

VOICEPIPE

Issue 55

July 2012

The Newsletter of the BIO-Oceans Association

Donald Gordon : Beluga Award Winner

2012
Bedford Institute of
Oceanography
50 years

Contents

Beluga Award Presentation and Ceremony	1-2
BIO 50 th Celebrations 24-25 October 2012	2
BIO-OA Summer Picnic	2
In Memoriam	2
From the President	3
Letter to the Prime Minister from the NSIS	3
Call for an Ocean 'Spring'	4
How I reached BIO by Peter Wells	5
An Update on the BIO 50 th Anniversary Volume: <i>The Voyage of Discovery</i>	6
Noteworthy Reads	7
From the Editor's Keyboard	10
About the Association	10
Ken Lee's public lecture	11
BIO-OA's Annual General Meeting	11
World Oceans Day on the Halifax Waterfront	12



Picture captions (clockwise from the top): Patrick Potter (Chairman, BIO-OA Beluga Award Committee) congratulates Don Gordon after presenting him with the 2012 Beluga Award (seen in the inset) (Photo: Kelly Bentham); David McKeown (Don Gordon's nominator) presents his testimonial with Don and Joleen on the beach in the background; Don Gordon's family looks on as Don makes his acceptance speech.; Joleen (Don's wife), Heather Gordon (Don's daughter) and Mark MacLean (Heather's husband).

Beluga Award Ceremony

Donald Gordon received his Beluga Award at a ceremony in the William Ford Auditorium at BIO on 24 May 2012 with family, friends and colleagues in attendance. David McKeown, who had nominated Don for the Beluga Award, gave the testimonial and remarked that Don's greatest talent was pulling together, inspiring and managing multi-disciplinary research teams. David also noted the enthusiastic support for Don's nomination in the many supporting letters. After the ceremony a luncheon was enjoyed by BIO-OA members and guests at MacAskill's restaurant in Dartmouth.



Halifax Regional Municipality has designed and executed a planting to commemorate BIO's 50th Anniversary. The planting is located in Leighton Dillman Park on Alderney Drive in Dartmouth.

ANNUAL BIO-OA SUMMER PICNIC BBQ

Tuesday, 21 August 2012 (starting at 2:00 pm)

(Rain date 23 August)

Come gather at Georgina and Ted Phillips' home (112 Craigview Drive, Glen Haven) on beautiful St. Margaret's Bay. Bring your own food for the grill and something for the pot-luck table (appetizer, salad or dessert). The BIO-OA will provide tea, coffee and eating utensils. Bring your bathing suits and towels if you're keen on having a swim! Please contact Georgina (ph: 823-3401; tandgphillips@eastlink.ca) for any additional details. A map and directions will follow by email closer to the date.

COME AND CELEBRATE BIO's 50th ANNIVERSARY!

On 25 October 2012 BIO turns 50. It was on 25 October 1962 that the Institute was officially opened. To celebrate this anniversary BIO has planned a series of events for 24-25 October 2012 to which all BIO-Oceans Association members are invited.

On **24 October** a one-day scientific symposium will be held to review and discuss the current issues of science, adaptation and mitigation dealing with climate change in the oceans. This public symposium will consist of invited guest lectures in the morning, followed by two facilitated panel discussions in the afternoon.

That evening the BIO-Oceans Association will host a reception at the Brightwood Golf and Country Club in Dartmouth from **5:00-7:00 pm**. Special guests will be the 50th anniversary honorees, i.e., those staff members who were working at or for BIO in 1962. However, we hope that as many of you and your partners will come as well. The reception will include a cash bar, yummy munchies and a chance to catch up with your former colleagues.

25 October will see the 50th Anniversary Gala in the Bill Ford Auditorium of the Institute, starting at 2:00 pm -- but you'd better get there early if you want to have a seat. There will be large TV screens set up in the cafeteria to enable the overflow to see the ceremony. Featured in the event will be the presentation of the Crystal Awards, aimed at giving recognition to BIO research and development project teams that have shown ingenuity, imagination, and that have made extraordinary contributions to government programs and/or international research initiatives over the past 50 years; introduction of the honorees; a slide show illustrating the history of the Institute; music; and a return (and final?) appearance by BIO's beloved former dance troupe, the *Trompederos*. As at any government occasion, there will also be a few speeches. The afternoon will end with a reception in the cafeteria areas where attendees will be able to view posters of the Crystal Award winning projects.

We hope that many of you, including those who have moved away from the Halifax-Dartmouth area, will join in this celebration of 50 years of great science and wonderful friendships.

In Memoriam

Captain Claude Ball, died 27 June 2012, Master of the CSS *Kapuskasing*, CSS *Baffin*, and CNAV *Sackville*.

Martin Frank Blaxland, died 22 May 2012, Administration.

Marjorie J. Ford, died 10 June 2012, wife of the former Director and Founding Father of BIO, Dr. William F. Ford (d. 1992).

Alan Cameron Grant, died 14 June 2012, geologist, GSC Atlantic.



FROM THE PRESIDENT

What a magnificent 2012 Canada Day weekend – beautiful weather and a vast array of activities to celebrate our national birthday! The lazy hazy days of summer are truly here. If you live and plan to spend

the summer in the metro area you will have no problem keeping busy with a steady stream of events for all ages and all interests. Of particular note are the Jazz Fest from 6-14 July, the Tall Ships 2012 from 19-29 July, and, of course, the perennial highlight, the BIO-OA Summer Picnic on 21 August.

With all of the distractions it is easy to forget about things of a more serious nature. However, in this edition of the *Voice-Pipe*, we have a report from the annual Elisabeth Mann Borgese Lecture, sponsored by the International Ocean Institute Canada, and a letter from the Nova Scotian Institute of Science to the Prime Minister of Canada to remind us that the nature of environmental protection in Canada is being dramatically altered. For the marine environment the changes to the Fisheries Act are dramatic; for example, biota not of interest to commercial or recreational fishermen are no longer of importance. The legislation replacing the Canadian Environmental Assessment Act (CEAA) will severely limit the scrutiny of large complex developments and completely ignore smaller projects even if they will destroy areas of critical habitat. Hand in hand with this, the scientific program in DFO is being gutted with the potential loss of many internationally renowned scientists. In the report from the Elisabeth Mann Borgese Lecture, Megan Leslie (MP) urges you to educate your MP about what is happening. I certainly support that action and I would suggest that you broaden your audience to include your MLA, your HRM councillor, and your friends and neighbours. The changes that will occur as a result of the passage of Bill C-38 are profound, and the negative impact will certainly be felt during the lifetime of our children if not during our own lifetime.

In the midst of all this turmoil about marine science we do have something to celebrate – 50 years of world class marine science at BIO. Special lectures have been taking place from the beginning of the year and they have been very well attended. These lectures will continue through the fall. On 22-23 September, BIO will open its doors to the public. This is an opportunity for all of us to volunteer and use the opportunity to communicate to the general public about the importance of the marine sciences to wise management of ocean resources. And 25 October 2012 is the BIG DAY – BIO's 50th birthday! (The events surrounding this day are detailed elsewhere in this newsletter.) We are expecting many of the original employees of BIO to be present for the festivities and so, be sure to come along and join in the celebration.

I hope to see many of you on 21 August at our annual picnic BBQ, and then in the fall at the Science Expo and during the special events surrounding the 50th Anniversary Gala.

Paul Keizer



Presenting Science to Nova Scotians since 1862

c/o 18 Remington Court
Halifax, Nova Scotia
B3M 3Y6
June 13, 2012

The Right Honourable Stephen Harper, P.C., M.P.
Prime Minister of Canada
Langevin Block
Ottawa, Ontario
K1A 0A2

Dear Prime Minister,

The Nova Scotian Institute of Science (NSIS) is an organization which has promoted science in Nova Scotia for 150 years. Its monthly lecture series provides an opportunity for members of the public and professional scientists to hear about new research developments in areas as diverse as petroleum exploration, parks and protected areas, ecology, and water quality. The Institute's members include scientists, teachers, librarians, and members of the general public.

The Institute is concerned about the very negative impact that the proposed legislation in Bill C-38 will have on the protection of fisheries and the environment. The Bill essentially removes habitat protection measures from the current Fisheries Act and restricts protection to species of commercial, recreational and aboriginal importance.

In the same Bill, the replacement of the Canadian Environmental Assessment Act (CEAA), including the modifications to the environmental assessment process, would essentially reduce its rigour and lead to negative impacts on the terrestrial, aquatic and atmospheric environments.

Environmental regulatory mechanisms can only be informed by good fundamental research and communication of the results of that research. However, in recent years, federal scientists have been increasingly restricted in their freedom to speak to the public and the media about the results of their work. This is entirely contrary to the principles of scientific research, peer-review and dissemination of research results. Scientists should be able to speak about their work freely and not be prohibited from doing so.

The Nova Scotian Institute of Science urges the Federal Government to reconsider the proposed changes to the CEAA and the Fisheries Act embodied in Bill C-38. The Institute also contends that scientists in the employ of the Canadian federal government and its agencies must be permitted to speak freely about the results of their work.

Sincerely,

Michelle Paon
President, Nova Scotian Institute of Science

International Ocean Institute President calls for an Ocean 'Spring'

by Andy Sherin

On World Oceans Day, 8 June 2012, the International Ocean Institute Canada held its annual Elisabeth Mann Borgese Lecture in the Weldon Law Building at Dalhousie University Halifax. This year's format was a panel composed of: Dr. Awni Behnam, President, International Ocean Institute; Dr. Susanna Fuller, Marine Conservation Co-ordinator, Ecology Action Centre; Ms. Megan Leslie, Member of Parliament for Halifax, Deputy Leader, and Environment Critic for the federal New Democratic Party; and the Honourable David MacDonald, Commons Group and former Progressive Conservative Member of Parliament and Cabinet Minister. The panel was asked to speak on the topic "Blue Planet Under Threat: Challenges and Opportunities at Rio+20."

Dr. Behnam spoke first reflecting upon the Earth Summit held in Rio de Janeiro in 1972. He said that despite the strong language coming out of the meeting, "governments have failed to reverse or halt degradation of the oceans." The 3rd Earth Summit, RIO+20, is an opportunity for an Ocean 'Spring'. Oceans is only one of many issues to be discussed in Rio de Janeiro - it will be a challenge to raise oceans to a higher profile at the meeting. Dr. Behnam asked "in whom should we place our trust to turn around the trends? What practical things can be done? Only people can make the change. The voice of the people must become the voice of the ocean."

Megan Leslie started by saying she relied on advice to distinguish between good and bad policy. She admitted that she did not understand the importance of oceans until she read Alana Mitchell's book 'Seasick: The Global Ocean in Crisis'. "It changed everything I thought about oceans", she said. She challenged the audience to educate their Member of Parliament: "Educating your MP works!"

"I work in a place that is hostile to the environment", Ms. Leslie said, although she had hope that the government's Conservation Strategy now under development may be one bright light on the horizon. She also challenged the audience to work to turn the tide "Why is evidence good? Why is science good?" She suggested letters to the editor are an effective technique to have influence.

David MacDonald stated that the key issue is governance. Two thirds of the ocean is beyond national jurisdiction, but governments by themselves are not going to solve the problem. He continued by saying that the source of the problem is the dominant economic system, private ownership, and trade with the deep ocean being the 'Wild West'. "The oceans and the atmosphere are not represented in any economic system", he said. Mr. MacDonald then told the story of meeting Thor Heyerdahl who told him that during his 1947 Kon Tiki Expedition in the Pacific Ocean, he and his crew felt they were the



Elisabeth Mann Borgese was the youngest child of Nobel prize winner Thomas Mann. For a long-time she was the only female member of the Club of Rome and founded the International Ocean Institute in 1972. She was awarded the Order of Canada in 1988 that recognized her as a "true citizen of the world." An exhibition on Elisabeth's life and work opened in June at the Buddenbrookhaus in Lübeck, Germany to mark the 10th anniversary of her death.

(Photo: SZ Photo / Wolf Gaudltz)

only people on the planet. Twenty-two years later on the Ra Expedition in the Atlantic Ocean, the evidence of the human presence was everywhere, owing to the ubiquitous plastic bag! Mr. MacDonald bemoaned the irony that "as ocean science improved, the disconnect with public policy has increased". Despite all the evidence of continued deterioration of the oceans and lack of action, Mr. MacDonald has hope that global consciousness will "light the flame."

Susanna Fuller, the last speaker, started her presentation by saying when she read about ocean acidification "I wanted to go back to bed". She quickly changed her tune, however, claiming that small organizations can do big things pointing to the Ecology Action Centre as an example. She suggested the North Atlantic Fisheries Organization's closure of 18 areas to bottom trawling was evidence of hope. She stated that RIO+20 had failed before it began, but that civil society can make a difference. She shared her experience at an international conference concerning fishing on the high seas. The non-governmental organizations (NGOs) were not permitted in the room where governments were negotiating, so they waited outside. The NGOs had food and the government negotiators did not. As the government representatives came out hungry, the NGOs were able to influence the direction of negotiations. This she referred to as 'cupcake diplomacy'.

Dr. Behnam, in his closing remarks, suggested there were two type of nations: powerful nations with the capacity to act and don't, and nations without power that don't have the capacity to act, so can't. Ultimately civil society will make the difference, governments and the United Nations cannot do it alone. People must take responsibility and not be complicit.

How I reached BIO - Odyssey of a Young Biologist

by Peter G. Wells

Career paths and finding the ideal new job in science, as in other vocations, are shaped by many forces, especially the fortitude of the seeker and much serendipity. I contributed my reminiscences on my career path in an unpublished paper entitled 'Reminiscences of a Career in Marine Environmental Science begun at the St. Andrews Biological Station, and the Role of Serendipity' for the Centenary Celebration of the St. Andrews Biological Station (SABS). The paper is on file in archives in the library at SABS. My path from SABS to the Bedford Institute of Oceanography (BIO) in the early to mid 1970s illustrates the role of chance events quite clearly. In 1969, I was employed as a Fisheries Technician, then Biologist, at SABS in St. Andrews, New Brunswick. I worked happily on Snow Crabs (*Chionoecetes opilio*) for 15 months from small fishing boats and the research vessel M/V *Harengus* in the western Gulf of St. Lawrence. I was then drawn away from crab biology by the opportunity to continue my university studies, this time on oil pollution impacts on lobsters. This was partially stimulated by having been part of the response team in February 1970 at the *Arrow* spill in Chedabucto Bay, Nova Scotia, and having met the ideal supervisor, Dr. John Sprague, an aquatic toxicologist who was heading to the University of Guelph as a professor. I became his first graduate student and commenced a research program, based at the Huntsman Marine Laboratory and SABS, on hydrocarbon toxicology with lobster (*Homarus americanus*) larvae and post larvae.

In my second experimental year, 1972, I was invited to participate in an oil pollution workshop in St. John's, Newfoundland. There I met Don Gordon and Paul Keizer from the newly formed Marine Ecology Laboratory (MEL) at BIO. After we all gave seminars, Don kindly volunteered the considerable expertise and analytical services of his laboratory to conduct additional crucial chemical analyses of my oil test solutions and other oily preparations. Though a marine zoology student in theory, I was breaking all the rules and doing a lot of environmental chemistry to get the exposure concentrations and compositions accurately described. This collaboration started a bi-monthly 'oil run' in a large green government stationwagon from St. Andrews. I would drive lots of samples to BIO, drop them off, have a chat, have lunch, raid a bookstore or two for spy thrillers and environmental polemics and exposes (not quite like Playboy!), and return to St. Andrews on the same day. My frequent visits to BIO, though frenetic at best, and labeled quite insane by some, introduced me to other activities and personnel at BIO, in particular, to the staff of the newly formed Environmental Quality Laboratory of Environment Canada (EC). Upon request, I also conducted some toxicity experiments on refinery effluents for Environment Canada's Environmental Protection Service (EPS) in 1972.



Peter Wells, sampling rock crabs in Chaleur Bay, New Brunswick, in the summer of 1979, as part of a study on the Belledune smelter effluents.

The invaluable collaboration with Don Gordon's lab at MEL and Ray Cote and colleagues at EPS, and two early publications concerning the impact of oil on lobster larvae, led to two offers from BIO in 1973: one, to become an NSERC Post-Doc with MEL, and the other, to join the Toxicity Evaluation Section of EC at BIO. As jobs were scarce, and wanting to work on applied water pollution problems, I chose the EC position. Thus, I joined BIO in September 1974, with my Ph.D. thesis partially written (it was completed the following spring), but with a heart full of thanks for having a job at a large and vibrant marine institute. Working at BIO for many years, on and off, in various programs of Environment Canada and DFO and with many colleagues, was a chance of a lifetime. I look back on the early years with so many fond memories. 'Thank you' BIO for the wonderful experiences, the lasting friendships, the knowledge transfers, and for sharing the amazing and continuing excitement of ocean and marine environmental science at a pivotal time in ocean affairs and human history.

An Update on the BIO Fiftieth Anniversary Volume

Voyage of Discovery

by Michel Latrémouille

The five-decade framework of this forthcoming publication by the BIO – Oceans Association will provide an historical perspective on some of the Bedford Institute of Oceanography's outstanding legacy of marine research and hydrography from 1962 to 2012. In 50 articles by over 100 authors, the work of many BIO oceanographers, hydrographers, engineers, technicians, and others in multiple disciplines will be featured.

The volume will be organized along the following general themes, with a series of articles under each:

- Historical Roots
- Arctic Studies
- Ocean Life
- Ocean Circulation and Chemistry
- Hydrography and Seabed Mapping
- Geological Oceanography
- Fisheries, Ecosystems, and Aquaculture
- Marine Contamination
- Technology and Instrument Development
- Energy Developments
- BIO and the Law of the Sea
- The BIO Experience

'Voyage of Discovery' is being financially supported by the Bedford Institute of Oceanography Directors. Editing and production is under the direction of an editorial board comprised of Donald Gordon, Michel Latrémouille (chair), Michael Lewis, David Nettleship, and Michael Sinclair.

Response to the call for contributions has been outstanding, both in number and scope of submissions. Manuscripts have been slow in arriving as authors have struggled to summarize 50 years of research by many researchers in various divisions and programs. At present, 44 of the 50 manuscript have been submitted and the majority of these have been reviewed by the editors and revised by authors. We are now completely confident that the published book will present well-written articles of broad interest to professional oceanographers, graduate students, and of course BIO staff, past and present.

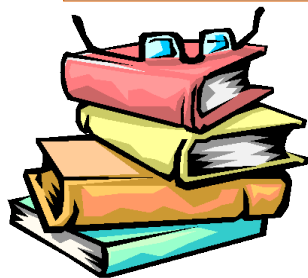
For use during the upcoming BIO 50th Anniversary Gala Events and Ocean Science Expo, a booklet outlining the content and availability of the new publication will be made available, including an order form. 'VOYAGE OF DISCOVERY' will be published in late 2012 or early 2013.

VOYAGE OF DISCOVERY: Fifty Years of Marine Research at Canada's Bedford Institute of Oceanography will be the most extensive Institute-wide compilation of scientific and hydrographic accomplishments ever assembled. While by no means comprehensive, the publication will give a general survey of BIO history and accomplishments over 50 years. A few of the subjects to be covered are:

- Canadian marine science history from before *Titanic* to BIO's founding; an overview of BIO's function, organization, and research.
- Arctic Ocean studies of waters, circulation, and currents, pack-ice properties, seasonal sea-ice variability, radioactivity, Canadian Ice Island Program discoveries, and climate change.
- BIO plankton ecology; benthic ecology; St. Georges Bay marine ecosystems study; Atlantic pinniped and cetacean research; marine ornithology - seabirds in Arctic and Eastern Canada.
- Ocean climate and coastal ocean circulation studies; the driving forces of hydrography at BIO; electronic charts; marine habitat and seabed sediment mapping.
- 50 years of marine geosciences for Canadians - one scientist's view; the subsurface geology of offshore eastern Canada; BIO coastal geoscience studies; marine geoscience and lakes; living Foraminifera research; discovering the Bay of Fundy seafloor.
- BIO science in support of the management of invertebrate fisheries; ecosystem management; research in support of harvest fisheries and ocean uses; environmental effects of salmon and mussel aquaculture; studies on toxigenic marine algae.
- Organochlorine pollutants in marine ecosystems; aquatic toxicology – applied studies in Maritimes Canada; BIO research in support of oil and gas developments, as well as tidal power issues.
- BIO marine engineering and instrument development; development of Icycler and Seacycler; the Huntex deep-tow seismic system; BIONAV; Loran-C at BIO.
- UNCLOS and BIO – defining Canada's extended continental shelves; the role of BIO in the Gulf of Maine boundary dispute; Epilogue: A perspective on the future.

DATELINE: 25 October 1962, Dartmouth, Nova Scotia

The Hon. Paul Martineau, Minister of Mines and Technical Surveys, said the opening of BIO was "... historic in our government's attempt to increase our knowledge of Canada's natural resources, historic in the furtherance of the advancement of the sciences of the sea, historic in our task of ensuring the safe navigation of Canada's coastal waters, historic in marking Canada's affirmed willingness to carry, with other nations of the world, its share of seeking increased knowledge of the sea for the benefit of mankind."



NOTEWORTHY READS: BOOK REVIEWS IN BRIEF

David N. Nettleship
Book Review Editor

The *Noteworthy Reads* section is an effort by BIO-OA to produce a representative list of recent noteworthy book publications related to the marine sciences and other subjects of general interest. The listing is not intended to be comprehensive or complete, but merely an attempt to highlight a number of 'good reads' that may be of interest to OA members and associates. Most books listed are available at local bookstores and public libraries. Book prices are regular retail in Canadian funds, but discounts of 20-30% are normally available on line at: e.g., amazon.ca or chapters.indigo.ca. Contributions of book reviews to 'Noteworthy Reads' are welcome – send via e-mail to David Nettleship: dnnlundy@navnet.net (phone: 902-826-2360).

SPECIAL PUBLICATION:

PLIGHT OF OCEAN LIFE!

Roberts, Callum. 2012. *The Ocean of Life: How Our Seas Are Changing*. Allen Lane, London, England. 390 pp. Hardcover, \$31.00 (ISBN 978-1846143946). – In this revelatory and disturbing book, today's 'Rachel Carson of the marine world', Callum Roberts, takes readers on a panoramic tour of the oceans showing why they are the most mysterious places on earth, with their depths still largely unexplored. In the process, we learn the history of the oceans from the beginnings of water on earth to their present form, the fascinating at-sea properties such as the circulation of currents and why they go where they do, changes in the chemistry of the waters over time, and the relationship mankind has had with the sea. Once the incredible richness of the oceans has been revealed, Roberts then describes how they have been altered over the centuries and the unprecedented threat they are experiencing at the present time. He details how human civilization has affected marine life, and describes the devastating impact commercial fishing, pollution, and climate change has had on marine life during the last few decades and how this directly affects our lives adversely on land. We should all read 'The Ocean of Life', both as a thrilling narrative of life in the oceans and what we must do to stop and reverse the damage we are doing. Clearly, not to take action to restore ocean life is a recipe for self-annihilation.

General Reviews

Berta, Annalisa. 2012. *Return to the Sea: The Life and Evolutionary Times of Marine Mammals*. University of California Press, Berkeley, CA. 205 pp. Hardcover, \$49.00 (ISBN 978-0520270572). – For anyone interested in mammals of the sea, Annalisa Berta's 'Return to the Sea' will excite and stimulate! Her up-to-date and expansive review of the biology and evolution of marine mammals traces events from the earliest times some 55 million years ago with giant whales and sea cows through the myriad environmental chal-

lenges of changing climates the group has experienced leading to modern forms such as deep-diving seals and clam-eating walruses. Along the way, evolutionary pathways and lineages of marine mammals are described, as are details of their anatomy, behaviour, ecology, and geographic distributions, past and present. Returns to the sea have been numerous over geologic time, and these events are used effectively to explain the present day diversity of marine mammals and causal factors responsible. Berta also explores current changes taking place in the marine environment including global warming and the impact of human activities on today's mammals of the sea. Overall, a timely and important work that should be read by all students of marine mammals.

Birkhead, Tim. 2012. *Bird Sense: What It's Like to Be a Bird*. Bloomsbury, London, England. 266 pp. Hardcover, \$28.00 (ISBN 978-1408820131). – Want a fascinating introduction into the world of birds as summer and the outdoors grasp our attention? If activities of birds in the backyard or countryside are of interest, then rush out and obtain a copy of Tim Birkhead's 'Bird Sense'. The subtitle "What it's like to be a bird" says it all! Professor Birkhead, one of Britain's most eminent avian behavioural ecologists, marries the poetry and science of birds to produce a unique review of their senses – vision, hearing, touch, taste, smell – one that reveals what makes a bird tick: how they interpret their environment, interact with conspecifics, and deal with the challenges of survival and reproduction. The writing is always clear, entertaining, and frequently embellished with intriguing interpretations of the way birds perceive the world and how sophisticated they actually are. The book is structured sense by sense, providing a thorough history of research, current beliefs and new findings (based on solid science), and what remains to be uncovered. These five chapters are followed by information-packed reviews of echolocation, magnetic sense, emotions in birds, and a postscript that ties everything together into a meaningful whole along with useful sections of notes, bibliography, glossary and index. This is a powerful, thoughtful piece of writing that entertains and educates simultaneously, and transforms avian biology into a means of viewing the living world around us.

Clack, Jennifer A. 2012. *Gaining Ground: The Origin and Evolution of Tetrapods, Second Edition*. Indiana University Press, Bloomington, IN. 544 pp. Hardcover, \$59.95 (ISBN 978-0253356758). – This second edition of Jennifer Clack's impressive book of the early tetrapods is a welcomed update of research findings and interpretations of this extraordinary group of animals, the ancestors of all vertebrate life. It begins in the Devonian period, some 370 million years ago, when the first amphibian-like fish emerged from the sea to exploit the land. Following an insightful introduction describing what a tetrapod is and their relationship to other vertebrates, nine chapters are arranged by major biologic event. The story of the emergence and evolution of the group is complex, though Jennifer Clack weaves a clear picture of the process through

the next 70 million years detailing the Devonian environment in which they evolved and the order and timing of anatomical changes that took place through the fish-to-tetrapod transition. And what a gripping and fascinating account it is, a step-wise continuum from the appearance of the first feet of lobe-fin-fish ancestors to a diverse modern family group of four-limbed animals called tetrapods. 'Gaining Ground' is a vivid and exciting portrayal of the evolution of terrestriality – the incredible move from water to the land!

Domeier, Michael L. (Ed.). 2012. Global Perspectives on the Biology and Life History of the White Shark. CRC Press, Boca Raton, FL. 567 pp. Hardcover, \$102.00 (ISBN 978-1439848401). – An outgrowth of the 2010 International White Shark Symposium, chairman Michael Domeier, one of the world's foremost White Shark experts, provides an exemplary summary of the latest research findings on this previously little known and understood shark. This multi-authored collection of diverse and outstanding papers shows the major advancement that has been made in knowledge of the White Shark and transforms its status from obscurity to one of the most studied sharks in the sea. The book is beautifully illustrated and divided into three sections – 'Biology, Behavior, and Physiology', 'Migratory Patterns and Habitat Use', and 'Population Monitoring, Policy, and Review' – that encompass a vast range of topics including previously unknown features of the species' reproductive biology, daily activity patterns, habitat preferences, migratory movements, and the research procedures and methods used. Organizer and editor Domeier and authors are to be congratulated on producing an authoritative, innovative, and timely work on a most difficult and important shark species.

Gibson, R.N., R.J.A. Atkinson, J.D.M. Gordon, and R.N. Hughes (Eds.). 2012. Oceanography and Marine Biology: An Annual Review. CRC Press, Boca Raton, FL. 388 pp. Hardcover, \$179.95 (ISBN 978-1439889985). – A multi-authored book, comprising six major review papers on cutting-edge marine topics, intended for a professional academic audience through oceanographic libraries or online (given the high cost of the volume). Although the topics covered are striking – all dealing with human impacts on marine ecosystems from nutrient enrichment and ocean acidification to conservation management and biodiversity assessments – the highlight is the fact that this volume is the 50th Year Golden Anniversary Edition (Volume 50) of the series, one of the most authoritative and cited sources in marine science. This outstanding achievement should be celebrated by all marine researchers and students of oceanography and marine biology!

Jorgensen, Sven. 2012. Introduction to Systems Ecology. CRC Press, Boca Raton, FL. 360 pp. Hardcover, \$99.95 (ISBN 978-1439855010). – Looking for some intellectually challenging science book to wile away the long days of summer? Well, this new work on systems ecology might just fit the bill, a textbook presentation that not only describes how

ecosystems work and respond to disturbances, but offers a first attempt to integrate four aspects of systems ecology – thermodynamics, biochemistry, network theory, and hierarchical organization – aimed towards the development of a holistic theory of systems ecology. After introducing systems ecology as an ecological discipline, the material is divided into two parts: the first, reviews the laws of thermodynamics and the general biochemistry of living organisms, and the associated constraints imposed by them on ecosystems; the second, explores the ways ecosystems avoid those constraints in order to grow, develop, and survive. The information presented is comprehensive, with difficulties in learning eased somewhat by the numerous illustrations and summaries of important points at the end of each chapter. Numerous examples and exercises are also provided to allow sample applications of the theory to be made to explain observations and generate predictions. Overall, this book will challenge and inspire any ecologist interested in the development and application of systems ecology theory to ecosystem-problem solving and environmental management.

Mann, Michael E. 2012. The Hockey Stick and the Climate Wars: Dispatches from the Front Lines. Columbia University Press, New York, NY. 395 pp. Hardcover, \$28.90 (ISBN 978-023115254X). – This book is a personal memoir about our climate future by Nobel Laureate and world renowned climatologist Michael E. Mann, the leading climate researcher and creator of the 'hockey stick' chart of 1998. Remember how the analysis of global weather data over the past one thousand years revealed a close correlation between the rise in temperature with the increase in industrialization and the use of fossil fuels? The inescapable conclusion drawn by Mann and his colleagues -- that worldwide human activity had raised carbon dioxide levels, trapping greenhouse gases in the atmosphere and warming the planet -- knocked the petroleum industry and global corporate entities off their feet! The result was a war of words and worse, a blatant attempt to discredit and smear the reputations of the scientists involved with the 'hockey stick' chart, with Mann the bulls-eye target. The 'climate wars' have been long and dirty, with industry and its paid science deniers continuing the assault despite the abundant scientific evidence in support of the 'hockey stick' finding. In this eloquently written narrative, Michael Mann speaks out of his experiences in a manner that underlines the central message of research on climate change: the planet is warming from human activity and the use of fossil fuels, and no matter how inconvenient that fact may be, we would be wise to improve our behaviour and treatment of the environment. This is a book to read and learn from.

Marzluff, John and Tony Angell. 2012. Gifts of the Crow: How Perception, Emotion, and Thought Allow Smart Birds to Behave Like Humans. Fitzhenry & Whiteside, Markham, ON. 304 pp. Hardcover, \$29.00 (ISBN 978-1439198735). – This book on our ever-present neighbour -- the American Crow -- will excite, inform, amaze, and entertain simultaneously! Authors John Marzluff, an accomplished

avian ethologist, and Tony Angell, renowned artist and naturalist, introduce us to the wonders of the amazing corvid family (crows, ravens, and jays) and its most common member. Corvids have large brains for their body size and display great intelligence and learning skills. 'Gifts of the Crow' shows how crow brains work and what it means to be a crow based on the results of scientific studies and numerous field reports. The accompanying anecdotes and stories together with Angell's drawings, all with scientific context, range from serious accounts of various behaviours and actions to interpretations that are hilarious. In total, the reader receives an in-depth look at these complex cerebral birds and the many behavioural traits we share. A marvelous and rewarding read!

McCormick, Herb. 2011. One Island, One Ocean: Around the Americas Aboard Ocean Watch. Weldon Owen Publishing, San Francisco, CA. 240 pp. Hardcover, \$35.00 (ISBN 978-1616281717). – In May 2009, a team headed by sailor and journalist Herb McCormick and solo-circumnavigator Mark Schrader, initiated a 13-month educational voyage to circumnavigate North and South America ('One Island') by sailboat – the first-ever continuous west to east sail – to document the state of ocean conditions and assess the impacts of climate warming and other pervasive anthropogenic factors on the shared coastal and offshore waters ('One Ocean') of the Americas. McCormick's narrative and accompanying world-class photos by David Thoreson deliver the message full thrust: a vivid picture of distressing destruction of the environment and native cultures, from disappearing ice and glaciers, the removal of villages from rising water levels to plastic pollution and the Pacific garbage vortex. Against these major concerns of ocean deterioration and the need for immediate conservation action, McCormick still offers a glimmer of hope owing to the impressive backdrop of the natural beauty of the oceans, sea ice, land and associated plants and animals. Awareness and an informed general public must result in forcing our political leaders to become stewards of our ocean waters. This beautiful coffee-table book detailing the epic environmental journey of 'Ocean Watch' will certainly do its part in delivering the essential message!

Stirling, Ian. 2011. Polar Bears: The Natural History of a Threatened Species. Fitzhenry & Whiteside, Markham, ON. 334 pp. Softcover, \$40.00 (ISBN 978-1554551552). – Here is an important review of the biology and life history of an arctic icon, *Ursus maritimus*, by Canada's leading Polar Bear expert, Ian Stirling, scientist emeritus with the Canadian Wildlife Service, who has led the arctic bear program for over forty years. There is no one more knowledgeable or experienced to provide an overview of the biology, behaviour, present status, and future prospects of the Polar Bear in both Canada and through its circumpolar range. The book is well structured, clearly written with the facts attractively presented, brimming with details of the life and challenge of being a top-trophic feeder in a northern marine ecosystem filled with uncertainties owing to climate warming. It is divided into subject-specific chapters leading to the all-important theme of

conservation and protection of one of the world's most interesting polar animals including: 'Present day distribution and abundance', 'Origin', 'Polar bears and humans', 'How to study', 'What makes a Polar Bear tick', 'Reproduction', 'Behaviour', 'Hunters of the northern ice', 'Life and death', 'The Polar Bear capital of the world', 'Highlights of conservation past and present', 'Environmental concerns', 'Climate warming', 'The future', and 'Concerns and hopes'. This volume is an invaluable sourcebook of information on both the natural history and present plight of the Polar Bear, and the nature of the changes occurring in arctic ecosystems. Dr. Stirling's syntheses are based on results of years of scientific research, quality findings that go a long way in the application of science to problem solving and monitoring threatened and endangered species including the Polar Bear.

Wellnhofer, Peter. 2009. Archaeopteryx: The Icon of Evolution. Verlag Dr. Friedrich Pfeil, Munchen, Germany. 208 pp. Hardcover, \$74.00 (ISBN 978-3899371086). – Once in a long time a classic publication emerges, often hidden away in production lists of small or foreign publishers. Such is the case with this outstanding account of the history and biological significance of the fossil *Archaeopteryx*, the start of the record of the rise of birds from their reptilian ancestors through millions of years and the origin of avian flight. Originally published in German, this revised English edition (translated by Frank Haase) is a masterpiece of both content and manner of presentation with 313 coloured plates and 54 b&w figures. Not a stone has been left unturned in this textbook review of hypotheses and perceptions of the origin and evolution of birds, and the role that *Archaeopteryx* has played as a 'missing link' and star witness of the process of evolution. This artistically structured volume is a detailed and comprehensive examination of what is known of this 150 million-year-old bird based on the ten skeletal specimens and single feather imprint that have been discovered. A geological excursion provides an introduction into the Jurassic world and nature of the Solnhofen limestone where the fossils have been found. The core of the book comprises lengthy descriptions and exquisite illustrations of each *Archaeopteryx* specimen followed by chapters on the suspected life history, physiology and reproduction, ecology and other aspects of the natural history and paleobiology of this ancient bird. Peter Wellnhofer has given us a 'tour-de-force' of one of the most significant fossils in the history of paleontology, a treasure chest of information for geologists, biologists and anyone curious about evolution and the dinosaur-bird divide.



From the Editor's Keyboard: It is with somewhat of a heavy heart that I write this column as BIO and government-executed ocean science once again gets downsized. I experienced the cuts in the 1990s and know the anxiety being experienced by those who have been affected and those who work beside them. A harbinger of the present situation is the termination of a globally recognized centre of excellence, COOGER. Paul Keizer expressed his dismay on the termination of COOGER in his opening remarks at the Beluga Award ceremony. These events challenge the BIO community both from a compassionate sense — be there and support those among us who are primarily affected — and the scientific sense — increase the collaboration between organizations and disciplines — and resist bureaucratic silos. Collaboration has marked the excellent science conducted at BIO and recognized most appropriately in the bestowing of the Beluga Award on Donald Gordon. Don expressed hope for continued good scientific work in his acceptance speech. Other challenges for us are the messages from the Elisabeth Mann Borgese Lecture. Megan Leslie tells us to educate your MP and write letters to the editor. Awni Behnam tells us civil society will be the key in making the “voice of the people, the voice of the ocean.” Time for complacency is long past. *Andy Sherin*, Editor



ABOUT THE BIO OCEANS ASSOCIATION

The Bedford Institute of Oceanography Oceans Association (BIO-OA) was established in 1998 to foster the continued fellowship of its members; to help preserve, in cooperation with the Institute's managers and staff, BIO's history and spirit; and to support

efforts to increase public understanding of the oceans and ocean science. Membership is open to all those who share our objectives. Most current members are present or past employees of BIO or of the federal departments of Environment, Fisheries and Oceans,

and Natural Resources (or their predecessors) located in the Halifax Regional Municipality. Membership is \$10.00 per year, \$40.00 for five years, or \$150.00 for a lifetime membership.

OFFICERS AND DIRECTORS

PRESIDENT
VICE-PRESIDENT
VICE-PRESIDENT

PAST PRESIDENT
SECRETARY
VICE SECRETARY
TREASURER
DIRECTORS AT LARGE:

Paul Keizer	466-7590
Mike Hughes	860-0784
Don Gordon	469-2798(h) 426-3278(o)
Betty Sutherland	454-6557
Elizabeth Crux	435-2541
David McKeown	477-5887
Lori Collins	466-3791
Bob Cook	868-2948
Gordon Fader	455-6100
Timothy Lambert	426-3872
Carol Manchester	861-3509
Georgina Phillips	823-3401
Tom Sephton	244-6080
Bosko Loncarevic	835-9606
Richard MacDougall	832-3624

keizerp@gmail.com
hughes@accesswave.ca
donald.gordon@dfo-mpo.gc.ca
jesuther@dal.ca
erberow@ns.sympatico.ca
davidmckeown@hfx.eastlink.ca
lcollins@accessable.net
roberthcook@eastlink.ca
gordon.fader@ns.sympatico.ca
tim.lambert@dfo-mpo.gc.ca
c.manchester@ns.sympatico.ca
tandgphillips@eastlink.ca
tom.sephton@dfo-mpo.gc.ca
bosko@ns.sympatico.ca
jrmacdogall@hotmail.com

COMMUNICATIONS: NEWSLETTER, PR, AND WEB SITE

NEWSLETTER EDITOR
ASSOCIATE EDITORS

PR AND MEMBERSHIP
WEBMASTERS

Andy Sherin	466-7965
David Nettleship	826-2360
Betty Sutherland	see above
Clive Mason	426-4163
Patrick Potter	426-6601
Philip Spencer	426-4465

oanewslettereditor@gmail.com
dnnlundy@navnet.net
see above
clive.mason@dfo-mpo.gc.ca
patrick.potter@nrcan-mcan.gc.ca
philip.spencer@nrc-mcan.gc.ca

COMMITTEES / WORKING GROUPS: CHAIRS

BELUGA AWARD
BIO COMMEMORATIVE STAMP
EQUIPMENT ARCHIVES
GRAPHIC DESIGN
HMCS SACKVILLE HISTORY
LIBRARY ARCHIVES
LIAISON Huntsman & BIO 50th
NSIS LIAISON
OUTREACH
SOCIAL PROGRAMS

Patrick Potter	see above
Dale Buckley	434-5734
David McKeown	see above
Art Cosgrove	443-7945
Keith Manchester (contact)	861-3509
Bosko Loncarevic	835-9606
Don Gordon	see above
Bob Cook	see above
Charles Schafer	861-3145
Claudia Currie (from January 2013)	

see above
dbuckley@ns.sympatico.ca
see above
acosgrove@hfx.eastlink.ca
k.manchester@ns.sympatico.ca
bosko@ns.sympatico.ca
see above
see above
charlestschaffer@hotmail.com

PAST PRESIDENTS

Robert Reiniger (1998-2000), Dale Buckley (2000-02), David Nettleship (2002-04), Donald Peer (2004-06), Betty Sutherland (2006-08 and 2010-11), Bob O'Boyle (2008-10)

Kenneth Lee delivers the fifth BIO 50th Anniversary Lecture



Kenneth Lee delivered the fifth in a series of public lectures to celebrate the BIO 50th Anniversary on 9 May 2012. He spoke of his research with the Centre for Off-shore Oil, Gas and Energy Research (COOGER) and especially his experience providing science advice and support to the oil spill clean-up operations following the Deepwater Horizon oil spill in the Gulf of Mexico. For the first time, dispersant was injected directly into a wellhead at a depth of 1,500 metres with the objective of diluting the oil below toxic concentrations and enhancing degradation by natural microbial processes. COOGER staff collected data day-and-night for 4 months to monitor the presence of small oil droplets in the water column and their dispersion in the subsurface.



BIO-Oceans Association Annual General Meeting

At the BIO Oceans Association Annual General Meeting, held on 24 May 2012, three new members of the Executive were acclaimed: Elizabeth Crux will become the Secretary, Richard MacDougall, Director at Large, and Claudia Currie will assume Social Program Coordinator in January 2013.

Captions (clockwise from top left): Ken Lee at the podium listening to a question; the black circle marks the location of one COOGER oil degradation experiment among several others on the Eastern Shore of Nova Scotia; Alain Vézina, DFO Regional Director of Science presents a 50th anniversary mug to Emily Kendell, winner of the door prize at Ken Lee's lecture; current and past Secretaries of the BIO-OA, Elizabeth Crux (left) and Iris Hardy (right); and Paul Keizer, BIO-OA President (left) and Gordon Fader, former Social Program Coordinator (right) welcome Claudia Currie, the new BIO-OA Social Program Coordinator.



World Oceans Day on the Halifax Waterfront

Another successful World Oceans Day on the Halifax Waterfront was held on 8 June 2012. There were numerous organizations, both government and non-governmental, that set up exhibits in and around the Maritime Museum of the Atlantic. BIO was well represented with exhibits from DFO and NRCan. The 'Mysteries of the Gully' exhibit was a hit with the younger set because of the specimens of biota on display from that Marine Protected Area. Defence Research and Development Canada brought the front half, the smart half, of their autonomous underwater vehicle (AUV) that was used in partnership with NRCan and DFO at BIO to survey the Arctic Ocean in support the Law of the Sea project. The AUV uses an innovative array of hydrophones on the vehicle that allows it to determine the direction to its retrieval site marked by an acoustic beacon that transmits coded acoustic messages. This year the CCGS *William Alexander* was tied up alongside with a large navigation buoy on board; unfortunately, visitors were not allowed to board the ship. Another difference this year was the presence of the media. In contrast with the total absence of media in 2011, all the major media outlets in town were present with their cameras. The stories they were following of course were the cuts at DFO and the implications of changes to the Fisheries Act and the Canadian Environmental Assessment Act in the Government of Canada's omnibus budget Bill C-38.

Captions (clockwise from top left): Donald Sam and Mark McLean (Habitat Protection) at the Habitat Display with the CCGS *William Alexander* in the background; the World Wildlife Fund panda greets Shavonne Meyer (Species at Risk), the DFO 'cooked' lobster; Claudia Currie (NRCan) with the live sea-bottom cam; and at the 'Mysteries of the Gully' display with attendees (from left to right): Andrew McMillan (Ecosystem Research), Hilary Moors (Ocean and Coastal Management, OCMD), Beatriz Rincón (Ecosystem Research), and Dominique Saheed (Intern, OCMD).

