

# BIO-OCEANS ASSOCIATION NEWSLETTER

Issue 43, July 2009

## FROM THE PRESIDENT

Summer has arrived and as I write the festivities for Canada Day 2009 are in the air. Since my last column, the Association has been active on a number of fronts.

First and foremost, on 19 May 2009 we held the BIO - OA Annual General Meeting, our opportunity to consider last year's accomplishments and air plans for the coming one. I presented a synopsis of the Association's activities during 2008/09, including seminars (John Woods on Fundy tidal power development), social events (summer picnic at Shiri Srivastava's home) and numerous projects (Dale Buckley's BIO Commemorative Stamp initiative, the Manchesters' HMCS *Sackville* history, David McKeown's BIO equipment archive), and other activities. Overall, it was a busy and productive year. After Bob Reiniger's Treasurer's report (we are in good financial shape), we held the annual elections for the Association's officers and directors. As no one is stepping down in 2009/2010, the incumbent team was voted back in. Some changes are coming at the end of 2009/10. We will be looking for two new Vice - Presidents and Michael Latremouille will be stepping down as editor of this newsletter after the January 2010 issue. Thanks Mike for 10 years of contributions as Newsletter editor. If anyone in the membership would like to join the Newlet-

ter's editorial staff, please contact either Mike or myself. After the elections, I turned over the meeting to René Lavoie, chair of the Beluga Award Committee. René and his committee did a great job in identifying this year's winner, Bruce Anderson. The auditorium was packed, which gives an indication of BIO staff's recognition of Bruce's impressive contributions to the Institute over the years. Check out the report on the award on pp. 8-9.

Preparations for BIO's 50<sup>th</sup> anniversary in 2012 are well in hand. Don Gordon is our representative on the BIO organizing committee and gives an idea of what's in store in this issue (see p. 10). Social events planned for the summer include a trip to Heritage Village on 8 July (see p. 12) and the annual picnic at the Cook residence on 20 August or on 25 August in case of rain (see p. 9 for details).

In addition to our regular columns (e.g., Noteworthy Reads by David Nettleship, p.2), there are lots of great articles in this issue.

I wish everyone a wonderful summer and hope to see you at the upcoming events.

— Bob O'Boyle



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## 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: dnmlundy@navnet.net (phone: 902-826-2360).

### SPECIAL PUBLICATION:

#### EVOLUTIONARY BIOLOGY AND DARWIN

**Ruse, Michael and Joseph Travis (eds). 2009. Evolution: The First Four Billion Years.** Belknap Press of Harvard University Press, Cambridge, MA. 979 pp. Hardcover, \$50.95 (ISBN 978-0674031753). – If ever there was a single volume to serve as a tribute to the 200<sup>th</sup> anniversary of the birth of Charles Darwin, the 150<sup>th</sup> anniversary of the publication of ‘On the Origin of Species’, and the science Darwin set in motion, this book is it! Editors Michael Ruse and Joseph Travis, together with Edward O. Wilson’s insightful introduction, have produced a massive volume that spans evolutionary science from its beginnings to its most recent findings. This is a book that everyone should know about and read, a unique and premier sourcebook on understanding the history of life and evolution. It is a one-volume introduction to evolutionary biology divided into two parts. The first part comprises lengthy essays on the overarching themes in evolution, from the history of evolutionary thought to educational controversies, from the origin of life and the fossil record, speciation and adaptation, and the key features of evolution including molecular and genomic evolution. The second part is encyclopedic in form, an alphabetical guide, made up of a large number of shorter essays on more specific topics. It is here that concise information on subjects such as adaptation, altruism, natural selection, Pleistocene extinctions and major groups of organisms can be accessed, as well as information on individual scientists that have made significant contributions to evolutionary theory and its development from Aristotle, John Ray and Carl Linnaeus to Jean

Lamarck, Erasmus and Charles Darwin, Thomas Huxley to Ernst Mayr and E.O. Wilson. Altogether, this volume provides the latest word on the history and philosophy of evolution, the maturation of evolutionary science as a discipline, and stands as a fitting tribute to Charles Darwin’s year.

### GENERAL REVIEWS

**Allmon, Warren D., Patricia H. Kelley and Robert M. Ross (eds.). 2008. Stephen Jay Gould: Reflections on His View of Life.** Oxford University Press, New York, NY. 400 pp. Hardcover, \$37.95 (ISBN 978-0195373202). – Warren Allmon, Director of the Paleontological Research Institution and Professor of Earth and Atmospheric Sciences at Cornell University and his co-editors, have produced an invaluable reference source about Stephen Jay Gould, renowned scientist and teacher of paleontology, evolutionary biology, and the history of science. Several tributes have been made to Gould and his influential works since his untimely death from cancer in 2002 (e.g., see review of Rose 2007: Issue 36 of BIO-OA Newsletter). However, this volume provides new insights into Gould’s intellect and influence, testaments by those closest to him – his students and close professional colleagues – that reveal Stephen Gould to have been as much a “genius” in the flesh as the rest of us knew from his voluminous writings and diverse scientific achievements. This is a book to have and cherish, both as a source of information on Gould’s writings (most complete bibliography yet produced) and as a full appreciation of the magnitude of his influence on both the academic community and the general public.

**Bassett, Carol Ann. 2009. Galápagos at the Crossroads: Pirates, Biologists, Tourists, and Creationists Battle for Darwin’s Cradle of Evolution.** National Geographic, Washington, DC. 303 pp. Hardcover, \$30.00 (ISBN 978-1426204029). – The Galápagos Archipelago is best known as the location visited by Charles Darwin in 1835 during his trip around the world on board the HMS ‘Beagle’, an exposure that engendered the development of his theory of evolution. Since that time, the 14 small islands making up the archipelago have been battered by human occupancy, first by early mariners who took tortoises and seals for food, then by colonists with their domesticated animals followed by other impacts such as the construction of an airbase for American forces in World War II to the present Ecuadorian fishermen, poachers of endangered marine species, and the tourist industry. In this work, Carol Ann Bassett sounds the alarm about the ongoing destruction of a unique plant and animal community, human activities that may soon destroy this remarkable ‘Eden’. The conservation and protection message given is clear and sensible, as is the overview of what is presently being undertaken to help preserve the living wonders of the

Galápagos Archipelago and what protective measures remain to be initiated.

**Carroll, Sean. 2009. Remarkable Creatures: Epic Adventures in the Search for the Origin of Species.** Houghton Mifflin Harcourt, Boston, MA. 352 pp. Hardcover, \$34.95 (ISBN 978-0151014859). – Here is a journey of discovery from the mid 1800s to the present, from the era of myths, imagined creatures and uncertainty about the world to the scientific wonders and knowledge of today. Sean Carroll, professor of molecular biology and genetics, leads the reader along the path of progress of a better understanding of how the world evolved and the remarkable pioneers that blazed the trail. In a most readable style, Carroll reviews the most important discoveries made in natural history over the last two centuries, from Charles Lyell's ground-breaking views of earth history, Charles Darwin's voyage around the world and his discovery of natural selection with Alfred Russel Wallace, Gregor Mendel's key to evolution, on to the discoveries of Precambrian life by Charles Walcott, findings on human origins by Louis and Mary Leakey in East Africa, the discovery of the structure of DNA by James Watson and Francis Crick, to cutting-edge breakthroughs in today's modern laboratories. Truly a feast for anyone interested in the tale of discovery leading to a better understanding of how we came to be.

**Dudzinski, Kathleen M. and Toni Frohoff. 2008. Dolphin Mysteries: Unlocking the Secrets of Communication.** Yale University Press, New Haven, CT. 224 pp. Hardcover, \$36.00 (ISBN 978-0300121124). – Have you ever wondered about the lives of dolphins outside the confines of captivity by humans? Details of their lives at sea are poorly known, as are the lives of most other marine mammals. In this fascinating book, aquatic mammal researchers Dudzinski and Frohoff take the reader on a journey of discovery into the dolphins' world below the ocean's surface to show how dolphins live, communicate, and interact with other species including humans. The focus is on communication, the structure and function of social signals, and transfer of information. Through captivating prose the authors provide an excellent overview of the modern techniques used to study dolphins in the wild, listen to their vocalizations, and translate meanings. Overall, 'Dolphin Mysteries' presents an up-to-date and scientifically accurate analysis of dolphin behaviour and goes a long way in clarifying the manner of communication within this amazing animal group.

**Mitchell, Alanna. 2009. Sea Sick. The Global Ocean in Crisis.** McClelland and Stewart, Toronto, ON. 238 pp. Hardcover, \$32.99 (ISBN 978-0771061165). – This book discusses the health of the oceans. It was released with considerable fanfare and is a worthy read for everyone con-

cerned about the future of the sea and its biota, in a world of overexploitation, pollution and climate change. Written by a well-travelled Canadian journalist, it is organized into a set of chapters on vital signs – the key signals that tell us something about the current condition and ecological integrity of the global sea. Hence, there are chapters on oxygen, pH, metabolism, fecundity, biodiversity, medical history and adaptability, amongst others, all very readable and informative, covering different parts of the globe. In the biodiversity chapter, the ground-breaking, synthesis-based research of Dalhousie University's scientists Boris Worm and Heike Lotze on the state of fisheries is highlighted. Although the book has claims it doesn't meet (it is not the first book on the subject) and a number of pesky factual errors, it is still worth a careful and thoughtful read. The book also has a very useful bibliography on the topic. The book has caught public attention, has been reviewed widely, and is due to be published soon in softcover, making it a good book for the summer patio and beach. (Peter G. Wells)

**Neme, Laurel A. 2009. Animal Investigators: How the World's First Wildlife Forensics Lab is Solving Crimes and Saving Endangered Species.** Scribner, New York, NY. 230 pp. Hardcover, \$32.99 (ISBN 978-1416550563). – Here is a look at the little known topic of wildlife forensics and the effort made by dedicated scientists to help stop, or at least mitigate, the lucrative trade in the illegal procuring and selling of wild animal parts. Laurel Neme, an environmental journalist, exposes us to the magnitude of the international demand for wildlife and animal parts -- ivory tusks (elephants, narwhal, walrus) for carving, exotic feathers (eagles, tropical birds) for headdresses, and gallbladders and penal bones for medicinal purposes -- and the negative impact that this illegal wildlife trafficking has had on rare and endangered species worldwide. Focused on the US Fish and Wildlife Forensics Laboratory, case studies are used to show the forensic techniques and procedures used to obtain conclusive evidence of criminal activity and how undercover investigators are able to identify and arrest the violators. Overall, a captivating account of the workings of a "CSI laboratory" for wildlife.

**Prager, Ellen. 2008. Chasing Science at Sea: Racing Hurricanes, Stalking Sharks, and Living Undersea with Ocean Experts.** University of Chicago Press, Chicago, IL. 178 pp. Hardcover, \$27.50 (ISBN 978-0226678709). – This collection of firsthand accounts of marine research, gathered by chief scientist Ellen Prager from her own personal experiences and those of her colleagues, unveils the adventure, challenge, and need for at-sea study of the global ocean environment. By using these many informative and entertaining stories from individual scientists, she succeeds in presenting an excellent cross-section of ocean science disciplines and

the passion, excitement and commitment engendered by ocean exploration and discovery. These highly readable stories are delightful and captivating, and provide a unique look at the demands and rewards of being a marine researcher. Although focused on the adventure aspect rather than in-depth science, the message of the need for doing good marine science and learning more about the world's oceans rings loud and clear! This is a must read for anyone interested in ocean research or considering oceanography as a career pursuit.

**Rose, Alex. 2008. Who Killed the Grand Banks: The Untold Story Behind the Decimation of One of the World's Greatest Natural Resources.** Wiley & Sons, New York, NY. 320 pp. Hardcover, \$36.95 (ISBN 978-0470153871). – Alex Rose, journalist, prize-winning writer and member of three Royal Commissions and Provincial Inquiries (BC) including one on Canadian fisheries, has undertaken a difficult but critical analysis of factors responsible for the destruction of the northern cod on the Newfoundland Grand Banks. How these fertile fishing banks were allowed to deteriorate to the catastrophic collapse of the fisheries through to its closure in 1992, an unprecedented ecological disaster, is the question asked. After careful research and consideration of events, Rose concludes the blame for the disaster rests squarely on the shoulders of the federal government for encouraging diversification of the cod-fishing fleets and ignoring the many warning signals of impending environmental and ecosystem destruction. Greed and willful blindness ruled the day, ultimately eliminating one of the richest fisheries the world has known. The final question posed by Rose is “Have we learned anything from this ecological disaster, or will such stupidity repeat itself on this and other key environmental issues?” The hope is for society and its governmental representatives to accept its critical role as a steward of the environment. Not to do so spells “disaster” for all of us.

**Struzik, Ed. 2009. The Big Thaw: Travels in the Melting North.** Wiley & Sons Canada, Mississauga, ON. 278 pp. Hardcover, \$29.95 (ISBN 978-0470157282). – Award-winning author Ed Struzik takes us on an all-important tour of Arctic Canada to demonstrate the impact current global warming is having on its lands, plants and animals including man. In a carefully integrated expose, Struzik combines the human and scientific narratives to produce a vivid and revealing synthesis of events underway, all pointing to a changing and threatened Canadian arctic. Everyone interested in northern Canada and its inhabitants, from the iconic polar bear and other marine and terrestrial mammals to unique plant communities should read this outstanding book and heed its findings of major environmental changes from global warming.

**Tudge, Colin and Josh Young. 2009. The Link: Uncovering Our Earliest Ancestor.** Little Brown, New York, NY. 262 pp. Hardcover, \$28.00 (ISBN 978-0316070089). – The authors tell the story of “Ida”, the oldest fossil primate yet discovered, 44 million years older than “Lucy”, the previously oldest primate fossil. Although not a direct ancestor of modern primates including humans, the skeleton of “Ida” is remarkably complete, the most complete primate fossil ever found, and will provide such an abundance of new information into primate evolution that the history of primate origins will be rewritten. The 47-million-year-old skeleton, the size of a small cat with four legs and a long tail, was a juvenile female estimated to have died at about 10 months. The story of her discovery and findings of the first scientists to study her are gripping, told in a brilliant manner that vividly reveals the significance of the find to our knowledge of primate evolution.

**Varmus, Harold. 2009. The Art and Politics of Science.** W.W. Norton, New York, NY. 315 pp. Hardcover, \$27.50 (ISBN 978-0393061284). – A book about health issues of truly global importance by Harold Varmus -- Nobel Prize in Medicine for his outstanding researches on cancer at the University of California (San Francisco) and former director of US Institutes of Health -- told through an engaging review of his diverse career as medical doctor, academic scientist and political scientist for the Clinton administration. A well written and unique look at an unusual life in science presented in four parts: becoming a scientist, doing science, a political scientist, and continuing controversies. Altogether, Varmus' accounts of having to deal with political battles ranging from budgets to stem-cell research, global health to public information and science publishing, reveals a creative individual who values science and underlines to everyone the important role of science in finding solutions to human and global problems.

**Wilson, John and Ross Clowes. 2009. Ghost Mountains and Vanished Oceans: North America from Birth to Middle Age.** Key Porter Books, Toronto, ON. 248 pp. Hardcover, \$34.95 (ISBN 978-1554700479). – A study of the earth in five parts: ‘Introduction’, ‘Birth and Childhood’ (4 to 2.5 billion years ago), ‘Tumultuous Teens’ (2 to 1 billion years ago), ‘Mid-life Crisis’ (the past 1 billion years), and ‘Old Age’ (the next billion years). The authors review continental drift and the formation of today's continents, and the establishment of ‘Lithoprobe’, an international multi-disciplinary research program initiated in Canada in 1981. Its aim to examine the Canadian landmass and offshore margins to determine how the North American continent was formed is detailed, as are the ensuing research findings that have given the program worldwide recognition as the best project of its kind in the earth sciences field. A most informative and interesting read of a relatively unappreciated topic.

## ANOTHER DAY IN PARADISE

David L. McKeown

Over the years, my wife Carol and I have developed the following vacation checklist:

1. lots of interesting by-ways and small villages;
2. warm, sunny days and cool nights;
3. little traffic and relaxed driving;
4. friendly people, good food, and comfortable accommodation; and
5. inexpensive.

If this list matches yours, try Portugal in the early spring. Carol and I spent almost four weeks there this past March and it exceeded our most optimistic expectations. March lies between the end of the rainy winter and the hot summer season. It is their low season so we stayed in three- and four-star hotels for about \$60-70 per night for two including an all-you-can eat hot and cold

reservations. Without exception, the Portuguese were very friendly and welcoming wherever we went. And finally, and most important to us, the cities, villages and countryside everywhere were outstandingly attractive and interesting.

Our first stop was Lisbon. We had an excellent hotel in a residential area across from a large park a short walk from the downtown area. We discovered that the oldest parts of Lisbon, and perhaps the most interesting to tour, are built on two hills flanking the downtown business district. The best way to see them is to take the almost cartoon-like antique number 28 streetcar which is perfectly designed to traverse the steep, very narrow, twisting streets of the old quarters.

highway south was effortless. The GPS includes western European maps and I have it programmed to avoid motorways and take the shortest route resulting in trips down some very interesting and unusual by-ways. It really made the trip for us.

If you plan to visit the Algarve, be warned, much of the central part is overdeveloped and held only limited attraction for us. However, even there, delightful small villages can be found, one of them being Carvoeiro where we stayed for several days while exploring the nearby coastal and inland areas as far west as Cabo Sao Vicenta, the south westernmost tip of Europe.

We then went on to the eastern end of the Algarve to visit Russ and Debbie Parrott. They had a lovely little villa in a national park near Traveria. As you might expect, we had no trouble locating their place as Russ had given me the latitude and longitude to the nearest second to enter into my GPS. Each morning Russ had a ritual. He would awake, step outside the villa, raise his arms into the air and declare "Another day in paradise". After this ceremony the four of us explored the endless sandy beach where they spent their days. Although it is a walkable distance away from their villa, along a lovely trail through a lagoon area, it can also be accessed via a tiny narrow-gauge railroad train. Upon our return from the beach, Janet and Doug Gregory joined us. The six of us then spent the remainder of the day touring the beautiful little town of Traveria and finished off with a great meal and copious wine. A brief word about the food at this point. If you love fish, you don't even need to be able to read Portuguese. Simply take the special of the day or point blindly at any item on the menu and you will never be disappointed. On the other hand, meat dishes may be a little more



Lisbon's number 28 streetcar.

breakfast buffet. The by-roads and villages were almost empty of cars and tourists and we could always get a table in any restaurant of our choice without

After a few days in Lisbon, we collected our rental car and headed south to the Algarve. With the aid of my GPS, driving out of Lisbon onto the main

of a gamble. Our favorite and highly recommended non-fish dish in the Algarve was chicken for two with marvelous gravy done in a crock-pot. Unfortunately, I did not write down its name, but it is easily identifiable on the menu, especially if there is an English translation available as there usually is.

Not wanting to impose further on the Parrott's hospitality, but loving the Traveria area so much, we moved to the Vila Gale Albacora hotel, which had originally been a tuna-fishing station.

We were now halfway through our vacation and had only seen a fraction of Portugal, so we headed slowly north on the back roads to Evora. Once again we found an excellent hotel, many small villages to visit nearby, and outstanding meals at modest prices. Notable foods in the Evora region were a three-cheese tomato soup and a cod-garlic-egg soup. The town dates back to Roman times. There is an impressive temple in honour of Diana that is best seen under floodlights at night and an amazing Roman viaduct nearby. Next to the temple is a

ing hotel run by a religious order. This small city is uniquely different than most other European ones, as it hardly existed until a religious vision occurred there in 1917. While staying there, we made a day trip back to Tomar. For anyone contemplating visiting this area, I would suggest doing the opposite to us, that is, stay in Tomar and visit Fatima. While travelling between these two towns we passed a large residence with a sign in Portuguese that we translated as "Home for Retired Cadavers", which suggests our Portuguese is not up to snuff!



Carol, Janet, Debbie, Doug, and Russ at the Parrott's vacation paradise.

Most of the buildings were original construction updated to four-star standard. A museum on the hotel grounds describes how the community functioned, the massive fishing weirs were assembled and the fish caught. This is open to the public and well worth a visit if you are in the area. While there, we swam in the hotel pool much to the amazement of the Portuguese who were swaddled in down jackets. March temperatures in Portugal are equivalent to mid-summer in Halifax and it (almost) never rains.

Pousada. There are a number of these high-end hotels in Portugal that, even out of season, were beyond our budget. We discovered that they are almost invariably restored historical buildings such as monasteries and seem to welcome visitors to their public spaces. After a very enjoyable few days exploring Evora and surroundings we again headed north. Our intention was to stay in Tomar, home of the Knights Templar. Here we received bad advice about hotel accommodation so went on to Fatima where we stayed in an interest-

Our final stop was in Coimbra, a lovely university town on a river north of Lisbon. The gentleman at the city tourist office explained that there weren't any guided city tours but recommended we take a local bus that wound its way through the business district, the university area and some parts of the old town. This proved to be excellent advice. The trip lasted an hour and cost us next to nothing. Coimbra, like all of the other places we visited, was a very walkable place. Once we had the "lay of the land" mapped out by the bus tour, we were able to re-visit the more interesting areas including some streets that were too narrow for the bus or even small European cars. Without question the regional meal of choice here is chanfana. It consists of chunks of roast kid done in gravy and red wine and served in a crock-pot. Don't miss it. I had it two evenings in succession.

At this point we had only toured the bottom third of the country, but our three-week plus sojourn was over and we had to return to Lisbon to catch our flight home. Without doubt we will go back again at the same time of year to take up our travels where we left off.



## BRUCE ANDERSON – 2009 BELUGA AWARD RECIPIENT



On 19 May 2009, Bruce Anderson was awarded the 2009 Beluga Award at a very well attended ceremony in the auditorium of the Bedford Institute of Oceanography.

In the beginning (1984), there was the Funds for Rural Economic Development program commonly known as the 'Freddy' program. Under it, funds were provided to hire students for the summer months. The Canadian Hydrographic Survey (CHS) at BIO asked Saint Mary's University for the names of its top 20 students. Two were interviewed but not Bruce. Not to be put off, he telephoned Sandy Watson in personnel at BIO, daily, and finally was offered a 22-week position with CHS as a Cartographic Assistant. The persistence he effectively used in getting this job is natural to him and appears more than once in his career.

Over the next six years, Bruce was hired into term positions at BIO seven times and laid off six times for a discouraging total of sixteen idle months. He refused to go away. When asked why, it's clear he had become strongly attached to the Institute and especially the people in it during his first job. After that, no matter how long the layoff, he still only wanted to work at BIO. There is no doubt that his well loved and widely known father George helped Bruce develop strong ties to the people and the organization.

Over his 25-year BIO career, Bruce has filled 13 different positions, starting with the 22-week contract with CHS shortly after his 1984 graduation from Saint Mary's University in Geography. Over his first four years, he had five successive contracts with the CHS. His duties then included assisting in the production of new charts, data entry, typesetting, digitizing, producing chart-sized negatives in the photo-mechanical darkroom, processing Notices to Mariners, and filing. His first contracts were followed in November 1988 with successive four- and seven-month contracts with Evan's Computer Applications Ltd. working on the creation of geological atlases of offshore Atlantic Canada and the western North Atlantic.

Between January 1990 and August 1995, Bruce had three contracts with administration branches. Then, for about a

year, he worked with Dr. Steve Campana preparing cod otoliths for oblation analysis, doing literature searches, and plotting data. This job was, for Bruce, a huge and wonderful change. That was because he was involved with a scientific program – the main business of the Institute. He knew that the administration work he had been doing was important, but the scientific work made him feel more connected to the purpose of the Institute; in addition, he found the work stimulating and fulfilling.

Following his time with Dr. Campana, Bruce began again working as a hydrographer – a job he holds today. He has worked on maintaining hydrographic data bases, training students, and, principally, on the production of new nautical chart editions.

Bruce is a first-rate employee with an interesting career. But where he stands head and shoulders above the rest of us is in his extraordinary voluntary service to BIO. He seems to be available anytime, for anything, if it means helping a social event, guiding a visiting group of dignitaries or students, leading BIO open houses, operating the gift shop, helping Santa at BIO Christmas parties, conducting charitable campaigns, etc., etc.

The following example of Bruce's volunteering was written by Patrick Potter. It takes place on 30 September 2003, the day after Hurricane Juan passed through Halifax:

The following day, a team of NRCan staff was to host the International Conference on Arctic Margins (ICAM) 2003 at BIO. With no electricity in the Institute, all of the planned events had to be held elsewhere. When contacted by a frantic conference organizer and asked to help out, Bruce's response was 'no problem'. Escorted through the darkened halls of BIO into the core lab where the refreshments and supplies for the icebreaker had been stored, he helped to move them to the new venue, set them up again, and then to host the function which welcomed Arctic researchers from all over the world, who had come to Nova Scotia for the event. Later in the week, he volunteered more of his time and helped to organize, set up, and host the ICAM banquet, the culmination of the very successful conference.

This volunteer work was neither to support a CHS conference, nor was it a commitment he had previously made. All he needed to hear was that help was needed and it was freely and cheerfully given.

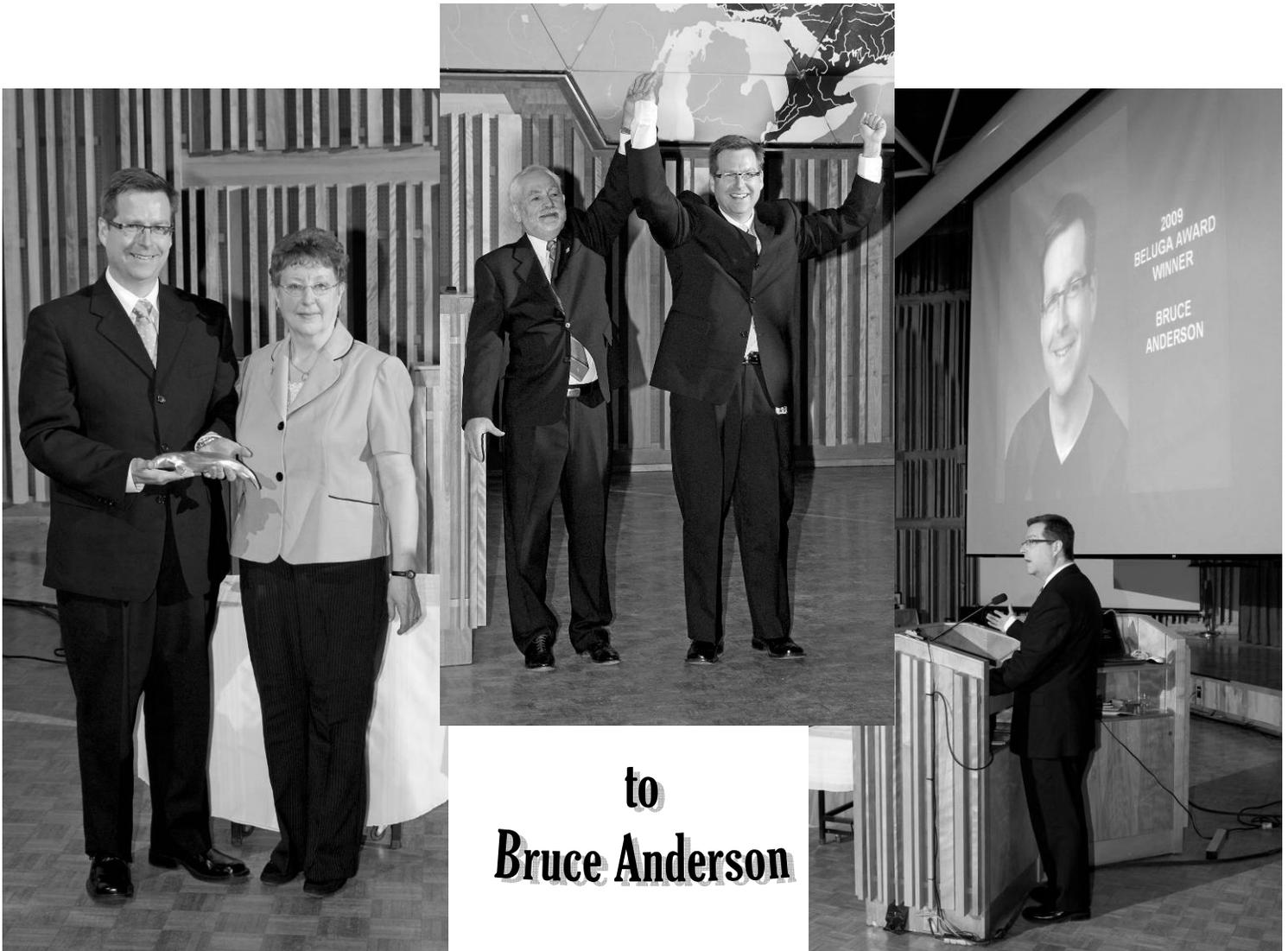
This example is typical of Bruce. Many similar tales appear in the letters supporting his nomination for the Beluga Award. His contributions have also led to winning The DFO

Distinction Award (2008), The DFO Merit Award (2003), The NRCan Merit Award (2003), and the Volunteer Honour Roll, City of Dartmouth (1990).

We, the members of the Beluga Award Committee\*, congratulate this exemplary man and thank him for his dedication and extraordinary service.

\*The Beluga Award Committee was comprised of Claudia Currie, René Lavoie (Chair), John Lazier, Barry MacDonald, and Brian Petrie.

## 2009 Beluga Award



to  
**Bruce Anderson**

*From left to right: Bruce Anderson and his mother Minnie; René Lavoie and Bruce; and Bruce giving his acceptance speech. (Photos by Kelley Bentham)*



## INVITATION TO THE ANNUAL BIO - OA PICNIC

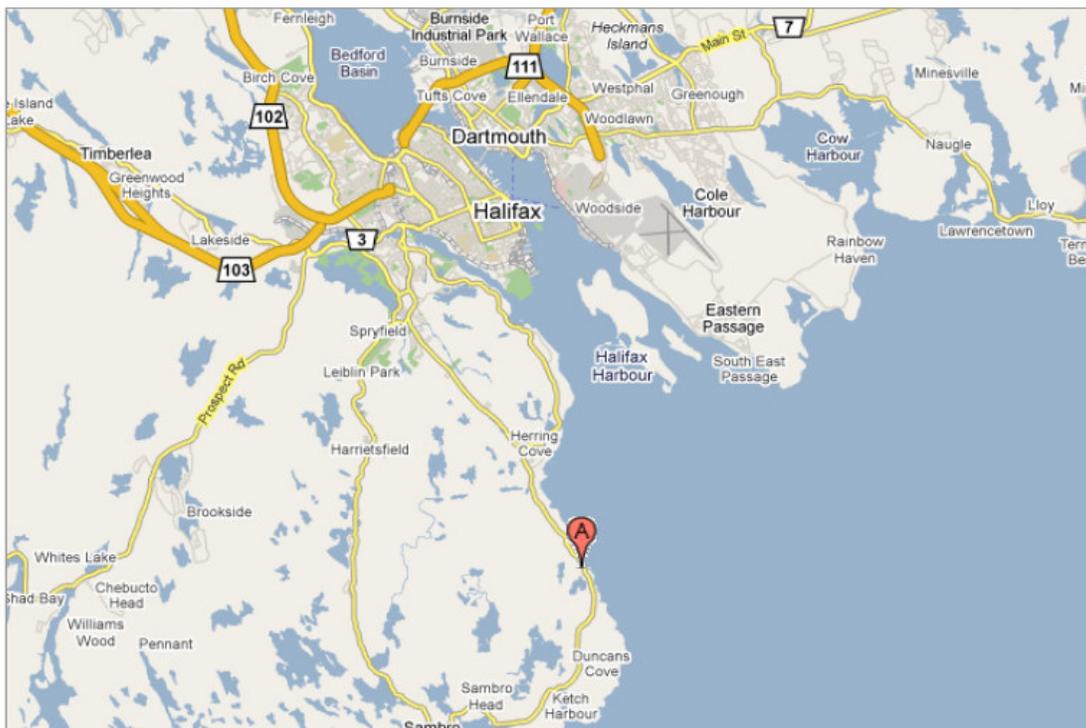
THURSDAY, 20 AUGUST 2009, AT 2 P.M.  
[RAIN DATE 25 AUGUST 2009, AT 2 P.M.]

HOSTED BY BOB AND HEATHER COOK AT  
FERNCLIFFE, 562 KETCH HARBOUR ROAD  
PORTUGUESE COVE, NOVA SCOTIA (TELEPHONE: 868-2948)

Join us for fun and frolic at Heather and Bob's beautiful home overlooking the entrance to Halifax Harbour. If you can attend only one BIO - Oceans Association event this year, make it this one - especially if you were absent when the Cook's last hosted us in 2002 and again in 2006.

Bring your own food for the grill and your favourite beverages. In addition, call Heather Cook at 868-2948 to coordinate food contributions to the general food table (hors d'oeuvres, pasta, salads, rolls, desserts, etc.). Below are directions to the Cook residence:

Starting at the **Armdale Rotary** (via Quinpool, Chebucto, or Dutch Village roads), take the **Herring Cove Road** (Route 349) to Herring Cove - at which point this road becomes the **Ketch Harbour Road**. Portuguese Cove is about 5 km farther on (a total of 13 km from the Armdale Rotary). At the highway sign saying "Welcome to Portuguese Cove", the Cook's house is on the ocean side a few hundred metres farther on. The entrances have stone gates connected by a grey fence and the address "562" is clearly marked. We hope to see you there.



## PLANNING UNDERWAY FOR BIO'S 50<sup>TH</sup> ANNIVERSARY

2012 will mark the 50<sup>th</sup> anniversary of BIO. A committee, co-chaired by Claudia Currie (NRCan) and Tom Sephton (DFO), and reporting to the Tuesday Club, has been set up to coordinate the planning of events. The first meeting was held on 10 June and representatives of all BIO components were present. The BIO-OA was represented by Charlie Shafer and Don Gordon. Plans are already underway for an Open House that will be held 15-21 October 2012. Other ideas discussed included a lecture series, panel discussions, a symposium on the contributions of BIO science, new permanent exhibits, a movie depicting BIO history, displays available over the internet and a high profile celebration event on 25 October 2012, the day of the 50<sup>th</sup> anniversary. Updates of planning will be included in future newsletters.

## HUDSON 70 COMMEMORATIVE CELEBRATION

Forty years ago this coming November, CCGS *Hudson* departed on an eleven-month circumnavigation of North and South America. Hudson 70 was the last of the historic voyages of ocean discovery begun by HMS *Challenger* in 1872. In recognition of this significant expedition, the Bedford Institute of Oceanography is organizing a commemorative event. The main activities will take place on 17 November 2009 including presentations of interest both to the scientific community and the general public, tours of the ship, and possibly even a short trip around the harbour for some lucky attendees. If you are interested in attending or know of anyone associated with Hudson 70 such as scientific staff, officers, and crew who would, please contact me at davidmckeown@hfx.eastlink.ca and I will ensure that you are kept informed of planned activities.

## RECALLING THE TAHITI – VANCOUVER LEG (PHASE VI) OF HUDSON 70

*Charles T. Schafer (Phase VI participant)*

*Editor's Note: On 14 June 2009 Charles Schafer prepared this description of early BIO science work during the Pacific Ocean leg of Hudson 70. His intent was to offer material that could be used in connection with the 50th BIO anniversary planning now underway as noted above.*

The replacement crew of marine scientists and technicians that joined the *Hudson* in Tahiti was similar, in many ways, to the one leaving the ship. Both groups comprised researchers and technical support staff that were eager to learn more about the physical and biological characteristics of a remote part of the ocean. Of equal interest was the associated geologic features of seafloor environments, the magnetic signature of igneous crustal rocks that underlie the marine sediment cover, and the geographic changes in the earth's gravity which have a direct effect on the

topography of the ocean's surface, that is at sea level.

The Hudson 70 expedition was, in fact, an interdisciplinary science mission. The Tahiti – Vancouver phase (VI) was no exception. The leg was marked by both direct and remote observations that spanned the ocean environment spectrum. Direct measurements and sampling were aimed at gaining new knowledge about water-mass physical properties such as temperature, salinity, and nutrient concentrations, the distribution of planktonic species, and the nature of seafloor sediments. Remote measurements collected information on changes in water depth (or seafloor topography) and on the geographic variation of magnetic and gravity fields which are an indirect reflection of the local structure of the Earth's crust and the forces exerted on the overlying ocean water.

### Science Activities and the Staff

Not surprisingly, the scientific and technical staff was a mix of marine geologists, marine geophysicists, biologists, micropaleontologists, and "blue water" oceanographers from government institutions and universities in Canada, Great Britain, and the United States. At predetermined stations spaced about 560 km apart, they carried out various field collection chores including water sampling (bottle casts), vertical and oblique plankton tows, sediment coring, and acoustic reverberation measurements. Between stations, geophysical sensors were deployed or activated to measure south to north changes in the characteristics of magnetic and gravity fields and changes in water depth.

The two modes of plankton sampling (vertical and oblique tows) provided information on the average population density and

diversity of plankton throughout the entire water column. In contrast, the oblique tow method was done with a specialized multi-net sampler that facilitated the collection of plankton residing in discrete layers of the water column. As such, the typical three-layer-tow regimen allowed scientists to observe plankton living in the 0 - 200 m, 200 - 500 m and 500 - 1000 m layers of the three major water masses that were crossed during the course of Leg VI. The multi-net sampler was fitted with an acoustic "telemetering" system designed by BIO engineers. It broadcasted data on the volume of water being filtered through the net and signaled the opening and closing of nets at various depths.

In contrast, the run between stations was focused on geophysical parameters such as gravity. Gravity measurements were being collected to estimate the shape of the geoid. The geoid is a measure of how the mean

ocean surface elevation changes due to the pull of gravity. The geoid's total variation is less than 200 m (-106 to +85 m) compared to a perfect ellipsoid. In this instance, gravity data that would permit the slope of the geoid to be calculated were being collected for later comparison with estimates that were to be obtained from orbiting satellites. At the time of the *Hudson 70* expedition, oceanographers envisioned the possibility of measuring small changes in sea level using microwave altimeters mounted on orbiting satellites. That technique was believed to have the potential for monitoring changes in ocean currents provided that the slope of the geoid could be precisely determined for the area of interest.

A unique feature of the Tahiti – Vancouver leg is that all of the samples, and the geophysical information recorded, were collected along a single mid-ocean survey line (the 150° West meridian) that is more than 7500 km long making it one of the longest traverses ever run by a marine research vessel. The ship's course intersected at least three major Pacific Ocean water masses. The survey team started the leg dressed in shorts and T-shirts, but gradually added extra layers of clothing as the *Hudson* steamed north toward the last station of the leg at 57.5° N latitude.

### Operational Aspects

Sea conditions during the Tahiti – Vancouver leg were not always predictable. For example, the high seawater temperatures encountered near the equator had a negative impact on the efficiency of the *Hudson's* engines that were designed for colder water operating conditions. In addition, the heavy set (wind and wave conditions) encountered in moving north between stations retarded the ship's schedule. By

the time that *Hudson* reached 10° N latitude, a decision was taken to open the spacing between stations to keep the ship on schedule. The additional between-station travel time also provided more time for the scientific and technical staff to process water and biological samples collected from the previous station and to make preparations for the sampling that was to be undertaken at the following station. *Hudson* arrived at Vancouver on the morning of 12 June 1970 after being at sea for 28 days.

### Early Scientific Results

Scientific publications and technical reports began appearing before the *Hudson* returned to Halifax via the Northwest Passage in the late fall of 1970. Many of these can be categorized as "curiosity-driven" investigations, but their observations would often find relevance as issues on ocean pollution and global climate change moved into the spotlight during the last several decades of the 20<sup>th</sup> century.

Discoveries made by oceanographers during the Tahiti – Vancouver leg include new information on air-sea gas exchange and the lag time (about 5 hours) that the deeper part of the oceans "mixed layer" showed to atmospheric pressure changes. While their measurements of dissolved oxygen were shown to be generally consistent with those of previous studies, deep water O<sub>2</sub> data showed evidence of a deep bottom current that flows east around the island of Hawaii. During this leg of the expedition, marine chemists encountered new difficulties with their methods including fouling of synthetic sea water by mould-like growths, the dissolution of silicate (one of the elements being measured in sea water) from the glass walls of certain test tubes,

and problems arising from the ship's motion and its effect on equipment and on the physical condition of the analyst – many of whom were not accustomed to spending long periods on a swaying and bouncing vessel. Equipment breakdowns that would be considered minor if they happened on land often led to the complete failure of seagoing programs. Another team of oceanographers was able to identify two deep zonal water masses at a depth of 4-5 km based on their anomalous values of potential temperature and oxygen concentration.

New information on the distribution of planktonic Foraminifera (shell-bearing marine protozoans that are used worldwide for paleoenvironmental studies and marine habitat mapping applications) in the Pacific showed that these important indicator organisms were controlled primarily by water temperature and nutrient concentration. Five major groups of species (warm tropical, warm temperate, cold temperate, cold water, and cosmopolitan) were delineated in three different water masses (southern, central and northern/subarctic). Marine micropaleontologists also found that the population density of Pacific planktonic Foraminifera decreased rapidly with depth and that they showed a comparatively regular decrease in species diversity from the equator to higher latitudes – a feature seen in many other kinds of marine organisms. Some of the Pacific planktonic Foraminifera species were found to be restricted to surface waters while others were found at all depths sampled during the leg. Several species were observed to be reduced in size at higher latitudes.

Marine biologists that were on board *Hudson* during the Tahiti – Vancouver leg were interested

in the size distribution of particles in the ocean. Current thinking at the time of the expedition was that the average size of suspended particulate matter or SPM decreased with increasing water depth, but in fact, very little was known about the distribution of particle sizes, their geographic variation and their variation with increasing water depth. The biologist's data showed that the size/depth relationship was an artifact of the way that samples were collected. The reason that the average size of SPM appears to decrease with depth was shown to reflect the fact that, as the concentration of total SPM decreases with depth, the chances of finding large particles in any given volume of sample also decreases in relation to smaller particles; smaller particles have more of a consistently uniform distribution in the water column. SPM results obtained during the leg was based on electronic determinations of particle size using a Coulter Counter which is a device normally associated with the analysis of human blood cell types in land-based hospitals and laboratories.

At the end of the day, the Pacific leg of *Hudson 70* produced a significant amount of new scientific information. However, it also served as a platform for testing new equipment and laboratory procedures, and as a work setting that diversified the seagoing experience of Canadian marine scientists, their respective technical and engineering support staffs, and the officers and crew of the *Hudson*.



## MEMORY LANE HERITAGE VILLAGE TOUR

**Wednesday, 8 July 2009**

## IN MEMORIAM

**Sherman James Glazebrook**, on 28 April 2009, aged 77. Sherman was well known at BIO where he worked as an oceanographic technician and head technician from 1967 until his retirement in 1985.

**J**oin us for a visit to this exciting village, take the tour, and enjoy a down-home cook-house meal. As it is close to Metro, we suggest that we take our own cars and meet between 11 and 11:30 a.m. at the Village.

We recommend viewing the extensive web site to find out about what the village offers: go to [www.heritagevillage.ca/home/](http://www.heritagevillage.ca/home/).

Only \$10 per person covers the tour and chow. Enjoy the authentic Cookhouse Chow at Memory Lane's 40s Cook-

house: homemade baked beans, soup, brown bread, sandwiches, gingerbread, cookies, lemonade, ice tea, and coffee or tea.

Please let Gordon Fader or Iris Hardy know soon if you wish to attend so they can book ahead (see below for contact info).

## ABOUT THE ASSOCIATION

**T**he Bedford Institute of Oceanography Oceans Association 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 per half decade, or \$150.00 for a lifetime membership.

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