B provides a schematic of the committee organization.

## II. Programs of IRES

### A. RMES

#### 1. Overview and Statistics

Number of students in the graduate program (2002-2003):

	Females	Males	Total
M.A.	4	3	7
M.Sc.	25	10	35
Ph.D.	21	26	47

Interest in the interdisciplinary graduate program in Resource Management and Environmental Studies continues to be high. The following table summarizes graduate interest.

	2002 - 2003	2001 - 2002	2000 - 2001
# of full time applications	122	101	65
# accepted	31	29	18

Financial assistance was available from a number of competitive sources in terms of fellowships and scholarships, as well as research assistantships provided through

grants and contracts awarded to Faculty Members. The following list provides the sources of financial assistance obtained by graduate students.

- Natural Sciences and Engineering Research Council
- Social Sciences and Humanities Research Council
- University of Graduate Fellowships
- Other University Awards
- International Awards:
  - Conacyt
  - Commonwealth
  - CNP/Brazil
  - Danish Government
  - National Science Foundation
  - United Nations
  - Research Assistantships

The Institute appreciates and thanks these sponsoring agencies for their support.

#### 2. Courses Taught

The following is a summary of the courses offered and guest lectures given by members of IRES.

- ***Carmichael, J.***
  - RMES 500C - Regional Sustainable Development and Integrated Assessment
  - ECON 471 - Economics for Non-Renewable Natural Resources
  - ECON 301 - Environmental Economics

- **Cohen, S.**
- RMES 500 D - Climate Change in the 21st Century

**Guest Lecture**

- APSC 262 –Technology and Society
- **Dowlatabadi, H.**
- RMES 500 P -Integrated Assessment
- RMES 500 C -Quantitative Methods and Modelling
- Assisted Mr. Kirthi Roberts prepare his ENSC 406 - Engineering and Ethics course at SFU.
- Assisted Prof. Peter Danielson plan INDS 502E - Modeling Democracy, Ethics and Genomics.
- With students helped organize three seminar series
  - o Liu Action and Research Seminars – 10 seminars, ~30 students
  - o Corporate Social Responsibility Seminars – 7 seminars, ~25 students
  - o Complex Systems – 3 chaotic meetings, ~15 students

- **Dorcey, A.H.J.**

- PLAN 595 - Planning and Negotiation in Natural Resource Management
- PLAN 540 A - Planning Project
- PLAN 548 C - Current Issues in Planning
- PLAN 548 N - Current Issues – Internship

- PLAN 597 – Planning for Water Resource Management

**Guest Lecture**

- RMES 500 – Integrated Watershed Management
- **Hall, K. J.**
- CIVL 405 - Environmental Impact Analysis
- CIVL 407- Environmental Laboratory Analysis
- CIVL 568 - Water Pollution Engineering and its Ecological Impact
- RMES 500 B - Integrated Watershed Management
- **Healey, M.C.**
- No formal teaching – sabbatical leave
- Receipt of Fulbright Fellowship to support sabbatical project.
- **Hinch, S. G.**
- FRST 386 – Aquatic Ecosystems and Fish in Forested Watersheds
- CONS 451- Integrated Field School
- CONS 486 – Fish Conservation and Management

**Guest Lectures**

- RMES 500 B – Integrated Watershed Management
- FRST 585 – Research Methods in Forest Hydrology

▪ **Kandlikar, M.**

- RMES 500 C - Quantitative Methods and Modelling
- RMES 500 Q - Science Technology and Human Development

**Guest Lectures**

- Ethics in a Complex Society, SFU

▪ **Lavkulich, L.M.**

- RMES 501 - Perspectives on Resources and Environment
- RMES 502 - Graduate Seminar
- SOIL 430 - Pedology
- SOIL 504 - Advances in Soil Chemistry and Mineralogy
- AGRO 460 - Agroecosystems

▪ **McDaniels, T.L.**

- PLAN 599 - Managing Environmental and Technology Risks
- PLAN 548T - Decision insights for Policy Analysis and Planning
- PLAN 547C/ 549C - Thesis and project advising roundtable
- PLAN 550 - Directed Studies
- PLAN 548X - Internships

**Guest Lectures**

- OCCH 504 - Introduction to Risk and Policy Analysis - September, 2002
- Occupational Hygiene and Health Care and Epidemiology seminar series presentation, "Risk Communication as

Decision Aiding" September, 2002

- ASPC 261 - Technology and Society, UBC, October 2002, Risk Management for Technologies
- Environmental Science 300 - November 2002 Watershed Management and Citizen Involvement
- SCARP 540 - Omnibus course November 2002 Value-focused Thinking for Planning
  - RMES 500 - Watershed Management, March 2003 Decision Making for Watershed Management

▪ **Robinson, J.B.**

- ENVSCI 448 - Thesis: Sustainable Transportation Modeling in QUEST
- GEOG 423 - Development of Environmental Thought
- GEOG 550A - Individual Directed Reading Course on Business and Sustainability
- GEOG 448 -Individual Directed Reading Course on Business and Sustainability
- RMES 500C - Regional Sustainable Development and Integrated Assessment co-taught with James Tansey and Jeff Carmichael

**Guest Lectures**

- APSC 261 – Technology and Society I - November 16, 2002
- APSC 262 – Technology and Society II - Coordinated a 5 session unit on QUEST, January 2003
- GEOG 324 at SFU, November 6, 2002
- GEOG 210 – Vancouver and its Regions, January 2003-07-21

- **Satterfield, T.**
- RMES 500F - Science, Policy, and Values in Resource Management
- ANTH 330 - Rural Peoples and the Global Economy
- RMES 502 – Research Seminar

#### **Guest Lectures**

- Elinor Ostrom Week

- **Schreier, H.E.**

- AGRO 460 - Agroecosystems
- RMES 500 A - Agricultural Watershed Management
- RMES 500 B - Integrated Watershed Management
- RMES 500 D - Water and International Development
- RMES 500 N - Urban Watershed Management
- SOIL/ PLAN 517/593 – Land and Resource Evaluation

#### **Guest Lectures**

- FOREST 444 Agroforestry, October 7, 2002
- SOIL 200 Introduction to Soil Science, November 28, 2002
- GEOG Seminar, SFU, A Global Watershed Network, October 24, 2002
- CIVIL 569 Land Use Impact on Water Pollution, March 21, 2003
- SOIL 200 Integrated Soil Management, March 29, 2003

- **Tansey, J.**

- RMES 500C - Georgia Basin Futures Project Seminar
- Foundations 103 - Introduction to the Social Sciences

- **Vertinsky, I.B.**

- BAIM 502 - Cultural and Political Environment of International Business
- MAPP Core - Asia Pacific Policy Studies

### **3. Students Supervised**

- **Carmichael, J.**

#### **M.Sc.**

- T. Neale

Serves on additional Ph.D. and 3 undergraduate honours thesis supervisory committees.

- **Dorcey, A.H.J.**

#### **Ph.D.**

- J. Irwin (RMES)
- J. Leitch (SCARP)
- O. Ohara (RMES)
- M. Senbel (SCARP)

#### **M.A./M.Sc.**

- A. Anderson (RMES)
- S. Bicego (SCARP)
- C. Beaubien (SCARP)
- S. Dang (SCARP)
- E. Embley (SCARP)
- A. Fish (SCARP)



- T. Harding (SCARP)
- J. Hill (SCARP)
- S. LeRoy (SCARP)
- Y. Lizee (SCARP)
- K. Miner (SCARP)
- H. Shay (SCARP)
- P. Whitelaw (SCARP)

Serves on 3 additional Ph.D. supervisory committees.

▪ **Dowlatabadi, H.**

**PhD**

- M. Boyle (RMES)
- J. MacDonald (RMES)
- R. Pacheco-Vega (RMES)
- E. Mazzi (pre RMES)
- H. Zerriffi (at CMU)

**M.Sc**

- Z. Bornik (RMES)
- P. Shepherd (RMES)

Serves on 3 additional Ph.D. supervisory committees

▪ **Hall, K.J.**

**Ph.D.**

- K. Ashley (CIVL)

**M.Sc.**

- K. Charlie (RMES)
- P. Keen (RMES)
- K. Kinnee (RMES)
- G. Mattu (RMES)

- A. Mashbough (CIVL)
- S. Wilson (RMES)

Serves on additional 8 Ph.D. and 5 M.Sc. supervisory committees.

▪ **Healey, M.C**

**Ph.D.**

- D. Bixler (RMES)
- M. Pearson (RMES)
- L. Rempel (GEOG)

**M.Sc.**

- J. Frolek (RMES)
- D. Haggarty (ZOOLOGY)
- C. Matheson (ZOOLOGY)
- L. Mehranvar (ZOOLOGY)
- J. Quigley (FRST)
- T. Patton (RMES)
- C. Lobsinger (ZOOLOGY)

Serves on additional 3Ph.D. and 3 M.Sc. supervisory committees.

▪ **Hinch, S.G.**

**Ph.D.**

- E. Mellina (FRST)
- S. Cooke (FRST)

**M.Sc.**

- G. Crossin (FRST)
- J. Degroot (FRST)
- K. Mackenzie (FRST)

- M. MacNutt (FRST)
- J. Quigley (FRST)
- D. Sneep (FRST)

Serves on 11 additional supervisory graduate committees.

▪ **Kandlikar, M.**

**Ph.D.**

- J. McDonald (RMES)
- M. Villanueva (RMES)

▪ **Lavkulich, L.M.**

**Ph.D.**

- S. Grand (RMES)
- T. Rolfe (RMES)
- J. Carruthers (RMES)
- D. Schreiber (RMES)

**M.A./M.Sc.**

- E. Downarowitz (RMES)
- C. Gravel (RMES)
- C. Leduc (RMES)
- R. Maal-Bared (RMES)
- A. McCue (RMES)
- N. Page (RMES)

Serves on all RMES graduate committees, also 5 Ph.D. and 4 M.Sc. outside of RMES.

▪ **McDaniels, T.L.**

**Ph.D.**

- M. Bazelywich (SCARP)

- W. Smith (RMES)

**M.A./M.Sc.**

- J. Bundali (SCARP)
- W. Craig (SCARP)
- D. Galland (RMES)
- G. Hunter (SCARP)
- R. Kelley (SCARP)
- H. Longstaff (RMES)
- P. Schulz (SCARP)
- M. Shipkey (SCARP)
- S. Smith (SCARP)
- M. Vancaillie (SCARP)

Serves on 1 additional Masters and 1 additional PhD supervisory committees.

▪ **Robinson, J.B.**

**PhD**

- A. Elias (RMES)
- P. Ostrowski (RMES)
- K. Roberts (RMES)
- A. Shaw (RMES)
- S. Talwar (GEOG)

**MA**

- E. Levin (GEOG)
- V. Long (GEOG)
- A. Savelson (RMES)

Serves on 4 additional PhD supervisory committees

▪ **Satterfield, T.**

**Ph.D.**

- D. Brownstein (RMES)
- D. Boyd (RMES)
- M.I. du Monceau (RMES)
- E. Villanueva (RMES)
- J. Timko (RMES)
- J. Donatuto (RMES)

**M.A.**

- B. Geddes (RMES)
- L. Liguori (RMES)
- Y. Yim (RMES)
- M. Zelmer (RMES)

Serves on additional 4 Ph.D. and 2 M.A. supervisory committees.

▪ **Schreier, H.E.**

**PhD**

- J. Ross (RMES)

**M.Sc.**

- J. Brydon (RMES)
- L. Elliot (RMES)
- J. Houston (SOIL)
- S. Magwood (RMES)
- J. McDonald (RMES)
- I. Smith (RMES)

Serves on additional 5 Ph.D. and 7 Masters supervisory committees.

▪ **Tansey, J.**

**Ph.D.**

- A. Elias (RMES)
- A. Shaw (RMES)

**M.Sc.**

- S. LeRoy (SCARP)
- P. Shepherd (RMES)

▪ **Vertinsky, I.B.**

**Ph.D.**

- O. Branzei (COMM)
- R. Camp (COMM)
- K. Fuller (COMM)
- C. Zietsma (COMM)

Serves on 1 Ph.D. and 1 Masters supervisory committees.

▪ **Yongyuan, Y.**

Serves on 2 Masters supervisory committees.

**4. University Graduate Student Supervisors (non IRES)**

The RMES program encourages and promotes interdisciplinary and transdisciplinary graduate education and learning. A significant contribution to this goal is the dedication and willingness of Faculty members from across the University to serve as primary thesis supervisors. The RMES program and the students are most appreciative of these academic contributions. Individuals who serve as Masters and Doctoral candidate supervisors are:

- Y. Alila (Forestry)
- R. Barichello (Agricultural Sciences)

- R. Cole (Architecture)
- M. Feller (Forestry)
- S.M. Glenn (Forestry)
- G. Hoberg (Forestry)
- R. Matthews (Anthropology and Sociology)
- B. McClean (Law)
- P.N. Nemetz (Commerce and Business Administration)
- T.J. Northcote (Forestry - Emeritus)
- R.K. Paisley (Law)
- D. Paterson (Landscape Architecture)
- D. Pauly (Fisheries Centre)
- T.J. Pitcher (Fisheries Centre)
- W.E. Rees (Community and Regional Planning)
- S. Shaikh (Agricultural Sciences)
- R. Sumalia (Fisheries Centre)
- A. Trites (Zoology)
- J. Vercaammen (Agricultural Sciences/Commerce)
- A. Vincent (Fisheries Centre)
- J.R. Wood (Political Science)
- P. Wood (Forestry)
- G. Wynn (Geography)

In addition, the RMES program is indebted to several people from each of the private sector, other Departments at UBC and other Universities, notably Simon Fraser University, for serving on graduate student committees and serving as University and external examiners. It is this dedication and willing cooperation that the delivery of an academically sound and holistic graduate learning experience.

## 5. Theses Completed

Fourteen students completed their graduate programs during the April 2002 to March 31, 2003 period. The degree, the name of the student, thesis title and the name of supervisor are as follows:

### **Masters – M.A.**

- **Geddes, Bronwen.** The Urban-Wild divide: Cross Cultural Perspectives on Wilderness and Nature in British Columbia. (Supervisor: T. Satterfield).

### **Masters – M.Sc**

- **Anderson, Aileen.** An Empowered Voice? An Assessment of the Participatory Process Conducted to Draft a Proposal for the Establishment of the Inkomati Catchment Management Agency, Mpumalanga, South Africa. (Supervisor: T. Dorcey).
- **Andrade, Annemarie.** Evaluating Ecotourism Practice in Brazilian National Parks: a Case Study of Jau National Park. (Supervisor: F. Tester).
- **Fikart, Alena.** A Comparative Assessment of Stormwater Runoff from a Coastal and Interior Log Yard. (Supervisor: K.J. Hall).
- **Hiebler-Chariarse, Jennifer.** The Effect of Logging on Periphyton and Invertebrates in Headwater Streams. (Supervisor: M. Feller).

- **Irwin, Anthony.** Benchmarking Greenhouse Gas Management in the Canadian Natural Gas Industry. (Supervisor: L.M. Lavkulich)
- **Page, Nick.** Community and Regional Scale Patterns of Native and Exotic Plant Species in Sand Beaches of Vancouver Island, British Columbia. (Supervisor: L.M. Lavkulich).
- **Pander, Sean.** Towards a Grounded Theory of Urban Attached Housing Design for Families: Balancing Lifestyle Perceptions with Sanctuary Needs. (Supervisor: D. Paterson).
- **Patton, Tyese.** Salish Creek Mitigation (Supervisor: M.C. Healey).
- **Stanford, Richard.** The English Channel: a Mixed Fishery, but which Mix is Best? (Supervisor: T. Pitcher)

- **Walrut, Bernard.** Sea Ranching and Aspects of the Common Law: a Proposal for a Legislative Framework. (Supervisor: B. McLean and R. Paisley).

Report on  
Activities -  
Programs of  
IRES

RMES

**Ph.D.**

- **Kalikowski, Daniela.** The Forum of the Patos Lagoon: An Analysis of Co-Management Arrangement for Conservation of Coastal Resources in Southern Brazil. (Supervisor: L.M. Lavkulich).
- **Newlands, Nathaniel.** Shoaling Dynamics and Abundance Estimation: Atlantic Bluefin Tuna (*Thunnus Thynnus*). (Supervisor: T. Pitcher).
- **Power, Melanie.** Fishing for Justice: A Groundwork for Ethical Fisheries Policies in Canada. (Supervisor: T. Pitcher).



## **B. International Internship Program**

The 2002-03 IRES/SDRI International Youth Internship Program was launched with great success. The following is an account of the activities that have taken place since March 31, 2002.

### **1. Background**

For the past five years, the Internship Program has offered opportunities for younger Canadian experts in the area of sustainable development to work in diverse organizations and professional areas within this field in countries worldwide, particularly developing countries. The Program has now expanded its scope to include the areas of resources and environment.

The internship program seeks to prepare a new generation of ecologically and socially responsible Canadians to further human, environmental, and international collaborations and sustainable development objectives. The Program promotes career opportunities in Canada and abroad and is designed to enhance positive, long-term and mutually beneficial partnerships among UBC, Canadian institutions and other nations bridging the gap between education and employment.

Intern applicants must be post-secondary graduates, under the age of 30, and may come from varied backgrounds in the humanities and social sciences, natural sciences, engineering, environmental, international development, focused regional studies, First Nations studies, business, education, law, agriculture, social work, health or planning fields, natural resource management; and

other disciplines or professional sectors. They should have an active interest in environmental and international development issues and be pursuing related career opportunities. While these positions are open to youth across Canada, we encourage IRES and UBC graduates to apply for these internships in order to extend the relationship between students and their professors beyond their time at UBC and to move the graduates into their desired professional careers.

All interns undergo a pre-departure orientation and training program here at IRES before their placement. Upon their return, as well as during the term of the internship, interns receive support from the Program in finding employment. Of the twelve interns who completed last years program, nine are currently employed and three are enrolled in graduate programs.

### **2. Current Figures**

This year, we received \$150,000 in funding from Human Resources Development Canada (HRDC) to support 10 interns and \$45,000 in funding from the Canadian International Development Agency (CIDA) to support 3 interns for a total of 13 interns in 8 countries worldwide - Honduras, Brazil, the United Kingdom, Bulgaria, India, Thailand, China, and Cambodia. We received 70 applications from across Canada. Those who were selected attended a weeklong orientation and pre-departure preparation session in the last week of October 2002 and twelve of the thirteen left for their overseas posts at the

beginning of November. The remaining intern left for her overseas post at the beginning of January. The interns submit monthly reports to the Program Coordinator and seem to be settling in well to their respective posts. The twelve interns who left in November are scheduled to return to Canada in May for debriefing and job placement support while the intern who left in January is scheduled to return in June for the same.

We are currently seeking funding from CIDA again and for the first time from Environment Canada's Science Horizons Youth Internship Program for the next round of internships.

**Coordination: Kara Ko  
(Bronwen Geddes – on leave)**

**Administrator: Leslie  
Stephenson**

Report on  
Activities -  
Programs of  
IRES

International  
Internship  
Program

### III. Collaborators and Affiliations

#### A. AIRG

##### 1. Who are we?

The Adaptation & Impacts Research Group (AIRG) is part of the Atmospheric & Climate Science Directorate of the Meteorological Service of Canada, Environment Canada. AIRG's mission is "to provide scientific expertise and leadership to Canadians on the environmental, social, and economic risks, vulnerabilities impacts and adaptations associated with atmospheric variability and change."

##### 2. Partnership with IRES

AIRG's co-location partnership with the Institute for Resources, Environment & Sustainability at UBC has provided many opportunities to advance research on climate change vulnerability, impacts and adaptation (VIA). This research is highly interdisciplinary, requiring collaboration between the natural and social sciences to understand the interaction between human and climate systems. AIRG staff at UBC work to form partnerships with the university research community and other research organizations to collaborate on multi-disciplinary studies.

##### 3. AIRG's Activities at UBC during 2002-2003

In 2002-2003, AIRG contributed to the University community in a variety of ways including promoting VIA research through the annual AIRG student research paper award contest, collaborating with UBC faculty and researchers on a number of research

initiatives and providing opportunities for students to participate in ongoing climate change research. Dr. Cohen taught a graduate level course, Climate Change in the 21<sup>st</sup> Century (RMES 500D), during the Winter Session of 2002-2003. Dr. Cohen and Dr. Yin also served on several graduate student advisory committees.

##### 4. New Faces

In 2003 AIRG welcomed Robin Bing Rong to its UBC office as a researcher-project coordinator for the vulnerabilities, impacts and adaptation (VIA) component of the Canada China Cooperation in Climate Change (C5) project. Robin is responsible for overall management of the VIA component and collaborating with researchers and officials in both Canada and China to define the direction of research.

##### 5. AIRG Staff and Research at UBC

Dr. Stewart Cohen, Researcher,  
[scohen@sdri.ubc.ca](mailto:scohen@sdri.ubc.ca)

Expanding the Dialogue on Climate Change and Water Management in the Okanagan Basin, British Columbia (Jan. 2002 - March 2004).

Dr. Yongyuan Yin, Researcher,  
[yongyuan.yin@sdri.ubc.ca](mailto:yongyuan.yin@sdri.ubc.ca)

Canada-China Cooperation in Climate Change (Oct. 2002-Dec. 2004)

Confronting Global Warming:  
Enhancing China's Capacity for  
Carbon Sequestration, Integrated  
Assessment Component (July  
2002-Dec. 2005)

Integrated Assessments and  
Vulnerabilities and Adaptation to  
Climate Variability and Change in  
the Western Region of China (Feb.  
2002-Dec. 2004)

Bing Rong, Researcher,  
[brong@sdri.ubc.ca](mailto:brong@sdri.ubc.ca)

Canada-China Cooperation in  
Climate Change (Oct. 2002-Dec.  
2004)

Tina Neale, Coordinator,  
[tneale@sdri.ubc.ca](mailto:tneale@sdri.ubc.ca)

Expanding the Dialogue on Climate  
Change and Water Management in  
the Okanagan Basin, British  
Columbia (Jan. 2002 - March 2004)

## **6. Students supported in 2002-2003**

Philippa Shepherd (RMES)

Meng Sun (ECON)

### ***Post-Doctoral Fellows supported in 2002-2003***

Dr. Wendy Merritt (Forest  
Resources Management)

## **7. More Information**

For more information on AIRG's  
projects and activities at UBC,  
please contact:

Tina Neale  
Coordinator, AIRG  
Institute for Resources, Environment &  
Sustainability  
Phone: 604-822-6899  
Email: [tneale@sdri.ubc.ca](mailto:tneale@sdri.ubc.ca)  
Collaborations and Affiliations – AIRG

Report on  
Activities -  
Collaborators  
and Affiliations

AIRG

## B. C-CIARN-BC

C-CIARN BC is the British Columbia regional office of the Canadian Climate Impacts and Adaptation Research Network (C-CIARN), a national program funded by Natural Resources Canada. BC's natural-resource-based communities and the province's economy, as a whole is particularly vulnerable to climate change impacts. These include increased rate of decline of fish stocks, forest susceptibility to pests and fires, and incidences of flood and drought conditions.

C-CIARN BC initiates, fosters and coordinates dialogue among researchers, stakeholders and decision makers. Recently, C-CIARN BC meetings have been held on University and College campuses bringing, faculty, researchers and students together, helping to create a community around climate change, an issue that needs to be addressed from a diversity of research disciplines. As well a series of regional workshops have been initiated. The first was in the Columbia Basin, at Cranbrook BC. Highlights of this workshop were: presentations on the potential changes in forest cover, fire danger and pest infestations in the Columbia Basin. Climate change impacts such as more frequent droughts and floods, less snow in the winter and higher temperatures throughout the winter months are changes already recognized by the communities in this region. Adaptation strategies such as a water conservation program in Kimberly are still in their early stages of implementation. C-CIARN BC, partnered with the BC Ministry of Water, Land and Air Protection and local organizations, to identify regional vulnerabilities, to improve the understanding of climate change impacts and to promote

research partnerships. Following the success in Cranbrook, a Workshop took place in Prince George. The mandate was to promote an information exchange between researchers and stakeholders on climate change issues, affection both human and natural resources in Northern British Columbia. The C-CIARN BC office is conducting a survey on the current state of the climate knowledge in BC, with a focus on expert opinion and a review of the literature on the subject. C-CIARN BC is proud of its new developed electronic database that is updated on a continuous basis and incorporates the newest publications on climate change impacts and adaptation in British Columbia. Through these activities C-CIARN BC is helping to create a community around climate change impacts and adaptation and hopes to foster collaborative research approaches for the future.

C-CIARN BC is located at the Institute for Resources, Environment and Sustainability at the University of British Columbia, please visit the website [www.britishcolumbia.c-ciarn.ca](http://www.britishcolumbia.c-ciarn.ca) for more information.

**Coordinator: Julia James**

**Administrator: Leslie Stephenson**

**Manager: Les Lavkulich**



## IV. Service

### A. UBC

#### ▪ **Cohen, S.**

- Adaptations and Impacts Research Group (AIRG) – Acting Director, National Headquarters, Toronto (July – October 2002)
- Adaptation and Impact Research Group (AIRG) – Member at UBC
- Research Awareness Week – organized panel on Climate Impacts and Adaptation Research at UBC (February 2003)

#### ▪ **Dorcey, A.H.J.**

- School of Community and Regional Planning (SCARP) – Director
- Centre for Human Settlements (CHS) – Acting Chair
- UBC Executive Committee for Research – Member
- Committee for Re-appointment of Dean of Faculty of Graduate Studies – Member
- Ad Hoc Committee to advise VP Dennis Pavlich on planning for University Town – Member
- Committee to develop plans for UBC's involvement in 2006 World Urban Forum, chaired by Dean Quayle – Member
- Committee to select UBC nominees for Trudeau Fellowships – Member
- UBC Committee to select two UBC proposals for CIDA Tier II competition – Member

- Organized and led UBC-SCARP/ACUPP national workshop on Future Directions for Planning Education (May 2002)
- Organized and led panel Greater Vancouver: A sustainable community? UBC Research Awareness Week, Robson Square (March 2003)
- **Dowlatabadi, H.**
  - Liu Institute for Global Studies - Academic Director
  - Bridge program - Associate Director
  - Promotion and appointment committee – Faculty of Graduate Studies, UBC - Member
  - Merit Committee – Faculty of Graduate Studies, UBC - Member

#### ▪ **Hall, K.**

- Continuing Education, UBC, Urban Watershed Management, (fall 2002), and Integrated Watershed Management (spring 2003) with H. Schreier and S. Brown. 20+ students.
- UBC Environmental Protection Advisory Committee (EPAC) – Member
- UBC Stormwater Management Committee - Member
- EPAC Stormwater Subcommittee – Chair
- Student Admissions Committee, RMES – Chair
- Safety Committee, IRES - Chair
- Contaminants in Water: Sources, Monitoring and Management. Research Awareness Week, Robson Centre (March 2003) - presenter

- **Hinch, S. G.**
  - Undergraduate Program in Natural Resources Conservation - Director and Advisor
  - Forestry Undergraduate Society – Faculty representative
  - Killam Teaching Award Committee, Faculty of Forestry – Member
  - Co-operative Education Steering committee, Faculty of Forestry – Member
  - Undergraduate Recruitment Steering Committee, Faculty of Forestry – Member
  - Natural Resources Conservation Program Advisory Committee, Faculty of Forestry – Chair
  - Adjudication, Advancement and Scholarship Committee, Faculty of Forestry – Member
  - Undergraduate Programs Curriculum Committee, Faculty of Forestry – Member
  - Vehicle Committee – Institute of Resources, Environment and Sustainability – Chair
  - Search Committee, Co-operative Education Coordinator, Faculty of Forestry – Member
  - First Nations Summer Program in Faculty of Forestry
- **Kandlikar, M.**
  - RMES Graduate Admissions Committee – Member
  - AERL Building Planning committee – Chair
  - AERL Building Information Technology Committee - Chair
- Corporate Social Responsibility Seminar at the Liu Institute – organized six seminars to explore the demand for and design of a graduate level course
- **Lavkulich, L.M.**
  - Representative on C-CIARN – Natural Resources Canada (2000+) - Member
  - Vice President Research – Reviewer Canada Foundation for Innovation Proposals -UBC (2000-2001) (2003-2004) - Member
  - UBC Fisheries Centre Advisory Board (2001+)- Member
  - Adaptation Impact Research Group (AIRG – Environment Canada – UBC) Advisory Council (2001+) - Chair
  - BC – Canada Climate Impact Adaptation Research Network (CCIARN – BC), Natural Resources Canada, BC Ministry of Air, Water and Land Protection and UBC, Coordinating committee (2001+) – Chair and Manager
  - Vice President Administration and Finance Campus Planning and Development (2000+) - Member
  - Vice President Administration and Finance - UBC Technical Advisory Committee for Neighbourhood Plans (2000+) - Member
  - AERL Building Academic Project Manager and P.I. (2002+)

- Resource Management and Environmental Studies (Faculty of Graduate Studies) (1994+) - Chair
- Institute for Resources and Environment (Faculty of Graduate Studies) (1995+) now Institute for Resources, Environment and Sustainability (2002 +) - Director
- Sustainable Development Research Institute – Acting Director (July 2001 – 2002)
- Dean’s Committee, St. John’s College, Faculty of Graduate Studies – Membership and Policy (1997-2003) - Member
- Faculty Curriculum and New Programs Committee, Faculty of Graduate Studies (2002 +)– Chair
- BRIDGES Program – School of Occupational and Environmental Hygiene – Member
- CHER Program – Health and Environmental Research – School of Occupational and Environmental Hygiene – Member
- **McDaniels, T.L.**
  - External review committee for the Museum of Anthropology, Faculty of Arts (January-April 2002) – Member
  - University Committee on the Future of Computing Education (2001-02) – Member
  - Admissions Committees for SCARP, IRES and Bridge Program – Member
  - Hiring Committees – SCARP
- Active participant in all aspects of unit governance in SCARP
- Nominations committee – Faculty of Graduate Studies – Chair
- Dean’s advisory committee on promotion and tenure – Member
- **Robinson, J.**
  - Fellow, St. John’s College, UBC (2001- )
  - Steering Committee, Centre for Interactive Research on Sustainability, UBC - Member (2002-)
- **Satterfield, T.**
  - Trudeau Fellowship Adjudication Committee – Faculty of Graduate Studies – Member
  - Space Committee for AERL building – Faculty of Graduate Studies – Member
  - Elinor Ostrom visit – College Visiting Scholar Program – organized and sponsored
- **Schreier, H.E.**
  - UBC Environment Committee (1996-2003) – Member
  - Promotion Committee for D. Lymes, Faculty of. Agricultural Sciences (2002) – Member
  - AERL IT Committee for New Building, UBC (2002-2004) – Member
  - RMES Graduate Student Admission Committee, Resources Management & Environmental Studies (RMES) – Member

**Vertinsky, I.B.**

- Peter Wall Institute of Advanced Studies: Adjudication Committee Early Career and Post Doc Awards Committee - Member
- St. John's College Academic Committee - Member
- Forest economics and Policy Research Unit – Director
- UBC-KIBT Project Curriculum Committee – Member
- UBC-KIBT Project, Research Committee – Lead
- CJR Management Committee – Member
- Centre for International Business Studies – Director
- Shanghai Summer Program – Academic Director
- W. Maurice Young Entrepreneurship and Venture Capital Research Centre - Director

▪ **Yongyuan, Y.**

- AERL Space Committee

**B. Community/ National/ International**

▪ **Cohen, S.**

- Canadian Climate Impacts and Adaptation Research Network – Science Adviser
- Okanagan Water Management & Climate Change – Co-Principal Investigator
- IPCC - participate in the planning for upcoming IPCC Fourth Assessment Report, Working Group II

- Panellist for debate on Kyoto Protocol ratification, BCIT School of Journalism (November 1, 2002)

▪ **Dorcey, A.H.J.**

- Governance Task Force, GVRD Sustainable Region Initiative – Member
- Working Groups for (a) Water; (b) Governance advising on development of Vancouver submission for CitiesPLUS competition – Member
- Canadian Institute of Planners – Member
- Accreditation Review Team for UNBC Planning Program – Member
- Planning Institute of British Columbia – Member
- PIBC Education Committee – Member
- Task Force on Continuing Professional Development Policy – Member
- Canadian Water Resource Association – Member
- Society of Professionals in Dispute Resolution – Member

▪ **Dowlatabadi, H.**

- UNU/IRVM global change integrated assessment initiative - Advisory Board
- Research Advisory Committee: BIOCAP, Canada. - Member
- Science Advisory Committee: Tyndall Center for Climate Change, UK. - Member

- Lead Author, Millennium Assessment Advisory Board, Working group II of the Fourth Assessment of the IPCC.- Member
- Integrated Assessment, Sweitz and Zeitlinger. - Co-Chief Editor,
- Editorial Board, Energy and Environment, Interscience.
- Editorial Board, Environmental Science and Policy, Elsevier Press.
- Editorial Board, Climate Policy, Elsevier Press
- More than 50 reviews for journals per year
- 12 reviews for granting agencies
- **Hall, K.J.**
- GVRD Stormwater Management - Member
- Editorial Board of Water Quality Research Journal of Canada - Member
- Society of Environmental Chemistry and Toxicology - Member
- Journal of Environmental Engineering & Science - (2002 - present) - Associate Editor
- Fraser River Estuary Management Program (FREMP) Water Quality Monitoring Task Force (1994-present) - Committee Member
- Fate of Contaminants in Burrard Inlet - Consultant to EVS Consultants (1995).
- Advisor to Okanagan Lake Fisheries Recovery Program (1995-present).
- Advisor to Water Quality Technology Program, Okanagan University College, Kelowna, (1994-present).
- Brunette Basin Issues and Actions Plan Work Group (1996- present)
- Brunette Basin Advisory Committee, GVRD – Member - Monthly meetings to follow action on the Watershed Action Plan (2000 to present)
- Greater Vancouver Regional District, Liquid Waste Management Plan, Environmental Monitoring and Assessments Committee – Member
- Greater Vancouver Regional District, Liquid Waste Management Plan, Brunette Basin Coordinating Committee – Member
- Science Advisory Panel for the Cruise Ship Industry, Began - Member (April 2001)
- B.C. Waterfowl Society (Reifel Refuge) - Director (2000- present)
- NCE Clean Water presentation in Boseno Italy
- Processing Centre, 4th Floor Rep
- Toxic Substance Research Initiative, Environment Canada, Trace Metal Review Committee – Member
- Canadian Aquatic Toxicity Workshop – Organizing Committee and coordinated judging of student papers and posters and gave out prizes, Whistler, BC (October 2002)



- Hall, K., C-J Beegle-Krause, L. Loehr, and K. George “Evaluation of the Effects of Cruise Ship Discharges on the Quality of Marine Sediments. Science Advisory Panel for the Cruise Ship Industry, Seattle, WA (August 2002). In “The Impact of Cruise Ship Wastewater Discharge on Alaska Water” pp. V-1 to V-12
- Hall, K., and A. Mearns. The Surface Water Microlayer of the Marine Environment and Potential Impacts of Wastewater Discharges from Cruise Ships. Science Advisory Panel for the Cruise Ship Industry, Seattle, WA, (August 2002). In “The Impact of Cruise Ship Wastewater Discharge on Alaska Water” pp. V-1 to V-11
- **Healey, M.C.**
  - Canadian Water Network, National Network of Centres of Excellence (Senior Scientist) - Board of Directors (2001-04)
  - MCRI “Coasts Under Stress Project” St. John’s, NF – SSHRC/NSERC Midterm Review Committee. (2002).
  - Peer reviews of MSS for the Journals Transactions of the American Fisheries Society and Behaviour and Environment Canada for their Threats to Water series
  - Independent Science Board for the Ecosystem Restoration Program of the CALFED Bay-Delta program in California – Member
  - Adaptive Management Forum of CALFED and the Anadromous Fish Restoration Program in California
- **Hinch, S.G.**
  - Editorial Duties (Journal of Fish Biology, Transactions of Ecological Applications, American Fisheries Society, Aquaculture)
  - Reviews for Granting and Research Agencies (NSERC Research Program, Oregon State University – College of Agricultural Science Research Program
  - Technical expert and advisor of the Biology Panel for International Elementary School Salmon Summit
  - National Radio and Live Web Interview: Country Canada
- **Kanllikar, M.**
  - Reviewer for Climatic Change, Risk Analysis, Global Environmental Change
- **Lavkulich, L.M.**
  - SHASTRI International Council (1993+) - Member
  - NATO/CCMS- European Union on Integrated Water Resources Development - Canadian Representative (2002 +)
  - NSERC – Industry Partnership Review and Site Evaluation – Saskatoon – Syncrude
  - NSERC – Industry Partnership Review - University of Guelph (Land fills)
  - NSERC – Industry Partnership Review – University of Alberta (Reclamation)

- Scientific Liaison, European Union IRES exchange – Water Resources (Brussels – UBC) – Membe
  - AQUANET - Influence of environmental factors and organic inputs on floc properties – Moncton Conference- Member
  - Manuscript Reviews (Can. J. Soil Science, Soil Science Soc. Amer. J., J of Environ Eng., J. Environ. Assess, Policy and Mangt
- **McDaniels, T.L.**
- Search Committee for CN Chair in transportation – Member
  - Health Canada- Panel for Risk Perception and Management Research Program – Member
  - Grant Reviews( US National Science Foundation, SSHRC, Alberta Heart Foundation
  - Decision Sciences area editor, *Risk Analysis*
  - Manuscript reviews (Environmental Science and Technology, Journal of Risk Research)
  - Education Committee, Society for Risk Analysis – Chair
  - International organizing committee, first World Congress on Risk – Member
  - Leader, facilitator and designer of two workshops conducted on behalf of Alberta Environment, Environment Canada and several NGO's regarding strategic planning for citizen involvement in underground carbon storage decision-making in Canada (January and March 2003)
- Workshop organizer regarding the World Congress of Risk and the role of the new *Risk analysis and Society* book, Society for Risk Analysis annual meeting, New Orleans, December 2002
  - Workshop participant for the Museum of Man, Ottawa and related cultural organizations on the role of risk analysis and decision analysis in setting priorities for heritage property conservation risk management in museums. New Orleans, December 2002
- **Robinson, J.**
- Program Committee, World Climate Change Conference, Moscow – Member (Sept 29-Oct 3 2002 )
  - Sustainable Enterprise Academy, Schulich Business School, York University - Faculty (2002- )
  - International Advisory Board for the Centre for Global Studies, University of Victoria - Member, (2001- )
  - Editorial Board, Integrated Assessment Journal, Baltzer Science Publishers, Amsterdam, the Netherlands - Member (2001- )
  - Editorial Board, *International Journal for Global Environmental Issues*, Inderscience Publishers, London, England – Member (2001)
  - Screening Committee, Initiative for the New Economy, Social Sciences and Humanities Research Council - Member (2001-02)
  - College of Reviewers, Canada Research Chairs Program, Ottawa - Member (2000-2002)

- Sustainable Region Initiative Energy Issues Task Group, Greater Vancouver Regional District -Member (2002- )
- Member, BC Climate Change Economic Impacts Panel, Government of British Columbia (2002- )
- Ecosystem-Based Management Framework Specialist Group, Coast Information Team – Member - established by the Provincial Government of British Columbia, First Nations, and environmental NGOs, forest products companies, and other stakeholder groups (2002- )
- Board of Directors, Westcoast Environmental Law, Vancouver - Member (2001- )
- Steering Group, HELIO International, Paris - Member (1999- )
- Advisory Committee, Envision Sustainability Tools, Inc. - Member (1998- )
- Advisory Council, David Suzuki Foundation - Member (1995- )
- Collaborative research with individuals and organizations in the community (a core goal of the Georgia Basin Futures Project), Review of application of Mark Jaccard for promotion to Full Professor, School of Resources and Environmental Management, SFU, Dec, 2002
- Review of paper for *Environmental Science and Technology* journal (June, 2002)
- Review of funding proposal to the Inter-American Institute for Global Change Research, Small Grants program (May 2002)
- Review of paper for *Journal of Environmental Management*, (May 2002)
- **Satterfield, T.**
  - Panelist for Review of Proposals to National Science Foundation's Research Program on Environmental Values
  - Panelist for Review of Proposals to Health Canada's Program on Risk Communication
  - Manuscript Reviews for the journals *Environmental Values*, *Ecological Economics*, *Journal of Anthropological Research*, *Women & Health*, *Human Ecology Review*
  - Book Reviews for *Alternatives*, *University of British Columbia Press*, and *Berg/Oxford Press*
  - Advisor to Risk Communication program for bioaccumulation of toxics through salmon consumption among Yakima Nation residents in western Washington
  - Presented a series of guest lectures at University of East Anglia's Centre for Risk Studies
- **Schreier, H.E.**
  - Member of Review Panel: Water for Food initiative International Centre for Tropical Agriculture (CIAT), in Cali, Columbia (March 5-11, 2003)

- Integrated Watershed management for rural development. RNRRC-Bajo, Renewable Natural Resources Research Centre, Ministry of Agriculture, Royal Government of Bhutan. Strategic Planning for National Watershed Program. (August 30-September 3, 2002)
- Advisor on Research Initiatives in Urban Water Resources Management. Landcare Research, Auckland New Zealand (Nov. 24- Dec 6, 2002)
- CBC Radio (Morning Side): Interview: drinking water and health risks in B.C. (May 27 2002)
- CBC Radio (Almanac) Water protection in British Columbia (June 20, 2002)CKNW Radio (Today) Vancouver's Drinking water and Drought (November 14, 200)
- Radio, Hamilton New Zealand. One-hour radio interview on Global Water Issues. (December 5, 2002), Hamilton, New Zealand
- Groundwater Review Panel; Langely Township Public Meeting, (October 9, 2002)
- Multi-media computer training program on Water Resources management. Yorito, Honduras April 11-14. Training for 35 Youth. Collaborative program with CIAT (Intern. Tropical Agricultural Research Centre (CIDA) & 5 day training program to CIAT collaborators in Central America on the production of a multi-media Watershed CD-ROM. (12 participants) in Tegusigalpa, Honduras, April 15-20, 2002
- Sustainable Regional Strategy: Water Issue Committee. Greater Vancouver Regional District October 2002-February 2003. Including: Presented
- Recommendations to the GVRD Sewerage and Sanitation Committee, June 18, 2003 and: Final review of overall strategy, July 3, 2003
- Schreier, H. 2002 Water quality monitoring and data evaluation. Part of a two week Training course for CIDA sponsored Egyptian Researchers, Vancouver, October 29, In: collaboration with Environment Canada, National Water Resources Institute (10 participants).
- Schreier, H. 2002 Urban Watershed Management. One day training course. Waitakere City Council, Whitakere, Auckland, New Zealand. December 3, 2002 (50 participants)
- Journal Paper Reviewed (Mountain Research and Development, April – August 2002 (Guest editor for special Issue of GIS applications in Mountains Water Resources Research, September 24, 2002-August 2003
- Book Review: G. Castell. 2002: Earthquake: Preparing for big one, Pacific Rim Earthquake Preparedness Program, Vancouver, 290 pp.
- Mountain Research and Development, May 2002, July 2002; Ambio, June 2002, Water Resources Research, September 24, 2002
- Research Grant Review: NSERC Strategic Grant, June 2002, July 2003
- **Vertinsky, I.B.**
- Canadian Research Chairs: member of the College of Referees
- Editorial Board (Journal of Cross Cultural Management, Journal of International Business, The International Public Management Journal)
- Executive Training (Guangdong Senior Executives Program, Korea Telcom Directors Program, Shanghai Telecom CIDA Program)

## Research

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### I. Faculty

- **Cohen, Stewart**

***Expanding the Dialogue on Climate Change and Water Management in the Okanagan Basin, British Columbia (January 2002 – March 2004)***

This two-year study, supported by the Climate Change Action Fund's Impacts and Adaptation program, is an assessment of the impacts of climate change on water resources in the Okanagan region of BC and implications for water management systems. Dr. Cohen serves as co-principal investigator for this collaborative study, which involves researchers from IRES, the Faculty of Forestry, Environment Canada and Agriculture and Agri-Food Canada. The first year of funding has supported a post-doctoral fellow in the Department of Forest Resources Management and an RMES Masters student.

An interim report, published in May 2003, summarizes work to date including downscaling of global climate models to create watershed-scale climate scenarios, calibration of the UBC Watershed Model to basin parameters, GIS land use mapping, a costing study of adaptation options and a study of water management institutions in the region. Work scheduled for the second year of the study includes completion of the hydrological scenarios and a crop water demand study. The study team will also engage stakeholders in a dialogue on the implications of the supply and demand scenarios for the region and options for adapting water management

practices to the possible climate change impacts.

Dr. Cohen will continue to serve as Co-Principal Investigator until submission of final report in 2004. Study team members will also prepare papers for submission to refereed journals. Collaboration with US-based partners on broader Columbia Basin topics will also continue, particularly at the University of Washington.

***Canadian Climate Impacts and Adaptation Research Network, BC Region***

Participation has been as Science Adviser for C-CIARN British Columbia, and as a speaker on impacts and adaptation methods and results at various fora, including university and public meetings (UBC, SFU, UNBC, Cranbrook), and a briefing for the Senate Standing Committee on Forestry and Agriculture in February 2003. C-CIARN BC has now established visibility with researchers and stakeholders in BC.

- **Dorcey, Anthony**

My personal research activities during the year were limited by the heavy demands of being the Director of the School of Community and Regional Planning (see attached Activity Report for details). My research continued to focus on sustainability governance. A book chapter was completed entitled "Sustainability Governance: Surfing the Waves of Transformation." It provides an overview of the evolution of approaches to sustainability

governance over the last three decades in Canada relating this to the theoretical literature and larger international context. The second half contains a more detailed examination of the experience in Greater Vancouver and proposes an adaptive approach to further development of sustainability governance that capitalizes on the current interest in innovations. Through the year I contributed to three activities where I could further advance my thinking and proposals through practical application: (i) Served on the Governance Task Force of the GVRD's Sustainable Region Initiative; (ii) Worked with one of my graduate students in providing the background paper on governance for Vancouver's CitiesPlus submission to the international competition on sustainable cities; (iii) Worked with students and the UBC Administration on assessing and strengthening the governance arrangements for Planning University Town.

A second major focus for my research was in leading and facilitating an extensive series of activities designed to celebrate SCARP's 50<sup>th</sup> Anniversary. These included various lecture series and workshops, which had the overall goal of identifying and developing the future directions for the School's teaching, research, capacity building, professional practice and service. These included a workshop addressing future directions for planning education, which involved academics, practitioners and students from across Canada, and has resulted in the journal article: Planning education for all seasons:

Integration and diversity in theory and practice

▪ ***Dowlatabadi, Hadi***

***Distributed Power Generation and System Reliability (with Hisham Zerriffi, Alex Farrell)***

With support from the Electric Power Research Institute and the Sloan & MacArthur Foundations we are concerned about electricity supply reliability. In times of war, attacking infrastructure is a common military tactic – and electric power systems are obvious targets. Since electricity cannot be easily stored or rerouted, supply must match demand. In an integrated electric system, a disruption can bring down large parts of the network. This can have severe economic consequences, and pose a threat to human life, as has been seen in a variety of conflicts (e.g., Bosnia). Moreover, the rise of organized and systematic global terrorism has demonstrated that an attack on an electricity system is an issue for all countries, not just for those undergoing conflict or at war. One possible way to mitigate the impacts of conflict and other stresses on electric power systems is to change the architecture of the system from the current paradigm of large centralized generation with long-distance transmission to a more distributed system with small generators located close to end-users. The goal of this research is to evaluate and quantify the reliability and economic implications of large-scale distributed generation in areas of conflict.

***Impacts of Simultaneous Market and Environmental Pressure on Restructuring of inter-dependent Industries (with Raul Pacheco)***





With support from the US NSF, we are looking at how Industrial restructuring in less industrialized countries has been associated with market opportunities created through globalization. Tanning and foot-ware industries have historically had a strong symbiotic relationship. However, technical change (e.g., man made materials), fashion, NAFTA and WTO have changed the landscape of foot-ware markets in N. America. These have changed the nature of economic links between these industries. Furthermore, an environmental disaster in Crystal Lake (downstream of Leon, Mexico) has put the local tanning industry under tight environmental scrutiny. This research compares development of tanning and foot-ware industrial complexes in Guadalajara and Leon to estimate the role of environmental pressures on industrial restructuring. We are particularly interested in whether size of firm and quality of product are critical variables in determining which firms are most capable of adapting to new operating milieu.

#### ***Adaptive Environmental Regulation (i)***

With support from the US NSF, I am looking into how to manage non-marginal changes in environmental regulation. These conditions are marked by incomplete and asymmetric information among the regulators and the regulated. This leads to poor goal setting and ideologically motivated instrument choice. I am trying to devise a new multi-stage approach to regulation that aims to utilize heterogeneity in innovation among the regulated to learn about feasible goals and appropriate instrument choice.

#### ***Adaptive Environmental Regulation (ii with Tim McDaniels)***

With support from the Aquanet NCE we are examining how the role of regulations and other factors in the spatial distribution of salmon hatcheries. Through this study we are hoping to devise more effective approaches to a future where risks from (and to) aquaculture are better managed and regulations can be adaptive in face of learning about the affected systems through time.

#### ***Household Response to Information and Prices in Energy Markets: Implications for Equity & Efficiency***

With support from the Resources for the Future, I am looking into the limits of markets. US Household data show that:

- 76% of households report being aware of energy savings information and labels on household appliances. Yet, more than 64% of US households do not use guides to energy savings when purchasing energy using appliances
- In the 95% of households who pay their own energy bills. Energy efficiency information guides the appliance choices of 37% of households.
- In the 5% of households who receive public assistance with their energy expenditures. In only 22% use energy efficiency guides in appliance purchases.



- That 16.5% of US households have residential energy costs exceeding 10% of their declared annual income; 3% of households (3.3 million) have residential energy costs in excess of 30% of their declared incomes.

Why do less than half of those who are informed about energy savings alternatives choose to use that knowledge? Why does facing full market forces only raise the proportion of those who use information to save energy expenditures from 22% to 37%? Why are expenditures of 10% of household income on residential energy insufficient market pressure to promote energy saving investments? What are the implications of the above for design of more equitable and efficacious public policy?

### ***Human Health and Global Change***

With support from the US NSF and the Exxon-Mobil Foundation, I have studied the various factors leading to prevalence of malaria since 1999. Over the past year we have continued our research and outreach activities. The research has been concentrated in three domains:

- “Contextual Determinants of Malaria” a book, co-edited by Casman and Dowlatabadi, based on papers and discussions at an international workshop organized by the editors.
- “Let them breath smoke:” a critical evaluation of climate policy impacts on exposure to air pollution in less industrialized nations

### ***Emergent Ethics/Norms of Applied Genomics (with Peter Danielson)***

We are developing models of democracy and interactive experiments aimed at understanding the dynamics of norm formation with respect to novel technologies such as applied genomics. We are examining context and path dependencies using three cases: bio-informatics, genetically modified fish and stem cell therapy.

### ***Scaling Impact Assessments (i)***

With support from the Canadian Environmental Assessment Agency) we are looking at how to improve impact assessment at a regional scale. Major projects are often initiated with the hope to attract follow-on development. As such they are "attractors." Environmental Assessments (EA) carried out at the level of such projects is meant "to include the cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out" (Canadian Env. Assessment Act, Sec 16(1)a).

We propose a methodology that estimates the cumulative impacts of a given project based on their power as an attractor. The strength of attractors (different types of projects) will be estimated using case studies of previous examples and the subsequent development process following from their implementation.

We propose to translate the above insights into a heuristic that is used to modify the vector of significant impacts assessed at the project level (current practice). This modification would be a vector of multipliers for each impact

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measured along the many relevant indicators. We plan to test the approach in a case study of the Kitimeot road and port proposal at Bathurst Inlet, Nunavut.

***Scaling Impact Assessments (ii in collaboration with Tim McDaniels)***

With support from the Aquanet NCE we are seeking to develop a clearer understanding of scale issues in regulation of salmon aquaculture on the BC coast.

▪ ***Hall, Ken***

**Biological Phosphorus Removal from Wastewater.**

With my graduate students, I have investigated the biochemical processes that regulate the biological removal of phosphorus from domestic wastewaters. We have also studied the use of redox potential to control the components of the biological phosphorus removal process in a sequencing batch reactor system. The biochemical models that were developed have been used extensively in understanding the nutrient removal from wastewater and improving the process.

This work resulted in nomination and subsequent appearance on the short list with Department of Civil Engineering at UBC for 2002 Stockholm Water Prize.

**Bioavailability and Bioconcentration of Water Pollutants.**

Studies have been conducted using fresh water leeches to bioconcentrate chlorinated phenolic contaminants to assess the level of pollution in the Fraser River. Leeches have been used

as environmental policemen to determine the leaching of woodwaste preservatives from lumber stored on the banks of the Lower Fraser River. The bioconcentration of chlorinated phenols were also monitored in pulp mill discharges using leeches as biomonitors.

**Water Quality Management on the Lower Fraser River.**

We have spent over 30 years monitoring the water quality conditions in the Lower Fraser River and its tributaries. Early studies investigated the water quality and sources of pollution to the Lower Fraser. Loadings of contaminants from sewage treatment plants, industries, stormwater runoff and agricultural drainage have been determined. More recent studies have focused on investigation of the relationship between non-point source contaminants in urban stormwater runoff and the intensity of land use (impervious surfaces and traffic). Detailed investigations have studied the cumulative effects of contaminants on urban streams and the availability of contaminants to aquatic organisms. Data collected from these studies have been used as case studies for CD-ROMs produced on watershed management and used in our 'at distance' courses in our Watershed Management Certificate Program.

**Limnological Studies in British Columbia.**

Studies have been conducted on nutrient dynamics and cycling in nutrient-rich lakes (eutrophic) in interior British Columbia. The

addition of chemicals (lime, ferric chloride) to precipitate nutrients and regulate the eutrophication process has been investigated. The use of fertilizer to increase the productivity of nutrient poor coastal and interior lakes, have been also investigated. These studies have involved an integrated research team of university and government personal to investigate all components of the aquatic food chain as nutrients were added to the water over the spring and summer seasons. Extensive investigations over 20 years have studied the energetics of meromictic (permanently stratified) lakes in interior British Columbia.

#### **Applied Environmental Engineering to Mitigate Pollution Problems.**

We have conducted both laboratory and field research into the use of lake aeration to improve water quality in eutrophic lakes. Factors that affect the efficient transfer of oxygen to water through hypolimnetic aeration have been investigated in detailed laboratory studies and the results used to design aeration systems for in lake use. We have also been using constructed wetlands, as a 'green engineering' method, to remove contaminants from leachates that come from woodwaste. Leachates from woodwaste have been characterized and the wetlands optimized (hydraulic retention time, water depth, nutrient addition) for contaminant removal.

#### ▪ **Healey, Michael**

On sabbatical at University of Rhode Island from Sept 2002

working on book on integrated management of coastal resources

Receipt of Fulbright Fellowship to support sabbatical project

#### ▪ **Hinch, Scott**

##### **Salmon Migration Research**

From 1992 to present, I have been conducting research examining the energetics, behaviour and survival of upstream migrating adult Pacific salmon in the Fraser River watershed. It has grown to be a collaborative effort between researchers at the University of British Columbia, Simon Fraser University, the Canadian Department of Fisheries and Oceans, the Pacific Salmon Commission and British Columbia Hydro. Our general objectives are to evaluate the effects of river environmental conditions on migrating salmon. Understanding patterns of energy use is very important because adult salmon stop feeding once they enter the river and rely solely on stored energy to complete migration and spawn. Any environmental feature that contributes to high energy use could thus contribute to enroute or prespawning mortality of the salmon. This research was funded through past NSERC operating and Strategic grants.

##### **Telemetry**

One of our main study approaches is the use of physiological telemetry. Radio transmitters that relay information on energy-use during swimming are surgically implanted into salmon enabling individuals to be tracked as they migrate up-river. We have conducted this work in several different river systems throughout the Fraser Basin and were the first group to quantify activity and measure energy

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use, in a habitat- and individual-specific fashion, in the field for migrating sockeye and pink salmon. We have found that habitat features and individual fish characteristics contribute to variability in migration behaviour, energy use and migration success. For instance, salmon migration was slowed and energy-use accelerated by complex flow patterns associated with river constrictions caused by islands, gravel bars and rock outcroppings. In contrast, if flows were linear and riverbanks parallel to one another, energetic costs were minimal. It appears that turbulent currents generate confusing migrational cues, which can lengthen migration paths and delay up-stream progress. We have also found that salmon seem to take advantage of pathways of reverse-flow that are associated with small eddies and river banks, to get forward assists and save energy. Telemetry observations at Hell's Gate, the most difficult point of passage along the Fraser River indicates that fish that don't adopt these types of energy saving behaviours, are unsuccessful at passing through this location and cannot continue up-river. Underwater video observations have confirmed these types of behaviours and the video results also suggest that some stocks are much more efficient than other stocks in their expenditure of energy. Using chemical body constituent analyses, we determined the total energetic costs of upriver migration for several stocks of sockeye salmon revealing that stocks which migrate long distances (500-1000km) have higher initial energy stores and are much more efficient (energy use per km) in their use of energy than those that migrate short distances. This supports the behavioural information that we have collected with telemetry and video.

With these types of body energy and behavioural field data, we have developed a salmon migration energetics model that tracks energy use from the start to completion of migration. This model can facilitate fisheries management in predicting the enroute mortality risk that migrating fish could encounter under a range of river conditions. If the model predicts high risk, then fisheries managers may opt to reduce harvest thereby lowering fishing mortality to compensate for higher migration mortality. We are currently exploring how salmon migration energetics may be affected by possible future climates.

In recent years in the Fraser River, adult Pacific salmon have begun entering rivers earlier than normal, and associated with this is extremely high mortality (>90%) prior to spawning. This unusual and unexplained recent change in migration behaviour has pushed some stocks to the point of collapse and the sustainability of others is severely threatened. Our current research program, funded through a 5-year NSERC Strategic Grant, brings together several scientists from academic and government laboratories with backgrounds in salmon ecology, behaviour, physiology, molecular biology and parasitology. Our general aim is to identify why this phenomenon is happening and determine its immediate and long-term consequences to the sustainability of salmon. To do this, we will conduct survey sampling, and laboratory and field experiments on normal and abnormal behaving migrants. Our findings will provide important information that will be used to help

the fisheries management agencies, our partners in this project, with their task of predicting future stock size for purposes of harvest and conservation. A better understanding of the causal factors driving migration timing and premature mortality may also suggest ways to mitigate the negative effects of this phenomenon.

### ***Research into Effects of Habitat Alteration on Ecology of Stream Dwelling Salmonids***

Another component of the research conducted in my laboratory is to study how natural and anthropogenically derived variability in habitat (as caused primarily by forestry practices) affects behaviour, stress, growth and survival of stream-dwelling trout and juvenile salmon. We investigated the role of nutrient levels and physical structural complexity (e.g. fallen trees that provide shelter) to the growth and survival of juvenile Coho salmon in small side channel streams in BC's lower mainland. Much of their natural streamside timber has been harvested so structural complexity is usually very sparse. A multi-stream survey revealed that nutrient-rich side channels produced larger sized fish but they did not produce substantially more fish than nutrient-poor channels. A whole-stream manipulation experiment revealed that with additions of structural complexity, survival of fish increased during winter months in a channel with little groundwater input but not in one with significant groundwater. Lack of in-stream shelter, a result of past logging, may thus be a

factor limiting coho production in surface fed side channels.

In these situations, the addition of woody debris may be a recommended management tactic. Little is known about responses of fish and habitat to forestry practices in non-coastal regions. One of our projects, carried out in the central interior region of British Columbia, focused on: a) an examination of the physiological stress responses of rainbow trout (*Oncorhynchus mykiss*) to clear-cut logging; and b) an evaluation of the impacts of clear-cut logging on stream temperatures and their consequences to fish growth. In part (a), acute and chronic stress indicators, comprising plasma cortisol, glucose and chloride concentrations, as well as interregal nuclear diameters and fish condition indices, were used to assess the health of fish in response to clear-cut logging using a synoptic survey approach. Streams were grouped into three logging categories: unlogged (controls), "newly logged" (clear-cut within 5-10 years), and "older logged" (harvested over 25 years ago). Newly logged streams had the greatest potential for sediment and temperature related impacts, while older logged streams had the greatest potential for impacts related to habitat degradation. None of our physiological indicators exhibited a biologically significant response to any of the logging treatments. In part (b), we examined stream temperature and fish growth and movement responses to clear-cut logging using a case study experimental approach, whereby four small streams (two treatments and two controls) were monitored prior to and following harvesting within the riparian zones. We found that our lake-headed streams did not exhibit increases in summer stream temperatures after logging took place despite the removal of >50% of the riparian vegetation.

Furthermore, rainbow trout in the “naturally warm” lake-fed treatment streams were larger and heavier across all size classes than trout in the “naturally cool” control streams. Mass movements of fish, which occurred largely in the spring, through study streams seemed unaffected by logging treatments. Overall, these results suggest that logging related impacts in the central interior of British Columbia may be more benign and consequently less harmful to stream dwelling fish when compared to coastal systems, especially if small lakes feed many of these streams.

- ***Kandlikar, Milind***

**Mitigating Air Pollution From Transportation In Urban India: A Comprehensive Assessment Of Alternative Fuel Systems (Collaborators: Madhav Badami. McGill University)**

There is revived interest in fuel alternatives to gasoline in transport sector in Industrialized Countries (ICs) and Less Industrialized Countries (LICs) alike. Environment concerns, national energy security consideration and perceived local economic opportunities have all contributed to this revival. This research project aims to inform policy-making and implementation with regard to alternative fuels in India. To this end, the project is performing a comprehensive assessment of alternative fuel systems in India’s urban transport sector. The assessment will include the evaluation of technical and economic alternatives, and comparative analyses of environmental, health, equity impacts arising from widespread use of alternative fuels such as Compressed Natural Gas (CNG),

Biofuels, and Low/Ultra-low Sulfur Diesel.

**Status:** Project was initiated in June 2003.

**Risk Perception in a Hydrogen Economy: A Case Study of Facility Location**

Hydrogen has the potential to be a crucial component of the fuel mix that can deliver sustainable power in the 21st Century. However, there are numerous technical, economic and societal challenges to overcome if hydrogen is to be as ubiquitous as fossil fuels. Like most new technologies the widespread use of hydrogen will be contingent upon the extent to which risks from hydrogen are socially acceptable. Hydrogen is a highly flammable gas and its storage and transportation on a mass scale are more than simply technical challenges. Adopting hydrogen will also require the public to “buy on” to the associated risks. There have been very few studies that address the question of public perception of risks from hydrogen. This study will use recent debates about the location of National Research Council’s (NRC) hydrogen fuel cell facility to examine questions about public perception of risk from hydrogen. (The facility is currently situated adjacent to UBC’s campus) The project draws on interviews with stakeholders - NRC staff, UBC administration and staff, and local residents--to understand how risk factors influenced decisions related to siting of the NRC research facility. It will provide a view into the complexity of siting hydrogen storage facilities with its intertwining considerations



of technical, regulatory and public perception issues.

**Status:** Approval from the Ethics Review Board at UBC was granted April 1, 2003. Project to commence in April.

### **Beyond Transaction Costs: A Study of the Impact of Information Technology on Rural Areas of Developing Countries.**

The past decade has seen the rise of India as a major global player in Information and Communication Technology (ITC). The spontaneous and giddy rise of the ITC sector has had a significant knock-on effect on the development debate in India. In an otherwise bleak picture of continuing poverty, and ineffective (if not disastrous) governance, and failed initiatives, ITC is seen as a beacon for change, and is being embraced as the new organizing principle for economic development well beyond the urban boundaries where it first emerged. Although anecdotal evidence on the role of ITC in poverty alleviation is becoming available, there is little systematic analysis of how ITC could influence economic development in rural India. This project is a study of how information technology could transform the farming sector in India. The project will evaluate several "e-initiatives" being developed with the intent of helping farming communities in India cope more effectively with market, environmental and climatic fluctuations.

**Status:** Initiated March 2003. Since this will be a long-term

measurement and evaluation initiative, I am in the process of developing collaborations in India.

#### ▪ **Lavkulich, Leslie**

Two major projects were completed over the period since the last annual report. The AQUANET Project on sediment water interactions was completed. The results confirm that both mineral and organic "wastes" from fin-fish aquacultural enterprises are sorbed onto mineral surfaces beneath and adjacent to the farm pens. The second project completed focussed on the integration model for coastal zone management that was developed in the coastal zone in southern Brazil (Patos Lagoon) at Rio Grande

The AQUANET Project has spurred on a re-focusing of the issues concerned with anthropogenic additions to the water-sediment column. This new initiative has two geographical foci. In Europe we are continuing our collaborations on the formation and mobility of floccules of anthropogenic agents (synthetic organics and metals) and natural sediments. The conditions favouring the formation of stable flocs in the Schelde (Belgium) have been found to be related to water quality conditions and salinity gradients. A similar project is planned for the estuary of the Fraser. The role of microorganisms in floc formation (biofilms) forms the basis of a continued study of the effects of agricultural run-off on the formation of these flocculated materials and their stability and movement. Ms. R. Maal-Bared will be studying this phenomenon in relation to water quality and human health concerns. This study is in conjunction with the watershed studies in the Lower Fraser, by Professors Hall and Schreier



Returning to a project initiated a few years ago, the formation of amorphous aluminosilicate (inogolite) in soil and drainage waters following forest land disturbance has been re-activated. With the concern of water quality (in this case monomeric aluminium) following forestland disturbance, there is increased interest in coupling soil processes and safe potable water. Ms. S. Grand will focus her Ph.D. studies on this emergent ecosystem health issue.

- **McDaniels, Tim**

**Aquanet Network, Salmon Aquaculture**

A research project funded by the Aquanet Network of Centers of Excellence program with Tim McDaniels and Hadi Dowlatabadi as investigators started and completed during the year. Its objective was to develop aspects of a risk management framework for salmon aquaculture. Five students were employed on the project, each doing independent research on aspects of salmon aquaculture, including Holly Longstaff, Sara Stevens, Daniel Galland, Patricia Keen and Kira Gerwing. Three papers have been completed in draft form, two masters' theses are under way, and two more papers are underway in draft. The project was awkward because the funding lasted only one year, and the gave us virtually no notice before the fiscal year started as to whether we had been successful in the grant competition. Nevertheless, the projects continued through the year and good results were achieved in the time and budgets. Presentations were given at a conference in Halifax in October, at a summit sponsored by the Aboriginal Fisheries Commission in March and others are planned.

## **Valuation**

Our research projects in conjunction with the Center for the Integrated study of the Human Dimensions of Global Change at Carnegie University continued apace. Our research projects this year included continuing work on a series of papers concerned with valuation approaches involving stakeholders, work on structured decision process, and a series of papers on adaptive learning and the role of objectives in adaptive decision process, as well as new work on salmon aquaculture (in a partnership with Aquanet), as well as ongoing support for a set of research papers regarding policy regarding air pollution and transportation in India, and a new project on rural energy planning in Africa. Participants in the research projects and papers included Tim McDaniels, co-investigator Robin Gregory, and a number of current and former students including Lee Failing and Dan Ohlson of Compass Resource Management, Joe Arvai of Ohio state University, Will Trousdale of EcoPlan International, Madhav Badami of McGill University and Jamil Bundalli, a new student in SCARP.

A new research grant on adaptive management in salmon aquaculture was awarded, to start on April 1, 2003.

- **Robinson, John**

The Georgia Basin Futures Project (GBFP) is entering its critical final year of research. As expected GB-QUEST is undergoing experimentation and research on QUEST users. The last phase of

the project will be to complete the community engagement and strategies research. We will be submitting an application for the renewal of the GBFP.

### **Digital Library**

The Georgia Basin Digital Library (GBDL) was once again funded by GEOIDE (GEOCOGNITO). This initial two-year project will set the stage for a more comprehensive proposal in 2003. This project will be coordinated with the successful NRCan. Our NRCan colleagues have also recently received funding for a complementary project (PATHWAYS). Both projects focus on folding information and landscape visualization into our digital library and exploring ways by which this information and the modeling tools we have developed may be combined in decision support processes.

### **CFI**

The Canadian Foundation of Innovation (CFI) proposal for the CIRS building has been submitted. This inter-institutional (UBC, BCIT, SFU and Emily Carr) project is planned to be located on the main campus at the Great Northern Way initiative. Funding has been obtained from partners (GVRD, BC Hydro, Western Diversification Canada and the Federation of Canadian Municipalities) for a feasibility study. The City of Vancouver has initiated a task force to assist with the project.

I am continuing my association with the Intergovernmental Panel on Climate Change as their institution moves to prepare the Fourth Assessment Report. I was

Coordinating Lead Author in the Second (1992-95) and Third (1998-2001) Assessment Reports.

### ▪ **Satterfield, Terre**

#### **National Science Foundation: Narrative Valuation in a Policy Judgement Context**

This is a collaborative three year project on new methods to elicit and represent environmental values in resource management contexts. The project work is consistent with the growing interest in value elicitation tools that (a) provide alternatives to methods that require all values to be translated into economic (e.g., willingness-to-pay) terms and (b) do a good job of representing the many social, ethical, scientific or economic value dimensions of a problem and thereafter link those components to the evaluation of a specific policy. Studies have been conducted in reference to water quality restoration, introduction of GM crops, restoration of salmon habitat, and management options when controlling for forest (spruce budworm) infestation.

#### **Foundation for Research in Science and Technology, New Zealand: Maori Perceptions of the Risks of Genetically Modified Organisms.**

This is a three-year collaborative project with Maori biologists; philosophers and international risk experts studying values involved in debates among New Zealand Maori populations about the introduction and use of genetically modified organisms. The studies involve both ethnographic interviewing and a national survey

, as well as the development of a decision-making framework that can address on equal footing technical and cultural risks.

### ***World Health Organization***

One-year study involving two surveys in Chile and Western China on perceptions of health and environmental risks. In both contexts, expert and nonexpert, rural and urban populations have/are being surveyed.

### ***Georgia Basins Futures Project***

This is a collaborative two-year study on cultural and mental models of sustainability as they apply to choice processing and future scenario development of planning options for the Georgia Basin.

### ***Asia Pacific Research Universities: Social and Ecological Equity in Protected Areas.***

Pilot funding was obtained to develop a collaborative project to examine the biological and social aspects of protected areas management in the Pacific Rim. Protected areas are an important contribution to ecological sustainability internationally, and are also cherished for a range of tourism, recreational, and ecosystem-service values. However, studies emphasizing biodiversity preservation also show that many protected areas are too small to sustain viable populations of larger species. Simultaneously, in situ and adjacent human communities are often identified as primary threats to the integrity of the reserve areas regardless of the cultural histories and economic options (and hence alternatives) available to locally impacted communities. The central research

objective is to determine the ecological and social implications of various management approaches both *within* and *surrounding* the boundaries of protected areas and to ask: To what extent can differences in conservation outcomes be attributed to different protected area management approaches?

### ***Resilient Communities Project:***

The Resilient Communities Project (RCP) is funded by the SSHRC under the Strategic Theme, "Exploring Social Cohesion in a Globalizing Era." This three-year collaboration of academics, First Nations peoples, and government is concerned with the social factors involved in the survival and resilience of British Columbia's coastal communities. The particular theoretical focus of our work is on the concept of 'social capital' and its impact on social and economic structures in a community. (In collaboration with Ralph Matthews, PI, Dept of Sociology, UBC)

#### ▪ ***Schreier, Hans***

### ***National Centre for Excellence on Clean Water (NCE): Nonpoint sources of pollution and cumulative effects in local watersheds***

There are 3 components to this research:

As part of the National Centre of Excellence (NCE) "Clean Water" program we have initiated an assessment of innovative stormwater detention ponds in urban watersheds. Given the rapid urbanisation on hillslopes and the

increased variability in extreme events most communities in the Lower Fraser Valley need to rethink their stormwater management strategy and change traditional designs to cope with the climatic changes. Ten different sites were selected in 4 different communities and 4 students and 2 interns are working on different aspects of water retention, sediment loads, contaminant, pollution remediation with wetland plants, bioavailability of metals and water balances. We are collaborating with Landcare Research in Auckland, New Zealand and are conducting the same research using the same techniques in both places and this should allow us to make valuable comparisons. The results of these two collaborative projects will be used to assist in developing new stormwater management guidelines in B.C. and New Zealand.

In collaborative between municipalities, regional districts, the Centre for Disease Control (CDC), Joule Microsystems Ltd and IRES 5 watersheds and two groundwater aquifers are being examined and the aim is to develop new techniques to examine cumulative effect of different land uses on water quality, sediments, aquatic and human health. Surface and groundwater are being monitored and land use activities are incorporated into a GIS database for modelling and scenario development. Linkages between land use, water chemistry, sediment transport and microbial dynamics are being investigated in a collaborative manner and the impact of metals, organic pollutants and metals is being investigated using chelex resins and SPMD's

bacterial contaminant using in-stream fluorescent sensors.

A specific aim of the project is to determine if in-stream fluorescence measurements can be used to determine inorganic and organic components in water supplies and isolate the bacterial portion from the other organic components in the suspended portion of the water column. The project is in collaboration with the B.C. Centre for Disease Control and Joule Microsystem Ltd. and is aimed at developing new advanced warning systems of bacterial contamination in streams and drinking water supply areas. Spatial distribution of contaminant sources is evaluated using GIS techniques and water quality and microbial typing will be linked with land use activities.

(All three projects are in collaboration with Ken Hall and 6 graduate students)

***PARDYP Project in the Himalayan Region:***

Integrated watershed research is carried out in this collaborative project between IRES and research teams in China, Nepal, India, and Pakistan. The focus of the research is to address water resource issues, land use impacts on water resources, land degradation, and food security. Examining land degradation and sediment transport processes, improving drinking water supplies, testing innovative water harvesting and low cost drip irrigation techniques, and determining ways to improve fodder production and soil fertility are the key research topics addressed in this project. This is a long term study sponsored by the International Development Research Centre (IDRC) and the Swiss Agency for Development and Cooperation (SDC) and is aimed

are sharing research results within the Himalayan Region. Scaling effects are addressed within and between watersheds, and WEB-based multi-media tools are used to share successes and to conduct collaborative research experiments.

### ***Youth Environmental Education in Honduras***

This CIDA sponsored project involved 30 youth (12-18 years of age) in the mountain community of Yorito, Honduras and has as a focus to teach the kids to become aware of environmental issues associated with water resources management. It involved the mapping of stream buffer zones, monitoring of water quality using macro-invertebrates, developing wetlands to partially treat sewage, and improving waste management practices in the village. At the same time the students are being trained to develop multi-media computer skills so that they can communicate their research skills in a more effective manner. This is a collaborative project between CIAT (International Centre for Tropical Agriculture) and IRES and is in its second year.

#### ▪ ***Ilan Vertinsky***

In the past year my research teams have completed several significant projects in the fields of forest management, international business and entrepreneurship. These efforts are being supported by research grants from NSERC, SSHRC, NCE, MCRI as well as government sources totalling more than \$350,000 annually. In the area of forest management, as part of the work at the Forest Economics and Policy Analysis Research Unit, we have completed work on the economics of

intensive silviculture and the impact of alternative institutional arrangements on sustainable forest management. We have developed optional strategies for silviculture under alternative objective functions. Our studies showed that the future state of the forest is likely to change considerably depending on which bio-diversity measurements are used and what time preferences (i.e. discount factors) are employed. We also showed that some policies dominate others under most reasonable formulations of the forest management problem. Furthermore we found that new institutional arrangements for forest management (e.g. zoning) can offer advantages in implementing sustainable forestry. These advantages stem only from the removal of unnecessary constraints and a reduction in transaction and enforcement costs. The first of several papers will be published in ITOR. Two papers were presented in Euro 2003 and the CORS 2002 meetings.

Another major project deals with the impact of the international regime on sustainability of forest management. In this project we have completed a study on the consequences of the implementation of the Kyoto Protocol on Canadian Forest products firms and the strategies they can adopt to exploit opportunities and mitigate the costs of the agreement. The report was distributed widely among firms and government agencies and is being prepared for publication.

We have completed two studies of SFM certifications, one of which has already been accepted for

publication in *Forest Policy and Economics*.

The project also dealt with trade in forest products and the impacts of trade barriers. A trade model was developed and used to advise the industry in its efforts to negotiate a new agreement with the U.S. The results of the work were presented in several briefings organized by DFAIT and one scholarly conference. The presentation will be included in a book chapter of selected papers edited by Alan Rugman of the University of Indiana. Another book chapter dealing with the impacts of trade barriers on sustainability is being prepared in response to an invitation by Sashi Kant of the University of Toronto.

In addition a chapter on designing institutions for sustainable forest management has been accepted as part of a comprehensive book about sustainable forest management to be published by the National Research Council of Canada.

We have also investigated under an FII contract the alternative ways of selling timber with a particular focus on auctions. We have modelled stumpage values as a function of regional and auction attributes and examined the potential impacts of extending the use of auctions in B.C.

In addition, we have examined under contract with the industry, alternative modifications for tenure policies.

A study for Environment Canada was completed on the effects of acid rain reduction on the

economics of forest in Eastern and Central Canada.

The work on International Business has focused on three themes:

1. The effects of mood on exchange trading,
2. Building trust in cross-border international joint ventures,
3. Environmental strategies: comparative studies

The results of the first study to be published in a leading psychology journal *Organizational Behavior and Human Decision Process* (OBHDP) reveals that bad moods sharpen the ability of traders in assessing information and reaching profitable decisions. They tend to be slightly over-pessimistic and as a consequence to invest too little. In contrast, traders in a good mood tend to be more careless, use less information and be over confident and thus may perform poorly. Traders in a neutral mood, though not as careful in their use of information as traders in a bad mood, do not suffer from either over optimism or pessimism and thus tend to achieve as good results as the traders in a bad mood. The results were obtained in two distinct series of experiments with 3 different types of mood manipulations.

The second study also involved an experimental design. It compared the behaviour of Japanese and Canadians in forming cooperative ventures. It shows that Japanese tend to be influenced by informal social processes, while the Canadian's prefer to rely on formal mechanisms (e.g. lengthy detailed contracts). Papers describing these experiments were presented in 3 conferences and the one presented at



the Academy of Management in Seattle was selected to the Best Paper Proceedings. Two papers have been submitted for publication (a revision was invited by OBHDP).

The third study focuses on the definition of environmentalism across nations and differences in firms' responses to environmental issues. A book chapter was recently published examining eco-sustainability orientation in China and Japan. An invitation to revise another paper examining the formation of green strategies in China was invited by the leading *Strategic Management Journal* (SMJ).

Two Ph.D. students completed their Ph.D. work this year working as part of the International Business Team.

The work in Entrepreneurship supported by the SSHRC MCRI grant has just begun this year but already has shown some significant results

We have been working on three themes:

1. Growing a high-tech cluster
2. Learning and innovation in small entrepreneurial firms
3. The geography of birth, death and performance of entrepreneurial firms

The first theme focuses on the evaluation of clusters and the role of government policy in ensuring their sustainability. The first study was prepared for the Premier's Technology Council and focused on the emergence of a biotechnology cluster in B.C. The study compared the state and

circumstances of the cluster's evolution and shows some critical deficiencies in the structure of funding of many biotech firms. The current focus of the study is to assess the role venture capitalists play in different stages of cluster growth.

The second theme focuses on innovation processes in small firms. It examines their R&D strategies, the use of internal and external sources of information and the role that inter-firm collaboration plays in the innovation process. Three papers have been presented in conferences. Two of the papers were submitted for publication. An invitation for revisions was received from the *Journal of Business Venturing*, the top entrepreneurship scholarly journal.

The third theme examines spatial entry decision of new ventures, the impact of company deaths upon birth rates and performance as a function of firms' characteristics at entry and location attributes. The studies use a unique database of firm-level income tax data matched to labour survey data. Using these databases we have completed the first study that shows the importance of firm death in creating opportunities for entry (i.e. birth). It also shows that death rates, however, serve as information, which entrepreneurs use to select among neighbourhoods.



▪ **Yongyuan, Yin**

***Canada-China Cooperation in Climate Change (October 2002-Dec. 2004)***

This multi-year research initiative involves Environment Canada, the University of British Columbia and many other Canadian and Chinese partners in an integrated assessment to examine vulnerabilities, impacts and adaptive (VIA) responses for a specific geographic region and sectors in North-eastern China. Funded by the Canadian International Development Agency (CIDA) under the Canada Climate Change Development Fund, the research will contribute to Canada's international climate change objectives and help China better address climate change vulnerabilities and adaptive capacity, while at the same time contributing to sustainable development and poverty reduction within the country.

***Confronting Global Warming: Enhancing China's Capacity for Carbon Sequestration, Integrated Assessment Component (July 2002-Dec. 2005)***

Supported by the Canadian International Development Agency (CIDA), this research is a collaborative partnership between AIRG at the University of British Columbia, the University of Toronto, Natural Resources Canada, the Chinese Academy of Sciences and other Chinese organizations. The purpose of the project is to build China's capacity in terrestrial carbon cycle

monitoring and modeling and to develop technology-based based integrated assessment tools and participatory multi-stakeholder methods that inform decision making aimed at increasing carbon sequestration while contributing to sustainable development. This project supported one UBC graduate student during 2002-2003.

***Integrated Assessments and Vulnerabilities and Adaptation to Climate Variability and Change in the Western Region of China (Feb. 2002-Dec. 2004)***

This project is part of the Assessments of Impacts of and Adaptation to Climate Change in Multiple Regions and Sectors (AIACC), a project funded by the Global Environmental Facility (GEF) and implemented by the United Nations Environment Programme. The ultimate aims of this project are to build scientific capacity in the region and suggest practical adaptation options and/or policies to effectively handle climate change impacts and ensure sustainable development. In this project, an integrated approach will be developed for identifying regional vulnerabilities to climate variations and change, and for prioritizing adaptation options to deal with climate change vulnerability. Countries and sectors involved include food supply, water shortage, land use conflicts, desertification, salinization, ecosystem deterioration, and railway construction in Tibetan permafrost region.

***Other Projects***

An impacts and adaptation methods training workshop was held in China

Research

Faculty

Relevant local economic and environmental conditions. Information in China was collected

An analysis of the impacts of carbon sequestration projects on regional economies in China is currently underway

Integrated Assessments and Vulnerabilities and Adaptation to Climate Variability and Change in the Western Region of China (Feb. 2002-Dec. 2004)

This project is part of the Assessments of Impacts of and Adaptation to Climate Change in Multiple Regions and Sectors (AIACC), which is a project, funded by the Global Environmental Facility (GEF) and implemented by the United Nations Environment Programme. The ultimate aims of this project are to build scientific capacity in the region and suggest practical adaptation options and/or policies to effectively handle climate change impacts and ensure sustainable development. In this project, an integrated approach will be developed for identifying regional vulnerabilities to climate variations and change, and for prioritizing adaptation options to deal with climate change vulnerability. Countries and sectors: Western China. Food supply, water shortage, land use conflicts, desertification, salinization, ecosystem deterioration, and railway construction in Tibetan permafrost region.

## II. Research Associates

### ▪ ***Carmichael, Jeff***

Jeff Carmichael was involved in several research activities during the period from April 2002 to March 2003, including activities concerning the Georgia Basin Futures Project (GBFP) and activities within Stewart Cohen's research project concerning Climate Change Impacts in the Okanagan. During this time, two papers were published concerning sustainable development research within the GBFP and another paper regarding the Georgia Basin QUEST model was submitted. He also made presentations concerning related process and results in conferences and workshops in Victoria, Ottawa, and in Maastricht, Holland. A central highlight of this period was the public release of a workshop version of the integrated assessment model called Georgia Basin QUEST, which is now being used in a series of workshops relating to the community engagement and research mandates of the GBFP

### ▪ ***Schendel, Emily Kate***

The period from July 2002 to March 2003 was a research period that brought closure of a major research project and the development of several new smaller projects. Kate Schendel joined the IRES team as the project co-ordinator for the AquaNet research initiative on environmental effects of fin fish net enclosure aquaculture. Of special interest was the role of the formation of "flocs", transient complexes of mineral organic and

metals that influence marine life viability. The focus was on floc properties and environmental distribution away from a marine net-pen fish farm. She completed the field sampling program, the development of laboratory techniques, and the final analysis. The results were presented in the poster competition at AquaNet II in Moncton NB, and also in a paper that was accepted with revisions. A second companion paper has been initiated and is currently in progress. These materials closed this arm of the AquaNet project. Other activities included a paper investigating tools to assess the potential for phosphorus movement from agricultural land to surface water, and a presentation co-authored with Les Lavkulich on Integrated Water Policy in Canada at the NATO/ CCMS Conference in Antwerp.

### ▪ ***Tansey, James***

Over the past year I have focused on completing a number of ongoing projects and on securing funding for future research. The manuscript for an edited volume on Industrial Ecology in Canada was submitted to UBC press and I secured an agreement with Earthscan to publish a book on

Sustainability and Environmental Assessment, co-authored with Bob Gibson and Selma Hassan. A number of articles from the Georgia Basin Futures Project were published this year and a book on the project is in progress.

My current research activities are directed towards analysis of a dataset that examines the relationship between social capital, social networks and health outcomes as part of a research project with Hertzman and Ostry from

Research

Faculty

Health Care and Epidemiology. This research is supported by a two-year grant from the Centre for the Integrated Study of Global Change, an NSF Center of Excellence. The broader goals of this initiative are to examine the concepts of resilience and adaptation in resource dependent communities in BC. I also remain actively involved in the Stuart Cohen's Okanagan project and received additional funding from the Climate Change Action Fund to develop socio-economic scenarios for climate change impacts on Robert's Bank.

### III. Research Funding

	<b>SUBTOTAL Managed by IRES (\$)</b>	<b>SUBTOTAL Managed by Other Unit (\$)</b>	<b>TOTAL (\$)</b>
<b>SSHRC</b>	490,420	260,000	750,420
<b>University of British Columbia</b>	307,267	2,190	309,457
<b>National Centres for Excellence</b>	261,123	172,473	433,596
<b>US National Science Foundation</b>	198,969	162,906	361,875
<b>Environment Canada</b>	192,140	-	192,140
<b>Shell Foundation</b>	154,920	-	154,920
<b>HRDC</b>	149,998	-	149,998
<b>Other Contributors</b>	142,525	274,863	417,388
<b>Natural Resources Canada</b>	120,000	-	120,000
<b>Forest Innovation Investment Resources Program</b>	93,270	108,996	202,266
<b>CIDA/IDRC</b>	109,070	-	109,070
<b>Province of British Columbia</b>	62,000	-	62,000
<b>NSERC</b>	31,000	525,750	556,750
<b>Canadian Foundation for Innovation</b>	-	97,263	97,263
<b>TOTAL</b>	<b>2,312,702</b>	<b>1,604,441</b>	<b>3,917,143</b>

The table provides a summary of the research funding received by Faculty members during the 2002-2003 fiscal year. It must be noted that more than 1.6M of the almost 4M dollars are administered through faculty members cross-appointed academic units. Particularly noteworthy is the amount from SSHRC and NSERC that are not assigned to the IRES

## Awards and Distinctions

- ***Dorcey, A.H.J.***

Nominated by SCARP students for the Margaret Fulton Award

- ***Healey, M.C.***

Recipient of Fulbright Fellowship to support work on Book on Ecosystem based management of coastal resources while on sabbatical at University of Rhode Island

- ***McDaniels, T.L.***

Recipient of the Distinguished Service Award from the Society of Risk Analysis

## Invited Presentations & Workshops

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### I. UBC

**Carmichael, J. J.** (2002) "Climate Change in an Integrated Assessment Tool: Georgia Basin Quest". Canadian Climate Impacts and Adaptation Research Network (C-CAIRN) Workshop, Liu Centre, UBC. 30 October 2002.

**Carmichael, J. J.** (2003) "Georgia Basin QUEST and Climate Change Issues". Presentation to Climate Change course led by Dr. Stewart Cohen, University of British Columbia, Vancouver, Canada. 27 March 2003.

**Carmichael, J. J.** (2002) "Georgia Basin Quest: Design Principles, Model Overview, and Research Paths". Sustainable Development Research Institute, University of British Columbia. 18 June 2002.

**Cohen, S.** (2002) Chair, Session on Climate Impacts and Adaptation Research at UBC, C-CAIRN BC, Liu Centre, October 30, 2002.

**Cohen, S.** (2002) "Perspectives on Developing Climate Change Scenarios", opening remarks, Climate Scenarios Workshop, C-CAIRN BC and Canadian Climate Impact Scenarios Project, Liu Centre, November 18, 2002.

**Dowlatabadi, H.** (2002) Sustainability, what does it mean?, RMES. UBC. March 14, 2002

**Dowlatabadi, H.** (2002) What to do about Uncertainty?, SDRI. UBC. April 2, 2002

**Dowlatabadi, H.** (2002) Health and Climate Change: implications for development, Appropriate Technology. UBC. July 10, 2002

**Dowlatabadi, H.** (2002) Appropriate Technology and Ethics of Engineering, Simon Fraser University: Engineers Without Borders. July 10, 2002

**Dowlatabadi, H.** (2002) Hot Air and Bad Air, Bridge Program, UBC. September 27, 2002

**Dowlatabadi, H.** (2002) What is policy research about?, Bridge Program, UBC. October 9, 2002

**Dowlatabadi, H.** (2002) Ideas for how Canada can meet her Kyoto targets, Liu Institute, UBC. November 6, 2002

**Dowlatabadi, H.** (2002) Is Kyoto bad policy?, Political Science, UBC. November 26, 2002

**Dowlatabadi, H.** (2003) Canada's climate policy, Moderator of panel including Rt. Hon S. Owen, and Rt. Hon D. Anderson, UBC. January 10, 2003

**Dowlatabadi, H.** (2003) ICAM presentation, Applied ethics, UBC. January 28, 2003

**Dowlatabadi, H.** (2003) Global change and emergent infectious diseases, Global Health, UBC. January 30, 2003

**Dowlatabadi, H.** (2003) Public health & development economics, Technology and Development, UBC. February 6, 2003

**Dowlatabadi, H.** (2003) Mind the gap: addressing engineering needs in developing countries, Engineers Without Borders, UBC. February 11, 2003

Invited  
Presentations  
and Workshops



**Dowlatabadi, H.** (2003) Kyoto: A Tale of Carts before Horses and Misguided Policy Assessments, Green College, UBC. March 11, 2003

**Dowlatabadi, H.** (2003) Modelling emergence of norms and ethics of applied genomics, Applied ethics, UBC March 18, 2003

**Dorcey, Anthony** (2002) "UBC-SCARP/ ACUPP national workshop on Future Directions for Planning Education", Robson Square – organized and led, May 2002

**Dorcey, Anthony** (2003) "A sustainable community?" UBC Research Awareness Week, Robson Square – organized and led panel, March 2003.

**Healey, M.** (2002) Panelist, workshop on international water issues, SFU/UBC. Vancouver May 21-22, 2002.

**Healey, M.** and L. Ricou (2002) "Alien species and alien landscapes, exploring the no-man's-land between science and literature" *IIGSP seminar*, Green College, November 6, 2002.

**Hinch, S.G.** (2002) "Salmon at their southern edge: current challenges to survival and prognosis for long-term sustainability." Jubilee Lecture Series, Faculty of Forestry, University of BC.

**Hinch, S.G.** (2002) "Energetics, behaviour and survival of upriver migrating adult salmon." *Conservation Biology Series*, Forest Sciences Centre, University of BC, Vancouver, BC.

**Kandlikar, Milind** (2002) "India: The Challenges of Governance", Special Lecture at the India Conference, UBC, November 15, 2002

**Robinson, J** "Funding Proposals" at "How to Write a SSHRC Strategic, INE or MCRI Grant Application, and get it funded", Liu Centre for the Study of Global Issues, UBC, April 30, 2002.

**Robinson, J** "GB-QUEST", presentation to the Mayor and Heads of Departments, City of Whistler, UBC, May 3, 2002

**Robinson, J** (2002), "QUEST to the Future", presentation at UBC Connects, UBC, June 24, 2002.

**Robinson, J** (2002) presentation on research funding, Department of Geography Professional Development Seminar for graduate students, UBC, Oct 3, 2002.

**Robinson, J** (2002) "Squaring the Circle: On the Very Idea of Sustainable Development", presentation to SDRI Interns, UBC, Oct 31, 2002.

**Robinson, J** (2003) "Energy, Climate Change and Sustainable Development: The Opportunity", presentation at Panel Discussion: Taking Action on Climate Change, with Minister David Anderson, UBC, Jan 10, 2003.

**Satterfield, T.** (2002) Guest lecturer for 2-day short course, *School of Occupational & Environmental Hygiene, Faculty of Graduate Studies*

**Schreier, H.** (2002) "Water Issues in the Developing World." Land & Community Noon Hour Speakers Series. Faculty of Agriculture, University of British Columbia, February 1, 2002.

**Schreier, H. S.** Brown, R. Bertbier. (2002) "The Himalayan-Andean Watershed Project: Comparison of 8 watersheds between the two regions." Seminar Presentation, Institute for Resources and Environment, UBC, May 17, 2002.

**Schreier, H.,** and S. Brown. (2002) "Himalayan-Andean Watershed Comparison. South-North Workshop: Globalization in the Mountain Environment: Conflicts and Opportunities." St. Johns College, University of British Columbia. June 24-25.

**Stephenson, L.K.** and **L.M. Lavkulich** (2003) Two solitudes: society and science. Oil Peak? What Now? Colloquim. IRES/ St. John's College, UBC.

## II. National

**Carmichael, J. J.** (2002) "Georgia Basin Quest Framework". *ESS Common Ground Workshop*. Natural Resources Canada, Ottawa. 4 February 2002.

**Carmichael, J. J.** (2002) "GB-Quest: Update and Discussion". *Georgia Basin Ecosystem Initiative*. Environment Canada, Airport Square, Vancouver. 8 May 2002.

**Carmichael, J. J.** (2002) "Georgia Basin Quest: Design and Modelling Principles and Overview". *Interdisciplinary Modeling Workshop*, Centre for Public Sector Studies, University of Victoria. 28 August 2002.

**Cohen, S.** (2003) "Climate Change Impacts in British Columbia" at WildBC event for educators, Surrey, BC. 2003-01-11.

**Cohen, S.** (2003) "Climate Change Adaptation", Speaker and panelist, Transportation & Climate Change Conference, University of Manitoba—Transport Institute, Winnipeg. 2003-03-12:

**Cohen, S.** (2003) Respondent, Climate Change Impacts on Water in the Georgia Basin/Puget Sound, Georgia Basin/Puget Sound Research Conference, Vancouver. 2003-03-31:

**Dorcey, A.H.J.** (2002) "Setting the Context: The Fraser River Estuary Past, Present and Future," *The Changing Face of the Lower Fraser River Estuary*, New Westminster, B.C. 18 April 2002.

**Dorcey, A.H.J.** (2002) "Making Waves in Planning Education," Canadian Institute of Planners, Annual Meeting, Burnaby, B.C. 26-29 May 2002.

**Dowlatabadi, H.** (2002) Ring Around the Top, Canadian Circumpolar Commission. April 10, 2002

**Dowlatabadi, H.** (2002) Beyond Optimization: muddling through!, Simon Fraser University. April 18, 2002

**Dowlatabadi, H.** (2002) Risk & Business, Fraser Milner Casgrain, Toronto. May 8, 2002

**Dowlatabadi, H.** (2002) Integrated Assessment of Climate Change – a 3 day teach-in, Ministry of Natural Resources, Ottawa.) May 14-16, 2002

**Dowlatabadi, H.** (2002) A Primer on Climate Change, Queen Mary Primary School September 24 2002

**Dowlatabadi, H.** (2002) Designing Policy to Reveal Uncertainty, Policy Research Institute 2002 Conference, Ottawa Canada. October 23, 2002

**Dowlatabadi, H.** (2002) Can we estimate the cost of Kyoto? , National Research Council, Vancouver. December 13, 2002

**Dowlatabadi, H.** (2003) Engineering for need vs. Engineering for want , Ethics and Engineering, Simon Fraser University. January 2, 2003

**Hall, K.J. and P. Keen.** (2002) "Emerging Issues in Water Quality: Endocrine Disrupting Chemicals and Stormwater Runoff in the Fraser River Estuary." Invited Presentation at *Symposium on "The Changing Face of the Lower Fraser River Estuary"*. New Westminster, B.C. April 18, 2002.

**Hall, K. and H. Schreier.** "Non-Point Sources of Pollution, Cumulative Effects and Mitigation in Urban/Rural Fringe Watersheds". Presented at Canadian Water Network Workshop "Connecting Water Resources: Bringing Research to Life" St. John, NB, March 2003.

**Healey, M.** (2002) "Competition and predation: effects of salmon culture." *AquaNet Environmental Theme meeting*. Guelph, May 14, 2002.

**Healey, M.** (2002) "Size, reproductive success and climate change." *International Fish Congress*, Vancouver, July 2002.

**Healey, M.** (2002) "Ecosystem Based Management of Resources", DFO-BCAFN dialogue session, Richmond, November 6 2002.

**Healey, M.** (2003) "Cumulative effects of human activity on coastal ecosystems: the sustainability challenge." *Atlantic Environmental Science Network meeting*. St. John, NB, March 2003.

**Hinch, S.G.** (2002) "Energetics, behaviour and survival of upriver migrating adult salmon: perspectives from physiological telemetry, underwater video and body constituent analyses." Seminar Series, Dept Biology, University of Windsor, Windsor, Ont.

**Hinch, S.G.** (2002) "Energetics, behaviour and survival of upriver migrating adult salmon: perspectives from physiological telemetry, underwater video and body constituent analyses." Seminar Series, Canadian Centre for Inland Waters, Fisheries and Oceans Canada, Burlington, Ont

**Kandlikar, Milind** (2002) Capacity Building for Climate Change, Department of Science and Technology, and Federation of Indian Chambers of Commerce and Industry, FICCI, New Delhi, Oct 22, 2002

**Kandlikar, Milind** (2002) "India: the Road Ahead, Conference on India's Development in the 21<sup>st</sup> Century", Vancouver, BC (November 2002)

**Kandlikar, Milind** (2003) "Coping with the Unintended Consequences of Technology, Ethics and Engineering", SFU, Vancouver, BC, (January 2003)

**McDaniels, T** (2002) invited keynote presentation titled: "Risk Communication as Decision Aiding" in: *Symposium on Communicating Research Results to Subjects of Exposure Assessments* at International Society for Exposure Assessment Joint Annual Meeting, July 2002.

**McDaniels, T** (2002), "Structuring A Risk Management Framework for Salmon Aquaculture" for Fish Farming and the Environment Summit, BC Aboriginal Fisheries Commission, Tsleil-Waututh Nation, North Vancouver, September 2002

Norstrom, S, E.K. Schendel, A. Feeman and **L.M. Lakvulich** "Influence of environmental factors and organic inputs on floc properties" Moncton Conference

**Robinson J** (2002), "QUEST and Systems Thinking", plenary presentation at Sustainable Enterprise Academy Business Leaders Seminar, Banff Conference Centre, Wed, May 14, 2002.

**Robinson, J.** (2002) "Energy, Climate Change and Sustainable Development: the Business Opportunity." Workshop presentation, *Sustainable Enterprise Academy Business Leaders Seminar*, Banff Conference Centre, Wed, May 15, 2002.

**Robinson, J.** (2002) "Decision Support Tools for Sustainability in the Georgia Basin." Presentation at *Governance for Sustainability workshop*, sponsored by the BC Ministry of Sustainable Resource

Management, Whistler, BC, June 2, 2002.

**Robinson J** (2002), "Energy, Climate Change and Sustainable Development", presentation to Minister Joyce Murray at Powertech, Vancouver, Thurs, June 6, 2002.

**Robinson J** (2002), "Energy, Climate Change and Sustainable Development: the opportunity" presentation at Canadian Gas Association Annual General Meeting and Executive Conference 2002, Vancouver, June 10, 2002.

**Robinson, J.** (2002) "Energy, Climate Change and Sustainable Development: the opportunity." Presentation at *Canadian Gas Association Annual General Meeting and Executive Conference 2002*, Vancouver, June 10, 2002.

**Robinson J** (2002), "Interactive Science for Sustainability in the Georgia Basin", presented to members of the National Round Table on the Environment and the Economy, Science World, Vancouver, August 22, 2002

**Robinson, J.** (2002) "Interactive Science for Sustainability in the Georgia Basin." Presented to members of the *National Round Table on the Environment and the Economy*, Science World, Vancouver, August 22, 2002; also presented at *Natural Resources Canada workshop on sustainability and hazard-related decision-making*, Vancouver, August 29, 2002.

Invited Presentations  
and Workshops

**Robinson, J.** (2002) "Interactive Science in the Georgia Basin: The GB Digital Library, the GB Futures Project and GB-QUEST." Presented at the *Environment Canada Policy Research Seminar Series*, Ottawa, Nov 8, 2002.

**Robinson, J.** (2002) "Interactive Science for Sustainability in the Georgia Basin." Presented at GBFP Workshop on Sustainability Initiatives in the Georgia Basin, Vancouver, November 15, 2002)

**Robinson, J** (2003) "Energy, Climate Change and Sustainable Development: The Opportunity", presentation at Thinking Through Sustainability lecture series, City of Richmond, Feb 13, 2003

**Schreier, H. and K. Hall.** (2002) "Watershed studies – the big picture perspective. Canadian Water Network, Regional meeting.' B.C. Centre for Disease Control. Vancouver, February 14-15, 2002.

**Schreier, H.** (2002) "Groundwater and Agriculture: Issues and Constraints." *Annual Meeting of the B.C. Groundwater Association*. Kelowna, B.C. March 2, 2002 Invited Keynote and Abstract.

**Schreier, H.** (2002) "How to minimize impervious surfaces in a watershed context. Planning Sustainable Communities: Workshop and Case Studies Focusing on Community Mapping." Community Mapping Network and Government Conservation Agencies. Langley, B.C. March 15, 2002.

**Schreier, H.** (2002) Comparing Andean and Himalayan Watersheds using Information Technology Tools.

International Development Research Centre, Ottawa. March 20, 2002.

**Schreier, H.** (2002) "Fishing for Solutions in Watershed Management." *Annual General Meeting of the Department of Fisheries and Oceans*. Harrison Lake Resort. April 9th, 2002.

**Schreier, H.** (2002) "Walkerton, Could it happen here: Water Issues facing municipalities." Presentation to the Lower Mainland Municipal Association (LMMA) Annual Meeting, Harrison Hot Springs. May 9th 2002.

**Schreier, H.** (2002) "Water and Agriculture : Harvesting the water before harvesting the crop." *Workshop and Think Tank on Water and the Future of Life on Earth*. Simon Fraser University Morris J. Wosh Centre for Dialogue. May 22-23, 2002.

**Schreier, H.** (2002) "Harvesting water before harvesting the crop." Public presentation: "Speaking of Science" Lecture Series, , SFU Continuing Education. Program, October 17, 2002.

**Schreier, H.** (2003) "Clean Water: Reconciling urban and agricultural expansion." "Making Waves: Water Wisdom for the Prairies." *Water Awareness Series*, One of three public events organized by Water Wisdom Inc. Winnipeg Manitoba, March 4, 2003.

**Schreier, H.** (2003) "Water Use and Agriculture – Global and local perspectives: Land Use Effects on watersheds in the Fraser Valley." *Annual General Meeting of the B.C. Agrologists*, March 29, 2003.

**Schreier, H., R. Bestbier, G. Derksen** (2003). "Land Use Impacts in the Elk Creek Watershed in Chilliwack; A multi-media public information system." Georgia Basin/Puget Sound Research Conference. USA/Canada Collaboration, Vancouver, March 31- April 4, 2003.

**Tansey, J.** (2002) "The Future is not what is used to be: advances and dimennas in Bioregional Planning." Canadian Association of Geographers AGM, Toronto.

**Yin, Y.Y.** (2002) "Vulnerability and adaptation assessment." Presentation at the *MOU Environment Canada and EPD of Hong Kong workshop*, October 2002, Vancouver, BC Canada.

### III. International

**Carmichael, J. J.** (2002) "Georgia Basin Futures Project: Project Overview, Quest Overview, and Agricultural Modelling Example". *European Forum on Integrated Environmental Assessment (EFIEA) Opening Conference*. Amsterdam, Holland.9 October 2002.

**Carmichael, J. J.**(2003) "Modelling Principles and Methods: Georgia Basin Quest." Seminar at International Centre for Integrative Studies. Maastricht, Holland. 10 February 2003.

**Carmichael, J. J.** (2003) "Participatory Integrated Assessment Within the Georgia Basin Futures Project". *European Forum on Integrated Environmental Assessment (EFIEA) Conference on Participatory Methods for Integrated Assessment*. Maastricht, Holland.12 February 2003.

**Cohen, S.** (2002). "Water Management and Climate Change in the Okanagan Basin, British Columbia". Ecosystem Connections Conference, American Fisheries Society, Spokane WA, 2002-04-29.

**Cohen, S.** (2002): Dangerous Anthropogenic Interference with the Climate System: Potential Impacts of Climate Change on Ecosystems and Society", 15<sup>th</sup> Conference on Biometeorology and Aerobiology Joint with the 16<sup>th</sup> International Congress on Biometeorology, Kansas City, 2002-10-27

**Cohen, S.** (2003): "Maintaining Stakeholder Commitments", Workshop on Methods in Participatory Integrated Assessment, University of Maastricht, Maastricht Netherlands. 2003-02-13.

Crossin, G., and **S.G. Hinch** (2002) "Bioenergetic efficiency, adaptive morphology and reproductive trade-offs in upriver migrating adult sockeye salmon: interdecadal variation and the influence of migratory distance and elevation." *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC



**Dowlatabadi, H.** (2002) Can't pay won't pay: quantifying the limits to household response in energy markets, CMU: Via telephone. March 13, 2002

**Dowlatabadi, H.** (2002) Health research at CIS-HDGC, Washington DC, Via telephone. May 9, 2002

**Dowlatabadi, H.** (2002) Households, information and response to market forces, International Energy Workshop, Stanford (delivered by H Zerriffi). June 19, 2002

**Dowlatabadi, H.** (2002), A sure bet to reduce CO<sub>2</sub>, International Energy Workshop, Stanford (delivered by Bin Shui). June 20, 2002

**Dowlatabadi, H.** (2002) Can we estimate the cost of Kyoto? , OECD Workshop on Climate Costs, Paris (presented by Gary Yohe) December 13, 2002

Farrell, A.P, C.G. Lee, K. Tierney, A. Hodaly, S. Clutterham, **M. Healey, S. Hinch** and A. Lotto (2002) "Field based measurements of oxygen uptake and swimming performance with adult Pacific salmon using a large mobile Brett-type respirometer swim tunnel." *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

**Hall, K., G. Mattu, Y. Yuan, D. McCallum, and P. Keen.** "Seasonal Variability in the Residence Time of a Shallow Lake Helps to Regulate Water Quality conditions in a Highly Urbanized Watershed". Presented at International Conference on Residence Time in Lakes: Science, Management, Education. Bolsena Italy (Sept. 29 – Oct 3, 2002)

**Healey, M.** (2002) "Science, international agreements, and salmon conservation." University of Rhode Island, Political Science, October 17, 2002.

**Healey, M.** (2002) "Quantifying conceptual models in ecological restoration." *Interagency Ecological Program Annual Meeting*. Asilomar, CA, February 2003.

**Healey, M.** (2003) "Sustainable Development in a global context." University of Rhode Island, Political Science, March 18, 2003.

**Healey, M.** (2003) Adaptive Management Forum, *Inter-river management*. California, Chair, March

**Hinch, S.G.**, and E. Standen (2002) "Using physiological telemetry to examine energy use, behaviour and survival of up-river migrating adult Pacific salmon." *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

**Hinch, S.G.** (2002) "Migrations of adult Pacific salmon." Seminar to Faculties of Forestry and Aquaculture, Swedish University of Agricultural Sciences, Umea, Sweden.



**Hinch, S.G.** (2002) "Forestry impacts on small coastal streams in British Columbia." Seminar to Faculties of Forestry and Aquaculture, Swedish University of Agricultural Sciences, Umea, Sweden.

**Hinch, S.G.** (2002) "Energetics, behaviour and survival of upriver migrating adult salmon." *Symposium on spatial movement of fish: field study, modelling, and management perspectives.* American Fisheries Society annual meeting, Baltimore MD.

Huang, Y. F., **Yin, Y.Y.**, G.H.Huang and I. Maqsood (2002) "User interactive decision support system for Xiangjiang River Basin management." *Flood Defence: Proceedings of Second International Symposium on Flood Defence (ISFD'2002)*, Sept. 10-13, 2002, Beijing, China.

**Kandlikar, Milind** (2002) Capacity Building for Climate Change, Department of Science and Technology, and Federation of Indian Chambers of Commerce and Industry, FICCI, New Delhi, Oct 22, 2002

Keen, P. and **K. Hall.** "Effectiveness of Public Participation in Integrated Watershed Management: Case Studies from British Columbia, Canada". Presented at International Conference on Residence Time in Lakes: Science, Management, Education. Bolsena Italy (Sept. 29 – Oct 3, 2003)

**Lavkulich, L.M.** and K.E. Schendel 2003. Water Basin Management in Canada. NATO Conference on

Transboundary Water Transport; Antwerp.

MacNutt, M.J., C.G. Lee, **S.G. Hinch** and A. P. Farrell (2002) "Stock specific differences in the swimming ability, metabolic rates and post-exercise metabolic recoveries of Fraser River salmon in relation to migration distance and temperature." *International Congress on the Biology of Fish.* University of British Columbia, Vancouver, BC.

**McDaniels, T.** (2002), "Structured Decision Process as an approach to deliberative policy analysis for Global change questions" invited presentation, Center for the Integrated Study of the Human Dimensions of Global Change, Annual Meeting, June, Pittsburgh

**McDaniels, Tim** (2002). Columbia/Wharton/University of Pennsylvania-sponsored Roundtable On "Risk Management Strategies in An Uncertain World" April 14-15, 2002, IBM Executive Conference Center, Palisades New York. Invited Discussant in Plenary Session and author of invited participant paper: "Risk management for extreme events: A Role for Adaptive Learning?"

Rand, P.S., **S.G. Hinch**, M.G.G. Foreman, J. Morrison, and J.S. Macdonald. (2002) "Migration success of adult sockeye salmon ascending the Fraser River, British Columbia: an analysis based on past, present and expected future river conditions." *International Congress on the Biology of Fish.* University of British Columbia, Vancouver, BC.

**Robinson, J** (2002) "Future Subjunctive: backcasting as social learning", invited presentation at The Natural Step, Wallingatan 22, Stockholm, April 17, 2002

**Robinson, J.** (2002) "Future Subjunctive: backcasting as social learning." Invited presentation at *Studies of the Future*, a seminar in memory of Peter Steen, Environmental Strategies research Group (fms), Stockholm. April 18, 2002.

**Robinson, J.** (2002) "Sustainable Development and QUEST", presentation at International Institute for Industrial Environmental Economics, University of Lund, Lund, Sweden, April 19, 2002.

**Robinson, J.** (2002) "Energy, Climate Change and Sustainable Development." Invited lecture, *Environmental Policy Forum*, Center for Environmental Science and Policy, Stanford University, Stanford, CA, May 9, 2002.

**Robinson J** and James Tansey, (2002) "Co-Production, Emergent Properties and Strong Interactive Social Research", presentation to Workshop on Interactive Social Science, sponsored by the Economic and Social Research Council, York, UK, July 11-12, 2002.

**Robinson, J** (2003), "Interactive Science in the Georgia Basin, Canada: The Georgia Basin Futures Project, the Georgia Basin Digital Library and GB-QUEST", invited keynote presentation at FIRMA and GOUVERNe Conference, sponsored by the European Commission, Barcelona, February 19-21, 2003.

**Satterfield, T** (2003) "The Vicissitudes of Risk" Oregon Health Science University January 2003

**Satterfield, T** 'Vulnerability and Justice in the Face of Risk' CEA-CREST

Graduate Program, California State University

**Satterfield, T.** (2002) Panellist for US NSF Initiative on Improving Methodological Practices in Qualitative Research. Arlington, VA

Shaw, A. and **J Robinson**, (2002) "Imbued Meaning: Science-Policy Interaction in the IPCC", presented at the Berlin Conference on the Human Dimensions of Global Environmental change, Knowledge for the Sustainability Transition, The Challenge for Social Science, Berlin, Dec 6-7, 2002.

**Schreier, H.** (2002) "Building bridges between communities in watershed management." *III MMSEA Conference on Resources and Indigenous Knowledge*. Chinese Academy of Sciences, Centre for Biodiversity and Indigenous Knowledge. Kunming Institute of Botany. Lijiang, Yunnan, China, August 25-28, 2002.

**Schreier, H.** (2002) "Watershed management: Scaling-up and scaling-out." *23rd FAO Workshop on Management of Mountain Watersheds*. FAO, European Forestry Commission, and IUFRO, Davos, Switzerland, Sept. 16-19, 2002.

**Schreier, H.** (2002) "The Urban Ecosystems : A New Challenge for Soil Scientists." Keynote address. The New Zealand Society of Soil Science Golden Jubilee Conference, Wellington New Zealand. November 25-29, 2002.

**Schreier, H.** (2002) "Applying GIS technologies to natural resources management." UNITECH, Institute

of Technology,  
Auckland, New  
Zealand.  
December 2,  
2002.

**Schreier, H.** (2002) "Urban and agricultural challenges to protect Water Resources." Environment Waikato, Hamilton, New Zealand. December 5, 2002

**Schreier, H.** (2002) "Watershed Management, Global Education via the Internet." International Centre for Integrated Mountain Development, *PARDYP Planning Workshop* Dec. 19, 2002.

**Schreier, H.** (2003). Linking Himalayan-Andean Watersheds. World Water Forum 3, Kyoto Japan. Special Session organized by UNESCO on "Water Resources Management in Mountainous Areas".

Shaw, A. and **J. Robinson.** (2002) "Imbued Meaning: Science-Policy Interaction in the IPCC." Presented at the *Berlin Conference on the Human Dimensions of Global Environmental change, Knowledge for the Sustainability Transition, The Challenge for Social Science*, Berlin, Dec 6-7, 2002.

Standen, E., **S.G. Hinch** and P.S. Rand (2002) "Moving water, swimming fish: using underwater videography to study the effects of hydraulic condition on energy use in up-river migrating salmon." *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

Steyn, D. and **J. J. Carmichael.** "Sustainability Research at the University of British Columbia: The Georgia basin Futures Project and the Quest model." Presentation to Joint Research Centre, Ispra, Italy. 18 June 2003.

Swart, R., **J. Robinson.** and P. Raskin. (2002) "Science, Sustainability and Scenarios: the Future of Thinking about the Future." Presented at the *Berlin Conference on the Human Dimensions of Global Environmental change, Knowledge for the Sustainability Transition, The Challenge for Social Science*, Berlin, Dec 6-7, 2002.

**Tansey, J.** (2002) "Social Adaptation and the Role of Social Capital in Resource Dependent Communities." Center for the Integrated Study of the Human Dimensions of Global Change AGM, Pittsburgh.

**Tansey, J.** (2002) "Limited Visions", "*Adaptive Research and Governance in Climate Change*" conference. Columbus, Ohio, December 17-19<sup>th</sup>, 2002.

**Vertinsky, I.** (2002) "A Knowledge-Based View of Environmental Performance in Different Cultural Contexts: Canada, Japan and China (with Branzei and Jennings), Academy of Management Annual Meetings, the ONE Division (Shared Interest Track), Denver, August 2002.

**Vertinsky, I.** (2002) "Cognitive Frames of Corporate Environmental Performance: Positional Differences and Similarities (with Branzei), The Academy of Management Annual Meetings, the SIM Division, Denver, (August 2002)

**Vertinsky, I.** The Impact of the International Regime on Sustainability: A Framework for Analysis. Proceedings of the SFM Network. November, 2002 p. 206-211 (with H. Nelson)

**Vertinsky, I.** Certification of Sustainable Forest Management Practice: A Global Perspective on Why Countries Certify. The Proceedings of the SFM Network Conference. November 2002 (with H. Nelson and C. Van Kooten)

**Vertinsky, I.** (2002) "Trusting International Joint Ventures Partners: Which components of Trustworthiness Matter for Canadian and Japanese Trustors? The 28<sup>th</sup> Annual Congress of the European International Business Academy (with Branzei and Camp), December 2002

**Vertinsky, I.** Benefits and Concerns about Intensive Management of Boreal Forests: Landscape versus Stand-level perspectives. Proceedings of the SFM Network Conference. 2002. pp 166-170 (with E. Kremar and A. Mathey)

**Yin, Y.** (2002) "Regional Sustainability and Decision Support System." Paper presented at *The Geoinformatics'2002*, June 1-3, 2002, Nanjing, China.

**Yin, Y.** (2002) "Integrated Approach for Sustainable Watershed Development." *CIDA Training Workshop "China - Canada: Flooding Control, Ecological Protection, and Sustainable Development"*, July 8-15, Wuhan, China.

**Yin, Y.** (2002) "Linking climate change with regional sustainability in the Georgia Basin." *Flood Defence: Proceedings of Second International*

*Symposium on Flood Defence (ISFD'2002)*, Sept. 10-13, 2002, Beijing, China.

**Yin, Y.** (2002) "Adaptation Evaluation Tools and Analysis Methods for Climate Change." *Proceedings of the Annual Meeting of the Chinese Ecological Economics Society and Western China Ecological Sustainability*. Lanzhou, China.

## Publications

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### I. Refereed

Arvai, J. L., **T. McDaniels**, and R. Gregory. 2002, Exploring a structured decision approach for fostering participatory space policy making at NASA. *Space Policy*, 18: 221-231.

David, A. J. Shortle, **J. Carmichael** and R. Horan, 2002. "Climate Change, Agriculture, and Water Quality in the Chesapeake

**Dorcey, A. H. J.**, S. Bicego, J. Friedmann, L. Sandercock, M. Senbel and S. Slack (2002) Planning Education for All Seasons: Integration and Diversity in Theory and Practice. *Plan Canada* 42(3).

**Dowlatabadi, H.** (2002) Scope and Scale In Integrated Assessment: lessons from ten years with ICAM. *Integrated Assessment*, 2(4):67-78.

Farrell, A.P., C.G. Lee, K. Tierney, A. Hodaly, S. Clutterham, **M. Healey, S.G. Hinch**, and A. Lotto. (2003) A large mobile Brett-type respirometer swim tunnel designed for adult salmon: field based measurements of oxygen uptake and swimming performance with Pacific salmon species. *Journal of Fish Biology* 62:64-84.

Fuchs, S.A., **S.G. Hinch**, and E. Mellina. (2003) Effects of streamside logging on stream macroinvertebrate communities and habitat in the sub-boreal forests of British Columbia, Canada. *Canadian Journal of Forestry*, 33:1408-1415

Giannico, G. R. and **S.G. Hinch**. (2003) Juvenile coho salmon seasonal movement in artificial side-channels. *River Research and Applications*, 19:219-231

Gregory, R. and **Satterfield, T.** (2002) Beyond Perception: The Experience of Risk and Stigma in Community Contexts. *Risk Analysis* 22 (2): 347-358.

**Hall, K.J.**, and T.G. Northcote (2002) Bimeromixis sharply intensifies primary processes in a normally unimeromictic small saline lake. *Verh. Internat. Verein. Limnol.* 28, in press.

**Healey, M.C.**, R. Lake, and **S.G. Hinch** (2003) "Energy expenditure during reproduction by sockeye salmon (*Oncorhynchus nerka*)." *Behaviour* 140:161-182.

**Hinch, S.G.**, E.M. Standen, **M.C. Healey** and A.P. Farrell. (2002) Swimming patterns and behaviour of upriver migrating adult pink (*Oncorhynchus gorbuscha*) and sockeye (*O. nerka*) salmon as assessed by EMG telemetry in the Fraser River, British Columbia, Canada. *Developments in Hydrobiologia*. 165:147-160.

H. Richard, D. Abler, J. Shortle and **J. Carmichael**, 2002. "Cost-Effective Point-Nonpoint Trading: An Application to the Susquehanna River Basin". *Journal of the American Water Resources Association*. 38(2):467-478

## Publications

Kalikoski-Coswig, D., **L. Lavkulich** and M. Vasconcellos (2002) The problem of fit between institutions, resources and activities in the management of artisanal fisheries in the estuary of Patos Lagoon, Brazil. *Marine Policy*. 26: 179-196

Kalikoski-Coswig, D., M.L. Asmus and **L. Lavkulich** (2002) Environmental analysis of the lower Camaqua River watershed (Brazil) – A study of planning and environmental education. *J. Environ Assess. Policy and Mangt.* 3: 273-297.

**McDaniels, T.**, R. Gregory, J. Arvai and R. Chuenpagdee, 2002, "Decision structuring to alleviate embedding in environmental valuation", *Ecological Economics*, in press

Mellina, E., R.D. Moore, **S.G. Hinch**, J.S. Macdonald, and G. Pearson (2002) Stream temperature responses to clearcut logging British Columbia: the moderating influences of groundwater and headwater lakes. *Canadian Journal of Fisheries and Aquatic Sciences* 59:1886-1900.

Pieters, R., S. Harris, L. Vidmanic, M. Roushorne, G. Lawrence, J. Stockner, H. Andrusak, K. Ashley, B. Lindsay, **K. Hall** and D. Lombard (2003) Restoration of Kokanee in the Arrow Lakes Reservoir, British Columbia: Preliminary results of a fertilization experiment. *American Fisheries Society Symposium* 34: 177-196.

Risbey, J., and **M. Kandlikar**, (2002) Expert Assessment of Uncertainties in detection and attribution of climate change. *Bulletin of the American Meteorological Society: Vol. 83* (9): 1317–1326.

Ritter, L., K. Solomon, P. Sibley, **K. Hall**, P. Keen, G. Mattu, and B. Linton. (2002) Sources, pathways, and relative risks of contaminants in surface and groundwater: A Perspective Prepared for the Walkerton Inquiry. *Journal of Toxicology and Environmental Health, Part A*, 65: 1-142.

Roberts, M, and **Satterfield, T.**, Henare, M. (in press) Whakapapa as a Classificatory Construct of Maori and its Implications for Genetic Engineering. *Journal of Pacific Studies*

**Robinson, J.** Future subjunctive: Backcasting as social learning. *Futures*, forthcoming.

**Satterfield, T.** Discrimination, Vulnerability, and Justice in the Face of Risk. *Risk Analysis* (in press)

S. Shui, B. and **H. Dowlatabadi**, (2003) "Consumer lifestyle approach to US energy use and the related CO2 emissions," Energy Policy, vol. in press.

**Schreier, H., K. Hall**, S. Brown, and R. Bestbier (2002) Distance education in watershed management: Linking graduate students with professionals. *Water Resources IMPACT* 4: 24-27.

**Schreier, H.** and S.. Brown. (2002) Scaling Issues in watershed assessments. *Water Policy* 3(1): 475-489.



Senbel, M, **T. McDaniels**, and **H. Dowlatabadi**, (2003) "The ecological footprint: a non-monetary metric of human consumption, as applied to North America," *Global Environmental Change: human and policy dimensions*, vol. 13, pp. 83-100.

Strachan, N. and **H. Dowlatabadi**, (2002) "Distributed Generation and Distribution Utilities," *Energy Policy*, vol. 30, pp. 649-61.

Standen, E.M., **S.G. Hinch**, **M.C. Healey** and A.P. Farrell (2002) Energetic costs of migration through the Fraser River Canyon, British Columbia, in adult pink (Oncorhynchus gorbuscha) and sockeye (O. nerka) salmon as assessed by EMG telemetry. *Canadian Journal of Fisheries and Aquatic Sciences* 59:1809-1818.

Swart, R., **J. Robinson**, and **S. Cohen**, (2002) "Climate change and sustainable development: expanding the options", forthcoming in special issue of *Climate Policy on climate change and sustainable development*.

**Tansey, J., J. Carmichael**, R. VanWynsberghe and **J. Robinson**. (2002) The Future is not what it used to be: Participatory Integrated Assessment in the Georgia Basin. *Global Environmental Change* 12(2): 97-104.

VanWynsberghe, R., J. Moore, **J. Tansey** and **J. Carmichael**, (2003), Towards community engagement: six steps to expert learning for future scenario

development, *Futures*, 35(3) 203-219.

**Vertinsky, I.** (with Branzei, Takahashi and Zhang) (2001) Corporate environmentalism and culture: A comparative field study of Chinese and Japanese executives. *International Journal of Cross-Cultural Management*, 1(3): 287-312.

**Vertinsky, I.** (with Zhou and Spencer) (2002) Strategic Trade policy with endogenous choice of quality and asymmetric costs. *Journal of International Economics* 56: 205-232.

**Vertinsky, I.** (with Zitsma, Wind and Branzei) (2002) The War of the woods: Facilitators and Impediments of organizational learning processes. *British Journal of Management* 13: 561-574.

**Vertinsky, I.**, (with Zhou and Zhang) (2002) Advertising trends in urban China. *Journal of Advertising* pp 73-81.

**Vertinsky, I.** (2003) Cooperative R&D and the Canadian Forest Products Industry, *Managerial and Decision Economics*. 24: 147-169 (with Nakamura and Nelson)

**Vertinsky, I.** Mood in Foreign Exchange Trading: Cognitive Processes and Performance. *Organizational Performance and Human Decision Processes*, (in press) (with F. Chan, K. Au, and D. Wang)

**Vertinsky, I.** Private and Self Regulation: A Comparative Study of Forest Certification Choices in Canada, the U.S. and Germany. Forest policy and Economics (forthcoming) (with B. Cashore, C. Van Kooten, E. Auld and C. Affolderbach)

**Vertinsky, I.** Modelling Alternative Zoning Strategies in Forest Mangement. ITOE. (fourthcoming) (with E. Kromar and C. Van Kooten)  
**Vertinsky, I.** The Economics, Demography and Cultural Implications of Globalization: The Canadian Paradox. Management International Review (forthcoming) (with W.T. Stanbury)

Von Westarp, S. S. Chieng, and **H. Schreier** (2003) Comparing low-cost drip irrigation, conventional drip irrigation, and hand watering in Nepal. *Agricultural Water Management*, in press, accepted for publication Jan. 30, 2003.

Wust, R.A.J., **L.M. Lavkulich** and R.M. Bustin (2002) A new classification system for tropical organic-rich deposits based on the Tasek Bera Basin, Malaysia. *Catena* 51: 133 - 163.

**Yin, Y.Y.** (2002) Adaptation evaluation tools and analysis methods for climate change *J. of Glaciology and Geocryology* 24(4): 426-432.

**Yin, Y.Y.**, Huang, Y.F. and Huang, G. H. (2002) An integrated approach for evaluating adaptation options to reduce climate change vulnerability in coastal region of the Georgia Basin. *GIS Science*,.

Yurkova, N., C. Rathgeber, J. Swiderski, E. Stackebrandt, J.T. Beatty, **K.J. Hall**, and V. Yurkov (2002)

Diversity, distribution and physiology of the aerobic phototrophic bacteria in the mixolimnion of a meromictic lake. *FEMS Microbiology Ecology* 40: 191-204.

Zeng, G.M., X.Z. Yuan, **Y.Y. Yin**, T.J. Hu and G. Yan (2002) Manufacture of liquid fuel by catalytic cracking waste plastics in fluidized bed. *Energy Sources*, in press.

Zerriffi, H., **H. Dowlatabadi**, and N. D. Strachan, "Electricity and conflict: advantages of a distributed system," *Electricity Journal*, vol. 15, pp. 55-65, 2002

## II. Non-Refereed

**Cohen, S.** and T. Neale (eds.). 2003. Expanding the dialogue on climate change & water management in the Okanagan Basin, British Columbia. Interim Report, Project A463/433, submitted to Climate Change Action Fund, Natural Resources Canada, Ottawa, 150 pp.

**Dowlatabadi, H.** "Risk and responsibility in foreign investment and international trade," *Canadian Competitive Record*, vol. 21, pp. 72-78, 2003.

**Dowlatabadi, H.**, M. Bazylewich, D. Boyd, M. Boyle, A. Elias, E. Fraser, Z. Harkin, **M. Kandlikar**, J. Krzyzanowski, W. Mabee, J. MacDonald, E. Mazzi, R. Pacheco, N. Rivers, K. Roberts, J. Robinson, A. Russell, P. Shepherd, and R. Van Wynsberghe, (2003) "A sustainable climate policy," Liu Institute for Global Issues, Vancouver.

Hertzman, C., **J. Tansey** et al, 2003, *Social Capital and Civil Society in Canada: Sociodemographic factors, Community Size, and Regional Variations*, On behalf of the Community Foundations of Canada for Heritage Canada

**McDaniels, T.** 2002 "Concepts and Analytical Tools for Risk Assessment and Risk Management" *Horizons* (online publication of the Government of Canada Policy Research Initiative) *Special Issue: A New World of Risk* October, 2002. ([http://policyresearch.gc.ca/page.asp?pagenm=v5n3\\_art\\_11](http://policyresearch.gc.ca/page.asp?pagenm=v5n3_art_11))

**Satterfield, T.** (2002) A Primer on Values Research in: M. del a Torre and R. Mason (eds), *Assessing the Cultural Significance of Natural Heritage*. Los Angeles, CA, The Getty Conservation Institute

**Schreier, H.** and S. Brown. (2002) Annual Report to IDRC on PARDYP Program. 12 pages.

**Schreier, H.** (2002) Elevating the status of Mountains. *Population Today*, Washington D.C. 3 pages

Whitelaw, G, R. Gibson, S. Hassan, **J. Tansey**, L. Krebs and D. Pokorny, (2002), Sustainability Theory, application and evaluation, in report the Canadian Environmental Assessment Agency Research and Development Programme.

### III. Books and Chapters in books

Bruce, J. and **S. Cohen**. Impacts of climate change in Canada. In H.

Coward and A. Weaver (eds.), *Hard Choices: Climate Change in Canada*, Wilfrid Laurier University Press, in press.

Casman, E. and **H. Dowlatabadi**, (2002) "The importance of context in defining malaria risk," in Contextual Determinants of Malaria, E. Casman and H. Dowlatabadi, Eds. Washington DC: Resources for the Future Press.

Casman, E. and **H. Dowlatabadi** (eds). (2002) Contextual determinants of malaria. resources for the future. Johns Hopkins University Press, Washington DC, 382 pp.

Casman, E., R. E. Basher, A. E. Beljaev, M. Birley, R. Bos, J. Cox, R. S. Desowitz, **H. Dowlatabadi**, B. Fischhoff, D. Focks, D. J. Gubler, R. Gusmao, C. Kidson, A. Kondrachine, R. S. Kovats, L. B. Lave, S. Litsios, J. Longstreth, W. Lutz, A. McMichael, M. G. Morgan, J. Mouchet, P. Reiter, D. R. Roberts, C. Sabatinelli, A. Shapira, M. E. Schlesinger, V. P. Sharma, K. M. Strzepek, T. Lin-Hua, and M. Wison, "Integrated Assessment of malaria Risk," in Contextual Determinants of Malaria, E. Casman and **H. Dowlatabadi**, Eds. Washington DC: Resources for the Future Press, 2002, pp. 349-57.

**Cohen, S.J.** (2002) Challenges and opportunities for scientist-stakeholder collaboration in integrated assessment of climate change in: *Implementing Sustainable Development. Integrated Assessment and Participatory Decision Making Processes*, H. Abaza and A. Baranzini (eds.). Edward Elgar Pub. Ltd., London, pp. 155-181.

**Cohen, S.J.** (2003) Impacts of Climate Change in: *Handbook of Weather Climate and Water: Atmospheric Chemistry, Hydrology and Societal Impacts*, T.D. Potter and B.R. Colman, (eds.). John Wiley and Sons, Inc., New York, Chapter 50.

**Cohen, S.**, B. Bass, D. Etkin, B. Jones, J. Lacroix, B. Mills, D. Scott and G.C. van Kooten. Regional adaptation strategies. In H. Coward and A. Weaver (eds.) (2003), *Hard Choices: Climate Change in Canada*, Wilfrid Laurier University Press, in press.

**Dorcey, A. H. J.** Sustainability Governance: Surfing the waves of transformation in: B. Mitchell (ed.) *Resource and Environmental Management in Canada: Addressing Conflict and Uncertainty*. Oxford, Oxford University Press, in press.

Fernandez, R.J., E.R.M. Archer, A.J. Ash, **H. Dowlatabadi**, P.H.Y. Hiernaux, J.F. Reynolds, C.H. Vogel, B.H. Walker, and T. Wiegand (2002) Global desertification: do humans cause deserts? in: J.F. Reynolds and M. Stafford-Smith (eds.) *Degradation and recovery in Socio-ecological systems: a view from the household/farm level*. Berlin, Dahlem University Press, pp. 297-323.

Fischhoff, B., I. R. Fischhoff, E. Casman, and **H. Dowlatabadi** (2002) "Integrated Assessment of malaria Risk," in Contextual Determinants of Malaria, E. Casman and H. Dowlatabadi, Eds. Washington DC: Resources for the Future Press. pp. 331-48.

Hassol, S. J., N. D. Strachan and **H. Dowlatabadi**. Energy Efficiency: A little goes a long way in: Energy without

Carbon. New York, Cambridge University Press, in press.

Kalikoski, D.C. and **Lavkulich, L.M.** 2002 The Forum of the estuary of Patos Lagoon: a framework for the analysis of institutional arrangements for conservation of coastal resources in southern Brazil. In: Paulo Freire Vieira (Org.), *Conservacao da diversidade biologica e cultural em zonas costeiras. Enfoques e experiencias na America Latina e no Caribe*. Florianopolis: APED-UNESCO

Lave, L. B. and **H. Dowlatabadi** (2002) "Reading the tea leaves: economic scenarios for the 21st century," in Contextual Determinants of Malaria, E. Casman and H. Dowlatabadi, Eds. Washington DC: Resources for the Future Press, pp. 260-9.

**McDaniels, T.** and M. Small (2002) *Risk Analysis and Society: An Introduction* in: T. McDaniels and M. Small (eds) *Risk Analysis and Society: An Interdisciplinary Characterization of the Field*. Cambridge University Press, forthcoming.

Northcote, T.G., and **M. C. Healey**. (Submitted 2002) Fundamental aspects of estuarine ecology relevant to fish-forestry interactions in: T.G. Northcote and G.F. Hartman (eds), *Fishes and Forestry – Worldwide watershed interactions and Management*. Blackwell Science, Oxford.

Northcote, T.G., and **S.G. Hinch**. Fish migration and passage in forested watersheds in: T.G. Northcote and G.F Hartman (eds), *Fishes and Forestry – Worldwide Watershed Interactions and Management*. Blackwell Science, Oxford, UK, in press

**Satterfield, T.** (2002) *The anatomy of a conflict: Identity, knowledge, and emotion in old-growth forests*. University of British Columbia Press.

**Schreier, H.** (2003). Challenges in Mountain Watershed Management. In: State of knowledge overview of global change research in mountain regions. *Advances in Global Change Research*, Kluwer Academic Publ. Dordrecht, Netherlands, (In Press, Oct. 2003)

**Schreier, H.** (2003). Mountain Wise and Water Smart Mountains as Water Towers, Banff Summit. Banff Centre for Culture and National Geographics. (in Press, Nov. 2003)

Sonesson, M., B. Messerli, and **H. Schreier** (2002) The Abisko Agenda: Research for Mountain Area Development. Rethinking Agenda 21, Chapter 13: Managing Fragile Ecosystems. A Contribution to the Year of the Mountains. *Ambio*, Special Edition 11, 105 pp

**Vertinsky, I.**, M. Nakamura and H. Nelson. (2002) Cooperative Rand and the Canadian Forest Products Industry. *Managerial and Decision Economics*, forthcoming.

**Vertinsky, I.** (with O. Branzei) (2002) Eco-sustainability Orientation in China and Japan:

Differences between Proactive and reactive Firms in: S. Sharma and M. Starik (eds), *Research in Corporate Sustainability*. Edward Elgar Academic Volume of Papers.

**Vertinsky, I.** Globalization and the Cultural Industries in Canada; Far from a borderless world. Culture of economy; Economics of culture, Bavarian American Academy, Munich (in Press) (with W. T. Stanbury)

**Vertinsky, I.** Designing Institutions for sustainable forest management. Towards sustainable management of the boreal forest, National Research Council of Canada, Ottawa (in press) (with H. Nelson, M. Luckert, M. Ross, and B. Wilson)

#### IV. Edited only

**McDaniels, T.** and M. Small (eds). (2002) *Risk Analysis and Society: An Interdisciplinary Characterization of the Field*. Cambridge University Press, forthcoming.

**Satterfield, T.** and S. Slovic *What's nature worth? Exploring narrative expressions of environmental values*. University of Utah Press, in press.

#### V. Book Articles

**Robinson, J.** and A. Mendis (2003) Opportunity or Illusion: The Vexed Promise of Dematerialization in: A. Dale and R. Cote (eds), *Industrial Ecology: Implications for Canada in the 21st Century*. Vancouver: UBC Press, in press.

**Robinson, J.** (2002) Changing the World: The Subversive Appeal of Sustainability Research *in*: J. Downey (ed), *Why We Need to Know: Essays by Leading Canadian Researchers*. Toronto: Canada Foundation for Innovation and Key Porter Books.

**Robinson, J.** (2002) Squaring the Circle? On the Very Idea of Sustainable Development, *in*: W. Chesworth, M. Moss and V. Thomas (eds), *Sustainable Development: Mandate or Mantra? The Kenneth Hammond Lectures on Environment, Energy and Resources - 2001 Series*. Faculty of Environmental Studies, University of Guelph, Guelph, Canada.

Rothman, D., **Robinson, J.** and D. Biggs (2003) Signs of Life: Linking Indicators and Models in the Context of QUEST *in*: H. Abaza and A. Baranzini (eds), *Implementing Sustainable Development - Integrated Assessment and Participatory Decision-Making Processes*. Cheltenham (UK): Edward Elgar, chpt. 8.

**Satterfield, T.** (in press). The Stigma of a Technological Accident in an African American Community *in*: B.H. Harthorn and L. Oaks (eds), *Revising Risk: Health Inequality and Shifting Perceptions of Danger and Blame*. Greenwood Press.

**Yin, Y.** Case study: climate change and regional sustainability in the Yangtze Delta, China" *in*: G. Knight and J. Jaeger (eds.) *Integrated Regional Assessment Volume*. START/CIRA/IHDP, forthcoming.

**Yin, Y.Y.**, Miao, Q.L. and Tian, G.S. 2003. Climate Change and Regional Sustainable Development: the Case of

Changjiang River Delta. Science Press, New York and Beijing.

## VI. Conference Proceedings

Crossin, G., and **S.G. Hinch** (2002) Bioenergetic efficiency, adaptive morphology and reproductive trade-offs in upriver migrating adult sockeye salmon: interdecadal variation and the influence of migratory distance and elevation. *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

**Dorcey, A.H. J.** (2002) Setting the Context: Fraser River Estuary: Past, Present and Future *in*: *Proceedings of Symposium on the Changing Face of the Lower Fraser River Estuary*, New Westminster, April 18, 2002.

**Hall, K** and A. Mearns (2002) The Surface Water Microlayer of the Marine Environment and Potential Impacts of Wastewater Discharges from Cruise Ships *in*: *Impacts of Cruise Ship Wastewater Discharge on Alaska Waters*. Science Advisory Panel for the Cruise Ship Industry, Seattle WA, Aug. 14-16, 2002. pp. VI-1 to VI-11

**Hall, K.J.** and P. Keen (2002) Emerging Issues in Water Quality: Endocrine Disrupting Chemicals and Stormwater Runoff in the Fraser River Estuary. Invited Presentation at *Symposium on "The Changing Face of the Lower Fraser River Estuary"* New Westminster, B.C. April 18, 2002.



**Hall, K.**, C-J. Beegle-Krause, L. Loehr, and K. George (2002) Evaluation of the Effects of Cruise Ship Discharges on the Quality of Marine Sediments in: *Impacts of Cruise Ship Wastewater Discharge on Alaska Waters*. Science Advisory Panel for the Cruise Ship Industry, Seattle WA, Aug. 14-16, 2002. pp. V-1 to V-12.

**Hinch, S.G.**, and E. Standen (2002) Using physiological telemetry to examine energy use, behaviour and survival of up-river migrating adult Pacific salmon. *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC

Holland, D., **Satterfield, T.**, Lachicotte, W. (2002) Personifications of the Future. *Invited Session: Annual Meeting of the American Association of Anthropology*, New Orleans, LA.

Huang, Y. F., **Yin, Y.Y.**, G.H.Huang and I. Maqsood (2002) User interactive decision support system for Xiangjiang River Basin management. *Flood Defence: Proceedings of Second International Symposium on Flood Defence (ISFD'2002)*, Sept. 10-13, 2002, Beijing, China.

**Kandlikar, Milind** (2003) Risk Management Framework for Adaptation to Climate Change in Conference Proceedings of FICCI conference on Climate Change in India, FICCI, New Delhi.

**Lavkulich, L.M.** and **H. Schreier** (2002) *Walkerton – Could it happen in B.C.* Vancouver Institute Lecture, Saturday February, Feb. 9, 2002. Invited Presentation, Abstract.

MacNutt, M.J., C.G. Lee, **S.G. Hinch** and A. P. Farrell (2002) Stock specific differences in the swimming ability, metabolic rates and post-exercise metabolic recoveries of Fraser River salmon in relation to migration distance and temperature. *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

Rand, P.S., **S.G. Hinch**, M.G.G. Foreman, J. Morrison, and J.S. Macdonald. (2002) Migration success of adult sockeye salmon ascending the Fraser River, British Columbia: an analysis based on past, present and expected future river conditions. *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

**Robinson, J.** (2002) Decision Support Tools for Sustainability in the Georgia Basin. Presentation at *Governance for Sustainability workshop*, sponsored by the BC Ministry of Sustainable Resource Management, Whistler, BC, June 2, 2002.

**Robinson, J.** (2002) Energy, Climate Change and Sustainable Development: the opportunity. Presentation at *Canadian Gas Association Annual General Meeting and Executive Conference 2002*, Vancouver, June 10, 2002.

**Robinson, J.** (2002) Energy, Climate Change and Sustainable Development: the Business Opportunity. Workshop presentation, *Sustainable Enterprise Academy Business Leaders Seminar*, Banff Conference Centre, Wed, May 15, 2002.



## Publications

**Robinson, J.** (2002) Energy, Climate Change and Sustainable Development. Invited lecture, *Environmental Policy Forum*, Center for Environmental Science and Policy, Stanford University, Stanford, CA, May 9, 2002.

**Robinson, J.** (2002) Future Subjunctive: backcasting as social learning. Invited presentation at *Studies of the Future*, a seminar in memory of Peter Steen, Environmental Strategies research Group (fms), Stockholm. April 18, 2002.

**Robinson, J.** (2002) Interactive Science for Sustainability in the Georgia Basin. Presented to members of the *National Round Table on the Environment and the Economy*, Science World, Vancouver, August 22, 2002; also presented at *Natural Resources Canada workshop on sustainability and hazard-related decision-making*, Vancouver, August 29, 2002.

**Robinson, J.** (2002) Interactive Science in the Georgia Basin: The GB Digital Library, the GB Futures Project and GB-QUEST. Presented at the *Environment Canada Policy Research Seminar Series*, Ottawa, Nov 8, 2002.

**Satterfield, T.** (2003) "Emotional Agency and Contentious Practice: Activist Disputes in Old Growth Forests" *Annual Meeting of Society of Psychological Anthropology*, San Diego, CA, April, 2003

**Satterfield, T.** and Levin, J. (2003) Risk Communication, Fugitive Values, and the Problem of Tradeoffs at Rocky Flats. *Annual Meeting of the Society of Applied Anthropology*, Portland, OR, March 2003

**Satterfield, T., Roberts, M., Henarea, M.** (2002) The Charisma of New Technologies and the Threat of the Non-natural to Cultural Integrity: Debates in New Zealand Maoridom about the Risks of GMOs. *Annual Meeting of the American Association of Anthropology*. New Orleans, LA November, 2002

**Schreier, H.** and **K. Hall** (2003) Non-point Sources of Pollution and cumulative effects. Presentation at *Canadian Water Network Symposium. National Workshop of the NCE*, National Centre of Excellence on Clean Water Network. St. John, New Brunswick, March 23-26. Power Point on Web.

**Schreier, H.** (2002) Groundwater and Agriculture: Issues and Constraints. *Annual Meeting of the B.C. Groundwater Association*. Kelowna, B.C. March 2, 2002 Invited Keynote and Abstract.

**Schreier, H.** (2002) Building bridges between communities in watershed management. *III MMSEA Conference on Resources and Indigenous Knowledge*. Chinese Academy of Sciences, Centre for Biodiversity and Indigenous Knowledge. Kunming Institute of Botany. Lijiang, Yunnan, China, August 25-28, 2000. Proceedings, 9 pp. Invited Plenary. Full paper on Web.

**Schreier, H.** (2002) Water and Agriculture: Harvesting the water before harvesting the crop. *Workshop and Think Tank on Water and the Future of Life on Earth*. Simon Fraser University Morris J. Wosh Centre for Dialogue. May 22-23, 2002 Invited presentation: Website Proceedings 12 pp.

**Schreier, H.** (2002) Watershed management: Scaling-up and scaling-out. *23rd FAO Workshop on Management of Mountain Watersheds*. FAO, European Forestry Commission, and IUFRO, Davos, Switzerland, Proceedings, 15pp.

**Schreier, H.** (2003) Closing the digital divide between Himalayan-Andean Watersheds. *World Water Forum 3*, Kyoto Japan. Special Session organized by UNESCO on "Water Resources Management in Mountainous Areas". March 16-18, 2003, UNESCO Publ., in press

Shaw, A. and **J. Robinson.**(2002) Imbued Meaning: Science-Policy Interaction in the IPCC. Presented at the *Berlin Conference on the Human Dimensions of Global Environmental change, Knowledge for the Sustainability Transition, The Challenge for Social Science*, Berlin, Dec 6-7, 2002.

Strachan, N. and **H. Dowlatabadi.** (2002) Distributed Generation and Path Dependency. *Delft Conference on Infrastructure Development*.

Standen, E., **S.G. Hinch** and P.S. Rand (2002) Moving water, swimming fish: using underwater videography to study the effects of hydraulic condition on energy use in up-river migrating salmon. *International Congress on the Biology of Fish*. University of British Columbia, Vancouver, BC.

Swart, R., **J. Robinson.** and P. Raskin. (2002) Science, Sustainability and Scenarios: the Future of Thinking about the Future. Presented at the *Berlin Conference on the Human*

*Dimensions of Global Environmental change, Knowledge for the Sustainability Transition, The Challenge for Social Science*, Berlin, Dec 6-7, 2002.

**Tansey, J.** The entirely unavoidable presence of uncertainty in science and decision-making, *The Changing Face of the Lower Fraser River Estuary*, FBC Conference, Vancouver, April, 2002.

**Vertinsky, I.** Trusting International Joint Ventures Partners: Which Components of Trustworthiness Matter for Canadian and Japanese Trustors? The Proceedings of the 28<sup>th</sup> Annual Congress of the European International Business Academy. 2002. (with Branzei and Camp)

**Vertinsky, I.** Benefits and Concerns about Intensive Management of Boreal Forests: Landscape versus Stand-level perspectives. Proceedings of the SFM Network Conference. 2002. pp 166-170 (with E. Kremar and A. Mathey)

**Vertinsky, I.** The Impact of the International Regime on Sustainability: A Framework for Analysis. Proceedings of the SFM Network. November, p. 206-211 (with H. Nelson)

**Vertinsky, I.** Certification of Sustainable Forest Management Practice: A Global Perspective on Why Countries Certify. The Proceedings of the SFM Network Conference. November 2002 (with H. Nelson and C. Van Kooten)

**Yin, Y.** (2002) Linking climate change with regional sustainability in the Georgia Basin. *Flood Defence: Proceedings of Second International Symposium on Flood Defence (ISFD'2002)*, Sept. 10-13, 2002, Beijing, China.

**Yin, Y.Y.** (2002) Adaptation Evaluation Tools and Analysis Methods for Climate Change. Keynote Speaker, *Proceedings of the Annual Meeting of the Chinese Ecological Economics Society and Western China Ecological Sustainability*. Lanzhou, China.

**Yin, Y.Y.** (2002) Vulnerability and adaptation assessment. Presentation at the *MOU Environment Canada and EPD of Hong Kong workshop*, October 2002, Vancouver, BC Canada.

**Yin, Y.** (2002) Integrated Approach for Sustainable Watershed Development. Invited speaker, *CIDA Training Workshop "China -Canada: Flooding Control, Ecological Protection, and Sustainable Development"*, July 8-15, Wuhan, China.

**Yin, Y.Y.** (2002) Regional Sustainability and Decision Support System. Keynote Speaker, Paper presented at *The Geoinformatics'2002*, June 1-3, 2002, Nanjing, China.

## VII. Technical Papers

**Healey, M.** (2002) Adaptive Management Forum. *Evaluation of Restoration for the Merced River, California*. CALFED Bay-Delta Program.

**Healey, M.** (2003) Adaptive Management Forum. *Evaluation of Restoration for Lower Clear Creek, California*. CALFED Bay-Delta Program.

**McDaniels, T.** (2002) *Values for Reservoir Operations Decisions*. Tennessee Valley Authority, report for TVA, 18 pages.

**Satterfield, T.** and Levin, J. (2002) *Public Science, Fugitive Values, and the Problem of Tradeoffs at Rocky Flats*. Report for the Department of Energy's Office of Science, Low Dose Radiation Research Program.

## VIII. VI. Hypertext and Multimedia Products

### *Multimedia CD Rom*

**Schreier, H., R. Bestbier, S. Brown, and K. Hall** (2002) *Agricultural Watershed Management*. A multi-media text book for an Internet distributed learning course. (With video, voice, images, GIS, Graphics and Text. CD-ROM @IRE).

**Schreier, H. S. Brown, and R. Bestbier** (2002) *The Himalayan-Andean Watershed Comparison Project*. Production of 9 CD-ROMs for 8 Watersheds in Nepal, Bhutan, China, Peru, Bolivia, and Ecuador. IRE, CIP, KIB, IDRC.

**Schreier, H. R. Bestbier, S. Brown, and D. Brooks.** (2003) *Water in International Development*. A multi-media CD-ROM Text Book for a Graduate level course delivered over the WEB, in press. IRC and IDRC.

**Schreier, H.**, R. Bestbier, G. Derksen, 2003. Agricultural Nutrient Management. Trends in the Lower Fraser Valley, B.C. 1991-2001. Multi-media CD-ROM – Nutrient budget modelling results. Environment Canada. @IRE

## IX. Working and Submitted Papers

**Carmichael, J., J. Tansey** et al (2002) Georgia Basin Quest: an Integrated Assessment Modelling Tool, Submitted to *Global Environmental Change*. (REVISE AND RESUBMIT)

Cooke, S.J., E.B., Thorstad, and **S.G. Hinch**. Activity and energetics of free-swimming fish: insights from electromyogram telemetry. Accepted with revisions. *Fish and Fisheries*. July 2003

Cooke, S.J., **S.G. Hinch**, and seven others. Abnormal migration timing and high en route mortality of sockeye salmon in the Fraser River, British Columbia. *Fisheries*. Accepted with revisions. July 2003.

Crossin, G.T., **S.G. Hinch**, A.P. Farrell, D.G. Higgs, A. Lotto, J. Oakes, and **M.C. Healey**. Energetics and morphology of sockeye salmon: effects of freshwater migratory distance and elevation. *Functional Ecology*.

Farrell, A.P., C.G. Lee, K. Tierney, A. Hodaly, S. Clutterham, **M. Healey**, **S. Hinch**, and A. Lotto. A large mobile Brett-type respirometer swim tunnel designed for adult salmon: field based measurements of oxygen uptake and swimming performance with

Pacific salmon species. *J. Fish Biol.*, in press.

Gregory, R., B. Fischhoff and **T. McDaniels**, 2002, "Acceptable Input: Creating Useful Deliberative Processes". Working paper

Kalikoski, D and **Satterfield, T.** 'On Crafting a Co-management Arrangement in the Estuary of the Patos Lagoon (Brazil): Opportunities and Challenges Faced through Implementation.' Targeting for Marine Policy

**Kandlikar, Milind** & Madhav Badami (2003) India's Fuel Alcohol Program: Unanswered Questions, and Unquestioned Answers.

**McDaniels, T.** and R. Gregory, 2002, "Learning as an objective within structured decision processes for managing environmental risks," submitted to *Environmental Science and Technology*, under review

**McDaniels, T.** and R. Gregory, 2002 "Concepts and Practice for Prescriptive Decision Aiding" submitted to *European Journal of Operational Research*, under review.

**McDaniels, T.** and *W. Trousdale*, 2003, "Evaluating Losses of Traditional Native Values With Multiattribute Value Assessment" Working paper.

**McDaniels, T.**, H. Dowlatabadi and S. Stevens, 2003, "Multiple Scales and Regulatory Mismatches In Global Change Processes: The Case of Salmon Aquaculture" Working paper.

**McDaniels, T.** and *H. Longstaff*, 2003 "Structuring Hierarchies of Objectives for Risk Management Decisions At Multiple Scales" working paper.

## Publications

Mellina, E., **S.G. Hinch**, and J.S. Macdonald. 2000. Physiological stress responses of stream dwelling rainbow trout (*Oncorhynchus mykiss*) to clear-cut logging in the central interior of British Columbia.

Pearson, M., and **M.C. Healey**. Life History Characteristics of the Endangered Salish Sucker (*Catostomus* sp.) and their Implications for Management. *Oikos*, accepted.

Pearson, M., and **M.C. Healey**. Life History of the Endangered Noolksack Dace (*Rhinichthys* sp.): Implications for Management. *Environmental Biology of Fishes*, in review.

Risbey, J. and **Kandlikar, M** et al (2003). Detection and Attribution of Climate Change: Do Experts and Models agree?

**Robinson, J.** and **J. Tansey**, (2002), Co-Production, Emergent Properties and Strong Interactive Social Research: The Georgia Basin Futures Project, submitted to Science and Public Policy.

**Robinson, J D.** Rothman, **J. Tansey**, R. VanWynesberghe and **J. Carmichael**, 2001. "Future Subjunctive: bringing together expert knowledge, public values, and the simulation of sustainable futures in the Georgia Basin Futures Project". Submitted to Technological Forecasting and Social Change.

**Satterfield, T.** (under review) "Risk Communication, Fugitive Values, and the Problem of Tradeoffs: Diagnosing the Breakdown of Deliberative Processes" *Science, Technology, and Human Values* (submitted)

**Satterfield, T.** (under review) "Emotional Agency and Contentious Practice: Activist Disputes in Old Growth Forests" *Ethos: Journal of Psychological Anthropology* (submitted)

Schendel, K., **H. Schreier, L.M. Lavkulich** (2003). Linkages between Phosphorus index estimates and environmental quality. *J. Soil and Water Conservation* (submitted for review Jan 29, 2003)

**Tansey, J.** 2003, Looking for Durkheim: another critical review of social capital, submitted to *Social Science and Medicine*.

**Tansey, J.** and R. Gibson, (2002), Incorporating Sustainability Measures into Environmental Assessment, in progress for *Environmental Impact Assessment Review*. **Tansey, J.** (2003) Industrial Ecology: Panacea or false prophet? Submitted to *Environment and Planning B*.

**Tansey, J.** (2002), Making the most of mumbling data: a review of recent advances in Grounded Theory, submitted to *Progress in Human Geography*.

**Tansey, J.** (2002), Available light, mumbling data: dilemmas related to interdisciplinary and action oriented research in progress.

**Tansey, J.** (2002), Institutional theory and sustainable development: a conceptual framework based on institutional theory, GBFP Working Paper.

**Vertinsky, I.** Institutional Change: The Emergence of Private Ownership in China *Journal of Business Research* (with Li and Zhou) forthcoming. \*\*\* other authors initials? Date?

**Vertinsky, I.** The Economics of Certifying Unobservable Qualities. IEE Engineering. (submitted) (with Zhou)

**Vertinsky, I.** Death, Birth and the Pursuit of Competitive Advantage: The Geography of Entrepreneurial Entry. A.M.J. (submitted) (with A. Pe'er)

**Vertinsky, I.** Integrity or Benevolence? Establishing Initial trust in International Joint Venture. JIBS (submitted) (with O. Branzei and R. Camp)

**Vertinsky, I.** The Formation of Green Strategies in Chinese Firms: Matching Corporate Environmental Responses to Individual Values and Principles. Strategic Management Journal (under third review) (with O. Branzei, T. Ursacki and W. Zhang)**Vertinsky, I.** Initial Trust in Collaboration within and across Cultures: The Role of Formal and Informal Assurances in Canada and Japan. Organizational Behaviour and Human Decision Processes. (under second review) (with O. Branzei and R.Camp)

**Vertinsky, I.** Innovative Strategies of Small Firms: Scope, Significance, Implementation Approach, and Impact. Journal of Business Venture. (submitted) (with O. Branzei)

**Vertinsky, I.** Collaboration Portfolio Designs for Small Manufacturing

Firms: Impacts on Absorptive Capacity and Innovation Performance. Organization Science (submitted) (with O. Branzei)

Von Westarp, S., **H. Schreier**, B.B. Shah, **L.M. Lavkulich**. (2003) Nutrient budget dynamics in intensively used agricultural soils in Nepal. Soil Science (Submitted Feb. 10 2003)

## Publications



## Highlights

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### ***Royal Visit – October 07, 2003***

As a part of the visit to the University of British Columbia to celebrate her Royal Highness Jubilee, Prince Philip, Duke of Edinburgh requested a meeting with students involved in environmental studies. RMES was requested to prepare a program for his Royal Highness. Coordinated by Leslie Stephenson, four interactive displays were presented to the Prince (a) Human Impact on a Rapidly Urbanizing Region (b) Impact of Technology on Global Fisheries (c) Human Impact on Coastal Zones and Marine Mammals, and (d) Ecotourism. A total of fifteen students welcomed the Duke of Edinburgh and enjoyed an open dialogue with the Prince. The IRES thanks the student volunteers: Amy Poon, Matt Muraro, Erika Paradis, Andrea Coombs, Manny Villanueva, Yvette Rizzo, Jamie Ross, Simone Magwood, Cheung (William) Wai-Lung, Eny Buchary, Caroline Gravel, Anton Pitts, Dorothee Schreiber and Lea Elliott.

The Duke was greeted and guided by Sashi Enarth and Leslie Stephenson. The Institute received a hand written note of appreciation from his Royal Highness, Prince Philip, Duke of Edinburgh.

### ***Highlights 2002 – 2003***

- The Institute completes its first year as a combined unit
- The support staff compliment is in place with new duties and functions defined
- Interest in the Resource Management and Environmental

Studies graduate program remains high

- Welcome addition to the teaching staff is Dr. Milind Kandlikar
- Dr. Scott Hinch is successful in obtaining \$1.1 M NSERC Strategic grant
- Research activity and scholarly publications continue
- Fourteen students graduate from the RMES program
- Alumni survey provides positive response to their UBC experience
- Awards received by IRES include:
  - o Mike Healey – Fulbright Fellowship
  - o Tim McDaniels – Distinguished Service Award – Society of Risk Analysis
  - o Leslie Stephenson – UBC Sustainability Award
- International activities and requests for international collaboration increase
- RMES contribution to the Royal visit was a success



## **Future Directions**

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### **I. AERL**

The successful application to the Canadian Foundation for Innovations and the British Columbia Knowledge Development Fund, with a major commitment by the Dean, Faculty of Graduate Studies has resulted in the implementation of a new facility for the Institute. The Aquatic Ecosystem Research Laboratory (AERL) will be shared by the Fisheries Centre. The exciting venture will provide adequate and quality space for faculty, student and staff offices, and the opportunity for state-of-the-art facilities for applications of emerging information technologies. Plans have evolved and it is anticipated that the new facility, to be located at 2202 Main Mall, will begin construction in the autumn of 2003, with occupancy in early 2005.

### **II. Strategic/ Academic Plan**

As a result of the merger of the former Sustainable Development Research Institute and the Institute for Resources and Environment the increase in faculty numbers, the increase in collaborative activities with cognate academic units at UBC and the growth in numbers of graduate students, a new academic plan is being drafted. Discussions on the draft of the plan are on going. Special attention is given to replacement of Faculty in areas of subject matter that will result from faculty retirements. The second criteria is to ensure that a core compliment of faculty will be

retained to meet the mission, goals and mandate of both the Institute for Resources, Environment and Sustainability and that of the Resource Management and Environmental Studies graduate program.

Future  
Directions

## Epilogue

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The Institute continues to accept the challenges “To initiate and foster integrated and holistic approaches to ecological and socio-economic teaching and research on science, policy and institutional arrangements central to sustaining natural resources and the environment”.

The Institute will:

1. continue to provide leadership and innovation in interdisciplinary and transdisciplinary education and research at the University of British Columbia and to actively foster the further development of the Resource Management and Environmental Studies graduate program,
2. continue to initiate, develop and strengthen research programs incorporating the highest level of scholarship, relevance and application to resolving critical resource and environmental issues, and
3. review its activities, especially the Resource Management and Environmental Studies graduate program and the needed faculty compliment to address future emerging issues.

Members of the Institute have made significant contributions to teaching, learning, research, scholarly activity and community service. Students have excelled in their programs. Graduates are employed and most in areas of their interest and expertise. The new compliment of staff work as an effective team and have brought a coherence to the operations of both the RMES graduate program, and the

administrative and financial needs of the Institute. The Institute has good and dedicated teachers, excellent students, competent and accommodating staff, exciting research projects, an enviable record of publications and information dissemination and is a leader in the applications of electronic technologies in teaching. The Institute continues to build on an exemplary international reputation.

The Institute welcomes the review of its activities that is scheduled for the autumn of 2003. The external review, the revised academic plan and the internal review of the Institute programs will provide an excellent opportunity for the Institute to meet the exciting challenges and opportunities ahead. Tuum est.

## **Staff Directory**

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### **AIREY, ADELLE**

Project Asst Georgia Basin Futures  
Project  
Address: 1924 West Mall, V6T 1Z3  
Phone: 604-822- 8830  
E-mail: gbfpassistant@sdri.ubc.ca

### **BESTBIER, GINA** *On leave*

Research Assoc Institute for  
Resources, Environment and  
Sustainability  
Address: LPC, 2206 East Mall,  
Room 466, V6T 1Z3  
Phone: 604-822-9245  
E-mail:  
bestbier@interchange.ubc.ca

### **BROWN, SANDRA**

Research Assoc Institute for  
Resources, Environment and  
Sustainability  
Address: LPC, 2206 East Mall,  
Room 466, V6T 1Z3  
Phone: 604-822-0437  
E-mail:  
sjbrown@interchange.ubc.ca

### **CARMICHAEL, DR JEFF**

Research Assoc Sustainable  
Development Research Initiative/  
IRES  
Address: 207, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-0078  
E-mail: jcarmichael@sdri.ubc.ca

### **COHEN, DR. STEWART**

Adjunct Pr Adaptation and Impacts  
Research Group/ IRES  
Address: 221, 2029 West Mall,  
V6T 1Z2  
Phone: 604-822-1635  
E-mail: scohen@sdri.ubc.ca

### **DICKSON, JAIMIE**

Secretary Institute for Resources,  
Environment and Sustainability  
Address: LPC, 2206 East Mall, Room  
462, V6T 1Z3

Phone: 604-822-6994  
E-mail: jdickson@ires.ubc.ca

### **DORCEY, DR. ANTHONY**

Pr/Dir Community & Regional  
Planning/IRES  
Address: Lasserre 433, 6333 Memorial  
Road, V6T 1Z2  
Phone: 604-822-5725  
E-Mail: dorcey@interchange.ubc.ca

### **DOWLATABADI, DR. HADI**

Pr SDRI/IRES/Lui Institute for Global  
Issues  
Address: 216, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-0008  
E-mail: hadi@sdri.ubc.ca

### **GAUTHIER, TROY**

Information Systems Sustainable  
Development Research Initiative/ IRES  
Address: 200, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-9566  
E-mail: tgauthier@ires.ubc.ca

Staff Directory

**GEDDES, BRONWEN**  
(on leave)

Internship Program Coordinator  
Sustainable Development Research  
Initiative/ IRES  
Address: LPC, 2206 East Mall, Room  
436A, V6T 1Z3  
Phone: 604-822-0546  
E-mail: interns@sdri.ubc.ca

**HAMPTON, CYNTHIA**

Administrative Assistant Institute for  
Resources, Environment and  
Sustainability  
Address: LPC, 2206 East Mall, Room  
462, V6T 1Z3  
Phone: 604-822-0067  
E-mail: champton@ires.ubc.ca

**HEALEY, DR MICHAEL**

Pr Institute for Resources, Environment  
and Sustainability  
Address: LPC, 2206 East Mall, Room  
470, V6T 1Z3  
Phone: 604-822-4705  
E-mail: healey@interchange.ubc.ca

**HERBERT, DEBORAH**

Project Manager Georgia Basin Futures  
Project  
Address: 208, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822- 9376  
E-mail: dherbert@sdri.ubc.ca

**HINCH, DR SCOTT**

Assoc Pr Forest Sciences/ IRES  
Address: Forest Science Centre 3022,  
V6T 1Z4  
Phone: 604-822-9377  
Phone Forestry Lab: 604-822-1969  
E-mail: shinch@interchange.ubc.ca

**JAMES, JULIA**

Coordinator C-CIARN BC/ IRES  
Address: LPC, 2206 East Mall,  
Room 436A, V6T 1Z3  
Phone: 604-822-4428  
E-mail: c-ciarn-bc@ires.ubc.ca

**KANDLIKAR, Dr. MILIND**

Assistant Pr. Institute for  
Resources, Environment and  
Sustainability/SDRI  
Lui Institute for Global Issues  
Address: 1924 West Mall, Room  
213, V6T 1Z2  
Phone: 604-822-6722  
E-mail: mkandlikar@sdri.ubc.ca

**KO, KARA**

Internship Program Coordinator  
Sustainable Development  
Research Initiative/IRES  
Address: LPC, 2206 East Mall,  
Room 436A, V6T 1Z3  
Phone: 604-822-0546  
E-mail: interns@sdri.ubc.ca

**KRUSE, RANDI**

Community Engagement  
Coordinator Sustainable  
Development Research Initiative/  
IRES  
Address: 205, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-8354  
E-mail: rkruse@sdri.ubc.ca

**LARUSSON, LAYLE**

Financial Assistant Institute for  
Resources, Environment and  
Sustainability  
Address: LPC, 2206 East Mall,  
Room 468, V6T 1Z3  
Phone: 604-822-0027  
E-mail: llarusson@ires.ubc.ca

**LAVKULICH, LES**

Dir and Pr Institute for Resources,  
Environment and Sustainability  
Address: LPC, 2206 East Mall,  
Room 436D, V6T 1Z3  
Phone: 604-822-3487  
Laboratory: MacMillan Building  
#127  
Phone Laboratory: 604-822-3477  
E-mail: lml@ires.ubc.ca

**LOCKHART, MISTY**

Project Asst Sustainable  
Development Research Initiative/  
IRES  
Address: 206, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-6817  
E-mail: misty@sdri.ubc.ca

**MCDANIELS, TIM**

Pr SCARP/ IRES  
Address: Lasserre 428, 6333  
Memorial Road, V6T 1Z2  
Phone: 604-822-9288  
E-mail:  
timmcd@interchange.ubc.ca

**MUNRO, ALISON  
(On leave)**

Project Manager Georgia Basin  
Futures Project/SDRI/IRES  
Address: 208, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-9376  
E-mail: alison@sdri.ubc.ca

**NEALE, TINA**

Research Coordinator Adaptation  
and Impacts Research Group/  
IRES  
Address: 2029 West Mall V6T 1Z2  
Phone: 604-822-6899  
E-mail: tneale@sdri.ubc.ca

**ROBINSON, JOHN**

Pr Sustainable Development Research  
Initiative/ IRES/GEOG  
Address: 217, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-9188  
E-mail: johnr@sdri.ubc.ca

**RONG, BING**

Researcher Adaptation and Impacts  
Research Group/ IRES  
Address: 2029 West Mall, V6T 1Z2  
Phone: 604-822-6157  
E-mail: brong@sdri.ubc.ca

**SATTERFIELD, TERRE**

Assistant Pr Institute for Resources,  
Environment and Sustainability/ SDRI  
Address: LPC, 2206 East Mall, Room  
472, V6T 1Z3  
Phone: 604-822-2333  
E-mail: satterfd@interchange.ubc.ca

**SCHREIER, DR. HANS**

Pr Institute for Resources, Environment  
and Sustainability/ Agsci  
Address: LPC, 2206 East Mall, Room  
436C, V6T 1Z3  
Phone: 604-822-4401  
E-mail: star@interchange.ubc.ca

**SHANKAR, RAKESH**

Academic Fellow Sustainable  
Development Research Initiative/ IRES  
Address: 218, 1924 West Mall, V6T  
1Z2  
Phone: 604-822-7725  
E-mail: rshankar@sdri.ubc.ca

**SHAW, JENNIFER**

Graduate Secretary Institute for  
Resources, Environment and  
Sustainability  
Address: LPC, 2206 East Mall, Room  
464 V6T 1Z3  
Phone: 604-822-9249  
E-mail: rmesgrad@ires.ubc.ca

**YIN, YONGYUAN**

Adjunct Pr Adaptation and Impacts  
Research Group/ IRES  
Address: 219, 2029 West Mall,  
V6T 1Z2  
Phone: 604-822-1620  
E-mail: yongyuan.yin@sdri.ubc.ca

**STEPHENSON, LESLIE**

Asst Dir Institute for Resources,  
Environment and Sustainability  
Address: LPC 2206 East Mall Room  
436E, V6T 1Z3  
Phone: 604-822-1482  
E-mail: lstephenson@ires.ubc.ca

**TANSEY, JAMES**

Senior Research Assoc/ Adjunct Pr  
Sustainable Development Research  
Initiative/ IRES  
Address: 215, 1924 West Mall, V6T  
1Z2-  
Phone: 604-822-0400  
E-mail: jtansey@sdri.ubc.ca

**VERTINSKY, ILAN**

Pr Comm & Bus Admin/ Dir Centre for  
International Business Studies/ IRES/  
Dir FEPA Research Unit  
Address: David Lam Mgmt Research  
Ctr 522  
Phone: 604-822-9406  
E-mail:  
ilan.Vertinsky@commerce.ubc.ca

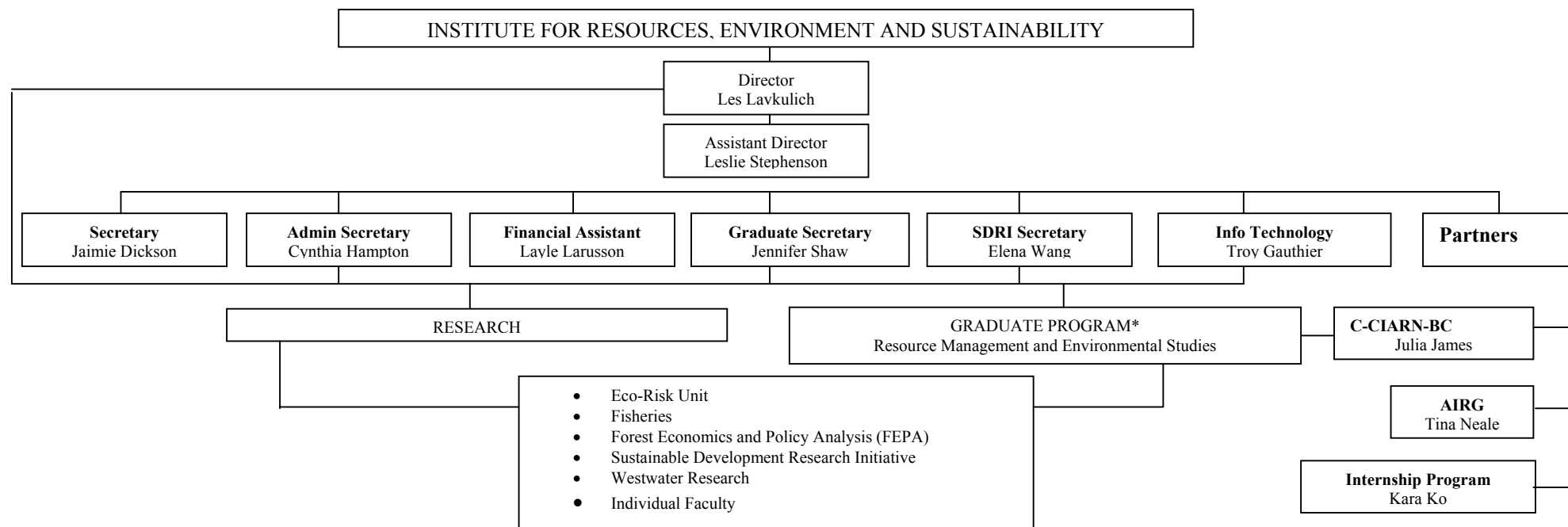
**WANG, ELENA**

Secretary Institute for Resources,  
Environment and Sustainability  
Address: 219, 1924 West Mall,  
V6T 1Z2  
Phone: 604-822-8198  
E-mail: ewang@sdri.ubc.ca



## Appendix A

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### Faculty Members of the Institute

A.H.J. Dorcey (SCARP)  
H. Dowlatabadi (Liu)  
L. Frank (SCARP)  
K.J. Hall (CIVIL)

M.C. Healey (EOSC)  
S.G. Hinch (FRST)  
M. Kandlikar (Liu)

L.M. Lavkulich (Director)  
T.L. McDaniels (SCARP)  
J.B. Robinson (GEOG)

T. Satterfield (Anthro/ Soc)  
H.E. Schreier (SOIL)  
I.B. Vertinsky (COMM)

### Affiliated Faculty

S. Duff (CHBE)  
J.R. Grace (CHML)  
K. Harrison (POLI)

G. Ingram (EOSC)  
P. Marchak (SOCI)

R. Matthews (SOCI)  
P.N. Nemetz (COMM)

M.G. Reed (GEOG)  
F. Tester (SOWK)

### Adjunct Professors

J. Carmichael (SDRI)  
W. Carr (Consultant)  
B. Carson (Private Consultant)  
S. Cohen (Environment Canada)

R. Gregory (Eco-Decision Ltd.)  
J. Griggs (Dovetail Consultant)  
K. Hyatt (Economics)  
G. Kofinas (Northern Initiatives)

C. Levings (Fisheries and Oceans)  
W. Nelles (Private Consultant)  
F. Petersen (MMK Ltd.)  
J. Sproul (Fisheries Biologist)

J. Stockner (Private Consultant)  
J. Tansy (SDRI)  
W. Thompson (FEPA Consultant)  
Y. Yin (Environment Canada)

### Honorary Professors

I.K. Fox, Professor Emertuis

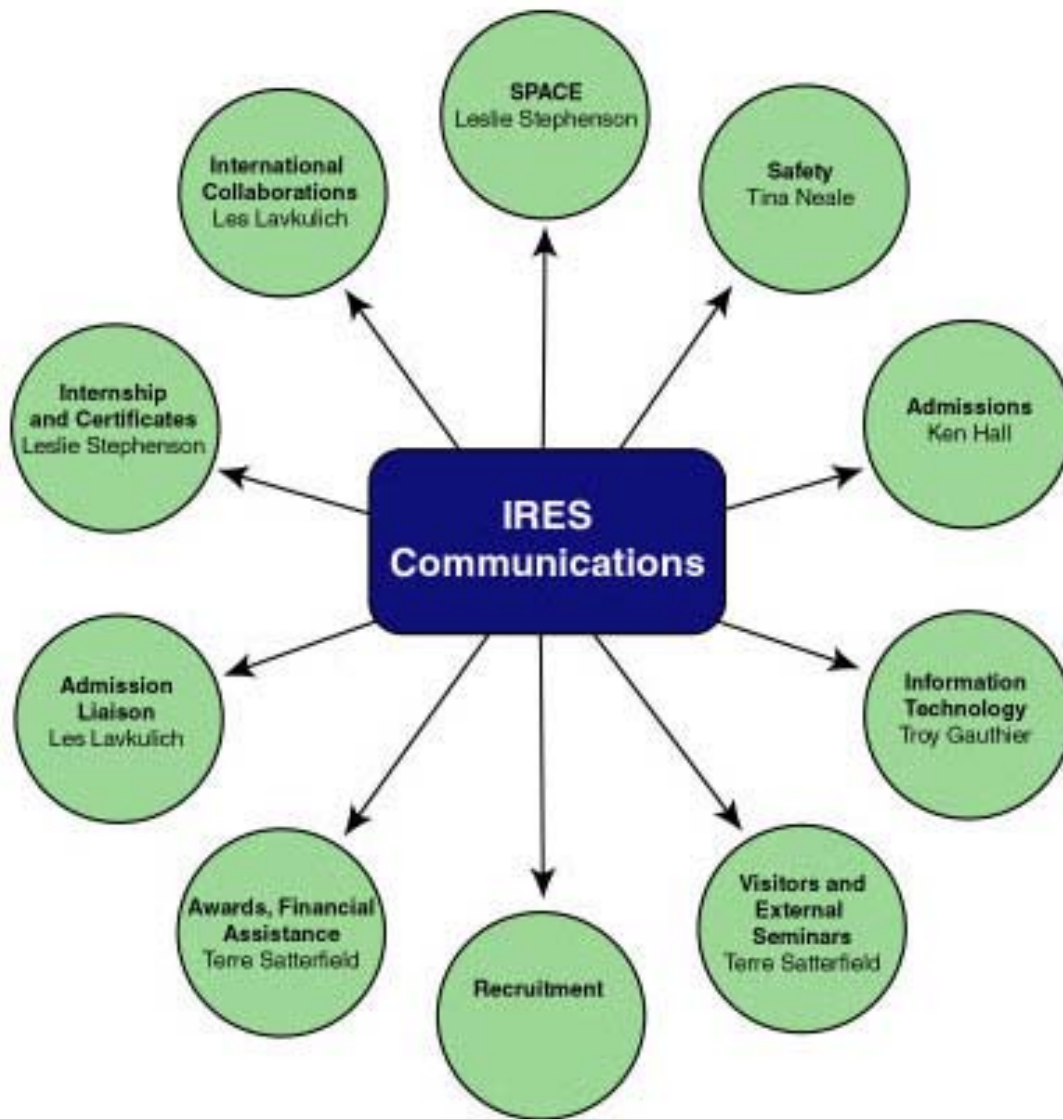
J. Fraser, R.T. Honourable

M. Harcourt

## Appendix B

### IRES Committee Structure – Administration and Communication

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# Appendix B

## IRES Committee Structure – AERL Planning and Design

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### IRES – AERL COMMITTEE AND WORKING GROUPS

#### Coordinating Committee

- Leslie Stephenson – chair
- Tony Dorcey
- Milind Kandlikar
- Student TBA
- Terre Satterfield
- Hans Schreier
- Les Lavkulich – ex officio
- Jaimie Dickson - coordinating secretary

#### 1. Information Technology

- Hans Schreier – chair
- Yin Yongyuan
- Hadi Dowlatabadi
- Troy Gauthier
- Layle Larusson
- Leslie Stephenson – ex officio
- Elena Wang – coordinating secretary

#### 2. Space Allocations and Planning

- Milind Kandlikar - chair
- Terre Satterfield
- Ken Hall
- Scott Hinch
- Tim McDaniels
- Larry Frank
- John Robinson
- Stewart Cohen
- Leslie Stephenson – ex officio
- Cynthia Hampton – coordinating secretary

#### 3. Graduate Students Facilities

- David Boyd – chair
- Jamie Ross
- Alison Shaw
- Ione Smith
- Michael Zelmer
- Jennifer Shaw
- Layle Larusson
- Les Lavkulich – ex officio
- Leslie Stephenson – ex officio
- Jaimie Dickson - coordinating secretary

