

VOICEPIPE

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Februray 2019

The Newsletter of the BIO-Oceans Association



Christmas Eve at BIO



Santa and his elves meet with boys and girls in the Ford Auditorium.

Once again, BIO staff and alumni and their families gathered in the Ford Auditorium and the cafeteria on Christmas Eve. The auditorium was decorated festively and welcomed Santa Claus and his elves to meet with the children. In the cafeteria chowder was served along with other nibbles and beverages. The line of excited children waiting to talk with Santa stretched across the auditorium and out into the hall way.

As is the tradition senior managers serve up the chowder to the “hungry” (it is just after breakfast) hordes. Also a tradition is the BIO Library book sale with proceeds going to the United Way.

2019 A G Huntsman Award

Submit a Letter of Intent by
31 March 2019

<http://www.huntsmanaward.org/Nomination.htm>

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Photos: clockwise from the top; the line up to visit Santa Claus in the Ford Auditorium; inter-departmental comraderies, left, Andrew Cogswell, DFO, right, Michael Parsons, NRCan; Tim Halman and Ella examine the books on offer from the BIO Library Book Sale; Paul “monitors” the festivities at the BIO front door with his reindeer friend; and the line up to visit Santa extended out of the auditorium into the hallway.



Long standing traditions at the BIO Christmas Eve party



Photo: From the left: Ryan Rafuse, Hannah Day, Santa Claus and Sherri Rafuse. Elf Sherri told your editor she has been Santa's elf at BIO for 10 years.



Photo: Senior managers dish out the chowder, left: Mike Cherry, right: Alain Vézina.



From the President

Christmas Eve at BIO last year cast my mind back to the time that our daughters came to BIO with me when they were young. Before they replaced the cushions in the auditorium with chairs, our girls

used to roll down the steps. Before they put locks on the doors leading away from the auditorium, they also used to wander the halls. The large number of children on Christmas Eve 2018 was reminiscent of those former days. As you can see from the photographs, there were many children anxious to see Santa in the Ford Auditorium. It is also remarkable that Sherri Rafuse has returned every year for 10 years to assist Santa as an elf.

Your CSS *Acadia* Task Force received a wonderful Christmas present hearing the Minister's announcement of the investment in the repair of the *Grand Old Lady*. It is impossible to determine if their efforts have had any real impact on the course the province took with respect to the *Acadia*, but I think their letter writing, media appearances and visits to politicians' offices would have had some influence.

In March of last year, Jim Stewart an accomplished research scientist at BIO and before that at the Halifax Fisheries Laboratory passed away. The Nova Scotian Institute of Science is publishing an article on his outstanding scientific career in their next issue of their Journal. Watch for it and the article written by Don Gordon on Gordon Riley in the same issue.

Finally I want to draw your attention to the initiative that one of our own has embarked upon in the aftermath of a family tragedy. Claudia Currie is establishing a charity called Fight4Life to provide resilience training for first responders in response to the death of her son Kyle, a firefighter, at his own hand. We wish Claudia every success in this endeavour.

Andy Sherin, First Vice President

In Memoriam

James (Jim) Edward Stewart, died 1 March 2018,
Research Scientist, DFO

Albert (Bert) James Hartling, died 1 January 2019,
DFO, Coastal Oceanography



Update on the CSS *Acadia*

Government Making Repairs to CSS *Acadia* and Nova Scotia Museum of Industry Communities, Culture and Heritage

Press Release December 6, 2018 - 12:11 PM

On the 101st anniversary of the Halifax explosion, government is making repairs to the only vessel still afloat to have survived the event, the historic CSS *Acadia*. The province will also continue repair work to the Nova Scotia Museum of Industry.

The CSS *Acadia* is a national historic site that is permanently moored at the Maritime Museum of the Atlantic in Halifax. The 105-year-old steel-hulled ship also served in the Royal Canadian Navy during both World Wars.

Restoration work that is necessary to preserve the CSS *Acadia* will include repair of the deck and sub-deck and dry-docking the vessel to repair the hull, electrical systems and ballast tank.

The province is also completing the replacement of the roof on the Nova Scotia Museum of Industry, in Stellarton. The museum tells the story of work, workers and how Nova Scotia was affected by the opportunities and challenges of the Industrial Age.

"The work on the CSS Acadia and the Museum of Industry aligns with Nova Scotia's Culture Action Plan, launched in 2017," said Leo Glavine, Minister of Communities, Culture and Heritage. *"The plan includes a focus on excellence in cultural stewardship and supports targeted investments in the Nova Scotia Museum system."*

Walking the Salt Path¹ – An English Saga Continues

by Peter Wells

In early Spring, 2018, I returned to England and backpacked for approx. 400 km along the northern stretch of the famed SW Coast Path, one of England's official national paths. This followed my 2017 walk along the southern stretch of the Coast Path beside the English Channel, from Cornwall to Dorset (see BIO-Oceans Assoc. Newsletter, Feb. 2018). This time, thanks once again to the kindness of relatives, I started on March 23rd from the small and remote fishing town of Minehead, Somerset, on the Bristol Channel. Minehead is the official starting point of the Path, marked by a magnificent metal sculpture (Fig. 1). The walk through three counties (Somerset, Devon and Cornwall) finished three weeks later at the beautiful artists' enclave of St. Ives, Cornwall, on the open Atlantic.



Fig. 1. The sculpture marking the start of the South West Coast Path, in Minehead, Somerset.

The early spring wet and windy weather and undulating terrain made the first week on the path quite challenging. Hills of North Devon's Exmoor National Park meet the Bristol Channel with 300m headlands and rocky cliffs, resulting in many demanding ascents and descents from the shoreline to the cliff tops (Fig. 2). With the prevailing SW wind in my face, trekking along the narrow coast path, often through deep mud and over wet rocks, could be exhausting and on some rainy days seemed endless. Other days were easier, where the path

¹ The title comes from the celebrated book "The Salt Path" by Raynor Winn (2018). Just published, it was found in a small book shop on a rest day in Padstow, Cornwall, and despite its weight was a treasured companion for the rest of the walk. The Times calls it one of the best books of 2018 and it has been nominated for prestigious awards.



Fig. 2. Headlands and cliffs of north Devon, on the Bristol Channel.



Fig. 3. A view along the Cornish coast – an easy section on a misty day.

stayed high above the cliffs, offering flatter walking and with clearer sunny weather, superb long views of the distant coastline yet to come (Fig. 3). As last year, I carried the bare essentials (~10kg) and mostly stayed in small inns, hotels and farm houses (19 in total), and on one occasion, a magnificent 19th century manor house (Fig. 4). This ensured a good night's rest and hearty dinners and breakfasts. Oranges, bananas, energy bars, and water fortified with key ions kept me going during each day.

This part of the English coastline (TRDAL 1987) is remarkable for its highly varied geology from several eras, many long sandy beaches and huge sand dunes (Fig. 5), two large estuaries, and countless headlands and



Fig. 4. The first night on the path, at a manor house in Porlock, Somerset.



Fig. 6. Picturesque Port Isaac, Cornwall, site of the Doc Martin TV series.



Fig. 7. Sharing a moment with an inquisitive free-range pony.

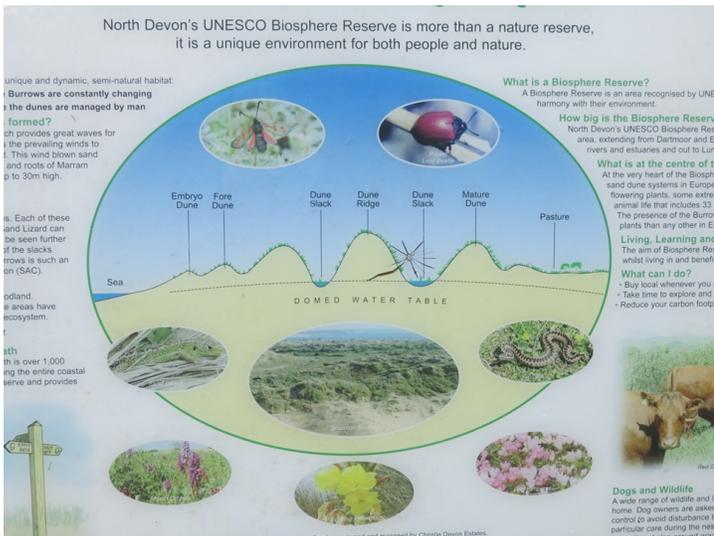


Fig. 5. The sand dunes of coastal Devon – a biosphere reserve but not fun to walk through.

streams. I passed through or stayed at many quaint villages such as Combe Martin (home of the celebrated scientist James Lovelock and the longest village in England), Clovelly (famous locally for its steepness), and Port Isaac (on a picturesque fishing cove and site of the

TV series, Doc Martin) (Fig. 6). Much of the coastline beyond the towns is protected land, through Nature England and the National Trust. However, in Cornwall there are desolate areas where the top land and cliffs show signs of industrial mining (tin, lead) from past eras. Where the path crosses through farmland, there are permissive paths and many stiles and gates between the fields. On farms, I often had to maneuver around sheep, cattle, and some times horses. Friendly ponies were often seen (Fig. 7). Being early spring, few flowers were in bloom and the vegetation was just greening up, in contrast with the year before. Highlights included seeing grey seals (Fig. 8), miles of heathlands, big wild seas (Fig. 9), views of the mysterious Lundy Island known for its seabirds, and numerous conservation areas. Also remarkable were the number of beaches popular for surfing (Fig. 10)



Fig. 8. Grey seals at Mutton Cove, near Hayle, Cornwall.



Fig. 9. Big wild seas and cliffs at Crackington Haven, Cornwall.

In England, I am always struck by the friendliness and kindness of strangers, on the path and in the inns. Many parts of the coast path are accessible for day walks. Day walkers would offer me coffee and replenish my water flasks, intrigued by my quest to explore the beautiful, wild and protected British coastline. In a pub in Combe Martin, Devon, I chatted during dinner with a gentleman who had relatives on Brier Island, NS! This year, I made some new friends enroute – Matt and Kat (from Cheshire), Stan (a retired business man from Virginia, who was doing the entire path at once), and two intrepid ladies from Ottawa and PEI who were thru-walking parts of the Cornish path. I walked with them over several days, thankful for the company and additional safety. Two good friends from Norfolk, whom I had met last year, kindly came south and joined me for three days between the fishing towns of Bude and Padstow, Cornwall.

After two weeks, a special treat was staying with cousins on a farm near Padstow for a weekend of rest, plenti-



Fig. 10. Surfers on a beach east of St. Agnes Head, Cornwall.

ful excellent food and a laundry! After that, I was ready for the five day walk to St. Ives, where I met cousin Clive and two friends from Plymouth. After some rest there, Clive and I walked some more of the coast path near Penzance. Though alone on a large part of this walk, I was always grateful for the sections done with company. Unlike the legendary John Muir, a true solitary walker, and others like him, I covet companionship when offered. I returned from this walk with many happy memories, photos galore and a full diary for articles and talks.

In April this year, I am heading back to England, the adventure being day hiking in the Lake District in advance of walking the Wainwright Coast to Coast Path, from St. Bees on the Irish Sea to Robin Hood's Bay on the North Sea. Wish me luck and good weather as I follow the mantras of “wander often, wonder always” (source unknown) and “nothing ventured, nothing won” (Edmund Hillary), while wandering from sea to sea.

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Photo credits: Fig. 7 - Graham Cogman, Norfolk. All the others—the author.

Fight4Life Charity is formed for First Responders

by Nicole Munroe, the Chronicle Herald

This article has been deleted from the website version of the *Voicepipe* to meet constraints on internet publishing imposed by the Chronicle Herald. The article can be found on the Chronicle Herald website at:

<https://www.thechronicleherald.ca/news/local/after-tragedy-mom-starts-charity-to-prevent-first-responder-suicides-268560/>

BIO Today

East Coast Ocean Forecasts¹

The ocean forecast is a research project of Ocean Sciences Division (OSD) to demonstrate the use of ocean models developed at OSD for short-range ocean forecasts. The forecasts displayed at the website <http://www.bio.gc.ca/science/research-recherche/ocean/forecasts-previsions/index-en.php> are generated from four forecast models: the Canadian East Coast Ocean Model (CECOM), the WAVEWATCH III wave model, the data-assimilative tide model of the northwest Atlantic and the Canadian Arctic Archipelago tidal model. The forecasts include surface drift trajectories, sea-ice concentration, water temperature, surface waves and water level. All forecasts start at 0000 and 1200 UTC. The maximum forecast period is 48 hours.

Ocean and sea-ice model

The ocean model used in the forecasting system is Canadian East Coast Ocean Model (CECOM), which is based on the Princeton Ocean Model (POM) and a multi-category sea-ice model. Sea-ice is coupled to POM thermodynamically. Sea surface temperature data are assimilated into the model using a flux correction method. Sea-ice concentration data are assimilated into the model using an insertion-nudging method. Monthly temperature and salinity climatologies are used as initial and boundary conditions of the model. The forcing fields are computed from three-hourly forecast meteorological parameters. Sea surface elevation computed from two tide models is superimposed on POM output to give the water level. Surface drift trajectories are computed from total surface current fields, which are the sum of surface currents from POM, Stokes drifts from the surface waves model, and tidal currents from the tide models.

Surface waves model

WAVEWATCH III is a third generation wave model developed at NOAA/NCEP in the spirit of the WAM model. However, WAVEWATCH III differs from its predecessors in many important points such as the governing equations, the model structure, the numerical methods and the physical parameterizations. It solves the spectral action density balance equation for wave-number-direction spectra. The parameterizations of physical processes included in the model, such as energy input by the wind, wave dissipation and nonlinear wave-wave interactions, do not address conditions where the waves are strongly depth-limited. Thus, the model can generally be applied on spatial scales (grid increments)

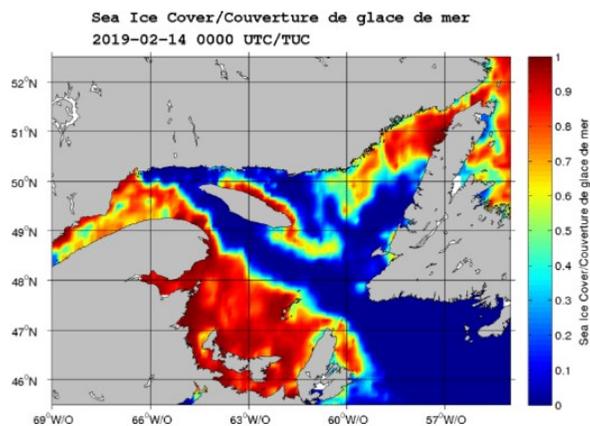
larger than 10 km, and outside the surf zone.

Ocean tide models

Tidal elevation and tidal currents are computed from the tidal constants from two models. The three-dimensional data-assimilative tide model for the northwest Atlantic covers Canadian east coast waters up to Davis Strait with 8 tidal constituents (M2, S2, N2, K2, K1, O1, P1, Q1). The model is based on POM. Multi-mission altimetric tidal data are assimilated into the model using a simple nudging scheme. The results are validated against independent in situ observations. The Canadian Arctic Archipelago tide model covers the Canadian Arctic Archipelago and Baffin Bay with 5 tidal constituents (M2, S2, N2, K1, O1).

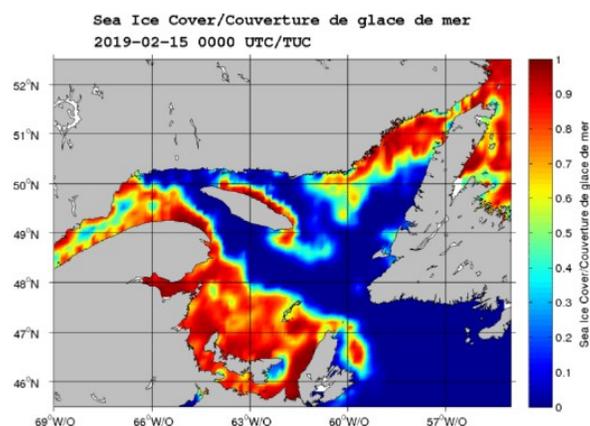
6:33:29 PM 13/02/2019

Sea Ice Concentration : 00z : Gulf of St. Lawrence : hour 024



6:35:45 PM 13/02/2019

Sea Ice Concentration : 00z : Gulf of St. Lawrence : hour 048



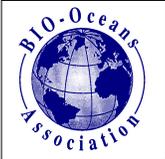
Two sea ice cover concentration forecasts for the Gulf of St. Lawrence at 24 hours (top) and 48 hours (bottom) accessed on 13 February 2019.

¹ Extracted from www.bio.gc.ca/science/ocean/research-recherche/forecasts-precisions/index-en.php

Editor's Keyboard: Firstly I want to apologize for my oversight in not including the death of Jim Stewart in the July newsletter. As mentioned in the President's message, an article is being published on Jim Stewart in the next issue of the NSIS Journal.

I want to thank Peter Wells for providing another story on one of his walking treks. He always tells a great story whether it is a coastal walk or a walk among the mountains of ancient seas. I chose the BIO Today topic of ocean forecasting after hearing a presentation by a

BIO scientist in Saint John on the research she was conducting on producing operational ocean forecasts. The importance of this work was emphasized to me later in conversation with a meteorologist recently transferred from Saskatchewan who commented to me on the challenges of doing reliable weather forecasting in Nova Scotia when it is surrounded by the ocean. I also wanted to bring to the members' attention the upcoming **UN Decade for Ocean Science for Sustainable Development** and encourage them to watch for activities leading up to 2021 that may be of interest. *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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Unless otherwise credited all photographs were taken by Andy Sherin



2021-2030 United Nations Decade of Ocean Science for Sustainable Development

What is the UN Decade of Ocean Science?

The United Nations Decade of Ocean Science for Sustainable Development (2021-2030) is an initiative launched by the UN in December 2017. It seeks to draw attention to the importance of ocean science data and information in the management decisions that will help the world make progress to the 2030 Sustainable Development Goals (SDGs), particularly Goal 14 – the ocean sustainability goal. The Decade will start in 2021, and planning for the decade will occur in the 2018-2020 time period. The IOC has been tasked by the UN General Assembly to work with all interested stakeholders to design a “Decade of Ocean Science” that will help us to deliver the ocean we need for the future we want.

What is the aim of the Decade of Ocean Science?

The objective of the Decade is to strengthen the international cooperation needed to develop the scientific research and innovative technologies that can connect ocean science with the needs of society, and to support countries in achieving the 2030 Agenda for Sustainable Development. The Decade will require the engagement of many different stakeholders to create new ideas, solutions, partnerships and applications, these include: scientists, governments, academics, policy makers, business, industry and civil society.

What will the Ocean Decade focus on as Research & Development Priority Areas?

The Decade will provide a framework for achieving a number of high level outcomes, clustered around:

- a comprehensive digital atlas of the world
- a comprehensive ocean observing system for all major basins

- a quantitative understanding of ocean ecosystems and their functioning as the basis for their management and adaptation
- a data and information portal supporting the decade outcomes
- an integrated multi-hazard warning system
- an ocean in earth-system observation, research and prediction, supported by social and human sciences and economic valuation
- capacity building and accelerated technology transfer, training and education, and ocean literacy

How will the Decade of Ocean Science achieve its goals?

The Decade is embracing a participative process so that scientists, policy makers, managers, and service users can work together to ensure that ocean science delivers greater benefits for both the ocean ecosystem and for society. A two way process is envisioned (top down and bottom-up): the objectives and outcomes will be agreed globally and every group and region of the world will support them. The bottom-up process will be established so as to allow for the regional or even local definition of these outcomes and objectives, with the formulation of scientific products, activities and partnerships that could be proposed in the context of the Decade.

Overall the Decade will mobilize resources towards:

TRANSFORMING - knowledge systems to support sustainable development

BOLSTERING - ocean observing and data systems

MEASURING - cumulative impacts for effective solutions

DELIVERING - best available knowledge to decision-makers

REDUCING - vulnerability to ocean and coastal hazards

ACCELERATING - transfer of marine technology, training and education

For more information on the UN Decade for Ocean Science you can visit: <https://en.unesco.org/ocean-decade>

Originally published in the newsletter of the International Coastal Atlas Network (<https://ican.iode.org>) Vol. 8 No. 1 January 2019

**2018 A G Huntsman Award Winner
Terence Hughes, James Cook University, Australia**



Dr. Kenneth Frank (right), Royal Society of Canada, presents the A G Huntsman medal to Professor Terence Hughes.



Photo: above; from the left, Dr. Kenneth Frank, Royal Society of Canada, Professor Terence Hughes, James Cook University, His Honour, The Honourable Arthur J. LeBlanc, ONS, QC, Lieutenant Governor of Nova Scotia; Her Honour, Mrs. Patsy LeBlanc; Dr. William Li, A.G. Huntsman Foundation and Dr. Aaron MacNeil, Dalhousie University.

Photo credits: Kelly Bentham

The 2018 A.G. Huntsman Award was presented to Professor Terence P. Hughes of James Cook University, Australia on 20 November 2018, in recognition of his outstanding research leadership in the field of coral reef ecology and for his work to raise the profile of coral reefs and their vulnerability to unchecked climate change.



A side by side comparison of a healthy portion of the Great Barrier Reef (left), compared to a bleached portion (right). As climate change warms ocean temperatures, coral bleaching is reaching epidemic levels. Left photo by Gary Bell / Oceanwideimages.com. Right photo by Greenpeace / Roger Grace. <https://www.greenpeace.org/usa/whats-killing-coral-reefs-and-how-can-we-stop-it/>