

# VOICEPIPE

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The Newsletter of the BIO-Oceans Association



## Steve Blasco awarded the 2016 Massey Medal



Steve Blasco (middle) receives the 2016 Massey Medal from the Royal Canadian Geographical Society president Gavin Fitch (right) and the Honourable Lois Mitchell, Lieutenant Governor of Alberta (left). The medal recognizes outstanding career achievement in the exploration, development, or description of the geography of Canada. Photo Credit: Peter Wells

The Royal Canadian Geographical Society selected Steve Blasco as the 2016 Massey Medal recipient. Dr. Blasco recently retired from the Geological Survey of Canada, at the Bedford Institute of Oceanography, after a career of more than 39 years focused on scientific research in Canada's marine environments. His studies have included scouring and conical shoals that create hazards to pipelines on the Beaufort Sea floor, the sediments of the Lomonosov Ridge, geophysical surveys of Georgian Bay, and shipwrecks as time markers (*Breadalbane* in the Arctic Ocean and *RMS Titanic* in the Atlantic Ocean). During his research, Steve brought together resources of government, academ-

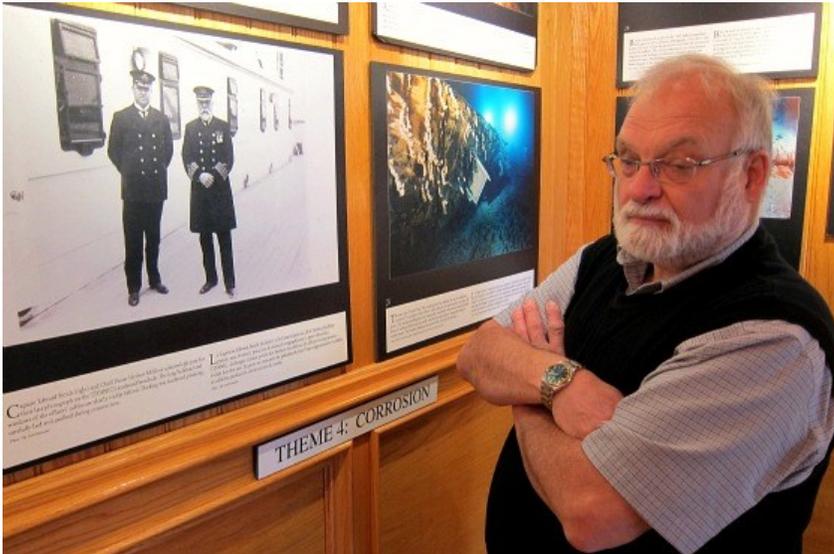
**Beluga Award Phase 1  
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31 January 2017  
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Sherin



Steve Blasco at the RMS *Titanic* exhibit at the Bedford Institute of Oceanography. The exhibit displays several photographs taken on the IMAX expedition to the *Titanic*. Using the *Titanic* as a time gauge, the expedition's chief scientist Steve Blasco and Lev Moskalev, a Russian biologist, conducted an integrated scientific program and observed that the ocean depths at 4,000 metres are not the inert, isolated, lifeless void as generally perceived to be. On first viewing of the IMAX footage, Steve said, "Not only did the quality and the resolution of IMAX imagery allow us to make positive identifications, but we saw the extent of the sediment disturbance more clearly on screen than through the porthole."

ia, and industry to advance the knowledge and public interest in these aspects of Canada's geography. He has shown remarkable communication skills and shared his passion with Canadians. He led the scientific team during the IMAX filming of a documentary on the wreck of the RMS *Titanic*, has been a strong proponent of community involvement (as in the Inuvialuit Settlement Region), has had an impact on environmental assessment for oil and gas exploration, and has provided scientific support for Parks Canada's establishment of Fathom Five National Marine Park. Steve has promoted the transfer of technology to universities and the exploration industry and designed innovative equipment for seabed studies. He has been a tireless explorer in the field of marine geophysics, developing a public interest and greater understanding of the geography of Canada's offshore regions.



From the left: Steve Blasco, Captain Stephane Julien, Master of the CCGS *Amundsen*, and Keith Levesque. Photo Credit: Arctic Net



Steve (far right, back row) was a member of an elite team of divers that made an exploratory expedition to the outer limits of Bermuda's seamount to reveal data on rising sea levels that could affect global thinking on climate change. Photo Credit: *Bermuda Sun*

#### From a student of ArcticNet's Schools on Board program aboard the CCGS *Amundsen*

"Every time [Steve] talks to us, I am amazed by all the things he has done in his life. He is one of the coolest people I have ever met. He has a great way of making a presentation interesting by making it full of personal experiences and memories. He makes it a lot less factual and a lot more about the amazing things you get to do as a scientist. Every story makes me want to experience the things that he has gotten to do. I can't wait to experience as much as I can throughout my life and hopefully create some amazing memories to pass on like he does."

Geneva Cloutis,  
Grant Park High School, Winnipeg, Manitoba



## FROM THE PRESIDENT

Happy New Year to all our members and their families. I hope each and every one of you had a great Christmas and I wish all of you a healthy 2017. This should be a wonderful year of celebration as Canada turns 150. I remember well the excitement fifty years ago when we celebrated our country's 100 years of Confederation. BIO was just a new institute and I was a skinny little teenager in high school. I was so proud of our country then and still am today, and I look forward to enjoying the party and all the activities throughout this year. I suspect I won't be available for the next big birthday in 2067 so I better enjoy this party.

BIO will help celebrate **Canada 150** with the open house 20-24 September 2017. It is also a significant anniversary for the Geological Survey of Canada (175 years) and Fisheries and Oceans Canada (150 years). Planning is well underway for the event with the theme *Route 150 – the history of ocean sciences for the last 150 years*. The route that our visitors take to view the various exhibits will have signposts denoting significant events and people in the history of the ocean sciences. The BIO Oceans Association will play a significant role in the BIO EXPO 2017. Our members, led by Don Gordon and Eric Mills, are currently working on the material needed for the 'Route 150' signposts. We are also developing our own exhibit, led by Charlie Schafer and Dave McKeown, highlighting the development of technology at BIO. We are open to any additional ideas for our exhibit.

BIO EXPO 2017 will need lots of volunteers to make sure it runs smoothly. We will need people in our own exhibit and there will be lots of jobs in other areas that will need to be filled. At our general meeting in November, Gabrielle Tompkins-MacDonald, the volunteer coordinator for BIO EXPO 2017, outlined the various needs for the open house. Many of you have worked at previous open houses and know how much fun it can be, even if it is a bit of work. Plus, you will get a great t-shirt with a **Canada 150** logo on it. If you are interested or have any questions, contact Gabrielle at [Gabrielle.Tompkins-MacDonald@dfo-mpo.gc.ca](mailto:Gabrielle.Tompkins-MacDonald@dfo-mpo.gc.ca).

In addition to the presentations on the BIO EXPO at our general meeting in November, we also ratified the changes to our bylaws. These were mostly housekeeping issues suggested by the provincial regulator, so we are now fully up to date. More importantly, we con-

firmed Claudia Currie as our First Vice-President. Congratulations Claudia and welcome back to the BIO OA Executive. The appointment of Claudia as VP assures a smooth transition in May at our next annual meeting, as she will be in place to take on the role of President. We will soon start thinking about the nomination process for the annual meeting, so if anyone is interested in becoming a member of the OA Executive, please let me know.

Finally, I want to direct everyone to the information in this edition of the *VoicePipe* on the Beluga Award (page 4). Of all the various projects and activities of the OA, I think the Beluga Award is the one of the most important. While the federal government has numerous awards with various criteria, I think the idea of being nominated and selected by your co-workers for "exceptional contributions to the success of BIO projects, initiatives or programs that exemplify unselfish effort that encourages cooperation and fosters the teamwork approach of BIO" elevates this award above any other. The award is open to all staff - administrative, technical, professional, scientific, and ship's crew. This year's committee has streamlined the process so that the first phase only requires a simple outline of why you feel the candidate deserves the award, just a paragraph of 200 words. The deadline for this phase is 31 January 2017. The second phase, which requires a more substantial submission has a deadline of 1 March 2017 for those nominations that continue on to that stage. I urge everyone to read the section on the nomination process and think seriously about nominating worthy candidates.

Mike Murphy, President

## *In Memoriam*

**Frances Joan Estelle Wagner**, died 8 November 2016, Research Scientist, GSC Atlantic.

**Thomas Clarence Richard**, died 6 January 2017, seaman, CSS *Acadia* and CSS *Hudson*.



### Beluga Award Nominations Call

This is the call for nominations for the 2017 Beluga Recognition Award. This year, nominations will be accepted in two phases.

**Phase 1:** Initial nominations which must be submitted by **31 January 2017** and include the following :

- Name of the nominee
- A paragraph describing how the nominee meets the Beluga Award criteria (in 200 words or less)
- Names of supporters of the nomination

**Phase 2:** If contacted by the Beluga Award Committee, the nominator must submit a more comprehensive nomination by **1 March 2017**. [Click here for further details on the nomination form and the Beluga Award criteria.](#)

The 2016 Beluga Recognition Award recipient, Glen Morton, and other past recipients are excellent examples of employees who continued to exhibit unselfish dedication to community spirit at BIO. The Award has a broad scope and recognizes individuals in any professional or technical field, craft, or skill who have made exceptional contributions to the success of BIO projects, initiatives,

or programs. These contributions should exemplify unselfish effort that encourages cooperation and fosters the team-work approach of BIO. All present and past employees who work or have worked at BIO in any field or specialization are eligible. It is intended that this Award should recognize all professions, including ship's crew, administrative personnel, technicians and scientists.

The Beluga Award Committee encourages you to start thinking about deserving nominees and looks forward to receiving your nominations.

### A Decade of Beluga Award Winners

2016 Glen Morton  
 2015 Barry MacDonald  
 2014 Claudia Currie  
 2013 Robert Murphy  
 2012 Don Gordon  
 2011 Brian Beanlands  
 2010 Sherry Niven  
 2009 Bruce Anderson  
 2008 Borden Chapman  
 2007 Murray Scotney

## A BIO Colleague Honoured

by D.L. McKeown

The National Research Council of Canada (NRC) is observing its 100<sup>th</sup> anniversary this year. As part of the celebrations, they have planted 100 trees in honour of staff who have made significant contributions to their research program and participated in volunteer community activities. Seventy trees were planted across Canada and the balance in Ottawa. Some months ago, Odette Murphy, late of BIO, now employed at the local National Research Council (NRC) laboratory, and an active member of our association, approached the BIO-OA Executive to see if we knew of anyone at NRC who we might wish to nominate for such an honour based on their interactions with BIO. While there was no doubt more than one person who might fall within that category, I was only familiar with one, Tim Dauphinee, so I prepared a nomination on his behalf. I was pleased to learn recently that a tree has been planted in his honour at the NRC laboratory in Ottawa.

Tim Dauphinee dedicated his research to the field of precision measurement of physical parameters such as temperature, pressure, and thermal conductivity of materials. Throughout his career, he recognized the importance of forging relationships between the government science community and industry and enthusiastically initiated and participated in a number of important technology transfer initiatives. His work led to publications in a number of prestigious international journals, more than twenty-five Canadian and U.S. patents and, in collaboration with Guildline Instruments Ltd., several became very successful commercial products. While we at BIO were not familiar with Tim's work in these early years, we had the fortune to work closely with Tim commencing in the late 60s and into the late 80's.

At that time, we were measuring sampling depth and ocean temperatures using very accurate mercury in glass thermometers and collecting seawater samples for later laboratory determination of salinity by chemical analysis. By the very nature of this technology, the process was time consuming, laborious, and restricted to measurements obtained at limited points from the surface to sea floor. To ensure that our measurements were accepted by the oceanographic community, we periodically sent our reversing thermometers to the Heat and Thermometry division of NRC in Ottawa for calibration against international standards.

It was here that Tim, a research scientist in that unit, first became interested in our antiquated but functional tech-



nology. Because of his familiarity with precision temperature and resistance measurement and a solid knowledge of electronics, Tim recognized that an instrument could be created to not only collect the information with potentially better precision and accuracy but also to provide as a continuous vertical profile. He then set about creating such a device and in short order had a working model. While I am not entirely familiar with the next few steps in this process, it is my understanding that a prototype unit was manufactured by Guildline Instruments with whom Tim had a long standing and close collaboration. According to the 1968-69 BIO Biennial Report, one of these units was purchased by BIO's Frozen Sea Research group for use during their 1969 Arctic field season.

Thus began a long and very productive collaboration with the BIO oceanographic community. Andrew Bennett and Jan Betlem of the Metrology Division, with the assistance of a number of BIO's physical oceanographers, put this first generation hybrid analogue-digital CTD through its paces by conducting various field and laboratory inter-comparisons with similar instruments during the early 70s. By the mid-70s, digital electronic technology had advanced to the point where a truly digital instrument could be envisioned. To accomplish its creation and convert the telemetry scheme from a multi-conductor to a single conductor cable, Paul Thorburn, an

electronic engineer in the Metrology Division, was seconded to work with Tim at the NRC lab in Ottawa. Upon completion of its creation, Andrew, Jan and others embarked on another round of field and laboratory experiments to prove its worth, and Guildline began the production of commercial units. This instrument became the bedrock of BIO's physical and biological field program for the next two decades before it was superseded by the next generation of instruments from other manufacturers.

This work led to Tim's development of a precision laboratory salinometer, the *Autosal*, that quickly became the gold standard in oceanographic establishments around the world. Not only is it a superb laboratory instrument, but it has proven sufficiently robust to be taken to sea and used for precision measurements with confidence. The superiority of the *Autosal* was demonstrated during BIO's participation in the 1974 international Global Atmospheric Research Experiment - Atlantic Tropical Experiment (GATE) where salinity samples were distributed to the oceanographic institutes for testing and rigorous inter-comparison. The first commercial *Autosal* unit was sold that year. Forty-two years later, over 500 have been sold and Guildline continues to receive orders for them at the rate of 12 to 13 per year.

In the mid-70s, it was noted that the conductivity cell on the CTD was responding not only to salinity changes in the ocean but also to particles passing through it. It was concluded that these particles were zooplankton for the most part and if their length, diameter, and numbers could be determined, the resulting device would be an excellent addition to the phytoplankton survey system that Alex Herman had created on the *Batfish* towed vehicle. While Tim worked on the design of an electronic system to measure the characteristics of copepods passing through the cell and devised efficient ways of transmitting this data to the surface in real time, Alex and his team of Michel Mitchell, Ted Phillips, Jean-Guy Desureault and Scott Young dealt with the problem of persuading the copepods to pass through the tiny orifice of the cell, integrating the technology onto *Batfish* and devising appropriate laboratory and atsea calibration procedures. The combined effect of these initiatives permitted users to identify and count dominant copepod species. The device became an integral part of the biological *Batfish* system and was used successfully during many operations off Nova Scotia and even as far away as Peru. This program eventually led to Alex Herman's development of the *Optical Plankton Counter* (OPC), a project in which Tim was an active member of the de-



The prototype *Autosal*.

velopment team. Both the OPC and later the *Laser Optical Plankton Counter* (LOPC) also developed at BIO, were transferred to industry and enjoyed long and successful careers over decades which were to a great extent a result of Tim showing us how to “work with industry”.

After his retirement from NRC, Tim and his wife became active in the Ontario Credit Union Foundation. In recognition of his contributions to this organization, they both received the Ontario Credit Union Central's Distinguished Service Award in 1989, were appointed Directors Emeritus of the foundation, and founded the Amy and Tim Dauphinee Scholarship at York University. In 1990 they received the Association of Co-operative Educators (U.S and Canada) Distinguished Service Citation and in 1997 they received the Gary Gillam Award for “exemplary achievement in promoting Social Responsibility in Credit Unions.”

Tim is now 100 years old and living in Toronto. Not content to rest on his laurels, he currently has two patent applications pending and I don't doubt working on other ideas. BIO researchers have been very fortunate to have had such a productive and successful collaboration with him. If any one wishes to contact Tim, please let me know as I have his e-mail address.



Dr. Frances Wagner (centre) receives her award for 25 years service to the Geological Survey of Canada in 1975. On the left is Dale Buckley, then Head of Marine Geology and on the right is Bosko Loncarevic, then Director of the Atlantic Geoscience Centre at BIO.

### **Dr. Frances Wagner: Adventurous micropaleontologist flouted convention!**

by Bill Atkinson\*

At a time when female scientists were a rarity, Frances Wagner embarked on a career in micropaleontology, becoming a distinguished expert and embracing the rough-and-tumble life of a field researcher for the Geological Survey of Canada. Dr. Wagner, who died on 8 November 2016 at the age of 89 in Falmouth, N.S., not only advanced her discipline, she led the way for other women to succeed in non-traditional fields.

Frances Joan Estelle Wagner was born on 28 May 1927, in Hamilton, Ont., to Harold and Muriel Wagner (née Konkle). At Wagshack, the family cottage on Muskoka's Mary Lake, about 250 kilometres north of Hamilton, young Frances spent her youth fishing and canoeing in summer, snowshoeing in winter, and hunting all year round. She also became an accomplished horsewoman and distance swimmer, and once badgered her younger brother into helping her identify every species of lichen near the cottage (they found more than 50).

Her early experiences proved an ideal preparation for a career in scientific field research conducted under trying conditions. Muskoka lies in the Canadian Shield, a swath of ancient metamorphic and igneous rock whose overburden has been scraped away by glaciation. To an active mind, Muskoka offers endless stimulation, both in its Precambrian geology and in the multitudinous ways in which life has colonized a stern terrain.

Dr. Wagner's undergraduate focus was paleontology, the study of fossilized remnants of ancient organisms. She graduated in 1948 with a bachelor's degree from the

University of Toronto, and then pursued a master's degree in invertebrate (stratigraphic) paleontology, conducting research for her thesis at the Powder Magazine Quarry, near Ottawa. This began her lifelong scientific focus on field research.

Dr. Wagner received her master's in 1950 and was hired by the Geological Survey of Canada (GSC), starting work the day she turned 23. She was not merely the only woman on a small field team investigating Canada's geology east of James Bay; she was one of only three female scientists then employed by GSC. Dr. Wagner's colleague Dr. Helen Belyea was mapping the geology of the newly discovered Alberta oil fields; Dr. Alice Wilson, her MA supervisor and the GSC's first female scientist, had lobbied for Dr. Wagner's inclusion. The prevailing attitude at the time, not just at the GSC but throughout North America, was that women were too fragile for the rigours of the geobiological field; Dr. Wagner soon refuted this view. Taking Ontario's northern rail system to the end of the line, then canoeing on to Moose Factory, was something Dr. Wagner handled at least as ably as her male companions.

A year after her foray into wilderness fieldwork, Dr. Wagner went to Stanford University, in California, to begin a doctorate in Pleistocene paleontology, in which no Canadian university then offered a graduate degree. Her PhD, in 1954, recognized her expertise in a subspecialty in which she would become pre-eminent: micropaleontology, the study of single-celled fossils such as pollen and plankton. According to science.ca, a site co-sponsored by the Royal Society of Canada, these tiny remnants of past ages "provide a picture of ancient ecologies, including the depth, salinity, pH [acidity], and temperature of the water, all of which are useful in mineral exploration and studies of changes in sea level, currents and climate."

In other words, these tiny bio-remnants can have massive consequences for our understanding of biogeological prehistory and for modern-day resource development.

Since micropaleontologists retrieve their field samples through rock coring of ancient seabeds that tectonic processes have raised into dry-land geology, as well as by dredging existing seabeds, Dr. Wagner's fieldwork took her from inland quarries and rock-faces to saltwater investigations. In 1970 she worked as a micropaleontologist aboard the newly commissioned CSS *Hudson*, a 90-metre research vessel that was the first ship to circumnavigate the Americas. Chief scientist on this incredible

voyage was Dr. Bernard Pelletier, who had recently been appointed head of the Marine Geology Section of the Bedford Institute of Oceanography, in Dartmouth, N.S.

While written in the cool language of scientific reports, Dr. Pelletier's Northwest Passage research log reads like an adventure novel. At one point the *Hudson* "rode up onto a particularly hard floe and slid off one side thereby heeling to port so abruptly and steeply that her guardrail almost touched the broken sea ice" – that is, her normally horizontal decks tilted halfway to the vertical. In sum, the *Hudson* expedition considered the Northwest Passage "not safe for shipping." Of course, this conclusion is being reassessed now that Arctic pack ice, reduced by global warming, increasingly opens Canada's northern continental shelf to oil and mineral exploration, as well to commercial surface traffic by container ships and oil and liquefied natural gas supertankers.

In 1967, Dr. Pelletier persuaded Dr. Wagner to join him at his Bedford Institute laboratory on the East Coast. There, in 1979, she co-authored a definitive study with Dr. Pelletier and Dr. Gus Vilks: *The Holocene Marine Environment of the Beaufort Shelf*. D.J. McLaren, then director-general of the GSC, said in its preface: "With exploration for hydrocarbons moving into Canadian Arctic waters, more information is needed for a better understanding of the highly sensitive Arctic marine environment where relatively small interferences with natural processes may result in pronounced disturbances. ... This Bulletin will be of interest to the companies engaged in drilling operations on the Beaufort Shelf."

The Maritimes remained Dr. Wagner's home for the rest of her life. In 1984, after gruelling field investigations that had taken her from the Caribbean to the Beaufort and from the Bay of Fundy to the Salish Sea, Dr. Wagner retired from the GSC.

Settling in Mount Uniacke, N.S., she pursued her long-standing interest in Morgan horses, teaching herself to

ride side-saddle – as well-bred ladies of British descent did well into the 20<sup>th</sup> century – and demonstrated this near-vanished art at various venues throughout Nova Scotia. Dr. Wagner bred Shetland Sheepdogs and was instrumental in saving the rare Norwegian Lundehund hunting breed from disappearance.

In 2013, Dr. Wagner suffered a stroke that left her unable to speak or move any part of her body other than her face and hands. Anne Bishop, a volunteer at the care home, met Dr. Wagner after her stroke. Despite the impossibility of verbal dialogue, Ms. Bishop was able to establish a close friendship with Dr. Wagner, whose mind, though partly veiled, was still razor-sharp.

"Our communication with her was a matter of close observation and small cues – a chuckle, a raised eyebrow," Ms. Bishop wrote in an e-mail. "We visited three times a week, reading friends' notes and letters to her, keeping enclosed photographs in an album and keeping her friends up to date as best we could. We also took in books from her huge personal library and read to her. As a result, we spent a great deal of time with her and learned a great deal about her. ... When we settled in to read to her, she lit up and, even with very little movement or strength left to her, she wanted to hold her side of the book" – the feminist scientific pioneer was dynamic to the last.

Dr. Wagner was predeceased by her parents, Harold and Muriel Wagner; and by her younger brother, David Wagner.

*Published with the permission of the author.*

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*\*Bill Atkinson is a science and technology writer based in North Vancouver, B.C.*

*See Dr. Wagner's profile at <http://www.science.ca/scientists/scientistprofile.php?pid=471>*

### **Celebrating our parks - hiking to Crypt Lake in Waterton National Park, Alberta**

by Peter Wells

For Canada's sesquicentennial, Parks Canada has opened its National Parks (NP) and historic sites all year without charge. All you need is a Discovery Pass, available on line at [www.commandesparcs-parksorders.ca](http://www.commandesparcs-parksorders.ca). This is highly recommended if you wish to explore one or more unique land-and-sea-scapes of our incredible country. In Atlantic Canada, we are especially fortunate to have nine NPs, from Fundy near Moncton to Torngat

Mountains at the top of Labrador, as well as many national historic sites.

To tempt the reader in this exploratory quest, let me describe an amazing adventure of last summer in Waterton NP, one of Canada's smallest Rocky Mountain parks. It is tucked away in SW Alberta, adjacent to Glacier NP of the USA, and the mountains of south-eastern BC. Waterton is relatively small (518 sq. km.), more remote than most parks in Alberta and hence less visited, and breathtakingly beautiful. It unfolds dramatically from the prairies to the mountain heights. Waterton Lake bi-



Fig. 1 The tunnel, Crypt Falls, and the rock wall that holds in the lake.



Fig. 2: Crypt Lake – a picturesque lunch spot.

sects the park and the international boundary, and the small town on the lake allows easy access to the surrounding wilderness.

I camped at the town's main campsite by the lake, enjoying expansive views of mountains and sky. Early one morning, I boarded the local tour boat for a short trip across Waterton Lake to Crypt Landing. This is the best way to access the trailhead to Crypt Lake, an iconic experience in the hiker's world. It involves an 8.7 km (one way), fairly strenuous walk, a tunnel, a cliff face, and a visit to a delightful lake in a cirque claimed by two countries. Along with 40 other intrepid souls of all ages, countries and condition, and with my daypack well stocked with water and food, I started up a steep trail, switch-backing a forested ridge of spruce, fir and pine, and entering the L-shaped, Hell Roaring Valley. For over three hours, I walked with other hikers, gaining considerable altitude. The trail was relentless and exposed to sunshine and drop-offs as it went higher, following a river and a series of spectacular waterfalls. The surrounding mountains rise up to 2920 m (9580 ft.) (Fig. 1).

Eventually, a small group of us reached the subalpine and Crypt Falls at the valley's apex. The Falls cascade over a 300 m rocky cliff. The trail narrowed and crossed a talus slope. I climbed a small metal ladder and entered a tunnel 20 m long, requiring a rocky, knee scrapping, head banging crawl through almost complete darkness. At the far end, I carefully treaded along a narrow ledge, holding on to a steel cable, definitely the most hair-raising part of the journey. A short uphill path for a few minutes, through a grove of small pine and fir, led to the

lake (Fig. 2).

Crypt Lake (1945 m) sits in a cirque, a rounded mountain valley carved by glaciers. The lake is beautiful, deep green-blue, calm and protected by 600 m cliffs. Being early afternoon, I had a quick lunch and rest, took photos, and began the return hike. With heart pounding, I traversed the ledge, tunnel and ladder again. Early in the descent, I met another hiker who had just had a minor tumble on the narrow scree-covered trail; she was also an Alpine Club member and mountain guide for the Bugaboos of BC. After a brief introduction, I joined her for the outward bound walk. She was tremendously fit and moved at a steady, non-stop pace. The company was welcomed and we descended the picturesque valley, enjoying the views and discussing mountain and conservation issues. Within three hours, we were back at Crypt Landing, waiting for the boat. This was a hike through some of the best mountain scenery, and with its challenges, an adventure to be long remembered.

So in this special year, choose your favorite park or other outdoor locale and explore – as the famed mountaineer J. Monroe Thorington said: “We were not pioneers ourselves, but we journeyed over old trails that were new to us, and with hearts open?” Be sure to wander often, and wonder always!

Reference: Patton, B. and Robinson, B. 1992. The Canadian Rockies Trail Guide. Fifth Edition – Revised. Summerthought, Banff, AB. 363 p.



## NOTEWORTHY READS: BOOK REVIEWS IN BRIEF

David N. Nettleship  
Book Editor and Reviewer

### ‘ESCAPE WINTER & SPRING WITH A COUPLE OF GOOD BOOKS’

The *Noteworthy Reads* section is an effort to identify 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: [dnnlundy@navnet.net](mailto:dnnlundy@navnet.net).

#### SPECIAL PUBLICATION:

#### SEA DUCKS AND BEYOND THE WAVES

Savard, Jean-Pierre, Dirk V. Derksen, Dan Esler, and John M. Eadie (Eds.). 2015. *Ecology and Conservation of North American Sea Ducks*. CRC Press, Taylor & Francis Group, Boca Raton, FL. 584 pp. Hardcover, \$146.00 (ISBN 978-1482248975).- This long-awaited Number 46 of the Cooper Ornithological Society’s ‘Studies in Avian Biology’ series was well worth the wait. It represents the first time the sea duck tribe Mergini (eiders, scoters, Harlequin, goldeneyes, Bufflehead, Long-tailed Duck, mergansers) has been reviewed in a single volume, separate from other members of the family Anatidae (swans, geese, ducks). Doubtless the task to assemble 27 authors, each an expert in one or more facets of sea duck biology and conservation spanning the enormous geographic distribution of the group comprising the 15 extant North American species, was formidable, as was the ensuing editorial effort to ensure every major topic critical to the primary objective of the review was covered: i.e., to highlight data gaps necessary to conserve and protect this fascinating group of marine waterfowl. An examination of the titles and content of the fifteen chapters clearly shows the all inclusive breadth and comprehensiveness of coverage of the subject that has been attained. Some of the topics are: status and trends of North American sea ducks; phylogeography, phylogenetics and population genetics; population dynamics; infectious diseases, parasites, and biological toxins; breeding costs, nutrient reserves, and cross-seasonal effects; contaminants: metals, trace elements, petroleum, organic pollutants, and radiation; foraging behaviour, ecology, and energetics; variation in migration strategies; remigial moult; site fidelity, breeding habitats, and reproductive strategies; breeding systems, spacing behaviour, and reproductive behaviour; harvest of sea ducks; and conservation and protection. The final chapter pro-

vides details on the overall conclusions drawn from the review as a whole, with a comprehensive synthesis of findings and future directions required to safeguard the future of sea ducks in North America and elsewhere through their global range. Without question, the editors along with the contributors of this book are to be congratulated for an outstanding accomplishment. The importance of this synthesis cannot be overstated as many sea duck populations in North America have been declining in number over the last few decades with two eider species (Spectacled and Steller’s) already listed as ‘Endangered’ and the Harlequin Duck and Barrow’s Goldeneye listed as ‘Species of Concern’. The rates of decline, both in species and numbers, will likely increase in the future as nesting and winter habitats for sea ducks continue to deteriorate from impacts of human activities and climatic events. This milestone work, however, will contribute greatly to assist both waterfowl biologists and government decision-makers in what future research needs to be done and in the formulation of new policies to ensure the protection of coastal, offshore and inland habitats from further human developments and harmful activities. *Ecology and Conservation of North American Sea Ducks* should be on the desks of every waterfowl biologist and manager, and anyone with an interest in waterbirds and their habitats.

Alvarez, Walter. 2016. *A Most Improbable Journey: A Big History of Our Planet and Ourselves*. W.W. Norton, New York, NY. 240 pp. Hardcover, \$27.00 (ISBN 978-0393292695).- Walter Alvarez, a brilliant scientist and eminent professor of geology at the University of California, gives readers of his latest work – *A Most Improbable Journey* – a thrilling look at ‘big history’, a tour-de-force of the factors that have shaped our world! He writes with great clarity and precision, and takes us on a journey of discovery going from the ‘big bang’ through the development of life on Earth, and the minute role humans have played on the planet. The overall outcome of this geology and biology history lesson is how improbable the generation of *Homo sapiens* has been, as has the species’ survival to the present time. This is an exciting and mind-stretching exercise to be enjoyed and relished by all. Buy, borrow, or steal a copy to read – without question an instant classic!

Balcombe, Jonathan. 2016. *What a Fish Knows: the Inner Lives of Our Underwater Cousins*. Scientific American/Farrar, Straus & Giroux, New York, NY. 288 pp. Hardcover, \$38.00 (ISBN 978-0374288211).- What do fishes know, can they think, assess situations, and take action that enhances their survival and reproductive output? These and other queries surface through this thrilling book of revelations on fish behaviour, breeding practices, and social structures that together show fish to be, without question, perceptive, aware, intelligent and conscious of their surroundings. Balcombe, an accomplished vertebrate ethologist, uses the findings of scientific experiments and studies to allow all of us to better understand the true nature of fishes and their often complex world.

His clear prose and manner of delivery through science, anecdotes, and stories are persuasive. This excellent book will cause us to permanently alter our views of fish making us view them as the stunningly diverse and intriguing animal group they are, second to none in beauty and complexity.

**Dawkins, Richard. 2016. *The Extended Selfish Gene*.** Oxford University Press, Oxford, England. 548 pp. Hardcover, \$42.00 (ISBN 978-0198788782).- A grand celebration of the 40<sup>th</sup> anniversary of Richard Dawkins' classic 1976 work *The Selfish Gene*, an expose of the gene as the unit of natural selection and evolutionary process. This expanded edition of the original – *The Extended Selfish Gene* – with two additional chapters taken from his *The Extended Phenotype* (1982) combined with significant explanatory endnotes and an important new Epilogue, result in a unique study package that provides a clear explanation of the 'selfish gene' concept and its role in evolutionary biology today. Read again (or for the first time) in this extended version, and continue to learn and ponder its numerous implications to biology and the living world as explained by one of the world's most capable science teachers.

**De Waal, Frans. 2016. *Are We Smart Enough to Know How Smart Animals Are?*** W.W. Norton, New York, NY. 340 pp. Hardcover, \$35.95 (ISBN 978-0393246186).- World-renowned ethologist and primatologist Frans de Waal takes us on a survey of intelligence in the animal kingdom demonstrating how little we know about non-human animal cognition. He reviews our out-of-date mechanistic view of animals, outlines the recent revolution in the study of animal cognition and, based on current scientific findings, shows how far more intricate and complex animal minds are than previously believed. And in a lively and easily understood manner, the author then displays the considerable scope and depth of intelligence in non-human animals by examining the results of studies involving dolphins, whales, octopuses, crows, parrots, bats, bonobos and chimpanzees. The conclusion? Clearly, we aren't quite as smart as we would like to believe!

**Graham, Ian. 2016. *Fifty Ships that Changed the Course of History: A Nautical History of the World*.** Firefly Books, Buffalo, NY. 224 pp. Hardcover, \$29.95 (ISBN 978-1770857193).- Interested in ships, their design, diversity, and history? If 'Yes', then take a look at this well-illustrated account of a representative sample of 50 vessels that made a mark on world history and human civilization. The review spans the ages from Egyptian Pharaoh Khufu's small *Solar Barge* craft (2566 BC) to the modern MS *Allure of the Seas*, the biggest ocean cruiser ever built housing over 5,000 passengers and a crew of 2,200. This ship tour includes most every boat-type model produced between those dates, which together display an intriguing variety of watercraft with a descriptive text that explains each vessel's timeline, function, and historical significance. 'Fifty Ships' is definitely a must-have volume for any book reference collection on ships.

**Kerr, Adam. 2016. *Charting Polar Seas: the Life, Careers and Interests of Adam Kerr – Chart-maker, Sailor and Fisherman*.** Lulu.com Publishing, Raleigh, NC. 236 pp. Softcover, \$13.00 (ISBN 978-1326573164).- A first glance at oceanographer Adam Kerr's *Charting Polar Seas* suggests an autobiographical memoir by an accomplished marine surveyor, but further examination reveals the outstanding accomplishments of a marine cartographer and polar adventurer. The history of the development of the author's career of charting the seas of the Antarctic and Arctic is intriguing. The beginnings with the Falkland Island Government (presently the British Antarctic Survey) provides a fascinating insight into the early stages of mapping polar sea regions, followed by his 30 years with the Canadian Hydrographic Service starting in Ottawa in 1958. His account of working with the newly established Polar Continental Shelf Project in 1959 under PCSP's first director Dr. Fred Roots, shows the polar network of the day in action with immediate connections with arctic luminaries such as Tom Manning, Graham Rowley, Keith Greenaway and others. These connections led to collaborative work with Mike Eaton and Mike Marsden in the development of new navigation/positioning technologies. The story continues through his work as regional hydrographer at the Canada Centre for Inland Waters and subsequent introduction to the world of international hydrography. In 1980, Kerr was appointed Director of the Atlantic Region of the Canadian Hydrographic Service, located in Nova Scotia at the Bedford Institute of Oceanography. This part is fascinating, as are the final stages of his amazing career as a director of the International Hydrographic Organisation in Monaco from 1987 to 1997 and retirement in Cornwall, United Kingdom. Adam Kerr died on 8 August 2016, but his life and many achievements live on in his wonderful autobiography *Charting Polar Seas*. Find a copy and read this treasure!

**Wilcox, Christie. 2016. *Venomous: How Earth's Deadliest Creatures Mastered Biochemistry*.** Scientific American/Farrar, Straus & Giroux, New York, NY. 256 pp. Hardcover, \$37.00 (ISBN 978-0374283377).- Ever wondered about the great diversity of venomous animals found in both aquatic and terrestrial environments, and their astonishing biology and evolution? Microbiologist Christie Wilcox's book provides the perfect introduction to the intriguing world of poisonous creatures and the ingenious ways they use toxic substances to defend themselves against predators and to capture prey to eat. Using stories of her own researches and fellow scientists, she gives us an in-depth look at a representative number of venomous fauna – from jellyfish, sea urchins, pufferfish, snails and octopuses to caterpillars, centipedes, spiders, wasps, snakes and scorpions – outlining their emergence and significance in the natural world and the biochemical wonders of the venom they produce and secrete. A fascinating and 'stingy' read!

**Editor's Keyboard:** In this issue we recognize three scientists that are / were innovators and ground breakers. Frances Wagner trod where few women had gone before being only the third female scientist hired by the GSC and the first to participate in a field program. She was still with the Marine Geology group when I started as a summer student in 1971 and to my embarrassment I didn't realize her scientific contribution until recently. I have worked with Steve Blasco on a couple of projects and enjoyed his presentations always laced with

humor and stories. I didn't have the opportunity to meet Tim Dauphinee but to be still submitting patents at the age of 100 is a remarkable achievement. You can view his previous patent applications on-line. Now we enter an extraordinary year for our nation. As Mike has said he remembers our 100<sup>th</sup> birthday party. I had the opportunity to go with my family to Montreal for Expo 67. As Peter reminds us one of the greatest Canadian assets to enjoy in 2017 is our national parks. Let us celebrate enthusiastically being Canadian this year. *Andy Sherin*



## ABOUT THE BIO-OCEANS ASSOCIATION

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

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

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

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