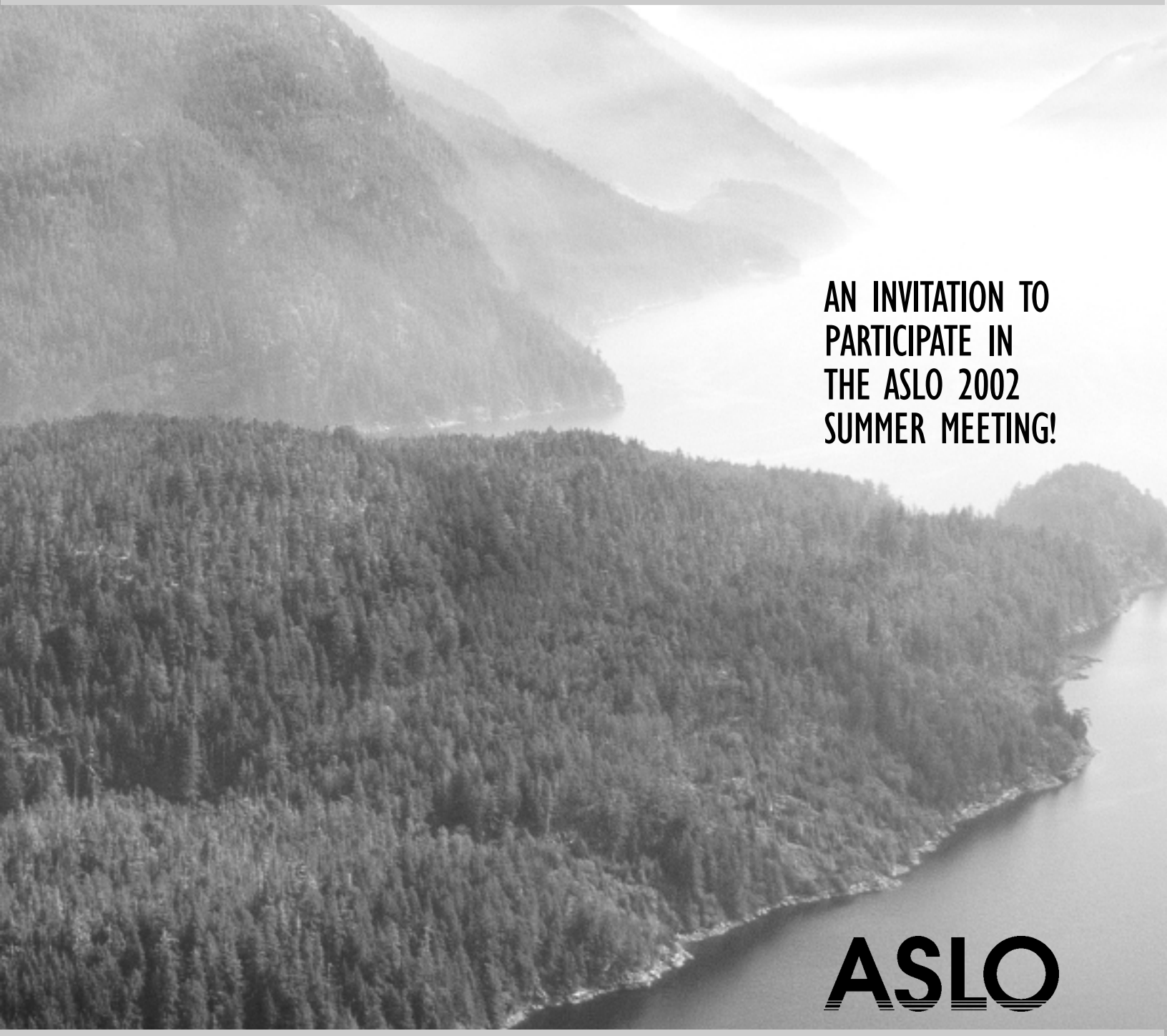
ASLO 2002 SUMMER MEETING

Inter-disciplinary Linkages in Aquatic Sciences and Beyond



June 10-14, 2002 · Victoria, British Columbia, Canada · www.aslo.org/victoria2002

The American Society of Limnology and Oceanography invites the submission of abstracts for oral and poster presentations! Please submit before the abstract deadline of January 20, 2002.

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Contents

Welcome to the ASLO 2002 Summer Meeting in beautiful Victoria, British Columbia, Canada!

The ASLO 2002 organizing committee encourages you to join us in the beauty of Victoria and invites your participation in a meeting that will provide a forum for researchers to highlight recent advances linking the various sub-disciplines within limnology and oceanography and to examine the potential for new linkages with scientific disciplines that extend beyond the aquatic sciences.

One of four planned plenary lectures will be held Monday through Thursday mornings and will be followed by a coffee break. Poster sessions and receptions are scheduled to provide a second opportunity to make professional connections in a social setting. Daily conference events will be held at the Victoria Conference Centre, and informal conversations and discussions following the meeting can be continued at various meeting places throughout the city. Please make plans to join us in Victoria!

The Theme of the Meeting: Inter-disciplinary Linkages in Aquatic Sciences and Beyond

Aquatic ecosystems are regulated by complex interactions among physical, chemical, and biological processes. However, it is often difficult to develop novel linkages and robust predictions among these diverse disciplines. In recognition of this, special sessions during the ASLO 2002 Summer Meeting will be organized into four sub-themes:

(1) Inter-disciplinary Linkages in Fisheries Science
Understanding the role of fish within ecosystems and the ways that fish populations are affected by and respond to environmental variability requires an interdisciplinary approach. The field of fisheries science therefore encompasses many aspects of both limnology and oceanography. This sub-theme aims to assemble a wide range of special sessions to highlight recent advances in inter-disciplinary fisheries science. Themes for special sessions include: the effects of climate (and climate change) on fish populations, food-web and behavioral studies of fish, ecological impacts of aquaculture and the invasion biology of fisheries, and the application of new techniques (e.g. environmental tracers, biophysical modeling) to the study of fish populations.

(2) Molecular and Cellular Linkages in Aquatic Sciences
The application of new technologies is revolutionizing many aspects of aquatic sciences. New molecular and cellular approaches have recently enabled us to assess in situ biodiversity, physiological responses of organisms to environmental forcing and stress, complex trophic interactions between different types of organisms, and most importantly, to link community composition to function and eventually to major biogeochemical processes in aquatic ecosystems. A decade after the major explosion of molecular approaches in aquatic ecology, it is time to assess whether these technological advancements have led to new paradigms and also to explore how existing paradigms in aquatic ecology can be readdressed with new approaches. This sub-theme will explore the current research on biodiversity and the application of molecular and cellular tracers to assess in situ physiology and function of organisms ranging from viruses to fish in aquatic systems.

(3) Landscape Linkages in Aquatic Sciences
To more fully understand the physical, chemical, and biological processes within aquatic ecosystems, it is essential to quantify and model the influence of processes that occur outside of aquatic ecosystems. Watersheds and atmospheric processes play a critical role in regulating nutrient, organics, and sediment transport as well as the climatic regimes of aquatic systems. Recognizing the importance of the linkages among terrestrial, aquatic and atmospheric environments in regulating aquatic ecosystems, the plenary talk and special and contributed sessions of this sub-theme will focus on the interactions between terrestrial/atmospheric processes and the structure and function of aquatic systems, including forest/stream linkages, pelagic coupling with littoral and benthic zones, water resources management, nutrient and mineral cycling, and coastal/estuarine eutrophication.

(4) Linkages Beyond Aquatic Sciences
Aquatic scientists need to create linkages beyond the aquatic environment because there are many direct and indirect health and socio-economic implications of the quality of aquatic ecosystems. This sub-theme will organize special and contributed sessions to address the linkages beyond aquatic sciences. The following are some of the examples of possible linkages between aquatic environment and humans: aquatic resource and human nutrition, toxics in aquatic environment and human health, water quality and waterborne disease, the ecological and environmental impacts of genetically engineered and aquaculture produced fish, and species invasion and biodiversity of aquatic environment.

The Scientific Program

The scientific program for the 2002 meeting includes plenary lectures, special and contributed sessions for oral presentations and poster sessions, and optional workshops. Sessions will be organized around the four meeting sub-themes. Abstracts of papers presented during the ASLO 2002 Summer Meeting will be published in the conference abstract book as well as archived on the ASLO web site following the meeting.

The ASLO awards and the ASLO minorities program will be important parts of the program.

Opening Address:
Dr. Tom Brzustowski, President, Natural Sciences and Engineering Research Council of Canada

Tom Brzustowski is president of the Natural Sciences and Engineering Research Council of Canada (NSERC), the national instrument for making strategic investments in Canada's capability in science and technology. NSERC supports both basic university research through research grants and project research through partnerships of universities with industry, as well as the advanced training of highly qualified people in both areas. NSERC is a separate employer of the Government of Canada, reporting to Parliament through the Minister of Industry. A council of 22 members selected from the private and public sectors and the universities govern it.

An engineer, Brzustowski graduated with a B.A.Sc. in engineering physics from the University of Toronto in 1958, and received a Ph.D. in aeronautical engineering from Princeton in 1963. He was a professor in the Department of Mechanical Engineering at the University of Waterloo from 1962 to 1987, teaching and carrying out research in thermodynamics and combustion. He served as chair of the department from 1967 to 1970 and as vice-president, academic of the University of Waterloo from 1975 to 1987. After that he served as deputy minister in the Government of Ontario from 1987 to 1995, first in the Ministry of Colleges and Universities and later in the Premier's

Council. Brzustowski was appointed president of NSERC in October 1995, and he was reappointed in 2000.

He holds honorary doctorates from several universities, namely, Alberta, Guelph, McMaster, Ottawa, Ryerson Polytechnic, and Waterloo, and he received the Engineering Alumni Medal from the University of Toronto.

Plenary Lectures
The first four days of the meeting will begin with a plenary lecture to address each of the four sub-themes of the meeting. Each lecture will be followed by a coffee break to encourage conversation and connections among scientists.

Inter-disciplinary Linkages in Fisheries Science:
Dick Beamish, Senior Scientist, and former Director, Pacific Biological Station in Nanaimo, British Columbia, Canada

Dr. Dick Beamish has published over 150 scientific articles on topics ranging from acid rain and climate impacts on fish, to new species of fish. He is a Commissioner of the International Pacific Halibut Commission and a member of the Pacific Fisheries Resource Conservation Council. In 1999 he was awarded the Order of Canada and in 2000, he was appointed as a Fellow of the Royal Society of Canada. Dr. Beamish is currently researching the impacts of climate and climate change on commercially important fisheries in British Columbia. The impacts are being assessed in relation to ecosystem responses.

Molecular and Cellular Linkages in Aquatic Sciences:
Mary Ann Moran, Associate Professor, Department of Marine Sciences, University of Georgia, Athens, Georgia

Mary Ann Moran obtained an M.S. at Cornell University in 1982 and went on to complete a Ph.D. at the University of Georgia in 1987. She is currently an associate professor in the Department of Marine Sciences at the University of Georgia. Dr. Moran works at the interface between microbial ecology, biogeochemistry, and ecological genomics. She has contributed significantly to our understanding of the microbial cycling and degradation of organic matter and of the fate of terrestrially-derived organic matter in coastal ecosystems. She has complemented biogeochemical research with pioneer studies of the diversity of aquatic prokaryotes, their physiological and genetic characteristics, and the link between biogeochemical activities and microbial diversity in salt marsh and estuarine ecosystems. The latter has involved the discovery and characterization of the diversity of bacterial genes mediating the decomposition of organic matter in aquatic systems. More recently, Mary Ann has begun to focus her investigations on the ecology of an ecologically relevant taxon of marine bacteria, the Roseobacterclade. As part of this research, she leads an effort to sequence the genome of one of the members of this important prokaryotic group.

Landscape Linkages in Aquatic Sciences:
Kathleen Laird, Biology Department, Paleoecological Environmental Assessment and Research Lab (PEARL), Queen's University, Kingston, Ontario, Canada

Kathleen Laird received her Ph.D. in ecology in 1996 from the University of Minnesota under the supervision of Drs. Herbert E. Wright, Jr. and Sherilyn Fritz. She has since conducted post-doctoral research at the Paleoecological Environmental Assessment Research Laboratory (PEARL) at Queen's University in Kingston, Ontario, with Drs. Brian Cumming and John Smol. Her main research interests focus on the use of paleoecological techniques to track natural and anthropogenic disturbances on lake ecosystems.

Dr. Laird's early interests in the outdoors were strengthened through undergraduate field research, and her interest in paleoecology grew while undertaking undergraduate studies of diatom ecology with Dr. Robert Edgar. In 1998, she received the Raymond L. Lindeman Award from ASLO for her paper "Greater drought intensity and frequency before AD 1200 in the Northern Great Plains, USA". This research was the first high-resolution paleoclimatic study of drought conditions in the continental interior of North America spanning the past two millennia.

Dr. Laird has continued her interests in assessing long-term climatic patterns in North America and in other regions of the world, including equatorial East Africa. As well, her interest in landscape dynamics has resulted in research on the impact of watershed disturbances from forest harvesting in western Canada. Additionally, her research has included numerous studies that have assessed long-term trends in nutrients from a variety of sources (e.g. urbanization, cattle ranching, etc.).

Linkages Beyond Aquatic Sciences:
Michael Crawford, Institute of Brain Chemistry and Human Nutrition, University of North London, London, UK

Michael Crawford is director of the Institute of Brain Chemistry and Human Nutrition, Faculty of Science, Computing & Engineering, University of North London. Until 1997 he was at the Queen Elizabeth Hospital for Children in London. Since 2000, Crawford has been the Danone Chair at the University of Ghent and an honorary professor of the Albert Schweitzer University. The Institute of Brain Chemistry and Human Nutrition is one of the pioneers of the methodology for the analysis of highly unsaturated fatty acids, work for which it has won two international awards. The 1995 International Award for Modern Nutrition and the Hofmann la Roche Centenary award in 1996 for its work on essential fatty acids and the brain lipids. It has also made an important contribution to the understanding of the role of lipid nutrition in human origins. The IBCHN has been dedicated to understanding the link between the environment and health particularly as it affects the brain. He received his Ph.D. in chemical pathology in 1960 from the Royal Post-Graduate Medical School, United Kingdom. He has published over 240 papers, book chapters, conference proceedings, and three books. His research interests include human nutrition, brain development and function. He is best recognized for his research on the biological role of long-chain polyunsaturated fatty acids in infant brain development. His current focus is on the role of fish in providing essential nutrition for human brain development and evolution.

About Victoria

Evergreen mountains with lakes, reservoirs, and streams flowing into the Pacific Ocean make Victoria a perfect setting for the ASLO 2002 Summer Meeting.

Victoria offers a wealth of unique sights and attractions - tropical gardens under glass, a colorful undersea world, a giant telescope pointed at the stars, an Olympic-sized pool with a water slide and places to wander along the harbor and shoreline. It's also called the Garden City because of its many brilliant and impeccably kept gardens. The most famous of these is The Butchart Gardens, the site of the meeting's optional outing on Wednesday evening. Other favorites

include Government House, Hatley Park, Beacon Hill Park and Saxe Point Park.

The city's 150-year history is carefully preserved in its many historic sites and heritage buildings. From the imposing facades of the Parliament Buildings and the newly restored St. Ann's Academy, to the gun batteries of a former military fort and the fairy-tale turrets of a century-old castle, exploring Victoria's historic treasures is a rewarding pastime at any time of the year.

Victoria has several exceptional museums rated among the very best in North America, including the Royal British Columbia Museum. Whether your interest is military, maritime, or aviation history, Native culture, pioneer stories, or marine mammals, Victoria's museums will capture your imagination with exciting exhibits that bring human and natural history to life.

ASLO Summer Meeting participants will see why Victoria took 2nd place in a recent issue of *Travel and Leisure* magazine that ranked the Top Five Cities in North America and placed the city ninth on the list of Best Cities in the World.

While it is seasoned with history and full of gardens that bloom all year long, the real beauty of Victoria is that you can do a thousand interesting things here at any time of the year. This part of Canada is renowned for its year-round, pleasant climate. Located in the sub-Mediterranean zone, Victoria enjoys some of the most moderate weather in all of Canada. Average daily temperatures during the month of June will be around 67° F (19.3° C). Victoria has a very low humidity ratio. The average monthly rainfall during the summer is less than 2.5 cm (1 inch). Almost constant offshore breezes keep summer days from becoming too hot, yet summer evenings can cool off. Therefore a sweater or a light jacket is recommended.

Comfortable walking shoes are a must. This resort style city is made for strolling, with downtown hotels, restaurants, shops and parks within close proximity to each other.

About the Conference Meeting Site

This meeting is carefully planned to provide an appropriate atmosphere and numerous opportunities to interact with colleagues and friends. All plenary sessions, exhibits, posters, and the special and contributed sessions will take place at one venue, the Victoria Conference Centre. A 1989 landmark building adjoining the historic Empress Hotel, the Conference Centre is a truly state-of-the-art facility located right in the heart of Victoria, near the Inner Harbour and surrounded by the city's rich, turn-of-the-century architectural heritage. All of the conference hotels are within walking distance as are more than 25 leisure attractions including the Royal B.C. Museum, the Crystal Garden, Thunderbird Park, Chinatown, Market Square, the Maritime Museum, and the Parliament Buildings. Just around the corner is the city's famous shopping area on Government Street, with turn-of-the-century stores containing items from antiques to the avant-garde, imported British and native West Coast woolens, and much more.

Housing arrangements for the 2002 Summer Meeting have been made at a variety of downtown hotels offering a range of room rates that will allow you to select the one that best fits your needs. Room rates range from $105.00 CDN to $229 CDN per night (approximately $68.00/ $149.00 USD). Hotel reservation information is included in this brochure with complete room rate and reservation instructions listed for each hotel. Student housing-type rooms are also available at the University of Victoria. With the exception of the rooms at the University of Victoria, all hotels are within walking distance to the meeting facilities. For those who chose stay at the university, the City of Victoria has transit service daily from the University of Victoria to downtown Victoria and back. (See the Local City Transportation section in this brochure for more information on rates, times and routes.)

For more information on the ASLO 2002 Summer Meeting, please contact:

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Special Sessions by Sub-theme:

Sub-theme 1: Inter-disciplinary Linkages in Fisheries Science

SS 1-01 Assessing Potential Environmental Impacts of Aquaculture

Organizer: Alec Dale (Alec.Dale@gems5.gov.bc.ca)

Aquaculture is one of the most rapidly expanding sectors of food production in the world. Traditional, integrated aquaculture techniques have been successfully practiced for centuries in certain parts of the world with few or no adverse impacts. However, modern large-scale operations of both freshwater and marine aquaculture have led to increased global concern over potential environmental impacts. The broad and expanding range of species and habitats utilised for aquaculture purposes leads to a broad range of potential impacts. Thus, the techniques and expertise required to accurately assess those impacts will necessarily have an inter-disciplinary origin. This session will highlight a wide variety of current research into freshwater and marine aquaculture impacts. In addition, it will provide an opportunity for researchers in this field to establish stronger links with those representing the broader spectrum of limnology and oceanography. These links and collaborations are essential for further development of research projects assessing aquaculture impacts. One of the main challenges in this field is to provide a sound scientific framework on which to base effective management and regulatory initiatives for the globally expanding aquaculture industry. It is hoped that this session will help provide a global perspective on research from both tropical and temperate regions.

SS 1-02 Geochemical Tracers in Calcified Structures: Implications for Fisheries Research

Organizers: Simon Thorrold (sthorrold@whoi.edu) and Claudio DiBacco

The exchange of individuals among geographically-separated groups, or connectivity, is a critical property of aquatic populations. Quantifying exchange rates among sub-populations is, however, extremely difficult because the source of larvae and new recruits sampled *in situ* is almost invariably unknown. Recently developed tagging techniques utilizing natural isotopic and elemental markers offer the potential for determining connectivity over ecologically-relevant spatio-temporal scales. The purpose of this symposium is to highlight recent advances in the use of geochemical tracers in calcified structures to address questions of population structure, larval dispersal trajectories and natal homing in fisheries ecology. The symposium will also seek to foster interactions among fisheries scientists, benthic ecologists, environmental geochemists and analytical chemists involved in this rapidly developing field.

SS 1-03 Zooplankton Response to Climate Variability

Organizer: Dave Mackas (mackasd@dfo-mpo.gc.ca)

Zooplankton communities often undergo large interannual-to-decadal changes in total biomass/productivity, and even larger changes in community composition. These changes often appear to be coherent over large areas, and to be correlated with various local and basin-scale climate indices. What are the causal mechanisms? How resilient are zooplankton to potential future climate change? What are the implications for other trophic levels? This symposium will provide a forum for discussion and between-region and between-taxa comparisons for both freshwater and marine ecosystems.

SS 1-04 Small-scale Biophysical Coupling in Plankton Ecology

Organizers: John Dower (dower@uvic.ca) and Thomas Miller

Given the very small size of most planktonic organisms, small-scale physical processes play a key role in determining the structure and function of planktonic ecosystems, and in regulating behavioral interactions between individual plankton. We invite presentations dealing with any aspect of small-scale biophysical coupling and plankton ecology. Our goal is to gather researchers working on a wide range of organisms (e.g. meso- and microzooplankton, larval and juvenile fish, phytoplankton), representing a broad range of approaches (empirical studies, fieldwork, and modeling), from both marine and freshwater ecosystems. We also extend a special invitation to physical oceanographers and physical limnologists with interests in biological processes.

SS 1-05 How Will Aquatic Ecosystems Respond to Climate Change?

Organizers: Kenneth Denman (ken.denman@ec.gc.ca) and Thomas Powell

A critical question regarding aquatic ecosystems is how will they respond to a changing climate. Because a changing climate will take these systems beyond their recent "statistical experience" (i.e. the parent statistical distributions will change), statistical forecast techniques are likely to fail. Therefore, process-based interdisciplinary models offer the best alternative to project the behavior of aquatic ecosystems into the future. This session invites interdisciplinary modelling and analysis studies of how aquatic ecosystems might change in response to a changing climate.

SS 1-06 The Ecological Impacts of Pelagic Longline Fisheries

Organizer: Larry Crowder (lcrowder@duke.edu)

Over the past decade, longline fisheries bycatch has received increasing attention from marine scientists, natural resource managers, and the concerned public. As pelagic longline vessels fish for tunas and swordfish, they also incidentally catch far-ranging and long-lived species like albatrosses, sea turtles, sharks, marine mammals and other economically-valuable sportfish. The incidental catch of non-target species requires inter-disciplinary examination because a myriad of oceanographic, ecological, and socio-economic factors influence the incidence of bycatch. Effective management strategies must be guided by an understanding of a wide array of subjects, including: fishing gear selectivity, oceanic habitats and prey dispersion, life history of target and bycatch species, behavior and decision-making rules of fishing fleets, international agreements over high seas fishing and protected species, and population and community level implications of the mortality levels observed at sea. This special session, dedicated to the linkages between fisheries science and other disciplines, represents an ideal forum for discussion of these different facets of longline fisheries bycatch. This kind of study establishes linkages across disciplines, nations, and ocean basins. In particular, because pelagic longline fisheries are pervasive and widespread, comparative studies of fishing and bycatch mitigation methods, population impacts for various species, and management approaches across ocean basins are especially pertinent. It is an issue that also creates linkages among nations, among fishing methods, and among several target species.

SS 1-07 Ecological Links to Population Dynamics and Productivity of Salmon

Organizers: Jim Edmundson (jim_edmundson@fishgame.state.ak.us)

Wild Salmon are the most valuable fisheries resource of the North Pacific. However, Pacific salmon species also undergo dramatic fluctuations in abundance over time. Since such fluctuations have tremendous economic and social impacts there is a need to understand the biological and environmental processes underlying changes in the productivity of salmon stocks. While ocean environment or climatic factors are usually thought to contribute most to variability in salmon production, several researchers have demonstrated the importance of habitat complexity, marine-derived nutrients, trophic interactions, and predator-prey relationships affecting growth and survival of juvenile sockeye during their freshwater (lake/riverine) life-history stage. However, there remain large uncertainties about the mechanisms linking climatic changes, oceanographic and freshwater conditions, and salmon production. A general mobilization of effort by a broad range of fishery scientists, population biologists, and aquatic ecologists is needed to complement the recent advances in biological understanding of salmon ecology to develop reliable reference points for system carrying capacity and to improve management capability. It is hoped that this session can point the way toward the research necessary to better understand the role of biological and environmental interactions to ensure the conservation and sustainability of salmon ecosystems.

SS 1-08 Sensory Ecology, Neurophysiology and Behavior of Zooplankton

Organizers: Ed Buskey (buskey@utmsi.utexas.edu) and Petra Lenz

The goal of this session is to bring together scientists from the disciplines of animal behavior, ecology, sensory biology, biomechanics and neurobiology to better understand how planktonic organisms sense, interpret and adapt their behavior to the special circumstances involved with a planktonic existence. This would include holoplanktonic organisms such as copepods, cladocerans and gelatinous zooplankton, along with meroplanktonic organisms including the larval forms of benthic invertebrates and larval fish. The session will address a variety of interdisciplinary questions including: How are zooplankton sensors and behaviors adapted to life in a viscous environment? What are the biomechanical limits placed on small planktonic organisms? How do they deal with currents and turbulence? What is the relative importance of visual, chemo- and mechano-sensory systems? How are these sensory systems constrained by neurophysiology? What are the sensory and behavioral adaptations of zooplankton for finding food and locating mates in a dilute environment, while also avoiding predators?

SS 1-09 Fisheries Population Linkage Spatial and Temporal Variation in Zooplankton

Organizers: Paul Snelgrove (psnelgro@caribou.mi.mun.ca), Pierre Pepin, and Dian Gifford

The importance of variability in zooplankton populations to the dynamics and population biology of marine and freshwater commercial fish species has been the subject of considerable discussion in recent years, and is central to paradigms such as the match-mismatch hypothesis. For some fish species, it is the early life history stages that interact strongly with zooplankton, but for others it is the juvenile or adult stage. Significant advances have been made in understanding the spatial and seasonal dynamics of some zooplankton groups, including protistan microzooplankton, that are thought to be important to fisheries species. The potential to integrate this emerging knowledge with fisheries oceanography represents an area where significant advances may be possible. Thus, we ask, will the marriage of zooplankton and fisheries population biology in a bond of oceanographic matrimony produce influential progeny?

SS 1-10 Marine Protected Areas: Critical tools for marine biodiversity conservation

Organizer: Tomas Tomascik (tomas_tomascik@pch.gc.ca)

Even though there is widespread consensus on the role and utility of MPAs in conservation of marine biodiversity and fisheries management, their future remains uncertain. Serious questions about the efficacy of MPAs are being raised again both in Canada and USA. This special session will address key concerns voiced in current debates on MPAs, and bring the latest MPA research results into a widely respected

scientific forum. The symposium will focus on the current status of MPA science, and its role in the conservation of marine biodiversity and rehabilitation of coastal fisheries. Questions to be addressed will include: 1) Where should MPAs be sited and the importance of MPA networks; 2) How large should MPAs be to meet both biodiversity conservation and coastal fisheries management needs? 3) How do MPAs function in terms of biodiversity conservation and fisheries management? 4) What is the empirical evidence to support the role of MPAs as tools for marine biodiversity conservation and fisheries management?

SS 1-11 Recent Ocean Climate Changes and Impacts on the Northeast Pacific Ecosystem

Organizer: David Welch (WelchD@pac.dfo-mpo.gc.ca)

There is mounting evidence for repeated regime shifts in the physical and biological oceanography of the Pacific Ocean, with sudden changes around 1977, 1990, and 1998 being most prominent. These shifts have had large impacts on many important commercial fisheries resources, most prominently many stocks of Pacific salmon. Amongst the major responses to the recent 1998/99 change in ocean climate was the largest run of Snake River chinook salmon to return in over 50 years. These fish entered the ocean in the summer of 1999. This session seeks to place observed changes in a fuller oceanographic context, and therefore solicits papers describing changes in the biological and physical oceanography of the region that underlie these upper trophic level responses. In particular, we invite observational studies that will serve to improve our understanding of the large increases in ocean survival beginning in 1999, and refine our oceanographic understanding of the links leading to improved fish survival.

Sub-theme 2: Molecular and Cellular Linkages in Aquatic Sciences

SS 2-01 Effects of Biotic Interactions on the Structure and Function of Microbial Food Webs

Organizers: Klaus Juergens (juergens@mpil-ploen.mpg.de) and Michael Pace

Bacteria mediate key pathways in biogeochemical cycles and energy flow in aquatic systems. The integration of bacteria in pelagic and benthic food webs, manifested by diverse linkages between the microbial and the metazoan food chain, is now well recognized. There is increasing evidence that the structure and function of microbial food webs is influenced directly by higher trophic levels. Predatory interactions can cascade via metazoans and protozans to the bacterial level and shape the phenotypic composition, activity and species composition. It is a particular challenge to determine whether these biotic interactions significantly alter the overall functions of microbial communities as well as the biogeochemical and ecological roles of specific bacterial groups. Substantial progress in the study of these interactions can be expected from the application of new molecular and cellular techniques. These can reveal shifts in microbial community structure and function even when bulk parameters such as biomass and production do not indicate changes. This session focuses on the impact of biotic interactions on the structure and function of microbial communities in marine and freshwater systems. We particulary encourage submissions, which examine the effects of trophic interactions on the genomic diversity and physiology of bacterial assemblages.

SS 2-02 Biogeochemical Process at the Sediment-Water Interfaces

Organizers: Lesley Smith (smithlk@terra.colorado.edu), Mary Voytek and Jennifer Tank

Increasingly, current trends in multidisciplinary research include teams of ecologists, hydrologists, geologists, physicists, and chemists working together to elucidate biogeochemical processes in aquatic ecosystems. Novel analytical techniques, including molecular probes, stable isotopes, and membrane inlet mass spectrometry, yield new insights into biogeochemical processes, such as nitrification, denitrification, and assimilatory uptake, that occur across the sediment-water interface. This session will focus on new linkages between areas of cross-disciplinary research in aquatic systems with the focus on biogeochemical processes at the sediment water interface being the common thread of each presentation. There are a number of large interdisciplinary projects that fit this session topic, such as LINX and the Hypoxia Study. We would invite a representative from each project to give an overview of the project, the techniques they are using, and the data they have collected. Each of these talks would be 20-30 minutes. The remainder of the session would be open to contributed papers. Depending on the number of contributed papers, this symposium could possibly be an all day session.

SS 2-03 Phytoplankton Ecology Using Molecular Approach

Organizer: Senjie Lin (slin@uconnvm.uconn.edu)

This special symposium is intended to bring together understanding on various ecological aspects of phytoplankton using molecular methods (DNA, RNA, antibody-based). In particular, this will provide a forum for those who are interested in this area to discuss the current status and future direction on applying genome sequence and genomics information/approach to the studies on phytoplankton ecology. The studies can be, but not restricted to, biodiversity, physiological status, growth rate, nutrient uptake, cell death, viral/bacterial lysis, and grazing.

SS 2-04 Microbial Stoichiometry and Impacts on Biogeochemistry: From Genes to the Biosphere

Organizer: Jim Elser (j.elser@asu.edu)

This session will examine ecological, evolutionary, physiological, and cellular/genetic aspects of microbial growth and its impacts on biogeochemical cycling in riverine, lacustrine and oceanic waters. Microbes are the dominant factor controlling and regulating nutrient cycling in natural waters, soils and atmosphere and can exhibit enormous physiological plasticity and rapid metabolic evolution; yet, most studies assume that systems should closely follow Redfieldian dogma. Is it reasonable to assume somewhat constant conditions in the chemical composition of natural systems, or is this an artifact

of the time in which we live and/or the systems we study? How has the chemical composition of aquatic life and their aquatic environment varied through time, from the Precambrian to the present and what feedbacks between microbes and the environment are most relevant? Does variation in environmental factors such as temperature, light, and discharge have predictable effects on microbial chemical composition and consequently, on nutrient cycling and patterns of C flow and sequestration in natural systems? The session will include studies of the microbial role in climate change and the flow of energy and nutrients in freshwater, oceans, and soils; the interactions between microbial and metazoan food webs, the mineral nutrition of various microbiota, stoichiometry and microbial pathogens; and the relationship of stoichiometry to biochemical and genetic underpinnings in microbes. Studies relating variance in the environment to the biochemical composition of microbial flora (RNA, DNA, macromolecules, etc.) and elemental (C:N:P:Fe) signature of microorganisms including viruses, bacteria, Archaea, algae, cyanobacteria, and protozoa are particularly encouraged.

SS 2-05 Phylogenetic and Physiologic Successions in Aquatic Bacterial Communities

Organizers: Thierry Bouvier (tbouvier@hpl.umces.edu) and Paul del Georgio

The abundance and biomass of bacteria are fundamental attributes of aquatic ecosystems. Although bacterioplankton biomass does vary seasonally within systems, and also spatially across systems, it is nevertheless remarkably stable, at least relative to other components of microbial and planktonic food webs. The relative constancy of bacterial biomass across aquatic ecosystems still puzzles many researchers. The temporal and spatial successions that occur in aquatic bacterial assemblages have traditionally been described in terms of bulk community attributes such as total abundance and production. We are now beginning to realize, thanks to the application of molecular and cellular techniques, that the apparent constancy of bacterial attributes in aquatic ecosystems masks profound and rapid shifts in phylogenetic composition and cellular activity, which are then reflected at the level of community metabolism. This session proposes to explore the bacterioplankton succession specifically at the level of phylogenetic composition and single-cell metabolic activity, rather than at the bulk level. The papers in this session should address the temporal shifts in phylogenetic and physiologic structure, and the phylogenetic and physiologic successions that occur along environmental gradients across ecosystems, or at boundaries and sharp ecotones such as oxic/anoxic and fresh/salt water interfaces. Talks should also focus on the factors that drive bacterial succession in aquatic ecosystems, and on the links between the phylogenetic/physiologic succession and community metabolism and function in aquatic microbial assemblages.

SS 2-06 Microbial Diversity in Time and Space

Organizer: Curtis Suttle (csuttle@eos.ubc.ca)

Molecular tools are rapidly changing our perception of diversity within communities of microbes including viruses, archaea, bacteria, and protists. These changes in perception include diversity at the genetic level, as well as the phenotypic level (e.g. metabolism and physiology). These sophisticated tools are allowing us to interrogate the dynamics of microbial diversity at a wide range of temporal (minutes to thousands of years) and spatial (microns to global) scales. The goal of this symposium is to provide a forum for discussing our burgeoning understanding of the dynamics of microbial diversity (temporal and spatial) and the approaches used to gain this knowledge.

Sub-theme 3: Landscape Linkages in Aquatic Sciences

SS 3-01 Landscape Control of High Latitude Lake and River Ecosystems

Organizers: Warwick Vincent (warwick.vincent@bio.ulaval.ca) and John Hobbie

Polar lakes and rivers are attracting increasing attention given their value for ecological research as end-member systems in which trophic complexity is reduced and climate-related effects more readily discerned. The aim of this symposium is to bring together researchers from the north polar and south polar regions to examine how changing landscape properties influence downstream limnological (and oceanographic) processes. The topics include the influence of vegetation change on carbon export and aquatic food web characteristics; the biogeochemical linkages between land and water across vegetation gradients; isotopic and other indices of changing land-water interactions; the downstream consequences of climate effects on landscape processes; and the importance of ecosystem legacies in controlling modern-day processes in high latitude waters.

SS 3-02 Turbulence and Plankton Dynamics

Organizer: Jef Huisman (jef.huisman@chem.uva.nl)

The word plankton stems from the ancient Greek word for wanderer. Phytoplankton and zooplankton species can thus be regarded as the tramps of the oceans, slowly wandering through the aquatic medium, often passively by means of turbulent diffusion or sinking, and sometimes also actively by for instance flagellae or cilia. The aquatic medium itself, however, is often subject to extensive movement at a variety of different scales, ranging from small-scale turbulence, via mesoscale eddies, to large scale circulation patterns. The interplay between plankton dynamics and the movement of water parcels in which this plankton is embedded may greatly affect the spatial patchiness, productivity, and species composition of aquatic ecosystems. This special session welcomes model studies, laboratory experiments, and field observations that help to illustrate and elucidate this intriguing interplay between fluid dynamics and plankton dynamics.

SS 3-03 Recent Advances in Coastal and River Plume Remote Sensing

Organizers: Chuanmin Hu (hu@seas.marine.usf.edu) and Frank Muller-Karger

Rivers collect water, nutrients, carbon and other materials from continental drainage basins and deliver them to the coastal ocean. Estuaries and coastal zones exhibit rapid change and extreme gradients in physical and biogeochemical properties and processes. Improvements in remote sensing technology and algorithm development promise to be a new tool to assess these properties and processes quickly and synoptically. This special session will serve as a forum for the exchange of ideas and information on the latest developments in remote sensing systems, platforms, algorithms, and applications for addressing critical issues in the study of land-ocean interactions. Topics may include, but are not limited to, sensor (passive or active, satellite or airborne) development, algorithm development, biogeochemical modeling with remote sensing data, and linkages to land use and land use change patterns.

SS 3-04 Biogeochemistry of DOC/DON in a Watershed Context

Organizers: Diane McKnight (mcknight@snobear.colorado.edu) and Yo Chin

This session will address the coupling of terrestrial and aquatic ecosystems through the transport of dissolved organic material (DOM), and associated nutrients and contaminants, to aquatic ecosystems, including lakes, streams and estuaries. DOM flux from terrestrial landscapes can be a major loss term for both organic carbon and nutrients, and varies with hydrologic regime, vegetation type and land use. The organic material transported to aquatic ecosystems influences C-cycling within the aquatic systems. Further, the dissolved material is a source of nutrients, e.g. N, and controls the transport of metal and organic contaminants. At the watershed scale, lakes and streams can be function as hotspots of DOM production because of algal productivity. The DOM transport to aquatic ecosystems and DOM cycling within aquatic ecosystems are subject to change with changing nutrients loading, land use, and climate. Presentations addressing all aspects of these processes from a range of perspectives are encouraged.

SS 3-05 Land-use, Groundwater and Lotic Ecosystems

Organizers: Christian H. Fritsen (cfritsen@dri.edu) and Alan McKay

This session will focus on groundwater/surface water interactions and their coupling to the benthic ecology of lotic ecosystems in higher order streams and rivers that tend to see more impact from land use activities. Topics including periphyton and macroinvertebrate community structure, interactions and dynamics in association with changes in land use and groundwater sources are particularly encouraged.

SS 3-06 Large Scale Change in Prominent Ecosystems

Organizers: Hunter Carrick (hcarrick@sfwmd.gov) and Gary Fahnenstiel

Given their size and position with watersheds, large and prominent ecosystems integrate change from the surrounding landscape, often times serving as barometers of local, regional, and global-scale change. Large scales change can be considered environmental processes that influence the structure and function of entire ecosystems. Some examples include: climate change, exotic species introductions, and introduction (or reduction) of environmental contaminants. We consider prominent systems to be those that are unique because of their size/volume/depth, their important biogeochemical/species composition, and/or their placement within complex landscapes. Prominent ecosystems tend to form networks with other ecosystems within the landscape, such that their proximity to large-scale perturbation can serve as predictive tools of general ecosystem response. Presentations in this session will focus on topical environmental issues in a variety of important ecosystems (lakes, rivers, wetlands, estuarine, and oceanic systems). In this way, we hope to cultivate some useful and exciting cross-fertilization that may ultimately illustrate unifying principles about how/why ecosystems respond to large-scale perturbation in complex landscapes.

SS 3-07 Headwater Ecosystems in Forested Landscapes and Beyond

Organizer: John Richardson (jrichard@interchg.ubc.ca)

Headwaters, defined as the smallest defined channels within a drainage network, are also the aquatic systems most vulnerable to land-use, in particular forestry. These systems, from ephemeral and permanent springs through to second order streams, are tightly coupled with hill slope processes. This special session will address the processes and structures that make these systems unique (biologically and physically), how land-use affects the systems, and consequences for the drainage network and associated landscape. Connections with forests and forest management will be one of the main underlying aspects of the session, but the latest understanding of processes within headwaters will be highlighted.

SS 3-08 Application of Automated Technology to Detect Environmental Change

Organizer: Karen Steidinger (karen.steidinger@fwc.state.fl.us)

This session will include a review of automated sensors and how they have been used, e.g., meteorological stations, buoy arrays for standard hydrographic measurements and currents, satellite remote sensing for SST and chlorophyll, anomalies in sea surface height, slocum gliders with environmental packages, automated sensors for specific chemicals or species, the Environmental Sample Processor (ESP), and more. In addition, new technologies and applications will be presented, such as multiple species probes or microelectronic sensors and multiple chemical probes for contaminants, new HPLC technology at sea in miniaturized packages. Biologists, chemists and engineers are working together to develop better, sensitive techniques to use

aboard SAV or other platforms and often these platforms can gather data in time-space while being unmanned for a period. Studies that are multi-scaled and multi-disciplinary in linking impacts in aquatic systems to other systems would be especially welcome.

SS 3-09 Climate-Lake Interactions

Organizer: Sherilyn Fritz (sfritz2@unl.edu)

Climate affects lakes directly through precipitation and temperature influences on lake energy and hydrologic budgets, as well as indirectly through processes driven by changes in stratification patterns, lake level, and catchment inputs. Lacustrine sediment records are commonly used to infer past climate variability, however, because of the diverse array of climatic influences on lake structure and function, a unique climatic interpretation of the stratigraphic record is often difficult or impossible. Here we consider studies that try to understand and constrain the climatic interpretation of lacustrine sedimentary records by incorporating studies of lacustrine and climatic processes. We seek contributions that include empirical or modeling studies of lake energy and hydrologic budgets or groundwater-lake interactions, studies based on modern calibration data sets, or laboratory studies that consider physical, chemical, and/or biotic variation influenced by climate. Papers on modern processes do not need to explicitly consider paleolimnological records but must be relevant to understanding lake processes at time scales of decades to millennia.

SS 3-10 Ecological Implications of Terrestrial Inputs into Lakes and Ponds

Organizers: Pamela Geddes (pgeddes@uchicago.edu) and Jay Lennon

Freshwater ecosystems are intimately linked to their surrounding watersheds through inputs of materials and energy. Most freshwater ecosystems receive inputs of terrestrial organic matter that can subsidize populations, structure communities, and affect ecosystem functioning. For example, particulate detritus is a large source of energy for organisms inhabiting headwater streams. Lakes also receive inputs of terrestrial organic matter, but mostly in dissolved form (e.g., dissolved organic matter, or DOM). Although limnologists have long recognized the magnitude of DOM inputs to lakes, it is still unclear how these inputs manifest themselves at different levels of ecological organization (i.e., populations, communities, and ecosystems). This uncertainty arises largely because terrestrial DOM has diverse effects on aquatic ecosystems. Terrestrial DOM is a potential source of energy, but also modifies many physical and chemical attributes of lake ecosystems. In this session we will attempt to merge knowledge concerning the ecological effects of terrestrial DOM on lake and pond ecosystems, focusing on two related topics: The effects of DOM at different levels of biological organization and the effects of DOM on ecosystem stability.

SS 3-11 Cycling and Transport of Trace Substances at the Sediment/Water Interface

Organizer: Robert Mason (mason@cbl.umces.edu)

In order to investigate trace metal and organic contaminant cycles in aquatic ecosystems, one must understand interrelated physical, chemical, and biological processes, such as the importance of the processes occurring at the sediment-water interface. The purpose of this session is to bring together researchers studying processes at the sediment-water interface and to allow a forum for the discussion of new and innovative studies and techniques. Topics include, but are not limited to: factors controlling fluxes to and from sediments; oxidation and reduction mechanisms for trace metals; linkages between major redox elements (S, Fe, Mn) and trace metal cycling; diffusive and advective controls over sediment-water exchange; and the importance of the benthic boundary layer in chemical cycling.

SS 3-12 Large Scale Ecosystem Manipulations

Organizer: Andrew Heyes (heyes@cbl.umces.edu)

A number of large-scale studies are looking at the impact of environmental contaminants, and the impact of man's manipulations of the landscape on ecosystems. Presently a number of long-term studies are on-going in the Experimental Lakes Area in Canada where, for example, mercury and an endocrine disruptor are being added to lakes and their watershed to assess the overall processes controlling their fate, transport and bioaccumulation into aquatic food chains. In addition, studies are also looking at the impact of reservoir flooding and other large-scale manipulations on the fate and transport of contaminants and other chemicals in these systems. This session aims to bring together investigators involved in large scale experiments to discuss the potential of such experiments to answer fundamental questions, the problems associated with approaches and extrapolation, and to contrast the results obtained at this experimental scale with those obtained with similar investigations at the mesocosm or laboratory scale.

SS 3-13 Natural Disturbances on Landscapes and Their Impacts on Aquatic Systems

Organizers: Kathleen Laird(lairdk@biology.queensu.ca) and Brian Cumming

Natural disturbances such as climate, fire, windthrow, earthquakes and hurricanes influence watershed processes and have impacts on lakes and other aquatic systems. These disturbances impact the chemical, physical and biological properties of aquatic systems. Long-term monitoring data, before-and-after comparative data and paleolimnological data provides a means in which to evaluate the intensity and frequency of such disturbances. The main focus of this session will be on natural disturbances on watersheds and their impacts on lakes. However, impacts on other aquatic systems may be included.

SS 3-14 An Interdisciplinary Journey Towards Integrated Aquatic Sciences: Homage to Jacob Kalff

Organizers: Carlos Duarte (cduarte@uib.es) and Yves Prairie

The year 2002 is a key milestone in the scientific journey of Jacob Kalff, Professor at McGill University, Montreal: Prof. Kalff will retire in summer 2002. The ASLO-2002 meeting in Victoria is a most timely opportunity to celebrate his contribution to aquatic sciences. The theme of the ASLO-2002 meeting in Victoria is particularly suited for this event, since Prof. Kalff's contribution embraces a surprisingly broad spectra of subjects, including plankton ecology, macrophyte ecology, microbial ecology, sedimentary processes, the fate and sources of pollutants in aquatic ecosystems, stream ecology, and watershed effects on freshwater ecosystems; as well as a driversity of ecosystem types, spanning from Arctic lakes to tropical lakes and the ocean. This session will contain an introductory talk by Prof. Kalff, and will be followed by contributions by some of his many former associates, students and others, which would collectively emphasize interdisciplinary linkages in aquatic sciences.

SS 3-15 Physical Forcing and Pelagic-Benthic Interactions in Aquatic Systems

Organizers: Craig Tobias (ctobias@mbl.edu), Bruce Peterson, Linda Deegan and Jeff Hughes

The function of estuarine and aquatic systems within the landscape results from complex physical, chemical, and biological interactions. This special session will explore these interactions in a variety of freshwater and marine environments. Increasingly, interdisciplinary collaboration among scientists has been required to more fully understand these complex systems, and in turn provide a more solid foundation upon which to manage coastal and aquatic environments. Papers will be sought that demonstrate cross-discipline collaboration, integration of physical, chemical, and biological approaches, and synthesis of hydrology and ecology through the use of models. Specific attention will be paid to physical controls and feedbacks on pelagic coupling with littoral and benthic zones, nitrogen and carbon flow through foodwebs, and nutrient cycling. Because the session will focus on multi-disciplinary synthetic approaches to system-scale questions, we believe that it will be of interest to a large breadth and number of aquatic and marine scientists.

SS 3-16 Lentic-Lotic Linkages in Freshwaters: Comparisons from Different Ecosystems

Organizers: Wayne Wurtsbaugh (wurts@cc.usu.edu) and Michelle Baker

Until recently, researchers studying lentic and lotic systems have largely ignored each other, despite the fact that these systems are usually linked together in landscape patterns that influence nutrient and water transport, water temperatures, biotic processes and ecosystem function. Lentic ecologists have generally considered streams simply as delivery devices for water and nutrients. Conversely, stream ecologists most frequently have treated lakes and reservoirs as interruptions of the normal stream flow. Early research focused on the impacts of reservoirs on river function, the influence of beaver ponds on boreal ecosystems, and the connectivity of rivers and their flood plains. Recently, researchers have begun to investigate how streams and lakes interact in watersheds, including landscape patterns of lake and stream linkages. This session will bring together researchers who have done pioneering research linking lentic and lotic ecosystems to share their theories and results on the importance of lentic-lotic connections for biological productivity, migrations of fishes and other organisms, and watershed hydrology.

SS 3-17 Global Mercury Cycling: From Natural to Anthropogenic Sources

Organizers: Danielle Fortin (dfortin@science.uottawa.ca) and David Lean

Mercury is naturally present in ecosystems, but it is also recognized that human activities, such as industrial manufacturing, and energy production through fossil fuel combustion and waste incineration, are increasing Hg loading in the atmosphere, leading to the contamination of the environment. Hg contamination of aquatic ecosystems has become a cause of great concern for several countries, because several fish species have been reported to bear high levels of Hg. The focus of this special session will be on Mercury cycling in the environment, more specifically on the mobility and transformation of Hg in the atmosphere, hydrosphere and lithosphere and on the physical, chemical and biological factors affecting its fate.

SS 3-18 Habitat Coupling in Lakes

Organizers: Daniel Schindler (deschind@u.washington.edu) and Jake Vander Zanden

Lakes are complex ecosystems composed of distinct habitats coupled by biological, physical and chemical processes. While the ecological and evolutionary characteristics of aquatic organisms reflect habitat coupling in lakes, limnological research has primarily emphasized pelagic processes. Pelagic, benthic and riparian systems have been largely studied isolation from each other, although biological habitat coupling has important consequences for nutrient cycling, predator-prey interactions, and food web structure and stability. This proposed session will highlight recent advances in studies of habitat coupling in lakes, and will address their implications for understanding ecosystem processes. Talks will include benthic-pelagic, terrestrial-aquatic, marine-lentic and lotic-lentic linkages. A central theme will be the role of anthropogenic disturbances such as lake eutrophication, habitat modification, and exotic species introductions, which may severely alter habitat connections, trophic dynamics and flows of nutrients and energy in lake ecosystems.

SS 3-19 Role of Benthic Communities in the Cycling and Balance of Nitrogen in Bays and Estuaries

Organizers: Jeffrey Cornwell (cornwell@hpl.umces.edu) and Michael Kemp

In the sediments of shallow water systems, processes such as remineralization, nitrification, denitrification and nutrient

burial are a dynamic part of the nitrogen cycle. Sediment N cycling is affected by organic matter supply, overlying water and sediment oxygen concentrations, the activities of bioturbating animals and benthic photosynthetic processes. The emphasis of this session is on the role of sediment nitrogen cycling processes on ecosystem nitrogen cycling, with a particular emphasis on new advances in rate measurements. We seek a diversity of presentations from freshwater, estuarine and marine ecosystems.

SS 3-20 From Trees to Large Woody Structure: Linking and Managing Riparian Areas and Aquatic Environments

Organizers: Michael A. Bozek (Michael.Bozek@uwsp.edu)

Riparian areas are inextricably linked to aquatic systems and among the most visible linkages between land and water are trees. With the age of many species of trees spanning decades and even centuries, land uses that alter riparian forests have long-range implications on effects to aquatic systems. Understanding these roles is critical as development along rivers and lakes is proceeding at unprecedented rates under burgeoning population increases. Science-based management can provide the foundation necessary to properly manage riparian forests and provide long-term sustainable sources of wood and its benefits to aquatic systems. Most of our understanding of the functional roles trees play in aquatic systems comes from research in fluvial systems and research in lacustrine systems is starting to increase. This symposium will explore the dynamic processes and functional roles that link trees in terrestrial and aquatic environments.

SS 3-21 Deconstructing Rivers: The Ecological, Geomorphic, and Social Consequences ff Dam Removal

Organizers: Gordon E. Grant (gordon.grant@orst.edu) and Martin W. Doyle

Removal or breaching of dams and other engineered river structures that have either outlived their original purposes, or pose risks to human safety or ecosystems is rapidly emerging as a global issue. Predicting fluvial and ecological response to such removals is a critical need but challenging, due to complex upstream and downstream process linkages and limited data. Spurred on by the scientific possibilities for understanding fluvial systems that dam removals represent, new studies have been initiated around the world in the past few years to explore the ecological and geomorphic responses, both positive and negative, to dam removal. This session will focus on results from these studies, and bring an international perspective to the issues surrounding removal of human engineered structures from river systems. Papers are solicited that explore the ecological, geomorphic, hydrologic, or social consequences and implications of dam removal.

Sub-theme 4: Linkages Beyond Aquatic Sciences

SS 4-01 The Role of the Ocean, Atmosphere, and Air-Water Exchange in the Long Range Transport and Distribution of Persistent and Bioaccumulative Pollutants

Organizer: Joel Baker (baker@cbl.umces.edu)

Recent studies have demonstrated that contaminants can accumulate in the remote polar regions of the globe and that high concentrations of these pollutants exist in polar bears and other high latitude species. Recent examples of this process include PCB's and mercury. While PCB's are transported and deposited due to the "distillation effect", the deposition of mercury is strongly determined by the unique atmospheric chemistry of the Arctic during polar sunrise. This session is seeking papers that deal with: quantifying the concentration and fate of pollutants in polar regions; the transport of contaminants from mid-latitudes to the Arctic; the details of the complex processes in the atmosphere and surface ocean, such as wet and dry deposition, gas evasion and re-emission of gaseous components; and the role of ocean circulation in the transfer of these pollutants on a global scale. Studies focusing on both current and historically-emitted pollutants are welcome.

SS 4-02 The Role of Microbiology in Trace Metal and Organic Contaminant Cycling in Aquatic Systems

Organizers: Jani Benoit (jbenoit@princeton.edu) and Mark Marvin-Depasquale

Today there is growing awareness of the interdisciplinary nature of environmental sciences. In order to investigate trace metal cycles in aquatic ecosystems one must understand a myriad of physical, chemical, and biological processes. Accordingly, the chemist needs to recognize cellular processes, and the biologist must consider chemical speciation. The purpose of this session is to bring together researchers working at the interface between the chemical and microbial realm. It is designed to facilitate discussion between scientists from various disciplines investigating the processes of trace metal and contaminant uptake, transformation, bioaccumulation, and toxicity. Topics would include, but not be limited to: a) Microbial trace metal uptake processes; b) Trace metal requirements/toxicity to aquatic organisms; c) Biologically-mediated trace metal transformations; d) Microbial transformation of organic compounds.

SS 4-03 Factors Controlling the Bioavailability and Bioaccumulation of Inorganic and Organic Chemicals into Aquatic Food Chains

Organizer: Robert Mason (mason@cbl.umces.edu)

The bioaccumulation of metals, especially mercury and organic contaminants such as PCB's into aquatic food webs is of importance from both a wildlife and human health perspective. However, while the overall concentrations of contaminants in organisms has been measured, the processes involved in determining the bioaccumulation and trophic transfer are not well known. This session seeks papers dealing with the processes of bioaccumulation, the

importance of benthic versus pelagic pathways, and papers looking at relationships between tissue concentration and trophic status. In addition papers investigating the links between bioaccumulation and water quality, water column speciation, food web structure and other factors are welcome.

SS 4-04 The Relevance of Gelatinous Zooplankton to Interdisciplinary Linkages

Organizer: Patricia Kremer (pkremer@uconn.edu)

This session would include a range of topics relevant to the sub-themes of the meeting but which focused on gelatinous zooplankton. I would be sure to solicit talks and posters that emphasized the importance of gelatinous zooplankton in food webs that affected fish/fisheries; the use of molecular techniques in the study of gelatinous zooplankton (including taxonomy and invasion vectors); examples of species invasions involving gelatinous zooplankton. There has been exciting recent work in all these areas, and this special session will be an attempt to integrate divergent views on the role and dynamics of gelatinous zooplankton.

SS 4-05 Tribute to Thomas Frost

Organizers: Maria Gonzalez (gonzalmj@muohio.edu) and Daniel Schneider

This symposium will be a tribute to Tom Frost's scientific contributions. Tom was an active member of ASLO, Associate Director of the Trout Lake Station of the University of Wisconsin Center for Limnology, and past program director for Ecology at the National Science Foundation. Tom's scientific interests were very broad, ranging from effects of environmental stresses in aquatic ecosystems to the ecology of zooplankton and freshwater sponges. Tom was interested in long term ecological patterns and large scale experiments. The theme of the symposium will encompass several of these areas in which Tom made important contributions. We are inviting to participate in this symposium several of his former collaborators, former students, as well as other researchers working on issues central to Tom's interests and accomplishments.

SS 4-06 Speciation, Bioavailability, and Impacts of Atmospheric Trace Metals in Aquatic Systems

Organizers: John Reinfelder (reinfelder@envsci.rutgers.edu) and Marc Amyot

The atmosphere is an important link between natural and anthropogenic terrestrial trace metal sources and aquatic ecosystems. The local, regional, and global atmospheric transport of trace metals has the potential to influence primary production, microbial production, nitrogen fixation, phytoplankton species composition, and the accumulation of potentially toxic metals in aquatic food webs in a wide variety of fresh and marine surface waters. The impact of the atmospheric deposition of trace metals to these waters depends on the chemical forms in which the metals are delivered and those they assume after deposition. This session would attract aquatic chemists interested in the speciation and reactivity of trace metals in atmospheric deposition, biogeochemists interested in the role of atmospheric deposition on major element cycles, freshwater and marine aquatic ecologists who seek to understand nutrient effects of atmospheric trace metals, environmental scientists and aquatic toxicologists interested in the fate, transport, and toxic effects of trace metal inputs.

SS 4-07 Lipids/Fatty Acids in Ecological Research

Organizers: Michael Arts (Michael.Arts@ec.gc.ca), Michael Brett, and Doerthe Mueller-Navarra

A recent, exciting phase of limnology, which may be called biochemical limnology, is evolving rapidly. The integration of recent studies of food biochemistry with traditional studies of food quantity has begun to reveal the striking importance of food quality and, in particular lipid quantity and quality, to reproduction and to the growth dynamics of many aquatic animals. It is now well recognized that lipids are the premier energy storage vehicles in aquatic ecosystems. The amount of stored energy that an organism has accumulated or lost is thus a good reflection of its recent feeding success, current physiological status and its future reproductive and/or survivorship potential. These features are superimposed over the food situation, but are not necessarily directly determined by the current food condition. Thus, measurement of energy reserves can offer powerful insights into the processes that regulate and modify species demographics and, ultimately, control species diversity. Since the early 1970s it has been possible to identify and quantify over 60 individual fatty acids (FA) using capillary (open-tubular) gas-liquid chromatography. Many of these FA are inextricably linked with key physiological and biochemical processes and are thus integral to proper ecosystem functioning. Some of these FA cannot be synthesized at all or are ineffectively synthesized by animals and are thus termed essential fatty acids (EFA). Recent evidence suggests that these EFA are important drivers of ecosystem health/stability and are therefore likely to be highly conserved in aquatic food chains. It is now widely accepted that EFA are an obvious source of human health and well-being (e.g. cardiovascular fitness). Further, there is now growing evidence that EFA have been a primary force in our past evolution. Presentations are welcome on topics (but are not limited to) on the role/utility of lipids/fatty acids in/as: a) the dynamics of energy flow; b) trophic markers of feeding; i.e. lipid biomarkers; c) chemical communication; d) maintenance of ecosystem health/stability and biodiversity; e) predictors (bioindicators) of stress; f) as a vehicle for contaminant accumulation and transfer.

SS 4-08 Global Freshwater Quality: Issues, needs and solutions

Organizers: Richard Robarts (richard.robarts@ec.gc.ca) and Robert Max Holmes

Freshwater quality is increasingly recognized as an issue of international importance. An estimated 1.4 billion people lack safe drinking water leading to 3.3 billion cases of human illnesses and 5.4 million deaths per year. According to some forecasts, as much as two thirds of the world population will face shortages of clean freshwater by the year 2025. Reliable, consistent and appropriate information is the key to understanding and improving the world's supply and quality of freshwater. There is a general consensus that our knowledge of the state of the world's freshwaters needs to

improve. Indeed, freshwater and marine waters are intimately linked in the hydrological cycle so that an improvement in our knowledge of the quality of freshwater will also lead to benefits for the marine environment. The UN's 1997 comprehensive assessment of the world's freshwater resources was hindered by: 1) The absence of reliable, comprehensive data from many countries; 2) Difficulties in assessing and comparing information from different countries and organizations. Furthermore, the complexity of water quality issues (e.g., public health issues, agriculture, food production, microcontaminants, long range transport of contaminants to pristine areas) has grown. New and different types of data, in addition to that historically collected in water quality monitoring programmes (e.g., simple chemical parameters, such as major ions, and indicator bacterial data), is required and in a timely manner. The application of technological innovations can serve to reduce costs and increase efficiency of monitoring programmes. In this session the status and trends in water quality will be examined for a number of large-scale regions. In addition, presentations will cover the problems and examine some of the solutions in trying to assess water quality at large scales and to identify emerging issues and environmental "hotspots".

SS 4-09 Does Intentional Nutrient Fertilization (N, P And Fe) Foster C Sequestration and/or Increased Fish Fertilization?

Organizers: Jonathan Cole (colej@ecostudies.org) and Jonathan Phinney

Intentional nutrient fertilization of aquatic systems is a controversial topic among scientists, but is gaining interests from private industries and government agencies (e.g. World Bank) to combat increasing CO2 emissions and declining fresh water and marine fisheries. Presently intentional fertilization is an issue "below the radar" of most scientists and policy makers, but will gain importance as Carbon mitigation measures are discussed in international treaties and fishery stocks continue to decline. Indeed the iron addition experiments in the Pacific and Southern Ocean have prompted private companies to study the efficacy of ocean fetilization for potential Carbon trading credits. Intentional N and P enrichment of coastal marine waters and oligotrophic lakes have been proposed to augment fish production. Better understanding of whether these practices could succeed and predicting their environmental consequences require expertise and linkages between limnologists and oceanographers. This special session will cover the efficacy of intentional fertilization to sequester atmospheric CO2 and increase fish yeilds in fresh and marine systems.

SS 4-10 Interdisciplinary Contributions to the Maintenance of the Integrity of Aquatic Ecosystems

Organizers: Carlos M. Duarte (cduarte@uib.es) and Denise Breitburg

Aquatic ecosystems are suffering a widespread deterioration due to growing pressure from human activities, both through direct forcing and indirect effects derived from global change. Approaches derived from aquatic sciences alone have proved relatively ineffective at addressing both the sources and consequences of these changes, which extend beyond the domain of aquatic sciences to involve socioeconomic drivers and feed-backs, and interactions with the atmosphere and the adjacent land ecosystems. Aquatic ecosystems are complex systems which analysis defeat conventional approaches tools, and could benefit from the application of new developments in complex systems theory. This session will focus on presentations reporting on the potentials of approaches involving interdisciplinary efforts extending beyond aquatic sciences to provide the scientific knowledge required to understand, model and manage aquatic ecosystems, as well as case-studies providing evidence of the power of these interdisciplinary efforts by example. In particular contributions are welcomed that will integrate effects of alterations in distant watersheds as well as transport of atmospheric-borne agents on coastal waters, introduce new concepts derived from the application of concepts and models derived outside aquatic sciences, as well as perspectives derived from consideration of socio-economic drivers of anthropogenic pressure on coastal ecosystems.

SS 4-11 Water and Society - Science and Management in a Social and Economic Context

Organizers: Graham Harris (graham.harris@cbr.clw.csiro.au) and Asit Mazumder

The major objective of this session is to bring together people from some of the large-scale watershed management programs around the world to discuss and share ideas about the role of water science in watershed management, the interface between science and the community and the impact of science on government policy and regulatory frameworks. Water is the key to global sustainability - we need to understand the interactions and manage our water resources more effectively. Multiple use management, water use efficiency, water quality, land use and the human society are all inter-linked. There are a number of major watershed management programs around the world - eg Murray-Darling Basin in Australia, Everglades and Mississippi/Gulf of Mexico in the USA, N. Ireland and the Bush Catchment, which are attempting to manage water allocation and water quality and landscapes in complex economic and social environments. There are also issues with multiple use conflicts in urban watersheds and drinking water supply catchments in Sydney, New York, Victoria BC etc. Our objective is to discuss the intimate linkages between the human population, land use, water quality/quantity and ecosystem management. In recent examples in the USA, UK and Australia, agricultural activity is a key to both land use management and water quality. In many countries declining terms of trade for agriculture is having major effects on land use and water quality. We can use these case studies of the new kind of natural resource management science that is emerging. This session will discuss the science-economics-policy interface, which might be the future of natural resource management around the globe and a new kind of science is required.

SS 4-12 Linking Science with Management of Freshwater Resources

Organizer: Karl Havens (khavens@sfwmd.gov)

With a rapidly growing human population and demand for freshwater, the world's lakes, rivers, and wetland ecosystems are being impacted at an ever-increasing rate. At no time in the past has there been a greater need for sound management of these aquatic resources and their watersheds, and for integration of science with resource management. Yet at a time when there is a dire need for water management agencies and scientific institutions to invest in more research, especially in water-stressed areas, just the opposite may be occurring. Budget cuts, changes in government policy, and other factors risk reduction, rather than strengthening, of the role of hypothesis-driven research in ecosystem management. This special session will address this general issue by means of an introductory commentary, followed by a series of case studies and larger-scale synthesis papers that describe how sound programs of ongoing hypothesis-driven research are facilitating the effective management of freshwater resources.

SS 4-13 Water Quality of Lakes, Rivers and Coastal Zones

Organizers: Sunny Jiang (sjiang@uci.edu) and Peiyuan Qian

Poor water quality is of concern for both its risk to public health and its impact on the integrity of aquatic ecosystems. Nearly 90 percent of the world population resides near coastal areas. This rapid development and urbanization along the coastal zone results in conversion of open land to an impermeable surface which increases storm water runoff into coastal waters. In addition, human and economic growth is also putting tremendous pressure on our sewage treatment facilities. Partially treated or untreated domestic and industrial wastewater is increasingly discharged to our waterways and coastal oceans. These urban runoff and sewage discharges alter the natural aquatic system by elevating the organic nutrient load resulting in eutrophication, harmful algal blooms, proliferation of pathogenic bacteria and loss of habitat for important aquatic/aquaculture species. In addition, urban discharges also transport pathogens from human waste into our recreational waters. Pathogenic viruses have been detected in coastal waters from the Florida Keys to Southern California Beaches. The focus of this special symposium is to review and assess the relationship between urban development and water quality in lakes, rivers and coastal zones in order to provide an integrated understanding of how to sustain a well-balanced ecosystem and assess risks to public health. This symposium will allow researchers to exchange information on new technologies for detection, prevention and mediation of current and future water quality problems.

Contributed Sessions for ASLO 2002

CS01 Air-Water Interactions
CS02 Aquaculture
CS03 Applied and Management Issues
CS04 Bacteria
CS05 Benthic-Pelagic Coupling
CS06 Benthos
CS07 Biodiversity and Bioinformatics
CS08 Biogeochemical Cycles
CS09 Chemical Processes
CS10 Climate Change, Interannual/Interdecadal Variation and Global Change
CS11 Continental Shelf Processes
CS12 Coral Reefs
CS13 Environmental Ecotoxicology
CS14 Estuarine and Near-Shore Processes
CS15 Fish
CS16 Harmful Algal Blooms
CS17 Invasive Species
CS18 Land-Water Margins
CS19 Macrophytes
CS20 Mesopelagic and Deep Sea Ecosystems
CS21 Microbial Dynamics
CS22 Modeling Approaches
CS23 Molecular Biology
CS24 Nutrient Dynamics
CS25 Optics
CS26 Organic Carbon Dynamics
CS27 Paleolimnology and Paleooceanography
CS28 Physical Processes
CS29 Phytoplankton
CS30 Primary Production
CS31 Remote Sensing and Technological Tools
CS32 Secondary Production
CS33 Sediment-Water Interactions
CS34 Stream Dynamics
CS35 Trophic Dynamics
CS36 Ultraviolet Radiation
CS37 Watershed Ecology and Ecosystems
CS38 Wetlands Ecology
CS39 Zooplankton
CS40 Other

Summary of Deadlines

Abstract Submittal Deadline ..... January 20, 2002
Authors Notified ..... February 2002
Meeting Schedule Posted on Web Site, Program Mailing to ASLO Members and Meeting Participants, and Student Travel Grant Recipients Notified ..... April 2002
Meeting ..... June 10-14, 2002

Abstract Preparation Specifications

All abstracts must be in English, using metric units. Do not include chemical or mathematical formulae, Greek characters, illustrations, figures or photos. Use no smaller than 10-point type. Do not use any formatting such as italics, bold, or subscript (CO_2 becomes CO2). Do not indent paragraphs. Use a single space between sentences. Use only the ANSI (American National Standards Institute) character set. [Adhere to a width of 105mm and a maximum height of 115mm (approx. 4.2" x 4.5").]

Each author citation should begin with a new line and be formatted as follows: last name and a comma, followed by the first initial (plus period) and the middle initial (plus period) and a comma, then institution and a comma, then city and a comma, then country and a comma, then e-mail address.

The title of the abstract must be in all caps and must not exceed 160 characters. The body of the abstract must adhere to a maximum count of 180 words, exclusive of the title and the author citations. Please

make the abstract as informative and representative of your presentation as possible.

The abstract text should be followed by your three session choices (in all capital letters) separated by one (1) space on a separate line. (Please list a specific "Other" last). The next new line should list your presentation preference (Oral or Poster). The last line of your abstract submission should identify the presenting author.

A sample of how the typed abstract should look is included. This format sample should be followed exactly, and abstracts must conform to these guidelines in order to be published.

Abstract Submission Procedures

The abstract submission deadline is midnight (Central Standard Time) on Sunday, January 20, 2002. All Internet and mailed submissions must be received by this date. (Mailed submissions must be sent in advance so that they are received, not postmarked, by this date.)

Stated guidelines and procedures must be followed exactly. If not, your paper will not be accepted. Abstracts can be submitted as follows:

1. Via the Internet. This method of submission is highly preferred. Go to the web site for complete instructions: http://www.aslo.org/victoria2002.
2. By mail. Submit the abstract on a 3.5" floppy disk (formatted for DOS) accompanied by one (1) original hard copy printed on white paper. All documents must be submitted in either WordPerfect for Windows or Microsoft Word for Windows file formats. Abstracts submitted in any other format are not acceptable and will be returned. Disks must be clearly and fully labeled with the name of the author to contact, institution name, mailing address, phone number, and e-mail address. Disk submissions must include a hard copy of the abstract, no exceptions. Fax copies of abstracts are not acceptable. Include the Abstract Submission Form along with the hard copy of the abstract. Please use a laser-quality printer to print the one hard copy that is required for mailed submissions.

Send originals and diskettes to: Helen Schneider Lemay, ASLO Business Office, 5400 Bosque Boulevard, Suite 680, Waco, TX 76710-4446.

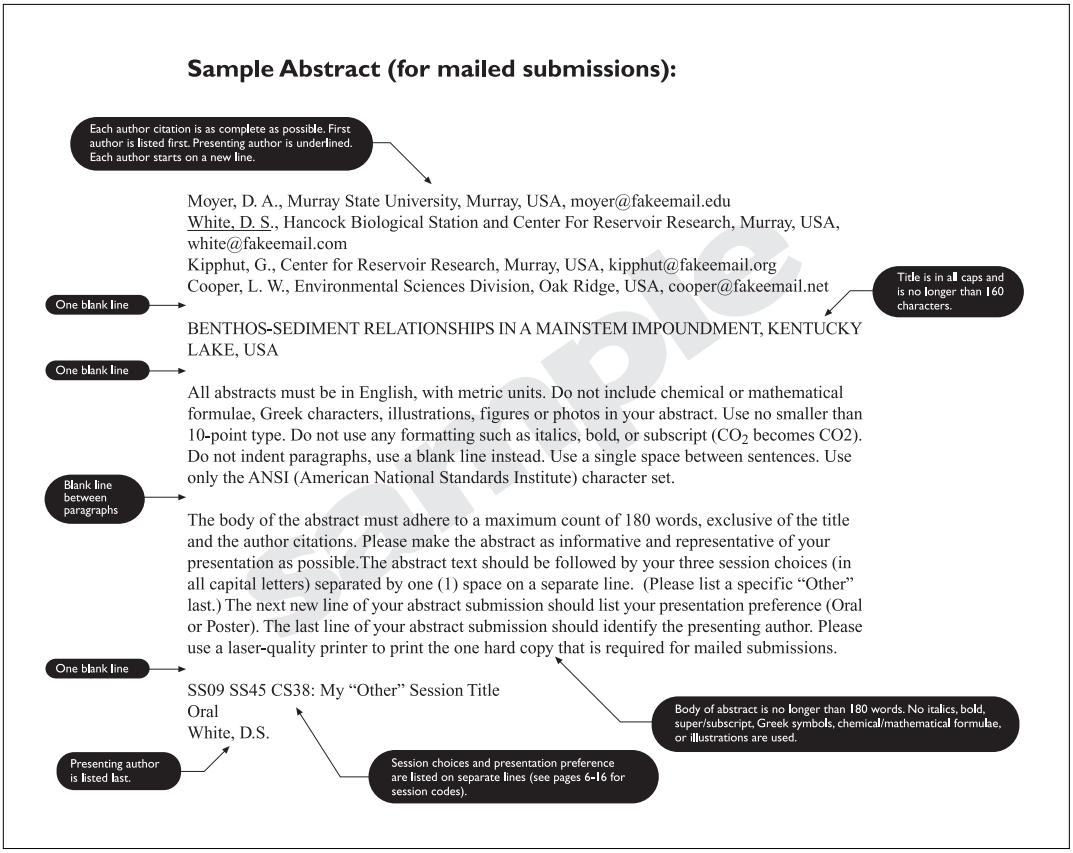
If you are not able to submit your abstract by one of these two methods, please contact Helen Schneider Lemay at (800) 929-ASLO (U.S. and Canada), (254) 399-9635 (Other locations), or via e-mail at business@aslo.org.

Please note:
- No e-mail submissions will be accepted.
- Abstracts will not be accepted if the presenting author has not registered.
- Faxed copies of abstracts are not acceptable.

Additional Charges to Authors
- Any author who submits an abstract on a disk and then also submits via the Internet will be charged a non-refundable duplicate submission fee of $60 USD.
- Likewise, any author who submits an abstract by mail and then resubmits the same abstract with revisions or changes or sends in a request for the appropriate changes to be made will be charged a non-refundable abstract change fee of $60 USD.
- An author who submits the same abstract more than once via the Internet will be charged a non-refundable duplicate submission fee of $60 USD.

Session Topic Codes
To assist the organizing committee in assigning your abstract to an appropriate special or contributed session, please use the session codes listed in this booklet. Please enter your first, second, and third choices under the Session Topic Code portion of the abstract form. Be sure to include the complete code for the appropriate session. While every attempt will be made to accommodate your assignment requests, the committee cannot guarantee that your abstract will be placed in any of the sessions chosen. Priority is given to the overall scientific program, and therefore final placement is solely at the discretion of the organizing committee.

Sample Abstract (for mailed submissions):



Abstract Submission Requirements

All persons wishing to contribute an abstract must send a registration form with payment for the full registration fee when submitting their abstract. ***Abstracts will not be accepted if payment for the one-day registration fee only is submitted.*** Only one paper per first author will be accepted. Each paper that is accepted must be accompanied by a registration fee paid by the presenting author. Please keep in mind that it may be necessary to accept for poster presentation some abstracts submitted for oral presentation, and those submit abstracts for poster presentation may be asked to do an oral presentation instead.

Originals, diskettes, and Internet submissions along with their accompanying registrations must be received by the submission deadline of midnight (CST) on January 20, 2002. As noted previously, an author's abstract and registration must be received at the same time regardless of how the abstract is submitted.

Author Notification

Presenting authors will receive confirmation by electronic means when the abstract and registration are received and will receive confirmation in this same manner when the abstract is accepted and assigned. Accepted abstracts will be posted on the web site after the scientific program schedule has been determined. If confirmation and notification by electronic means are not possible, please indicate the alternate method of notification when you submit your abstract.

Important Notes:

- Submission via the Internet is recommended and highly preferred.
- Payment of the full registration fee and completed form must accompany the abstract. (Abstracts will not be considered unless the presenting author has registered for the meeting and paid the full registration fee.)
- Abstracts will not be accepted by fax or e-mail.
- Do not mail in any abstracts or registration materials if you submit electronically!
- Abstracts must adhere to the guidelines and sample in this brochure.
- Only one paper per first author will be accepted. Each paper that is accepted must be accompanied by a full registration fee paid by the presenting author.
- Duplicate submissions will be charged a non-refundable processing fee of $60.00 USD.
- Abstract revisions or changes made by the ASLO Business Office will be subject to an abstract change fee of $60.00 USD.
- It may be necessary to accept for poster presentation some abstracts submitted for oral presentation, and likewise, some abstracts submitted for poster presentation may be accepted as an oral presentation.
- The submission deadline is midnight (CST) January 20, 2002, and will be strictly adhered to.

Oral Presentations

Talks will be a total of 15 minutes in length, including five minutes for questions and discussion. In special cases, and at the discretion of the session organizers, invited speakers and presenters may be given two consecutive slots. The time limit will be strictly enforced to facilitate movement between sessions. When completing the submission form, please check if you prefer to do an oral or a poster presentation and indicate if you were invited to present by one of the session organizers. This will assist the selection committee in the proper placement of your paper.

Note: It may be necessary to accept for poster presentation abstracts submitted for oral presentation and vice versa.

Audio Visual Equipment

A PowerPoint projector and a screen will be set up in each room. Presenters must provide their own lap top computer. To minimize any compatibility problems, please assure that your presentation design does not exceed XGA (1024 x 768). If your laptop is not already so equipped, you will need to bring your own power converter in order to convert to North American power. An overhead projector and/or a 35 mm slide projector only can be provided upon request. However, rental of a VCR, monitor, audio systems, computers, provision of extra power outlets, extra tables, stands, etc. can be handled for an additional cost and must be requested at the time the abstract is submitted. Any costs for additional equipment will be billed to the abstract's presenting author.

Posters

Poster space will be 4 ft. by 4 ft. (1.16m by 1.16m) in size. Poster sessions will be at the Victoria Conference Centre on Tuesday, Wednesday, and Thursday afternoons following the conclusion of the oral sessions on those days. Refreshments will be served during the poster sessions. Posters will be displayed during poster sessions that will take place on Tuesday, Wednesday, or Thursday, depending upon the poster session to which you are assigned. You will be notified of your poster session's time and day well in advance of the meeting, and you will be expected to be available to present your poster during your designated poster session. Posters must be prepared to exact specifications so that they fit within the space assigned to them, and poster presenters are asked to adhere to designated set up and tear down instructions and times.

Important note regarding poster presentations: Posters may be discarded by the convention decorator if they are not dismantled by the presenting author immediately after the conclusion of their poster session.

Commercial and Nonprofit Exhibits and Additional Sponsorship Opportunities

An exhibit area will be set up at the Victoria Conference Centre. Exhibits will be open to attendees on Tuesday, Wednesday, and Thursday, June 11 – 13, 2002. Both commercial and nonprofit exhibitors are encouraged to participate. The costs for exhibits are as follows:

Commercial (For-profit) ..... $1,150.00 USD
Non-profit ..... $750.00 USD

Exhibitors are invited to participate in the various social activities associated with the meeting by paying the additional spouse/guest fee of $100.00 USD.

Also, several opportunities are available for sponsorship of various breaks, receptions and other functions throughout the meeting, please contact the Exhibits/Sponsorship Coordinator at the ASLO Business Office, (800) 929-ASLO or (254) 399-9635 if you would like more information.

Minorities Program

The 13th annual ASLO Minorities Program will be held at the Victoria meeting. The initiative is a shared undertaking between Hampton University and ASLO and is funded by the Ocean Sciences Division of the National Science Foundation. Minority students will attend a pre-conference workshop and field trip and will give presentations in a student symposium. Students participating in this program will be aided by ASLO member volunteers who will serve as meeting mentors. If

you would like to recommend a student for the program, or if you are interested in serving as one of the meeting mentors, please contact:

Dr. Ben Cuker
Marine Science Department
Hampton University
Hampton, VA 23668
Phone: 757-727-5884
Fax: 757-727-5740
E-mail: benjamin.cuker@hamptonu.edu

Outstanding Student Poster Awards

ASLO will present several awards for the most outstanding posters presented by student members. Posters in all areas of aquatic science are appropriate, including theory, modeling, and laboratory or field experimentation. To be eligible, the student must be an ASLO member and first author on research that has not been presented previously at ASLO or other scientific meetings. Presentations will be judged on the basis of innovation/scientific insight, quality of experimental design/methods, and clarity/effectiveness of presentation. All posters submitted by students will be considered for the student poster awards. There is no need to apply.

Student Travel Awards

The ASLO board has approved a limited number of need-based student travel stipends to be awarded to students who make oral or poster presentations at the meeting as a first author. These special awards are available to full-time students currently enrolled in any university or college who are not supported by a grant or other source that could provide the necessary travel support. There are no restrictions on the residence of an applicant. The applicant must be a member of ASLO, first author on an oral or poster presentation, and cannot have received a travel award previously. In order to apply for an ASLO Student Travel Award, you must complete the ASLO Student Travel Award Application found in this brochure or on-line at http://www.aslo.org/victoria2002. In order for your Student Travel Award Application to be considered, it must be submitted at the same time your meeting registration, payment and abstract are submitted and received in accordance with all meeting deadlines.

Conference Events, Workshops, and Optional Evening Reception

Opening Welcome Mixer Reception (Sunday, June 9, 2002)
An opening welcome mixer reception will be held from 6:00 to 9:00 p.m. on Sunday, June 9, at the Empress Hotel. In addition to the reception, the conference registration area will be open at the nearby Victoria Conference Centre so that you can check-in for the meeting at this time.

Opening Session and Awards Presentation (Monday, June 10, 2002)
Attendees of the ASLO 2002 Summer Meeting will attend the welcome and opening session on Monday morning. The first Society award and the first plenary lecture will immediately follow.

Plenary Addresses (Monday, June 10, through Thursday, June 13, 2002)
Plenary lectures are planned each morning from 8:30 to 9:30 a.m., Monday through Thursday mornings. Extended coffee breaks will follow these presentations to allow attendees time to discuss the points of the address further.

Awards Presentations (Monday, June 10, through Thursday, June 13, 2002)
One Society award recipient will be recognized and honored each day as part of the day's general session. The plenary lectures will immediately follow each award presentation.

Annual Business Meeting (Monday, June 10, 2002)
ASLO's annual business meeting is scheduled for Monday evening from 5:30 to 6:30 at the Victoria Conference Centre. All ASLO members and meeting participants are encouraged to attend.

Poster Sessions and Receptions (Tuesday, June 11, through Thursday, June 13, 2002)
Poster sessions and receptions will take place in the Victoria Conference Centre on Tuesday, Wednesday, and Thursday evenings from 5:00 to 7:00.

Optional Wednesday Evening Reception (Wednesday, June 12, 2002)
Cost: $40.00 USD per person (Includes transportation, admittance to the gardens, and hors d'oeuvres. Beverages will be available.)

Butchart Gardens with its spectacular flowered landscapes, flowing streams, fountains and ponds have been a renowned destination for visitors to Victoria since the turn of the century. In 1904, the concept of The Butchart Gardens began with an effort to beautify a worked-out quarry site on the 130-acre estate of Mr. and Mrs. R.P. Butchart, pioneers in the manufacture of Portland Cement in Canada. Their endeavor became a family commitment to horticulture and hospitality spanning more than 90 years and delighting visitors from all over the world. From the exquisite Sunken Garden to the charming Rose Garden, this 50-acre showplace still maintains the gracious traditions of the past, in one of the loveliest corners in the world.

Participating in this planned optional activity will allow you to enjoy the flowers by daylight, stop for awhile to enjoy refreshments and hors d'oeuvres and then see the Gardens again by the romantic Night Illuminations, a time when cleverly concealed, indirect lighting creates an iridescent glow that transforms these famous gardens into a fairyland, richly scented with summer blooms. Don't miss the magnificent Ross Fountain made all the more stunning by creative lighting effects.

Sunday Workshops

This year's meeting will have two training workshops on emerging technology and instrumentation. These workshops are being offered at the Victoria Conference Centre on Sunday, June 9, 2002, before the meeting begins. The workshops are primarily introductory-level classes for conference participants who have little or no experience in the field. A nominal fee will be charged for each. More details and updates on the tutorials can be found on the conference web site: http://www.aslo.org/victoria2002 or by calling the ASLO Business Office: (254) 399-9635 or (800) 929-ASLO.

Workshop 1: Modern ICPMS, Principles and Practice
Date: Sunday, June 9, 2002
Time: 11:00 a.m. – 12:00 p.m.
Location: Oak Bay Room, Victoria Conference Centre
Fee: $10.00 USD

This one-hour seminar reviews the current uses in aquatic sciences for ICPMS, covering elemental analysis (quantitative multi-element analysis and low-level oligo-element analysis), elemental ratios and isotope

ratios. It will review making these measurements in aqueous samples and in solid phases. Current instrumentation, including quadrupoles ± collision cells, high resolution magnetic sector, multicollector ICP-MS, time of flight ICPMS, and ion trap ICPMS will be reviewed. Comprehensive bibliographies on selected instrumental topics will be distributed. The lecture is open to everyone and will be given by Chuck Douthitt, a technical representative from ThermoFinnigan. He will be available afterwards to analyze specific technical questions. A nominal fee of $10.00 and advance registration are required to participate in this workshop.

Workshop 2: Use of GIS in the Aquatic Environment
Date: Sunday, June 9, 2002
Time: 1:00 - 3:00 p.m.
Location: Oak Bay Room, Victoria Conference Centre

This workshop will discuss the most important GIS concepts, functions, and tools that are essential to the successful application of GIS technology in the aquatic environment. Included will be examples of the GIS tools for managing aquatic data, analyzing aquatic systems in a spatial context, relating non-spatial data, and displaying analysis results in a meaningful way. Geostatistical analysis and 3D visualization tools will be introduced also. A portion of the workshop will be "hands-on," and each participant should bring a laptop computer to take full advantage of this session. The workshop will be presented by ESRI Applications.

For more information about the workshop, please contact James Henderson (jim.henderson@esri.com). A nominal fee of $25.00 and advance registration are required to participate in this workshop.

Organized Scuba Diving Trip

An organized scuba diving excursion is being planned for Saturday, June 15, 2002, following the conclusion of the ASLO Summer Meeting. A maximum of 8 (eight) divers can take part in this field trip which will involve two charter dives out of Victoria or Sidney, Vancouver Island, B.C. In order to participate, you must have a minimum dive experience of 15 dives with five in the last six months. Advance registration is required.

Cost is $80.00 USD and includes transportation to and from the dive site, lunch and air for two dives. Equipment rentals are extra.

Please note: If there are more than 8 participants interested, an additional dive will be arranged for Sunday, June 16, 2002.

Field Trip Coordinator: Maggie Squires, Simon Fraser University, Burnaby, B.C., Canada, V5A 1S6. Please contact: msquires@sfu.ca if you would like to take part in this special activity or if you have questions.

Small Group Get-together Opportunities

Along with the planned events and activities, the conference organizers encourage friends and colleagues to come together to continue conversations and networking following the sessions each day. Designated conference hotels will have ASLO hospitality rooms to provide a meeting place for small groups and a spot to continue informal conversations among friends. Also, the city of Victoria lends itself to these types of informal gatherings due to the many restaurants, parks, and pubs located throughout. The ASLO booth in the exhibit area and the message boards located nearby are excellent places to leave messages for your colleagues while you are attending the meeting.

Self-Guided Tours and Extra Activities

This spectacular city with its coastal, mountain, and park settings offers a wide variety of outdoor activities. Victoria is a safe, multi-cultural city full of charm, character, and vitality. With everything that the city has to offer, it's no surprise Victoria has been voted one of the top best destinations in the world.

Although the meeting will take much of your time, we do not want you to miss out on any of the history, culture, beauty, museums, and other places of interest that make Victoria unique. Victoria is a very cosmopolitan city that provides a small town atmosphere.

We encourage you to visit Tourism Victoria's downtown Visitor Information Center on the Inner Harbour for free maps, brochures and information on attractions, restaurants, services, tours, cultural activities and more. The Visitor Center is a convenient outlet for transportation and sightseeing. Look for the heritage art deco tower at the northeast corner of the waterfront causeway.

If you would like details before you arrive in Victoria, consult the Tourism Victoria web site at www.tourismvictoria.com for complete and up-to-date information that will help you plan your trip. You also can contact The Greater Victoria Visitors and Convention Bureau at 812 Wharf Street, Victoria, British Columbia, Canada V8W 1T3; (250) 953-2033 Phone, (250) 382-6539 Fax or info@tourismvictoria.com E-mail.

Following is a listing of self-guided tours that you may want to try. The Victoria Visitor Information Center will have maps and more details.

- Walking Tours
- Museums
- Heritage Home Tours
- Afternoon Tea
- Hiking Tours
- Bird Watching Tours
- Boat Tours

Organized Activities

The activities that follow will allow you to enjoy all the wonder found in this part of the world. If you would like to take part in one of the activities listed below, we have provided the appropriate contact information so that you can sign up for these activities on your own. Reservations are on an individual basis and cannot be made by using the conference registration form or the web site. Prices are stated in Canadian dollars. Both prices and times shown are subject to change, therefore you must call the appropriate contact to make your reservations and to confirm rates and times.

Vintage Rail (Malahat) Excursion
Departures: 11:00 a.m. and 2:00 p.m.
Cost: $34.00 CDN per person

Experience the magic of vintage rail travel aboard your choice of heritage, deluxe or parlor car. Departing from the downtown Victoria train station, the two and one-half hour rail trips travel north along the E&N Railroad, climb up Vancouver Island's Malahat Mountains and cross over two 300-foot high trestle bridges. An eco-tour narration and camera-ready scenery provide guests with a view of the Island that is unavailable any other way.

Contact: Ross Rowland, Pacific Wilderness Railway Tours, Phone: 250-381-8600 or Fax: 250-381-8615

Ride The Line & Dine Tour to the Aerie Resort
Departure: 11:00 a.m. (5 ½ hours)
Cost: $124.00 CDN per person (Includes train, transfers, four-course gourmet meal and discussion with the chef.)

This tour is exclusive to Pacific Wilderness Railway!!! Enjoy the luxury of dining at the Aerie Resort, one of Conde Nast Traveler Magazine's top 100 hotels in the world.

Contact: Ross Rowland, Pacific Wilderness Railway Tours, Phone: 250-381-8600 or Fax: 250-381-8615

Trains Trestles and Totems Tour
Departure: 11:00 am (5 ½ hours)
Cost: $64.00 CDN per person

Experience the rich culture of our largest First Nations Band with a visit to the Quw'utsun' Cultural Centre. Enjoy a narrated rail trip to Malahat Station where a Gray Line motor coach awaits for the scenic trip to Duncan. Return to Victoria via motor coach.

Contact: Ross Rowland, Pacific Wilderness Railway Tours, Phone: 250-381-8600 or Fax: 250-381-8615

An Evening on Victoria's Ale Trail™
Time: 4:30 to 10:00 p.m.
Cost: $119 CDN per person (Price includes transportation originating from and returning to your accommodation, First Island tour guide, brewery tour guides, four brewery tours, tastings at each location, appetizers at one brewpub, three-course dinner at another brewpub including appetizer, choice of main course, dessert and coffee or tea).

The Egyptians did it. The Danes did it. Even the English did it – and still do. They develop some of the finest all natural, handcrafted brews in the world. Now Victoria, that little bit of Britain in Canada, is doing it. Victoria's Ale Trail™ is a tour for those who simply adore great beer and enjoy delicious food. Meet the brew masters and tour each brewery sampling their specialties along the way. Learn about the beer making process from hops through to fermentation and bottling. Learn about beer and food pairing while sampling the fresh new lagers and ales paired with the chef's creation of the day. Experience the flavor of Victoria's Ale Trail™.

Contact: Pat Hatchman, First Island Tours, Phone: 250-658-5367 or Fax: 250-658-8169

Trails and Whales Package
Departure: 10:00 a.m. (Full-day activity)
Cost: $100.00 CDN plus tax per person, $49.00 CDN plus tax per person (Cycling Tour Only), and $65.00 CDN plus tax per person (Whale Watching Only). Lunch is not included. These are special prices for ASLO 2002 Summer Meeting participants.

The Trails and Whales Package includes the best of what Victoria has to offer, from sightseeing on a bike, to getting up close and personal with the killer whales. Starting and finishing in Victoria, a full day of activity will see participants gather at the Harbour Canoe Club for a 10:00 a.m. fully-guided cycling tour of the city (approximately two to three hours). Visitors will get to see some of the behind-the-scenes beauty of Victoria from our extensive trail network, viewing gardens and landmarks around Victoria from a cyclist's perspective. Wildlife encounters are always part of the adventure! Upon returning to the Inner Harbour departure point, clients will be outfitted with cruiser/survival suits and transferred to a waiting Zodiac Marine Vessel for a three-hour whale-watching excursion! Safe, fun and educational we know you will not be disappointed! Reservations, a camera, and sunscreen are recommended.

Contact: Andrew Skinner, Great Pacific Adventures, Phone: 250-386-2277, Fax: 250-386-3370, E-mail: andrew@greatpacificadventures.com

Gray Line of Victoria's Butchart Gardens Tour
Departures: Hourly from 10:00 a.m. to 3:00 p.m. (Subject to change)
Cost: $ 38.50 CDN (adult) per person

One of Victoria's famous sites, Butchart Gardens is rated among the most beautiful in the world. From the downtown area, your bus will drive along the Saanich Peninsula past acres of small and large farms with many views of pastoral beauty and serenity. At Butchart Gardens, you will see the Sunken Gardens, the Japanese and Italian Gardens, the English Rose Gardens and the magnificent Ross Fountain, all linked spacious lawns, streams and lily ponds-50 acres of fragrance and beauty. The tour length is approximately three hours. (ASLO meeting participants will have a chance to visit the gardens on Wednesday evening, June 12, during the optional evening reception.)

Contact: Susan Warrington, Gray Line of Victoria,
Phone: 250-388-5248, Fax: 250-388-9461, and Alison Partridge, Butchart Gardens, Phone: 250-652-4422, Fax: 250-652-3883

Special Opportunities and Information for Students

For up-to-date information on all planned student events, housing recommendations, room sharing opportunities and the Career Link Program please check the ASLO conference web site at http://www.aslo.org and click on Student Information.

ASLO Student Meeting (Monday, June 10, 2002, 6:30 p.m., Victoria Conference Centre)

Meet and put a face and a personality to ASLO president Bill Lewis and L&O editor-in-chief Everett Fee.

Wild Bill stands high on a hefty limb of the Tree of Limnology after an interesting and outstanding career that has included speeding down rainforest rivers and irrigating the Colorado desert. Don't miss Bill's great science tale!

Scientist and rock-climber, Everett is a Canadian limnologist who ably navigated the L&O ship through troubled waters to the top of the publishing mountain. He will discuss how to get a paper published in the journal (and other things).

An additional guest scientist will share experiences with public policy and offer hints on how to effectively communicate science to managers and policy makers.

Student Representatives Maggie Squires and Cynthia Kicklighter will be on hand to answer questions about serving on the ASLO Board. Maggie rotates off of the board next year. If you're interested in serving ASLO and your fellow students and working with a group of outstanding limnologists and oceanographers, please add your name to the list of potential candidates. Contact ASLO Executive Director Jonathan Phinney at jphinney@aslo.org.

Career Link Program

Prospective employers and supervisors are invited to post announcements free of charge at the ASLO Student Booth. Students are invited to post resumes for viewing by employers and supervisors during the meeting. In addition to hard copies please bring an electronic version and post your ad or resume on the computer at the Career Link

Booth. Electronic versions of ads and resumes will be distributed free of charge after the meeting. There were over 100 requests for the Career Link material after the Albuquerque meeting. For more information contact Maggie at msquires@sfu.ca. To learn more about the Career Link Program, please go to the following ASLO web site: www.aslo.org (Click on Student Information, then select Career Link Program).

Volunteers Needed for Poster Judging

Post docs and professionals who are members of ASLO are invited to serve as poster judges. Each judge will be responsible for evaluating 10 posters. Please indicate your area of expertise and interest in serving as a volunteer by sending an e-mail to: studentreps@aslo.org.

Roommates Wanted

Roommates Wanted is a free on-line service to those who are seeking roommates during ASLO meetings. To participate visit ASLO's website at www.aslo.org , click on Student Information, then select Roommates Wanted.

Registration Information

Online registration is preferred and highly recommended. You can register electronically on the conference web site (http://www.aslo.org/victoria2002). Electronic registrations must include complete credit card information.

Every attempt has been made to allow secure transmissions of your credit card information and transaction, but ASLO assumes no liability for your credit card information when it is released electronically. All credit card transactions will be processed through the conference web site. Transactions are protected and encrypted using a secure socket layer (SSL) certificate provided by Verisign, Inc. SSL technology is the industry-standard method for protecting web communications. The SSL security protocol provides data encryption, server authentication, message integrity, and optional client authentication for a TCP/IP (internet) connection. Credit card verification and debit services will be provided by Authorize.net, a leading provider of Internet-based transaction services with thousands of online and traditional business customers around the world.

If registration by electronic means is not possible, please complete the registration form included in this book and send to the address listed below with payment or charge card information. Please return mailed-in registrations to:

ASLO Business Office
5400 Bosque Boulevard, Suite 680
Waco, Texas 76710-4446

Please make checks payable to: ASLO (All payments must be in U.S. dollars drawn on a U.S. bank.)

Registrations complete with purchase order or credit card information that are not accompanying an abstract submission can be faxed to: (254) 776-3767.

The full registration fee includes admission to all sessions, exhibits, evening sessions (unless otherwise specified), Sunday welcome reception and poster receptions (Tuesday through Thursday), coffee breaks, book of abstracts, and the program book (sent to all registrants prior to the conference). Optional events such as any special organized activities, the workshops and the Wednesday evening reception are not included.

Substantial savings apply if the payment and registration form are received on or before May 10, 2002.

Substitutions or Cancellations

We understand that occasionally other responsibilities and personal obligations prevent you from attending a program for which you have registered. If you find that you will not be able to attend the ASLO meeting, we encourage you to send a substitute. Substitutions can be made at any time, even on-site at the conference.

If you find it necessary to cancel after you have already paid, we can refund your conference fee (less an $80 USD processing fee) if we receive notice in writing on or before May 10, 2002. Due to the limited number of enrollments available, registrants who cancel on or after May 11, 2002, will be not be eligible for any part of a refund.

To provide cancellation notice and request a refund, please send a letter to: Helen Schneider Lemay, ASLO Business Office, 5400 Bosque Boulevard, Suite 680, Waco, Texas 76710-4446, fax your request to (254) 776-3767, or via e-mail to business@aslo.org.

Non-Refundable Fees for Duplicate Submissions and Abstract Changes

Duplicate abstract submissions and/or registrations will be charged a non-refundable processing fee of $60 USD to cover the costs associated with processing. If submitting electronically, DO NOT submit mailed-in hard copies as well.

Also, any author who submits an abstract by mail and then resubmits the same abstract with revisions or changes or sends in a request for the appropriate changes to be made will be charged an abstract change fee of $60.00 USD.

Registration Fees *

*Fees are stated in U.S. dollars and must be paid in U.S. dollars.

- ASLO Members: $300.00 USD on or before May 10, 2002 ($360.00 USD after May 10, 2002)
- Non-members (Those who are not a member of ASLO): $350.00 USD by May 10, 2002 ($410.00 USD after May 10, 2002)
- ASLO Student Members: $200.00 USD by May 10, 2002 ($260.00 USD after May 10, 2002)
- Non-Member Students: $250.00 USD by May 10, 2002 ($310.00 USD after May 10, 2002)
- One-day registrations: $150.00 USD
- Spouse/Guest: $100.00 USD (Spouse and guest fees cover only the conference social events such as the Sunday welcome reception, coffee services, and the poster receptions (Tuesday through Thursday). Optional events such as the organized activities and the Wednesday evening activity are not included. However, spouses and guests are encouraged to register for the organized activities. Spouses and guests cannot be admitted to the sessions without paying the appropriate full registration fee.)

A late fee of $60.00 USD will be added to all registrations received after May 10, 2002.

Fees to attend ASLO's 2002 Summer Meeting must be paid in advance. Due to the limited numbers, registrations are not considered guaranteed until a check, money order, purchase order, or charge card information is received. All fax registrations must include complete credit card information, including number, expiration date, and

cardholder name. VISA, MasterCard, and American Express are accepted. Organizations can be billed only if a purchase order accompanies the registration either by fax or by mail.

Registration and any other fees listed on the conference registration form are payable in U. S. currency only. All fees in Victoria, such as hotel and individual activities as shown will be paid in Canadian currency.

If desired, confirmation will be sent to attendees upon receipt of each completed and paid registration.

Currency Exchange

Canadian currency is in dollars and cents. One dollar and two dollar denominations are coins, while all other dollar denominations are paper currency. U.S. currency is accepted at most shops and restaurants; exchange rates vary. Major credit cards are accepted at most locations. Traveler's checks are encouraged and are the safest and most convenient way to carry money.

Cash machines with 24-hour access to networks such as Plus, Cirrus, Interac and Visa are available at many convenient locations in Victoria. Banks generally are open from 9:30 a.m. to 4:00 p.m., Monday through Friday and often on Saturdays.

Customs

U.S. citizens and residents should carry either a birth or baptismal certificate and at least one ID card with photo or a passport. A current U.S. driver's license is NOT accepted as proof of citizenship. Naturalized citizens should be able to produce documents proving citizenship, such as a green card.

Visitors from countries other than the United States must have a valid passport and may require other documentation such as visas or alien cards permitting entry.

All persons entering Canada must fill out a declaration for Canada Customs.

Wearing apparel and personal effects are admitted free of duty. Persons aged 19 and over may bring into Canada up to 50 cigars, 200 cigarettes and 200 grams (8 oz.) of tobacco. Persons aged 19 and over may bring into Canada 1.14 litres (40 oz.) of spirits or wine or, in lieu, 8.5 litres (288 oz.) of beer or ale.

Federal Goods and Services Tax

The Federal Goods and Services Tax (GST) is a value-added tax of 7%, applied to most purchased goods and services regardless of whether the buyer is a resident of Canada or a visitor to Canada. Visitors living outside of Canada can obtain a rebate on most goods taken out of Canada and for the GST on accommodation if their stay is less than 30 days. An instant GST rebate of up to $500 can be obtained by submitting receipts and a one-page form to participating duty-free shops.

Alternatively, visitors may file for a GST rebate once they return home; they will receive reimbursement by check. Forms are available at Tourism Victoria's Visitor Information Center.

A provincial sales tax (PST) of 7% applies to all retail purchases with the exception of liquor, which is taxed at 10%.

For more information or assistance, call (920) 432-5608 (outside Canada) or 1-800-668-4748 (inside Canada) or write to Visitor Rebate Program, Summerside Tax Centre, Revenue Canada, Summerside, PE, C1N 6C6, Canada.

Special Needs

If you have a disability or limitation that may require special consideration in order to fully participate, please check the box on the registration form. Someone from the planning organization will contact you to see how we can accommodate your needs.

Childcare

Arrangements for childcare can be made through Spoon Full of Sugar Nanny Service, Phone: 250-595-3245. Please note that any arrangements made represent a contractual agreement between the individual and the childcare agency/provider. ASLO assumes no responsibility for the services rendered.

For More Information

For more information on the ASLO 2002 Summer Meeting, address all correspondence and questions regarding registration, conference logistics, and hotel accommodations to:

Helen Schneider Lemay
ASLO Business Office
5400 Bosque Boulevard, Suite 680
Waco, Texas 76710-4446
business@aslo.org E-mail
http://www.aslo.org/victoria2002 Web
800-929-ASLO (Within the U.S., Canada, and the Caribbean)
254-399-9635 (All other countries) Phone
254-776-3767 Fax

If your questions pertain to the program, please contact one of the meeting chairs. If you need information regarding content of a particular session, please contact the appropriate session organizer.

Hotel and Accommodation Information

ASLO has selected eight (8) hotels, all within walking distance of the Victoria Conference Centre, which will host the ASLO meeting delegates. Each has its own unique charm and is located close to the breathtaking inner harbor, many restaurants, shops and local pubs. These hotels provide a range of sleeping room rates. Please make your hotel reservations by **contacting the hotel directly** via phone or fax and specify that you are entitled to the **"ASLO Room Block"** rate. The cut-off date for each hotel is shown on the hotel listing. It is important that you make your reservations early since June is the high season in Victoria and availability and rates will be affected after the cut-off date. We hope you will support these hotels.

Payment

Please note that room prices are stated in Canadian dollars.

Conference Hotels

Please see the map that is included in this booklet.

Laurel Point Inn

680 Montreal Street
Victoria, BC V8V 1Z8
Phone: 250-386-8721, Fax: 250-386-9547

Standard Rooms: $105 CDN (single/double), $120 CDN (triple)
Junior Suites: $155 CDN (single/double), $170 CDN (triple)

Reservation Cut-off Date: May 8, 2002

The Laurel Point Inn is a downtown waterfront hotel on Victoria's Inner Harbour and is within easy walking distance of the Parliament Buildings, Victoria Conference Centre, Royal BC Museum, Beacon Hill Park,

downtown shopping, and entertainment venues (no hotel shuttle service). The hotel features 135 standard rooms and 65 ultra-luxurious suites and junior suites, all with balconies and spectacular water views. All guestrooms contain cozy down duvets, complimentary in-room coffee and tea, hairdryers, high-speed Internet access, free local, toll-free and calling card calls. Hotel amenities include two restaurants (one seasonal), cozy piano lounge, ocean-side patio, lush Japanese gardens, indoor pool, Jacuzzi, saunas, gift shop, air-conditioning and 24- hour room service.

Chateau Victoria
740 Burdett Street
Victoria, BC V8W 1B2
Phone: 250-382-4221 Fax: 250-380-1950

Standard Rooms: $113 CDN (single/double)
One-bedroom Suite: $146 CDN (single/double)
Add $15 CDN for triple occupancy and $30 CDN for quad occupancy.

Reservation Cut-off Date: May 8, 2002

Children 18 and under free of charge when sharing with an adult. Rates include room only. Breakfast is not included.

Located within a three-minute walk of the Victoria Conference Centre and a fives-minute walk to museums, historical sites, shopping, and city attractions. Rooms and suites feature coffeemaker, hairdryer, iron and ironing board, clock radio, remote control TV and movie channel. Suites also feature mini-refrigerators, balconies, two TV's and two telephones. 29 suites have full kitchens. Indoor pool, whirlpool and exercise room.

Two restaurants – "Vista 18", Victoria's only rooftop restaurant and lounge on the 18th floor and "Victoria Jane's Restaurant and Lounge" on the lobby level. Room service.

Hotel Grand Pacific
450 Quebec Street
Victoria, BC V8V 1W5
Phone: 250-386-0450 Fax: 250-386-8779

$189 CDN (single/double). $30 CDN for extra person.

Reservation Cut-off Date: April 24, 2002

Children under 18 stay free when accompanied by parents. Breakfast is not included.

Prime location in the Inner Harbour, two blocks from the Victoria Conference Centre. Free shuttle service to the conference venue. Newly expanded facility with 308 rooms and suites, air-conditioned, and all with balconies. Large desk area and complimentary high-speed Internet access, voice-mail and enhanced privacy features, coffee machines, hair-dryers and in-room safes in all rooms. Pacific Restaurant and Lounge, featuring gourmet cuisine of the Pacific North-West and an open-air, terraced patio. Luxurious new lobby and reception area. The hotel has one of the most extensive fitness facilities in Victoria, complete with a 75-foot, ozonated lap-pool, jet-spray tub, sauna and children's pool. Full range of fitness equipment, squash and racquetball courts. Features day spa and hair salon on-site. Walking distance to major attractions and shopping.

Harbour Towers Hotel
345 Quebec Street
Victoria, British Columbia V8V 1W4
Phone: 250-385-2405 or 800-663-5896 Fax: 250-360-2313

$169 CDN (single/double).

Reservation Cut-off Date: May 13, 2002

Deluxe highrise overlooking Inner Harbour. Most rooms offer spectacular views. 187 rooms and suites. Suites have kitchen, dining room and living room. Great for families and business travellers. Contemporary design and furnishings. On-site day spa offering a range of services. Complimentary downtown shuttle.

The Magnolia Hotel and Spa
625 Courtney Street
Victoria, BC V8W 1B8
Phone: 250-381-0999 Fax: 250-381-0988

$169 CDN (single/double)

Reservation Cut-off Date: May 13, 2002

Rate includes room and continental breakfast. Two blocks from the Victoria Conference Centre, The Magnolia is centrally located in Victoria's Inner Harbour District. Four Diamond, AAA Rated, this 64-room boutique hotel is known for its unique European influence, beauty, and charm. The hotel guestrooms feature harbour and city views. Rooms include 27-inch color television with enhanced movie offerings, private bars, in room coffee makers, iron board, hairdryer, electronic voicemail message service, dataports for computer hook ups, spacious desks, lush terry bathrobes, nightly turn down service, floor to ceiling windows, large soaker tubs with separate shower, and Aveda amenities. Full service Aveda Lifestyle Spa. The hotel has two uniquely different restaurants. Hugo's Grill offers relaxed dining in an atmosphere richly appointed with warm textiles and wonderful woodwork. And Hugo's Brewpub offers a more casual experience surrounded by steel accents, heritage brick walls and micro-brewery.

Royal Scot Suite Hotel
425 Quebec Street
Victoria, BC V8V 1WZ
Phone: 250-388-5463 Fax: 250-388-5452

$135 CDN (single/double).

Reservation Cut-off Date: May 13, 2002

Rate includes spacious Studio Suite with full kitchen, queen bed and queen sofa/or double bed separated by a partition wall.

Complimentary coffee/tea and cookies.

Four-Star full service hotel highlighted with beautiful flower gardens and located three blocks from the Victoria Conference Centre, one block from Victoria's Inner Harbour. Complimentary shuttle service to downtown and the Conference Centre. Jonathan's Restaurant is well known for its warm elegance, cheery staff and superb food. Indoor recreation area features pool, exercise room, hydro therapy pool, sauna, and billiards room. Mini-market and gift shop on premises. In room services include irons/ironing boards, hair dryers, makeup mirrors, free local calls, stove, refrigerator/freezer, microwaves, inside corridors and free newspaper. Smoke-free floors, coin operated laundry and free parking compliment your stay at Victoria's Suite Hotel-Royal Scot.

Executive House Hotel
777 Douglas Street
Victoria, BC V8W 2B5
Phone: 250-388-5111 Fax: 250-385-1323

$130 CDN (single/double); Extra guest $15 CDN

Reservation Cut-off Date: May 8, 2002

Smoking and non-smoking rooms. Enjoy European ambience and world-class hospitality in the finest downtown hotel. Directly across from the Victoria Conference Centre, one block from the magnificent Inner Harbour, Royal BC Museum, National Geographic Theatre, shopping and attractions. City, ocean, and mountain views. Suites with full kitchens, living room and balconies. Guest amenities include complimentary in-room coffee/tea, remote control TV with in-room movies, hairdryers, irons/boards and portable fans. Services include concierge, fax and photocopy service, room service, same day dry cleaning and laundry service, ice and soft drink machines. Complimentary shuttle service to/from Inner Harbour transportation links. Facilities include Barkley's Steak & Seafood House, Caffe d'Amore, Doubles Oyster Bar and Bartholomew's Bar & Rockefeller Grille.

The Fairmont Empress
721 Government Street
Victoria, BC V8W 1W5
Phone: 250-384-8111 Fax: 250-381-5959

$229 CDN (single/double), $259 CDN (triple), $289 CDN (quad)

Reservation Cut-off Date: April 23, 2002

Adjoined to the Victoria Conference Centre, The Fairmont Empress provides an ambiance of old world charm and a tradition of hospitality and service dating back to 1908. With 477 beautifully appointed guestrooms, including such amenities as lush terry robes in the room, in-room coffee makers with complimentary coffee and tea, on-demand in-room movies and video games, iron and ironing board and mini-bar. Situated on the edge of Victoria's Inner Harbour, The Fairmont Empress, as been fully restored to its timeless elegance of a grand heritage hotel and reflects the stately beauty of the Victorian Era. Other features that uniquely identify The Fairmont Empress are The Empress Dining Room offering the sophistication of fine dining, world-famous afternoon tea, the Colonial setting of The Bengal Lounge, known for their famous curry and live jazz on weekends, a full European spa, as well as complimentary indoor pool and fitness center facilities.

Alternate Accommodations
Rooms are available at the University of Victoria. Located approximately 10km from downtown Victoria, it is easily accessible by car (15 minutes), bus (30 minutes), or bicycle. If you chose to stay at the university and do not have a car or a bicycle, it will be necessary that you utilize local city or public transportation to get to the meeting and back each day. Approximate room rates range from $38 to $50 CDN. To make reservations, call (250) 721-8395 and ask for reservations.

These rooms can be single or shared, and all have centrally located washrooms. Lounges with cable TV are on every floor. A limited number of self-contained units with four single bedrooms, kitchen, living room, two washrooms and separate shower room also are available. UVic offers a variety of licensed cafeterias and dining services.

Local City Transportation

The City of Victoria has transit service daily from the University of Victoria to Downtown Victoria and back. There are three buses that will take you to Downtown Victoria, the #4 Mt. Tolmie, #11 Beacon Hill, and #14 Craigflower. Depending upon the route that you select, the ride takes approximately 20 to 30 minutes. The #4 Mt. Tolmie and #11 Beacon Hill leaves from the University Exchange (across from the book store) and drop off in front of the Victoria Conference Centre. Costs for these BC Transit services are $1.75 CDN each way. Day passes are available for $5.50 CDN and can be purchased at the UVic Student Union Building information booth.

For more information, including specific times, bus routes, fares, accessible services, and other user tips, please visit the Victoria transit system at their web site: www.bctransit.com. BC Transit schedules are available at the Tourism Information Centre located at 812 Wharf Street.

Taxicab services are also available.

Conference Check-In and Registration

Registration prior to the meeting is strongly encouraged. By doing so, you will greatly reduce the amount of time necessary to complete the on-site registration process and pick up your meeting materials.

Meeting materials, name badges, and registration packets can be picked up on Sunday, June 9, 2002, at the Victoria Conference Centre from 1:00-9:00 p.m. Registration will be opened each day at the Conference Centre, from Monday, June 10, through Friday, June 14, from 7:00 a.m. to 5:00 p.m.

Name badges will be included in your registration packet and must be worn at all times throughout the meeting.

Maps showing the various session and meeting room locations will be included in the abstract book that you will receive on-site when you check-in for the meeting.

Victoria Conference Centre Parking

Public parking is available in the Conference Centre for a daily fee of $12.00 CDN. This parking area is located beneath the Conference Centre and is accessible by Douglas Street.

Special Airline Rates

Located 30 driving minutes from downtown Victoria, Victoria International Airport serves daily flights from Vancouver International Airport and Seattle-Tacoma Airport, as well as flights from points throughout Canada and the U.S. Both Air Canada and United Airlines are providing special rates for ASLO meeting attendees. Air Canada is now offering a non-stop flight from Toronto to Victoria.

Air Canada
We have appointed Air Canada as an official airline of the ASLO 2002 Summer Meeting in Victoria. Simply contact Air Canada's North American toll-free number at 1-800-361-7585 or their local number at 514-393-9494. You also can call your travel agent. To take advantage of special discounted airfares, please indicate convention number CV657464 when making your reservations. By ensuring that the convention number appears on your ticket, you will be supporting ASLO.

United Airlines
Special arrangements also have been made with United Airlines. Special meeting fares apply to all attendees of the ASLO 2002 Summer Meeting who use the Special Meeting Desk to book their reservations. You can earn a 5% discount off the lowest applicable fare, including First Class, or 10% off the mid-week coach fare. United is also offering an additional 5% off tickets purchased at least 60 days in advance. Call or have your travel agent call 1-800-521-4041 and refer to Meeting I.D. Number 500BN. Mileage Plus members receive full credit for all miles flown to this meeting. Tickets can be mailed by United, picked up at your local travel agency or United Airlines ticket office. Seats may be limited. United discounts are valid into Victoria, B.C. or Vancouver.

Airport Shuttle Service

AKAL Airport Express Bus-Link Ltd. is offering special discounts to ASLO 2002 Summer Meeting participants. The Airporter provides daily ½-hour service to and from the Victoria International Airport to all hotels in Greater Victoria. Service is also available to the University of Victoria. The Airporter is available to cover all the incoming and outgoing flights from Victoria International Airport.

A round-trip shuttle rate of $23 CDN can be secured simply by stating that you are in Victoria to attend the ASLO 2002 Summer Meeting. A one-way rate of $11.70 CDN also applies. (This is 10% off their regular one-way fare.)

The shuttle bus and AKAL Airporter information booth are located right outside the arrival doors by the baggage claim area. Upon arrival, please check with the shuttle driver by the curbside, and he will guide you regarding your schedule, pick up and drop off locations. Reservations are not necessary for arrivals, but they are required for return trips to the airport from the conference hotels. Please call them no later than the night before to make your reservation for your return shuttle to the airport from your hotel.

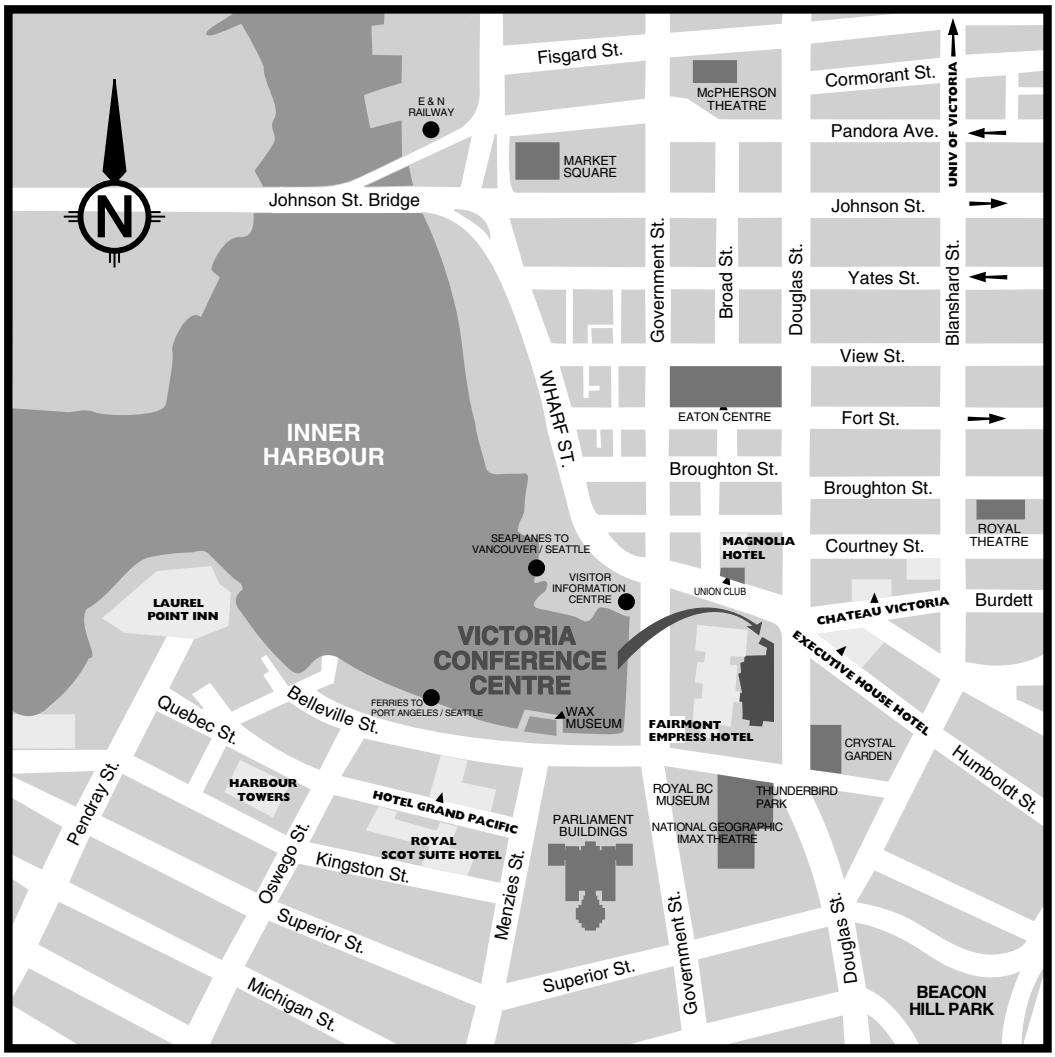
You can book a reservation through their web site: www.akalairporter.travel.bc.ca or you can call 250-386-2525 or toll-free (U.S. and Canada) 1-877-386-2525 between the hours of 4:30 a.m. and 10:00 p.m. (Pacific)

Car Rental

While all regular meeting events are within easy walking distance to the downtown area and the conference hotels, renting a car would be an excellent idea if you are planning to take some side trips while you are in Victoria.

Hertz has been appointed the official car rental company for the American Society of Limnology and Oceanography in Victoria. For reservations, call Hertz at 800-654-3001 in the U.S.: 800-263-0600 in Canada: 416-620-9620 in Toronto, or outside of these areas at 405-749-4434. Refer to CV# 022K0759. Or you may contact your travel agent.

Map - Downtown Victoria and Meeting Hotels



ASLO 2002 Registration Form

If you are unable to register electronically on the web at http://www.aslo.org/victoria2002/, please mail completed registration form and payment to: ASLO, 5400 Bosque Boulevard, Suite 680, Waco, Texas 76710-4446, USA. Registrations complete with purchase order or credit card information that are not accompanying an abstract submission can be faxed to: (254) 776-3767.

Please make checks payable in U.S. dollars and drawn on a U.S. bank to: ASLO

Please print or type.

LAST NAME _____ FIRST NAME _____ MIDDLE INITIAL _____

NAME FOR BADGE _____

INSTITUTE OR ORGANIZATION _____

DEPARTMENT OR FIRST ADDRESS LINE _____

LAST ADDRESS LINE _____

CITY _____ STATE/PROVINCE _____ ZIP _____ COUNTRY _____

E-MAIL _____ PHONE _____ FAX _____

Fees (in U.S. dollars and per person):

☐ ASLO Member (received on or before May 10, 2002) ..... $300.00 USD _____

☐ Non-ASLO Member (received on or before May 10, 2002) ..... $350.00 USD _____

☐ ASLO Student Member (received on or before May 10, 2002) ..... $200.00 USD _____

☐ Non-ASLO Student Member (received on or before May 10, 2002) ..... $250.00 USD _____

☐ Spouse/Guest (received on or before May 10, 2002. Spouses and guests will not be admitted to the sessions.) ..... $100.00 USD _____

☐ Late Fee (Must be added to all registrations that are mailed after May 10, 2002) ..... $60.00 USD _____

☐ One-Day Registrations (registering on or before May 10, 2002) ..... $150.00 USD _____

☐ Optional Wednesday Evening Reception ..... $40 USD _____

☐ Scuba Diving Trip ..... _____ # of reservations @ $80.00 USD per person = $USD _____

☐ Workshop 1: Modern ICPMS ..... $10.00 USD _____

☐ Workshop 2: Use of GIS ..... $25.00 USD _____

Total in U.S. Dollars _____

☐ I am a member of ASLO.
☐ I am not a member of ASLO, and I would like to receive more information.

Payment:

☐ Amount Enclosed
☐ Bill My Organization. *(You must submit a purchase order.)*
☐ Credit Card Payment
  ☐ Visa ☐ MasterCard ☐ American Express

NAME ON CARD _____

CARD NUMBER _____ EXP. DATE _____

SIGNATURE _____

Confirmation:

A confirmation will be sent to the e-mail address on this form unless you specify otherwise.

I prefer that my registration confirmation be sent via:
☐ Fax ☐ Mail

Special Needs:

☐ If you have a disability or physical limitation that may require special consideration so that you might fully participate in this meeting, please check here. You will be contacted by someone from the planning organization to see how we can accommodate your special needs.

ASLO 2002 Abstract Submission Form

The abstract submission deadline is January 20, 2002. (All Internet and mailed submissions must be received by this date. Mailed submissions should be sent in advance so that they are received, not postmarked, by this date.)

To submit your abstract electronically, please point your forms-capable web browser to http://www.aslo.org/victoria2002/. Stated guidelines and procedures as stated in the Call for Papers must be followed exactly. If not, your paper will not be accepted. Submit the abstract on a 3.5" floppy disk (formatted for DOS) accompanied by one (1) original hard copy printed on white paper. All documents must be submitted in either WordPerfect for Windows or Microsoft Word for Windows file formats. Abstracts submitted in any other format are not acceptable and will be returned. Disks must be clearly and fully labeled with the name of the author to contact, institution name, mailing address, phone number, and e-mail address. Disk submissions must include a hard copy of the abstract, no exceptions. **E-mail and fax copies of abstracts are not acceptable.**

You may not submit the form in this brochure if you choose to submit via the Internet.

Author to Contact: (Only one abstract per first author will be accepted.)

LAST NAME _____ FIRST NAME _____ MIDDLE INITIAL _____

INSTITUTE OR ORGANIZATION _____

DEPARTMENT OR FIRST ADDRESS LINE _____

LAST ADDRESS LINE _____

CITY _____ STATE/PROVINCE _____ ZIP _____ COUNTRY _____

E-MAIL _____ PHONE _____ FAX _____

Abstract Information:

Abstract is:

☐ Invited Session #: _____ ☐ Contributed

Presentation Preference:

☐ Oral ☐ Poster

Session Topic Code (Please reference listing in this brochure.):

Choice 1: _____ Choice 2: _____ Choice 3: _____

If "Other," please specify: _____

Confirmation of Acceptance:

You will be notified of acceptance by e-mail unless otherwise noted here. Please notify me by ☐ Mail ☐ Fax.

Student Travel Award

The ASLO board has approved a limited number of need-based student travel stipends to be awarded to students who make oral or poster presentations at the meeting. These special awards are available to full-time students currently enrolled in any university or college who are not supported by a grant or other source that could provide the necessary travel support. There are no restrictions on the residence of an applicant; however, the applicant must be a member of ASLO and first author on an oral or poster presentation. The applicant cannot have received an ASLO travel award previously. **All applications submitted by mail must be accompanied by the Student Travel Award Application.**

☐ I am applying for a Student Travel Award and meet the above criteria. I have completed the registration, abstract submission, and student travel award forms.

Minority Program

☐ I have applied for ASLO's Minority Program.

Audio-Visual Requirements:

☐ Basic Kit (Basic a/v kit includes PowerPoint projector and a screen only. You must bring your own laptop computer.)

An overhead projector and/or a 35 mm slide projector will be provided only if requested in advance. Please indicate if you need either of the following:

☐ 35 mm slide projector ☐ Overhead projector

☐ Other *(List any additional audio-visual equipment that you consider necessary for your presentation. Please note that any special requests for audio-visual (i.e. rental of VCR, monitor, audio systems, computers, provision of additional power outlets, tables, stands, etc.) should be made when the abstract is submitted. Any costs for these additional items will be billed to the author on this form.)*:

_____

_____

_____

In order to be considered as complete, the registration form and full registration fee must accompany the abstract form. Mail the completed abstract submission form, completed registration form, payment of the fee, floppy disk, and one (1) copy of the abstract to:

ASLO 2002 Summer Meeting
c/o ASLO Business Office
5400 Bosque Boulevard, Suite 680
Waco, Texas 76710-4446, USA

Checks should be in U.S. dollars and drawn on a U.S. bank.

Make checks payable to: **ASLO.**

ASLO 2002 Student Travel Award Application

Eligibility requirements: These special grants are available to full-time students currently enrolled in any university or college. Students must be a member of ASLO and cannot have received an ASLO Student Travel Award in the past. Applicant must be both the first and presenting author. This is a need-based, one-time award. Students are eligible only if not supported by a grant or alternate source that could fund the trip to Victoria.

LAST NAME FIRST NAME MIDDLE INITIAL

INSTITUTE OR ORGANIZATION

DEPARTMENT OR FIRST ADDRESS LINE

LAST ADDRESS LINE

CITY STATE/PROVINCE ZIP COUNTRY

E-MAIL DAYTIME PHONE (INCLUDE COUNTRY CODE) FAX

TYPE OF DEGREE SOUGHT EXPECTED DATE OF COMPLETION

TITLE OF PAPER

FACULTY ADVISOR: NAME, PHONE NUMBER, FAX NUMBER

FACULTY ADVISOR: E-MAIL ADDRESS

☐ Yes ☐ No I am a full-time student and member of ASLO. ASLO Member #: _____ ☐ Membership Application is Attached.

☐ Yes ☐ No I have not previously been awarded an ASLO Student Travel Award.

☐ Yes ☐ No I am not supported by a grant or alternate funding source.

$ _____ Amount of funds you anticipate needing to attend the meeting

$ _____ Amount that could be provided by your institution

Please mail completed forms to:

Helen Schneider Lemay
ASLO Business Office
5400 Bosque Boulevard, Suite 680
Waco, Texas 76710-4446

If necessary, please use the space below to explain your need for this award:

Please complete this form and attach the following to this application:

1. Abstract of paper according to specifications on the abstract form
2. Copy of completed abstract submission form
3. Registration form
4. Payment of the student registration fee

Important Dates to Remember

Abstract Submittal Deadline ..... January 20, 2002
Authors Notified ..... February 2002
Student Travel Grant Recipients Notified,
Meeting Schedule Posted on Web Site, Program
Mailing to ASLO Members and Meeting Participants ..... April 2002
Meeting ..... June 10-14, 2002

ASLO 2002 Housing Reservation Form (Do Not Send with Meeting Registration.)

ASLO has selected eight (8) hotels, all within walking distance of the Victoria Conference Centre. This form is designed to assist you in making your hotel reservations via **fax or mail**. You also can call the hotel of your choice directly. If you prefer to make your reservations via phone, please specify when calling that you are entitled to the **ASLO Room Block** rate.

The cut-off date for each hotel is shown on the hotel listing in this brochure. Please note the appropriate cut-off date and make your reservations accordingly so that you will be assured of the special "ASLO Room Block" rate at that hotel. Reservations will be accepted on a first-come, first-serve basis. It is important that you make your reservations early because June is the high season in Victoria, and availability and rates will be affected after the cut-off date.

How to Reserve a Room in Victoria by Using this Form

All room reservations must be made directly with the hotel of your choice. Do not send this form along with your meeting registration and/or abstract submission. It must be completed and sent directly to the hotel. Each hotel's mailing address and fax number are included in this brochure. Please complete one form for each room requested. All rates shown in the brochure are in Canadian dollars.

In order to process your reservation, either a credit card, check, or money order is required to guarantee your reservation for the first night. After your hotel reservation has been processed, you will receive a confirmation from the hotel.

HOTEL NAME

HOTEL FAX NUMBER HOTEL PHONE NUMBER

Block Information: ASLO 2002 Summer Meeting Room Block

Rate for Single: _____ Rate for Double: _____ Other: _____

Reservation Name: _____ Names of other guests in the room: _____

# of Adults: _____ # of Children: _____ # of Beds: _____

Address for sending confirmation

STREET ADDRESS OR P.O. BOX

CITY STATE/PROVINCE ZIP/POSTAL CODE

COUNTRY

PHONE FAX

E-MAIL ADDRESS

☐ Prefer Smoking ☐ Prefer Non-Smoking Arrival Date: _____ Departure Date: _____

Special Requests:

☐ I will require a handicapped accessible room.

Payment

☐ Check or money order enclosed. Amount:

CREDIT CARD TYPE

CARDHOLDER'S NAME

ACCOUNT NUMBER EXPIRATION DATE

SIGNATURE

Please contact the hotel directly if you need to make changes to your reservation prior to the meeting or if you need to cancel your reservation. Cancellation policies vary from hotel to hotel, so please contact your preferred hotel directly if you have any questions.

ASLO Membership Application 2001

VIC02

Thank you for your interest in ASLO. To become a member of this society, complete the information below and send with your dues payment to: **ASLO, 5400 Bosque Blvd., Suite 680, Waco, Texas 76710-4446, USA**

Please print or type.

LAST NAME | FIRST NAME | MIDDLE INITIAL

INSTITUTE/ORGANIZATION

ADDRESS LINE 1

ADDRESS LINE 2

CITY | STATE/PROVINCE | POST CODE | COUNTRY

E-MAIL | PHONE | FAX

HIGHEST DEGREE | YEAR DEGREE ATTAINED

GENDER (M OR F) | BIRTH YEAR | FIELD (LIM = LIMNOLOGY; OCE = OCEANOGRAPHY; IF LISTING BOTH, ENTER PRIMARY FIRST.)

Discipline: _____
IF LISTING MORE THAN ONE, LIST IN ORDER OF PRIORITY.

B = Biological
C = Chemical
G = Geological
O = Optical
P = Physical

Environmental Specialty: _____
ENTER NO MORE THAN FOUR IN ORDER OF PRIORITY.

1 = Lakes/Reservoirs/Ponds
2 = Rivers/Streams
3 = Great Lakes
4 = Wetlands
5 = Estuaries
6 = Coastal Ocean
7 = Open Ocean
8 = Most / All

DISCIPLINARY SPECIALTY (PROVIDE NO MORE THAN A 30-CHARACTER DESCRIPTION.)

Membership Categories:

- ◯ Regular Member with Subscription to the Journal, *Limnology and Oceanography*
  - ◯ Printed Version - North America $90.00
  - ◯ Printed Version - Outside North America $110.00
  - ◯ Electronic Version Only $75.00
- ◯ Regular Member without Journal Subscription $50.00
- ◯ Student Member with Subscription to the Journal, *Limnology and Oceanography (5-year limit for graduate students)*
  - ◯ Printed Version $75.00
  - ◯ Electronic Version Only $35.00
- ◯ Emeritus Member *(for Emeritus Members wishing to subscribe to the Journal)* $70.00
- ◯ Emeritus Member ..... No Charge

NOTE: Subscription to printed version includes access to electronic version.

Payment Information:

◯ Check enclosed
(Please provide checks drawn on a US or Canadian bank in US dollars payable to: ASLO.)

Send remittance to: **ASLO**
American Society of Limnology and Oceanography
5400 Bosque Blvd., Suite 680
Waco, Texas 76710-4446
Voice: 800-929-ASLO or 254-399-9635
Fax: 254-776-3767
E-mail: business@aslo.org

◯ Credit card payment:
◯ VISA ◯ MasterCard ◯ American Express

CARDHOLDER NAME

CARD NUMBER | EXP. DATE

SIGNATURE

ASLO

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Waco, TX 76710-4446 USA