On the web at www.bio-oa.ca

BIO-OCEANS ASSOCIATION NEWSLETTER

Issue 49 January 2011

COMMUNITY REMEMBERS BIO WORKER
Roger Bélanger

Detail of carving of Roger Bélanger carved by his brother, Ray Bélanger.

Blueberry Run Trail, West Chezzetcook, N.S.

On 6 June 2010 the West Chezetcook and Grand Desert Community Interest Group (WCGDCIG) commemorated one of their celebrated and loved former community members, Roger Bélanger. Roger, as readers will remember, was a long serving photographer at BIO and the first recipient of the Beluga Award.

The event unveiled a carving in many types of wood by Roger's brother Raymond.

Roger was clearly as committed to his adopted community of West Chezzetcook and Grand Desert as he was to the BIO community. Judy and Danny Bellefontaine remember meeting Roger at a house party in Seaforth and enjoying the company of someone else speaking French. They shared their memories of the many contributions Roger made to their community including Director of the WCGDCIG, build-

BIO-OA LECTURE
20 MARCH 2011
2:00 PM BIO Auditorium
Sandra Farwell
Energy Futures for Nova Scotia

Contents

ing the Blueberry Run Trail (14 km of the Trans-Canada Trail) while he was undergoing chemotherapy, sending out regular e-mails describing the birds that were resident in his pond and the bequest from his estate to the WCGDCIG.

Roger recorded in his photographs the many events that took place at "L'Acadie de Chezzetcook" and the beauty present about the waters of Chezzetcook Inlet and Seaforth.

One of Roger's ideas was to display three Acadian flags in the Cheezzetcook Inlet every summer.

Clearly, Roger's death has left a very large hole and he is missed terribly.

By Andy Sherin with Shirley Lowe, Judy and Danny Bellefontaine.

Danny Bellefontaine eats a raw clam with Roger looking on during initiation ceremonies for the Acadian Caravan of Sails in 2000. (Photo: Shirley Lowe)

Beach at Seaforth at sunset.

From the President

The tree is down and the house decorations safely stored away for another year. I hope that all of you had a happy Christmas / holiday season and that 2011 will prove to be a good year for you.

Since the last Newsletter appeared, the Oceans Association has continued early planning for BIO's 50th anniversary celebrations. On page 4 of this issue there is a call for authors for a book commemorating the scientific accomplishments of BIO since its opening in 1962. It is my hope that a number of our members will be willing to contribute to this important project.

We are still looking for volunteers to coordinate the "Memories of BIO" project as described in the Issue 48.of the Newsletter. Don Gordon or I would love to hear from you with an offer to participate.

The Oceans Association has also held or been part of two social activities since October 2010. On 18 November a number of us visited the Maritime Command Museum housed in Admiralty House at CFB Halifax. Thanks to the Museum's curator, Richard Sanderson, we learned much about the history of the house itself and of Canada's naval past. Photos from the visit are included in this issue on page 3. Then, as usual, we also participated in the BIO Christmas party on Christmas Eve morning.

I invite you to visit **www.bio-oa.ca** our revamped web site. Stay tuned for additional announcements.

I trust you will enjoy this issue of the Newsletter, especially the archival photo on the bottom of page 3 taken only two years before I joined the Institute in 1972.

Betty Sutherland

REMINDERS FROM ISSUE 48

Nova Scotian Institute of Science *Hall of Fame*

Nominations

Send a brief statement about a BIO marine scientist you wish to nominate to Betty Sutherland, BIO-OA President (jesuther@dal.ca). Candidates must be deceased and made significant contributions to science in Nova Scotia.

"Memories of BIO" project volunteers

Please contact Don Gordon at Donald.Gordon@dfo.gc.ca. Your involvement will provide a valuable contribution to the BIO 50th anniversary celebrations.

A group of BIO-OA members enjoyed an interesting **visit to the Maritime Command Museum** in Halifax on 18 November 2010. Located in Admiralty House, a National Historic Site, the Museum is a repository of records and artefacts that provide insight into the naval presence in Halifax extending as far back as 1759. As well as collections of weapons, uniforms, models, art, and documents, the Museum is known for eclectic collections of navy-themed cigarette lighters, silverware, ship's bells, and other items. The Royal Canadian Navy celebrated its 100th anniversary of service on 4 May 2010. Interestingly, the centennial for the Royal Canadian Air Force will not occur until 2024 and for the Canadian Army not until 2040. Clockwise from the top left are: a view of Admiralty House; our entertaining guide Richard Sanderson explaining some of the valuable medals on display at the museum; BIO-OA members at lunch in the Wardroom at CFB Stadacona; and a view of one of the museum's display booths. The group photo was taken by Bob Cook, the others by Jane Latremouille.

From the BIO Photo Archives

Atlantic Geoscience Centre (AGC) Management Committee at its first 'retreat' at the Orchard Inn near Wolfville, NS in July, 1972. From left to right are David Ross, Dale Buckley, Bosko Loncarevic, Pat Purcell, Keith Manchester, and Ron Eden. AGC is the predecessor organization for the Geological Survey of Canada Atlantic at BIO.

ANNOUNCING A SPECIAL PROJECT TO COMMEMORATE THE 50TH ANNIVERSARY OF BIO

THE SCIENTIFIC ACCOMPLISHMENTS OF BIO 1962-2012

In 2012, BIO will mark its 50th anniversary. To help celebrate this important milestone, we plan to compile and publish a book commemorating the many scientific accomplishments of BIO during its first half century. This project will be done under the auspices of the BIO-OA and directed by an Editorial Advisory Committee.

We invite your participation in this exciting project which will create a lasting legacy of the history of BIO science and its important accomplishments. First and foremost, we are seeking authors for drafting the proposed science review articles and hope that many of these will come from the BIO - OA membership. We are also seeking volunteers to assist with reviewing and editing.

We hope that you will be willing to join us in this landmark venture. Details are provided in a proposal that can be obtained from any member of the Editorial Advisory Committee. If you are interested in contributing to this project as an author, reviewer or editor please contact Don Gordon (Donald.Gordon@dfo-mpo.gc.ca) as soon as possible. If you are willing to serve as an author, please indicate the topic you propose to cover. We anticipate that most of the review articles will have several authors.

We will compile the initial response early in 2011 and then start to solicit specific contributions to fill the important gaps. Updates will be provided as the project evolves.

The proposed deadline for contributions is the end of December 2011. All contributions will be reviewed and edited before being turned over to a publisher. A publisher has not yet been selected, but several possibilities are being explored. The goal is to have the book published by the end of 2012.

THE SCIENTIFIC ACCOMPLISHMENTS OF BIO 1962-2012
Editorial Advisory Committee

Allyn Clarke
Ross Claytor
Gerard Costello
Don Gordon
Charles Hannah
Erica Head
Bosko Loncarevic
Dave McKeown
Eric Mills
Mike Parsons
Mike Sinclair
Betty Sutherland
Peter Wells

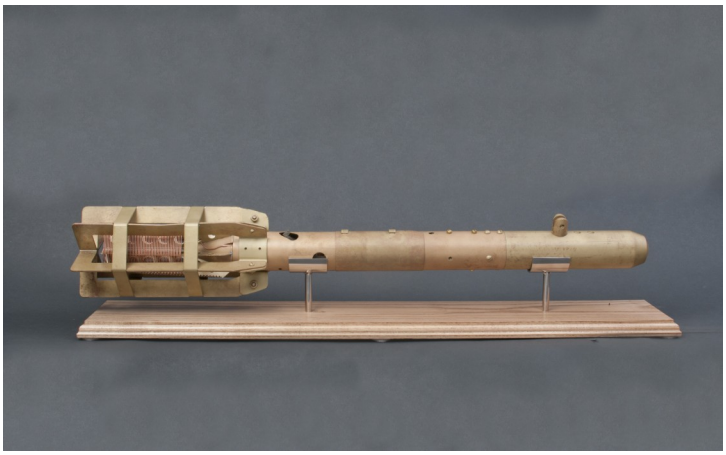
A GENEROUS DONATION

by D.L. McKeown

Last winter Tim Lambert donated an antique brass bathythermograph (BT) to the BIO-OA oceanographic equipment archives. Tim was very apologetic about its condition, as it had suffered the inevitable wear and tear of heavy use over many years followed by storage under less than ideal conditions. Nevertheless, we were very grateful to receive it, as it is a worthy example of a device once used by many oceanographers during their careers.

Later, Peter Vass volunteered to restore the BT. Over a few months, he completely disassembled the instrument, cleaned all the parts and then carefully rebuilt it. After DFO paid to have it glass-beaded and covered with a permanent protective coating (thanks Tom Sephton), Peter built a beautiful wooden stand for it.

The BT has been returned to virtually its original condition and will become the centrepiece of a display of physical oceanographic equipment artifacts that is currently being assembled. If all goes as planned, BIO-OA members will have an opportunity to view this display and the fruits of Tim's generosity and Peter's craftsmanship at the next BIO-OA Annual General Meeting on 6 May 2011.



Letters to the Editor

No letters were received for Issue 49
Visit www.publicscience.ca
Let us know what you think of it.

The Editorial Team would like to encourage a conversation in the newsletter between members on issues relevant to the Association through a *Letters to the Editor* column. The views expressed in *Letters to the Editor* will of course be those of the authors alone. To submit a letter to the Editor, send an e-mail to OANewsletteredtor@gmail.com or hard copy to Andy Sherin, 9 Rose St., Dartmouth, NS B3A 2T4.

NORTHERN INVADERS [1]

By Paul Brodie [2]

A consequence of commercial shipping via the Northwest Passage may be the introduction of marine invasive species from ballast water and specialized feeders such as walrus may be vulnerable.

On 23 March 1752, the first edition of Canada's first newspaper, *The Halifax Gazette*, was published. There was mention of problems related to shipworm, a nuisance marine species that was actually a wood-boring clam. Adjustments to ship handling and cruising speeds, reduced cargo capacity, a need for larger crews and increased stone ballasting were some of the consequences of the infestation. Now, 250 years later, invasive species are a global concern and inland waterways of North America are under threat.

At some stage, 90 per cent of all objects produced or processed by man are carried by ship. Ballast water, ranging from 1,000 to 100,000 tonnes, is carried by vessels to compensate for cargo, maintaining stability and hull integrity. About 100,000 ships carry ballast water worldwide. Ballast water is a mixture of water taken on at previous ports of call and billions of tonnes of seawater are transported worldwide annually, containing thousands of foreign plant and animal species, quite apart from those attached to ships' hulls. Some survive to establish themselves in distant marine ecosystems, where they may compete with, prey upon, parasitize, or otherwise alter the habitat of local species.

After half a century of allowing transoceanic vessels, or 'salties', into the Great Lakes, it is questionable whether there has been a net benefit in by-passing ice-free deepwater ports such as Halifax and Saint John. A disadvantage of direct delivery of cargo to and from inland ports is the importation of many of 182-plus foreign species, including the zebra mussel. Billions of dollars will eventually be spent on control measures. The International Maritime Organization (IMO) now requires that new vessels install ballast water treatment systems, and existing vessels to be retrofitted. It will be many years before this is achieved.

Given another chance, would we repeat these mistakes? Would we allow this to happen in the North?

Ice in the Northwest Passage was viewed as an impediment to vessels, just as it was to those entering the St. Lawrence. Ice is essentially the seasonal roof of a marine greenhouse, acting as a substrate and contributing to marine production.

The walrus is an example of a large northern marine mammal that is specialized, suction feeding on clams. Walrus bask and drift on pack ice, using it as a base for diving, essentially crop-rotating the available clam beds. Reliance on a narrow spectrum of prey carries risks should there be changes in climate, ice cover, or should the food base be affected by an introduced disease or parasite. The primary food base of walrus could be compromised by the introduction of foreign organisms via ballast water.

We may already have evidence that such a scenario is possible. In the Bras d'Or Lakes of Cape Breton, it is most likely that bulk carriers from Chesapeake Bay entering the lakes to load gypsum may have de-ballasted water containing the single-cell protozoan parasite MSX, which has devastated oyster production in the area.

The *Clipper Adventurer* aground about 55 nautical miles from Coppermine, Nunavut. (Photo: Canadian Coast Guard)

Ballast water exchange will take place in the Northwest Passage as vessels trim for weather and changing ice conditions. Most existing vessels will not have any treatment system on board, relying solely on water ballast exchange while underway.

In theory, this requires a three-fold flushing of ballast systems. However, this cannot be achieved, as the procedure is

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both dangerous and ineffective. Designated sites in deep water for the exchange or flushing of ballast tanks are an interim measure.

On 23 July 2006, the 55,000-tonne auto carrier *Cougar Ace*, with 4,812 vehicles on board, rolled on its side off Alaska while attempting to transfer ballast water during a ballast flushing procedure at sea.

In April 2010, the Chinese-registered coal carrier *Chen Neng One* ran aground near a restricted area of the Great Barrier Reef while attempting a short cut. While concern was expressed over loss of fuel oil and structural damage to the UNESCO protected reef, there has been little consideration given to the potential for invasive species dumped into this complex ecosystem during the emergency emptying of ballast tanks to lighten the vessel for recovery. Even fully laden vessels, declaring 'no-ballast-on-board', carry many tonnes of ballast water and sediments. Time will tell.

Such incidents are possible in the Northwest Passage, considering the recent grounding of the cruise ship *Clipper Adventurer* in late August 2010 in three metres of water (see photo p. 5). Vessels attempting to avoid such shoals may be carried onto them by shifting pack ice. In September 2010, two Canadian oil tankers ran aground in the eastern Arctic. This is disturbing, considering the low frequency of vessels in the area.

No doubt, cargo vessels will exchange ballast water during the passage. While oil slicks and dumped bilge water might be traced to a vessel by their chemical signature, it will take many years before we might correlate changes in habitat with a ballast dumping event.

The introduction of invasive species does have a long-lasting effect, more devastating than an oil spill or toxic dumping event. The question is not if it will happen, but when.

The savings in time and fuel, through the use of the Northwest Passage by foreign vessels, will eventually become too attractive. Canada has the responsibility to protect the inland waterways of our Arctic regions, including polar wildlife.

Designated dumping sites and ballast tank flushing should be seen as half-measures. Diminishing ice cover in the Northwest Passage, once the controlling factor for shipping, must now be replaced by strict Canadian regulations.

[1] Originally published in *The Nova Scotian* (17 October 2010: D3) with title: "Ballast water rules are long overdue".

[2] Dr. Paul Brodie, a renowned arctic marine mammalogist and former research scientist with Fisheries & Oceans Canada, has studied the biology and energetics of marine mammals throughout the Arctic and Atlantic oceans for decades, with continual consultations with the shipping industry.

OFFSHORE SCIENCE VESSELS: AN UPDATE

The Department of Fisheries & Oceans issued a press release in November 2010 announcing the completion of the design phase for the construction of four new Canadian Coast Guard (CCG) offshore science vessels. Details are as follows:

The three new **Offshore Fisheries Science (OFS) Vessels** are the intended replacements for CCGS *Teleost,* CCGS *Alfred Needler,* and CCGS *W.E. Ricker*, as well as CCGS *Wilfred Templeman*. The OFS vessels will be used to: conduct fishing and acoustic surveys of fish and invertebrates; collect information on the distribution, abundance and biology of species to be used in stock assessments for new and existing fisheries, and in studies supporting the assessments; and collect physical, chemical, and biological oceanographic data to monitor changes in marine ecosystems and their impact on fisheries resources and ecosystem health.

Each vessel will have accommodations for approximately 39 workers (crew and scientists). The vessels will be 60-65 metres in length and capable of staying at sea for up to 31 days without re-provisioning. The design will include a modern propulsion system, an integrated bridge, modern acoustic sensors, and modern deck and trawl equipment. A $2.5 million design contract for three new offshore fisheries science vessels has been awarded. Two of the new vessels are expected to be delivered in 2014, and the remaining vessel will be delivered in 2015.

The design phase for a new **Offshore Oceanographic Science (OOS) Vessel** is underway, a vessel that is intended to replace CCGS *Hudson* on the East Coast. This new OOS vessel will be used to: conduct multi-disciplinary physical, chemical, and biological oceanographic expeditions; observe global and regional oceanographic circulation and interactions; contribute to the assessments of resources and impacts to the various marine ecosystems; support marine geology; and contribute to data gathering for hydrographic charts, oceanographic engineering, establishment of internal and international marine boundaries, and for other government departments and research organizations.

The OOS vessel will have accommodations for approximately 59 workers (crew and scientists). It will be about 90 metres in length and be capable of remaining at sea for several weeks without re-provisioning. Its design will include a modern propulsion system, automation in the machinery spaces, an integrated bridge, and a modern dynamic positioning system to allow scientific research within a given zone for prolonged periods. A $2.48 million contract has been awarded to design this new CCG offshore oceanographic science vessel (previously announced in Budget 2007, as a replacement for CCGS *Hudson*). The new OOS vessel is expected to be delivered in 2014.

A NATIONAL WONDER: THE GULLY[1]

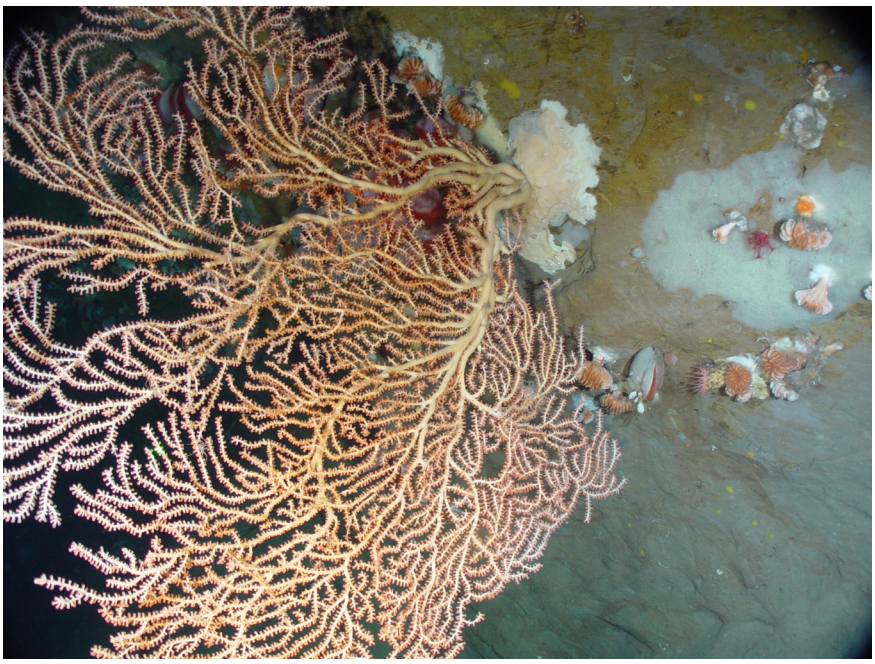
by Brian Hayes[2]

The Gully is a national wonder that few Canadians will ever get a chance to see. It is deep in the Atlantic Ocean, about 40 kilometres east of Nova Scotia's Sable Island, lies the Gully — the largest underwater canyon found off North America's east coast.

Because of the Gully's great depth, steep slopes and diversity of habitat, the federal government, in 2004, designated the 80-kilometre long canyon that extends into the Scotian Shelf as a Marine Protected Area (MPA). This designation provides lasting protection for 2,364 square kilometres of the canyon and surrounding areas, which are globally recognized as an exceptional marine habitat.

"A Marine Protected Area is an area that's set aside in the ocean where conservation is first priority" said Maxine Westhead, the section head of protected areas and conservation planning with the federal Department of Fisheries and Oceans. "Each marine protected area is different. Generally, we find places that are interesting like the Gully or coral conservation areas. With something like the Gully, we have sort of a coral forest on the bottom and we have endangered northern bottlenose whales living at the top of the canyon. So in that area you have things at the top you want to protect, as well as things on the bottom." To conclude, Westhead said: "It's essentially protection from extraction", whether oil exploration, commercial fishing or mining for aggregates on the seafloor.

Along with the whales, dolphins and colourful, slow-growing cold-water coral, Westhead also said there are a host of other marine mammals, fish species, and relatively unknown microscopic organisms living in the canyon.



Photograph of a specimen of *Paramuricea* sp. from The Gully taken by ROPOS (Remotely Operated Platform for Ocean Sciences) in 2007.

Scientists believe the Gully was formed some 150,000 to 450,000 years ago from erosion caused by the meltdown of retreating glaciers. Geological research continues in the area to better understand the the Gully's history and formation.

The canyon floor ranges in depth from about 200 metres at its head, in an area known as the Trough, to more than 2,500 metres at its mouth. The Gully's opening is about 16 kilometres wide, about the length of Halifax Harbour including Bedford Basin.

The canyon has become an important place for scientific research in helping to understand and conserve its valuable ecosystem. For more than 20 years, researchers have studied the behaviour of northern bottlenose and other whales living in the Gully. To ensure their survival, Westhead said scientists are trying to figure out what exactly bottlenose whales eat, although it's generally believed they dive down deep in the canyon to feed on large squid.

To understand the diversity and distribution of organisms and their habitat, scientists have been using the latest technology, including a remotely operated underwater submersible, to photograph the bottom of the canyon and get samples of deep-sea creatures. Westhead said surveys deep below the ocean surface have revealed 427 types of organisms living in the Gully to date, including a variety of fish species, crustaceans (crabs and lobsters), jellyfish, squid and other invertebrates.

The Gully Marine Protected Area is divided into three separate management zones where commercial fishing is either banned entirely or limited activity is permitted. "It's not about shutting people out", Westhead says but "we believe that setting aside pockets of the ocean can contribute to a sustainable fishery and sustainable use. Marine Protected Areas are just one of many tools ocean managers can use for long-term conservation of our marine ecosystem." Although Canada and other countries have committed to finding and

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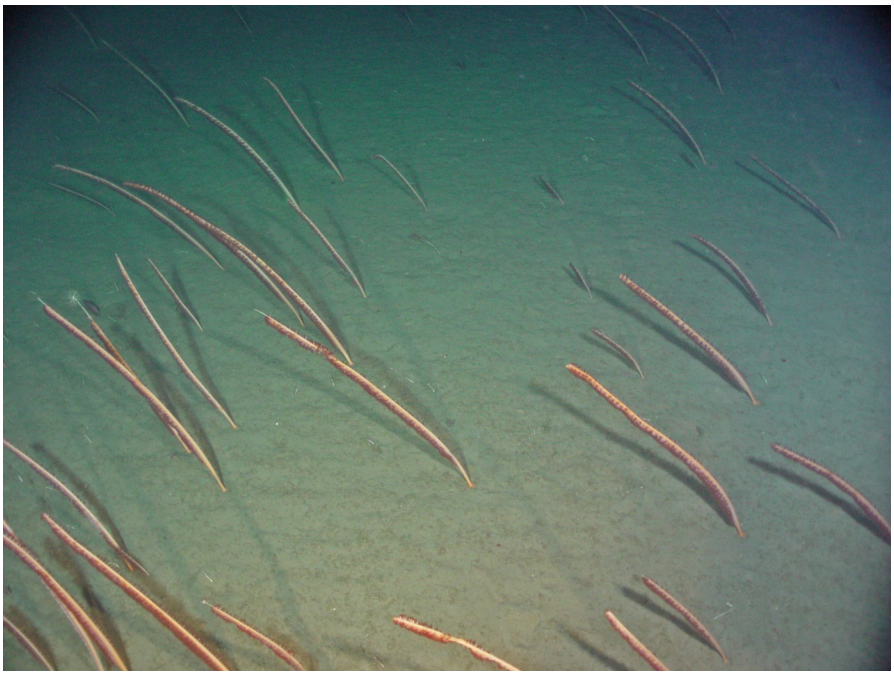
designating Marine Protected Areas, getting support for protecting pockets of the ocean can be difficult.

"The Gully is lucky because it has these cute bottlenose whales that the World Wildlife Fund uses in its marketing campaigns to rally public support. It's a lot easier in the offshore if you have charismatic mammals like dolphins and whales living there" Westhead says.

There are three Marine Protected Areas in the Maritimes: the Gully, Basin Head in Prince Edward Island and the Musquash Estuary, a seven square kilometre coastal estuary in the Bay of Fundy near Saint John, New Brunswick. Westhead adds "The Gully Marine Protected Area is far from the Nova Scotia coast in offshore waters, but Musquash is coastal and tidal so you can actually go out and walk around to see and feel it. It's very tangible and people can see it as they drive right by it on the highway."

Without community pressure, Westhead says the area might never have been designated for protection. The federal Department Fisheries and Oceans also oversees two coral conservation areas, one near the mouth of the Bay of Fundy and the other in the St. Lawrence Channel. Both are off limits to fishing.

Before an area of interest is eligible for protection designation, Westhead said "we work with a multi-stakeholder advisory committee made up of representatives from conservation groups and the fishing, oil and gas and ocean mining industries to come up with a design" obviously there's give and take on everyone's side, during a long and very public process that can take years to complete. Westhead said it took five years of discussions before the Gully was designated and seven before Musquash received protection in 2006.



Photographs from The Gully taken by ROPOS (Remotely Operated Platform for Ocean Sciences) in 2007: top, field of sea pens *Halipteris finmarchica;* bottom, bubblegum coral *Paragorgia arborea.*

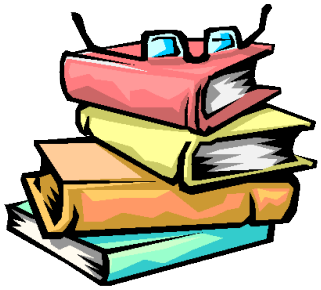
[1]Originally published in the Chronicle Herald on 10 April 2010
Reprinted with permission of the author.

[2] Brian Hayes is a freelance journalist.

In Memoriam

Peter Poh Kee Lim, died 31 December 2010, former Senior Marine Surveyor, Transport Canada and BIO ship's officer while working towards his Master Foreign Going ticket.

Daniel Wright, died 8 July 2010, former research scientist, Oceans Science Division, BIO. In Issue 48 we unfortunately printed the incorrect date of Daniel's passing. Our apologies for this oversight.



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:

The Nature of a Great Sea: Past and Present

Winchester, Simon. 2010. Atlantic: Great Sea Battles, Heroic Discoveries, Titanic Storms, and a Vast Ocean of a Million Stories. HarperCollins Publishers, New York, NY. 495 pp. Hardcover, $31.99 (ISBN 978-0061702587). – True to the publisher's product description, bestselling author Simon Winchester's '*Atlantic*' is a "breathtaking saga of the magnificent Atlantic Ocean, setting it against the backdrop of mankind's intellectual evolution." But how can anyone write a geographical biography of a seawater mass covering 32 million square miles, comprising twenty-five percent of the planet's total water? And what of the massive volume of facts, both oceanographic and historic, of the Atlantic Ocean's origin and evolution combined with the more recent presence of humans and their marine-associated activities? A daunting task, yes, but not outside the capability of an accomplished writer like Winchester who thrives on making science accessible and easily understood as judged by his many previous award-winning books such as '*A Crack in the Edge of the World*' (2005), '*Krakatoa*' (2003), '*The Map that Changed the World*' (2001), and '*The Professor and the Madman*' (1998). In asking how an ocean that only 500 years ago was believed to be impassable to one now considered a mere bridge between two continents, the idea to write a story of the Atlantic and humankind's relationship with it was born. The Preface, Prologue and seven chapters take the reader on a sea journey like no other. At the start, the early tentative, shore-hugging voyages along the ocean's eastern edge are introduced followed by the more adventuresome efforts, amateur and professional, to chart the ocean's edges, shoals, depths and currents. Other stages reviewed range from industrial developments, slavery, pirates, territorial naval battles and political encounters to recent environmental and pollution concerns including an assessment of the destruction of fish stocks, with an account of the Canadian government-mishandled cod fishery in Newfoundland highlighted. Overall, Winchester's narrative succeeds in bringing the majestic Atlantic Ocean vividly alive and shows its significance from the earth's geological origins to mankind's intellectual evolution -- a history of the very best type and an awe-inspiring accomplishment! A must-read for everyone, a book that cannot fail to educate, inspire and ignite all of us!

General Reviews

Battersby, William. 2010. James Fitzjames: The Mystery Man of the Franklin Expedition. Dundurn Press, Toronto, ON. 224 pp. Hardcover, $35.00 (ISBN 978-1554887811). – William Battersby, archaeologist and long-time student of the ill-fated Franklin Expedition, produces the first comprehensive biography of Commander James Fitzjames, captain of HMS *Erebus* and third in command of Sir John Franklin's search for the Northwest Passage in 1845. Fitzjames was a young and ambitious officer determined to make his name by joining the expedition. But instead he disappeared along with the other 128 members of the expedition, a mystery of polar exploration that remains largely unsolved to this day. Until now, little was known about Fitzjames and his meteoric rise from lieutenant to commander and procurement of the much sought-after position as captain of HMS *Erebus*. Was he a self-promoting adventurer from a well-positioned family with 'friends in high places' or a skilled officer with his potential for greatness recognized by the Admiralty elite? Using naval records and Fitzjames' journals and personal letters, Battersby goes a long way in providing answers and plausible explanations to the many previously asked questions concerning Fitzjames' background and connections within the strongly class-orientated British society. For the first time in 150 years, this captivating man and his significance for the Franklin Expedition can be properly understood and appraised.

Chapman, Anne. 2010. European Encounters with the Yamana People of Cape Horn, Before and After Darwin. Cambridge University Press, New York, NY. 744 pp. Hardcover, $129.95 (ISBN 978-0521513791). – An expensive, but intriguing and revealing volume of the human presence in the Cape Horn region spanning some six thousand years. Anne Chapman, a Franco-American ethnologist, has performed extensive studies of the Yamana people in the Chilean and Argentinean part of Tierra del Fuego. She compares their culture and way of life as hunters-gathers with the European outsiders that first appeared in 1578 and thereafter – explorers, whalers, sealers, missionaries – including Drake, Cook, and Darwin with their outside scientific world.

The documented narration of dramas presented during this time period provides a full description of the motives of the intruders and those of the resident Yamana, and what the former gained and the latter lost. Overall, this unique work places the hunting-gathering Yamana people of Tierra del Fuego and nearby areas into world history and stands as an impressive contribution to the ethno-history of the Cape Horn area.

Cohen, Richard. 2010. Chasing the Sun: The Epic Story of the Star that Gives Us Life. Random House, Toronto, ON. 608 pp. Hardcover, $40.00 (ISBN 978-1400068753). – From our winter armchair in northern climes, acclaimed author Richard Cohen takes us on a voyage around the world that will both illuminate our relationship with the star that gives us life and warm our hearts by the intense pressure and afterglow produced from the information presented. This book is an extraordinary solar encyclopedia, providing not only scientific details of our Sun and solar system, but also an array of dazzling facts and insights into the mythology, anthropology and other aspects of our relationship with old Sol. Cohen gathered fascinating stories during seven years of research that included journeys to locations in eighteen countries spanning the full range of environments and peoples, from the cold polar regions of the Arctic and Antarctica to sweltering deserts in Arizona and everything in between. The tales collected and presented show the Sun is present everywhere – in art, religion, language, literature, medicine, and even in ocean depths -- with interpretations within each category amazingly diverse by country, people, culture and time frame. Every aspect of the Sun's influence on our lives, past and present, is explored with outstanding consequences. This splendidly written and illustrated volume is informative beyond all expectations. It is commanding in content and yet entertaining, and most important succeeds in showing how complex our relations with the Sun have been and continue to be. Readers will find a superabundance of illuminating facts and anecdotes that will hold their attention during the cold and dark season of winter!

Fagan, Brian. 2010. Cro-Magnon: How the Ice Age Gave Birth to the First Modern Humans. Bloomsbury Press, New York, NY. 297 pp. Hardcover, $35.00 (ISBN 978-1596915824). – World history at its best, a fascinating account of shifting climatic conditions and their consequences. Renowned anthropologist and climate history expert Brian Fagan provides a fascinating examination of the lifestyle of archaic Neanderthals and early modern humans, the Cro-Magnons, and the prolonged encounter between the two some 30,000 and 45,000 years ago. The analysis is both instructive and entertaining, done in a way that brings the Europe of yesteryear to life vividly displaying the conditions and challenges of the climate of eighty to ten thousand years ago and the marked changes that occurred. Fagan describes the likely impact of the Ice Age climate on the two groups, the diminishing Neanderthals and invading Cro-Magnons, and concludes that the superior intelligence and technologies of Cro-Magnon allowed them to flourish and displace their competitors. A great deal of science is introduced along the way making Fagan's interpretation of Cro-Magnon history and the onset of *Homo sapiens* convincing and seminal. Definitely a gripping and provocative book!

Glynn, Ian. 2010. Elegance in Science: The Beauty of Simplicity. Oxford University Press, Oxford, England, UK. 271 pp. Hardcover, $34.95 (ISBN 978-0199578627). – Only rarely does a special book on the nature of science appear. This volume by eminent Cambridge physiologist Ian Glynn tackles the idea of elegance in science to show its importance and widespread application by scientists working in many, if not all, disciplines. He considers elegance to be a fundamental aspect of the creativity and imagination involved in scientific activity by revealing beauty, simplicity, clarity, and proportion in the application of science to find solutions to problems, to the design of experiments, and to the development of theories. Historical examples are given that fully demonstrate the principle of elegance in science ranging from the 'elegant proofs' of mathematics such as Pythagoras' theorem to Kepler's Laws and the discovery of the structure of DNA. '*Elegance in Science*' is an exciting and stimulating read that clearly shows the important role that 'elegance' plays in science.

Grant, Shelagh. 2010. Polar Imperative: A History of Arctic Sovereignty in North America. Douglas and McIntyre, Toronto, ON. 560 pp. Hardcover, $39.95 (ISBN 978-1553654186). – Shelagh Grant, arctic historian and adjunct professor in the Canadian Studies Program at Trent University, delivers a full and comprehensive study of North American sovereignty in Arctic America that spans 200 years. Although written from a Canadian perspective, the overview is an unbiased summary that provides excellent documentation covering American, British, Danish, Norwegian and Russian histories and claims of the polar regions of North America. Grant includes Greenland in the review and uses the findings from her 30 years of archival research on Arctic sovereignty to produce an authoritative and ground-breaking document. A thorough treatment is given to the facts uncovered with conclusions drawn from a careful balance incorporating aspects of major changes in international law, science and technology, and climate against the claims by countries seeking sovereign rule of arctic lands and waters. Several highlights appear, but the previously unpublished details of the transfer of the Arctic islands from Britain to Canada in 1880 stands out, as does the action taken to secure the Canadian title of the Arctic Archipelago. The conclusion that historically ice cover and access more than either military might or legal interpretation has determined interest by countries in asserting sover-

eign authority should give rise to concern with current major changes in arctic ice patterns from global warming. Shelagh Grant sounds a warning call to all readers to take note and push governments to respect existing sovereign rights and by doing so, protect the fragile polar environment of Arctic America and elsewhere from irreparable damage.

Lockett, Jerry. 2010. Captain James Cook in Atlantic Canada: The Adventurer and Map Maker's Formative Years. Formac Publishing, Halifax, NS. 198 pp. Hardcover, $29.95 (ISBN 978-0887809200). – This is a book for every resident of the Maritimes and Newfoundland and Labrador to read and treasure, and a "must-have" volume for any student of marine history. It is a short but well-researched biography of renowned British cartographer and explorer James Cook that begins in Nova Scotia and takes the reader through his early charting of the St. Lawrence River and Gulf, and through journeys to Newfoundland and Labrador. The fruits of his labour -- magnificent navigation charts -- are known for their impressive accuracy and detail, charts that remain useful to this day! Maritime historian Lockett ably demonstrates how Cook's early experience in Atlantic Canadian waters laid the groundwork for his three pioneering voyages of exploration and discovery in the Pacific that established him as one of the world's greatest navigators and cartographers.

Lynch, Wayne. 2010. Planet Arctic: Life at the Top of the World. Firefly Books, Richmond Hill, ON. 240 pp. Hardcover, $40.00 (ISBN 978-1554076321). – This book by wildlife writer and photographer Wayne Lynch is a magnificent visual and written celebration of the world of the Arctic. Using spectacular photos and an authoritative text, this cold and forbidding region is transformed into a landscape of unforgettable beauty and life. Lynch's treatment is captivating and displays vividly his eye for beauty and excellent grasp of complex natural history aspects of northern ecosystems, both aquatic and terrestrial, and the living things that inhabit them. The worlds of the dominant life-forms are revealed including the hardy lichens and wildflowers, waterfowl, colonial seabirds and land mammals: arctic hare, musk-ox, caribou, arctic fox, seals, walrus, and polar bears. Overall, an impressive introduction to the spectacular Arctic, a region of particular concern today as the stress from global warming and climate change continues to increase.

Newton, Ian. 2010. Bird Migration. New Naturalist Series, Collins, London, UK. 598 pp. Hardcover, $75.00 (ISBN 978-0007307319). – If you've ever pondered over the marvels of bird migration, this book by Ian Newton is the answer! Newton's contributions to ornithology are exceptional, providing seminal research into bird population ecology and conservation with a plethora of high quality research papers and books. This recent volume, like the dozen or so earlier ones, is a 'tour de force' that provides a definitive analysis of the subject of migration in birds. It is comprehensive, meticulously researched and written in an easy, lucid style to satisfy all readers, both amateur and professional. Unlike his monumental '*The Migration Ecology of Birds*' published in 2008, this book targets a more general audience and makes the details of this complex subject easily understood and accessible. In its 24 chapters with numerous colour photographs, maps, graphs and tables, Newton covers all aspects of the study of bird migration from the tools used and recent technological advances in telemetry and stable isotope analysis to the central question of how birds travel from breeding to wintering grounds. After examining the basics – e.g., mechanics and fuelling of flight, influences of weather, strategies employed (i.e., short hops or big leaps) – the remarkable mechanisms of timing, control of movements, and navigation are reviewed in detail, followed by an insightful overview of the evolution of migration and the effect of repeated glaciations on geographical patterns of migrants. The book concludes with a comprehensive summary of the vulnerability and conservation needs of migrant bird species including the potential threat posed by emerging patterns of climate change and a short list of gaps in our knowledge of bird migration and recommendations for future research. Overall, a book to be treasured by everyone interested in bird migration, from the specialist focused on the physiology and neurological involved to the amateur bird watcher that marvels at the large flocks observed in spring and fall. This work has plenty to stimulate and fascinate every natural history reader!

Taylor, Timothy. 2010. The Artificial Ape: How Technology Changed the Course of Human Evolution. Palgrave (Macmillan), New York, NY. 256 pp. Hardcover, $32.00 (ISBN 978-0230617636). – Here is a thought-provoking and exciting read concerning our roots and how we developed into the species we now are! Renowned archaeologist Timothy Taylor outlines the biological basis for our species *Homo sapiens* and then demonstrates how our tool-making abilities and rapid cultural development have been the major forces of human evolution. His thesis is stated succinctly in the Introduction to this masterly crafted and written work: "There are seven species of great ape on the planet. Six of them live in nature. One cannot live without artificial aid. Humans would die without tools, clothes, fire and shelter. So how, if technology compensates all of us for everything we do, did we ever manage to evolve in the first place? With such innate deficits, how did the weakest ape come out on top? This is the story of our remarkable ascent." By reviewing the lengthy history of major discoveries of human fossils and artifacts, Taylor provides answers to most of those queries in a convincing manner based on solid evidence. He shows our technological dependency over the past two million years and the uniqueness of humankind from its unlimited creativeness, and concludes that the mechanism of our evolutionary fitness today, and in the recent past, is our technology – we have become an intrinsically 'artificial species'!

Editor's Keyboard: This issue begins with the story about the community of West Chezzetcook and Grand Desert commemorating one of BIO's own. Roger Bélanger, the first recipient of the Beluga Award, also made an outstanding contribution to BIO. This is only one example, although an exemplary one, of the significant impact BIO and its staff have on the communities we live in. I have just completed a six-month job organizing a conference where "working together" was the theme. From this experience, I learned that collaboration and a style of inclusive leadership is required for communities to meet their full potential. Both the communities we live in and BIO are entering a stressful time. In 2011, we need to collaborate more and exercise leadership to make the year a happy and a prosperous one. Best wishes for 2011. *Andy*

ABOUT THE ASSOCIATION

The 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 for five years, or $150.00 for a lifetime membership.

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Newsletter printed by Jean and Michael Crowell, The UPS Store, Tantallon, Nova Scotia, (902) 826-7087.