

The end of an era at the Huntsman

It is with great sadness that the new Fundy Discovery Aquarium will open without the presence of the Huntsman Marine Science Centre's founder, Dr. John Anderson.

Dr. Anderson—university president, marine research director, visionary conservationist of the North Atlantic Salmon, dashing ski instructor and proud husband, father, grandfather and great grandfather—died Thursday, March 24, 2011 at home in St. Andrews. He was 84 years old.

Embracing the philosophy that people should always do the type of work and learning that they like to do, Dr. Anderson again and again pursued new challenges, from being a high school drop out, to research scientist, university professor, and president of one of the oldest public universities in North America, the University of New Brunswick.

A native of Toronto, Dr. Anderson was instrumental in all three of the major research and conservation institutions in St. Andrews N.B., serving as Director of the Biological Station, one of the Canada's top marine biology research facilities; co-founder of the Huntsman Marine Science Centre; and the Atlantic Salmon Federation's vice president of operations.

John completed his BSc in Forestry at the University of Toronto in 1951 and, in pursuing his doctorate, diversified his academic interest from forestry to animal physiology. In 1958, this won him an appointment as an assistant professor of biology at UNB, and then an associate professorship at Carleton University in 1963. Recruited in 1967 to be Director of the Biological Station in St. Andrews, Dr. Anderson launched a period of expansion and outreach for the facility.

He was determined to open up the research work of the marine scientists so the public could better understand its value for the country. A key method in this effort was his commissioning of the film *Down to the Sea*, by director Giles Walker, revealing the challenges and benefits of ocean research at the Station.

Dr. Anderson made his mark with superiors in Ottawa, and in 1972 he became Director General in charge of all the nation's

research facilities for the Department of Fisheries.

Within a year, though, he felt the pull back to New Brunswick and academia and in 1973 accepted the presidency of the University of New Brunswick.

Dr. Anderson expanded the university's research capacity and encouraged new programs in aquaculture and marine biology. His tenure

saw the opening of the Aitken Centre and Integrated University Complex in Fredericton and the Athletic Centre at the University of New Brunswick in Saint John (UNBSJ). Dr. Anderson presided over the first convocation at the UNBSJ campus.

Dr. John McLaughlin, president of UNB three decades after Dr. Anderson, observed in a 2010 tribute: "...It was Dr. Anderson who set out the vision of a one-university, two-campus institution – a powerful, integrating concept..."

Following his presidency, in recognition of his contributions to academia, John received honorary doctorate degrees from various universities, adding a collection of additional letters after his name.

During his time with the Biological Station and with the other national Department of Fisheries research facilities, Dr. Anderson pursued connections between the universities and marine research.

The Huntsman Marine Laboratory, as it was then known, was the essential vehicle, fostering the participation of over 35,000 students and professors over 40 years. Particularly attractive to Dr. Anderson was the fact that all 300 Grade 6 students in Charlotte County participate in a two-day program at the Huntsman, learning about the species that inhabit the intertidal zone.

A growing passion for Dr. Anderson was the Atlantic Salmon, its fate in the frigid waters of the North Atlantic, and its declining return rates to many eastern rivers.

In conserving the Atlantic salmon, Dr. Anderson forged closer ties among several players who had not always seen eye to eye: the finfish aquaculture growers, the research community and the salmon anglers on both sides of the US-Canada border. Fittingly, the title of the book he authored in this period was *The Salmon Connection*, published in 2007.

In honour of Dr. Anderson, it has been determined that the first gallery in the new Fundy Discovery Aquarium will be named The Dr. John Anderson Gallery.

His contributions to science and the Huntsman will certainly be missed, but he will not be forgotten.



Dr. John Anderson, 1926-2011.



Dr. John Anderson speaks at the opening of the Huntsman Marine Laboratory in 1969.

Genetics program funding announced

On March 14, the Atlantic Canada Opportunities Agency (ACOA) announced the results of the latest Atlantic Innovation Fund (AIF) competition. One of the successful projects was a genetics development program for Atlantic salmon that will be based at the Huntsman. The \$7.8 million project, partners the Huntsman with Admiral Fish Farms Ltd. (Grand Manan), Gray Aqua Farms Ltd. (Northampton), Northern Harvest Sea Farms Ltd (Letang), and others.

The project will develop an elite Atlantic salmon breeding program to produce salmon with better growth rates, improved fillet yield, and natural resistance to disease. The five-year project will be co-located in New Brunswick and Newfoundland. The ACOA funding is part of a \$15.9 million investment in New Brunswick through the Atlantic Innovation Fund (AIF).

Seven projects in New Brunswick are included in the AIF funding announcements, which total more than \$61 million for the Atlantic region.

Making the announcement, the Honourable Keith Ashfield, Minister of National Revenue, Minister of ACOA and Minister for the Atlantic Gateway, said, "Supporting science and technology is key to Canada's future economic growth. Our government is committed to helping businesses and universities create and maintain research jobs and attract and retain world-leading research talent, which will lead to discoveries that improve our productivity, competitiveness and overall quality of life."



With the Grade 6 program over for another school year, high schools, including Royal West, from Quebec, above, have started to arrive at the Huntsman for marine biology courses.

At the Huntsman

Currently studying or undertaking research at the Huntsman are:

- Dr. Mick Burt, University of New Brunswick graduate students' gadology parasitology studies;
- Northern Harvest Sea Farms—salmon broodstock holding;
- Dr. Keng Pee Ang (Cooke Aquaculture) - sea lice research;
- The Huntsman's Amber Garber, working on sea lice research;
- Northeast Nutrition—ongoing feed trial research;
- Cooke Aquaculture/Genome Atlantic—cod broodstock holding

Visiting Fellowships at the Huntsman

Applications are invited for Visiting Fellowships at the Huntsman Marine Science Centre.

The goal of this program is to bring scientists to St. Andrews to take advantage of collaborative research opportunities in the local community. Awarded funds must be spent at the Huntsman.

Applications should include a CV, brief outline of proposed research (including names of local collaborators) and budget. The maximum cash award will be \$3,000, but may be increased through reductions in billable on-site expenses.

For more information, or to apply, contact the vice-chair of the research committee, Dr. Tillmann Benfey, c/o the Huntsman, at huntsman@huntsmanmarine.ca

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Huntsman Marine Science Centre
1 Lower Campus Road
St. Andrews-by-the-Sea, NB E5B 2L7
Canada
506.529.1200
Fax: 506.529.1212
huntsman@huntsmanmarine.ca

www.huntsmanmarine.ca

First visiting fellowship may yield new species

The Huntsman has hosted its first visiting fellow, Dr. Thomas J. Trott, Associate Professor of Biology at Suffolk University, Boston, Mass.

The Visiting Fellowship Program is co-sponsored by Huntsman and DFO's St. Andrews Biological Station (SABS) to promote collaborative research and attract visiting researchers to the area.

Dr. Trott's project on the Marine Fauna of Rocky Shores and Sea Grass Meadows of Senegal, West Africa, is an extension of work he and Dr. Gerhard Pohle of the Huntsman's Atlantic Reference Centre (ARC) conducted in Senegal three years ago. Their field study was funded by the Census of Marine Life NaGISA program and generous donations from Suffolk University. The university has a satellite campus in Dakar, the capital of Senegal. Its strategic location at the shores of the East Atlantic made for an ideal home base to launch field expeditions.

Dr. Trott's research at the ARC involves the lab portion of the NaGISA project that requires identifying and counting the animals that were collected.

"This is the less glamorous part of the work, far removed from the exotic and steaming shore of Senegal," says Dr. Trott, "but without this phase of work, the field study would be meaningless."

Far removed from an African summer indeed he is, since during Dr. Trott's visits lasting January through March, he experienced some of St. Andrew's worst winter weather. "On my first Monday morning, blowing snow and -20F temperatures welcomed me." He is no stranger to winter weather, however, since he lives in Portland, Maine, and has worked during winter months on Cobscook Bay.

Identifying animals from West Africa is much harder than doing the same here, as very few scientists have worked in that part of the world. The marine fauna and flora of the west coast of Africa represents a major gap in our knowledge of biodiversity,

particularly invertebrates, including animals such as sea stars, crabs and clams. Compounding this is the scarcity of studies: much of the work done appears in 19th century museum publications.

"These are difficult to find and request copies of," says Dr. Trott, "but are essential to identifying animals since many were first described with text and drawings in such papers."

The SABS library has been most helpful by successfully retrieving books and references for Dr. Trott's work.

The location of the field work begs the questions: 'Why West Africa?' ...'Why Senegal?'

To start, the mission of NaGISA was to inventory shorelines around the world to assess their ecology on a global scale. West Africa, specifically Senegal, was a contribution from the Atlantic Ocean NaGISA office at Huntsman to the Census initiative (see InDepth 8, summer 2008).

Continued on page 5



Dr. Thomas Trott, left, Associate Professor at Suffolk University, Mass., in the lab with the Huntsman's Dr. Gerhard Pohle.

Around the Huntsman...



Left: Construction of the tank interiors for the new aquarium is being undertaken locally by John Anderson and his team, along with Huntsman staff member Josh Nunn. John and Josh learned how to make the interiors from Eli Fishman, who creates the displays at the Atlantis Aquarium on Long Island, NY. Above: the creation of barnacles.



The new tidal display tank is hoisted into place at the Fundy Discovery Aquarium.



Above: The new Fundy Discovery Aquarium under construction. Now that the building itself is in place, the view seems to change on an almost daily basis as the summer 2011 opening looms.



Left: There are changes to the upper campus too, with the annex alongside Anderson House nearing completion.

One of the isopod species from the Senegalese samples.



Possible new species discovered

Continued from page 3

There is more to the selection of this particular area of West Africa, however. The biogeography of this shoreline is influenced by convergence of two major ocean currents, the colder North Equatorial and warmer South Equatorial currents. The Senegalese coast is situated in this area and the boundary between these biogeographic regions is often drawn at the latitude of Dakar, Senegal. This setting results in a complex biodiversity.

The potential for discovery among the vials of preserved animals is high, and it is possible four new species have been found.

“All of these mysteries are small animals of two kinds commonly known as beach hoppers and roly-polleys” Dr. Trott says smiling, “but my colleagues call them amphipods and isopods.”

The roly-polleys, also named pill bugs, are familiar as back yard critters and seem unusual to think of as marine animals.

However, most of the species in this group of crustaceans live in salt water. Their diversity in form, numbers, and types reaches a peak in the tropics. Most are small, but the deep-sea *Bathynomus giganteus* found in the Atlantic can grow up to a foot long. Imagine finding that in your backyard!

Determining if the specimens are new species will need further work, some perhaps involving attempts to match their molecular fingerprint to what is already known. DNA barcoding, similar to how groceries are marked, is a technique that is becoming an important instrument in the taxonomist’s tool kit. Every species has its own unique barcode, like a fingerprint, based on their molecular biology. Libraries of barcodes are being generated with the hope that much of the ocean’s biodiversity can be measured more quickly than with traditional methods, before species become extinct.

When asked if bar-coding will replace traditional morphological taxonomy, Dr. Trott believes not entirely.

“The reality is that very few students are trained to be experts in traditional taxonomy and (we) are a breed on the brink of extinction as are many of the species being studied. Barcoding is attractive since it fills this ever widening gap, but the information gained by it does not include what an animal looks like and hence what it may eat and how it may reproduce and function in the ecosystem. Just like at the grocery checkout, only a code is registered, not what the item looks and tastes like.”

For such a brief expedition, the pay-off has been great. Not only

have potentially new species been uncovered, but also the known geographic ranges of most have been extended. Many of

the animals found were known only from South Africa, the Iberian Peninsula or the Cape Verde Islands.

By knowing the range of a species, the potential effects of climate change can be monitored more accurately since, as oceans warm or cool, the geographic ranges of animals and plants will shift to coincide.

Changes in climate can be particularly large along the coasts, since the effects from both the ocean and the land impinge upon the sea shore. If the ranges of species are not accurately mapped, knowing if the appearance of a species in a location never before recorded is the effect of climate change cannot be certain.

Invasive species, animals and plants that become established through the accidental introduction via ocean-going vessels are changing ecosystems on a global scale and thus are of major importance. In fact, one of the potentially new species may be a variation of an invasive species known to have spread across many areas of the globe.

The information gathered from identifying and counting animals by Dr. Trott will become part of the Ocean Biogeographic Information System (OBIS). This is a global, electronic ‘file cabinet’ of recording information about marine plants and animals. Anyone with a computer can access the information (www.iobis.org/mapper/). The Census of Marine Life funded OBIS and its development though the last decade.

Dr. Trott concludes: “My experience at the ARC has been rewarding on many different levels. It is the perfect setting to do this type of work. Not only is it equipped with the tools, instruments, and much needed library, having the expertise of my colleague and friend Dr. Pohle nearby has been invaluable. I can’t count the number of times a second pair of eyes helped to decide the identification of an animal. Science aside, the comradeship of the lab’s crew made the work extremely fun and enjoyable. I really felt at home here. I have enough stories and memories to last a lifetime, including a winter experience at the Huntsman!”

A rare find for Grade 6 program

Usually, Grade 6 students visiting the Huntsman Marine Science Centre for the Ocean Discovery program – a part of the science curriculum – go to the beach and discover sea stars, crabs, periwinkles and other local marine life.

Every once in a while, there's unusual beach glass and, of course, litter, but for one Blacks Harbour Elementary School student, there was a find of a different nature on the beach at the science centre. The student located a small, blue piece of plastic with some information inscribed on it.

It was a tag, less than an inch long, with an address to return the tag to, and the offer of a reward. The excited and intrigued student handed the tag to Laura Barrett, Education Assistant at the Huntsman, who was leading the beach study. And then the investigation to the origin of the tag began.

A few initial phone calls drew a blank, and the PO Box number listed on the tag proved to no longer be in existence when the tag was returned by the post office to the Huntsman as undeliverable. Not giving up, Laura took the tag to Jim Cornall, who also works at the Huntsman, who thought that the typeface of the inscription looked to be from the late 1970s or early 1980s. But that didn't help much, either.

Jim took a photo of the tag, and sent it along to Lou Van Guelpen, Curator of Fishes and Collections Manager at the Atlantic Reference Centre. While Lou couldn't identify the tag either, he sent the photo to the St. Andrews Biological Station, and through the wonder of email, it circulated the entire staff.

For a few days, the trail went cold, until Derek Knox, Fisheries Technician at the Biological Station, emailed to suggest the tag

Below: The Grade 6 class from Blacks Harbour Elementary School found a tag, shown right, on the beach while participating in the Huntsman's Ocean Discovery program.



might not be from the station, but from the Atlantic Salmon Federation, located in Chamcook, just outside of St. Andrews. Laura then got in touch with the suggested contact, Jonathan Carr, who confirmed that the tag had, indeed, originated from the Atlantic Salmon Federation, and was from a program that originated in the late 1970s. However, with the tagging program long since defunct, it meant that the reward was no longer available. But the Huntsman stepped in to give the student a small prize package – including the 30-plus-year-old tag – because of the interest the discovery had created.

Rebecca Goreham, from the Atlantic Reference Centre, looks at a hermit crab specimen as a part of a study being undertaken for the University of Alaska Fairbanks. A variety of sizes of several different crabs, and larvae, are being identified for the study.



News in brief...

- Dr. Gerhard Pohle was the keynote speaker, making a presentation on the Census of Marine Life and NaGISA to the Fisheries and Scientists Research Society in Truro, NS.
- A photo from the Huntsman was used in a provincial Grade 9 text book, *Vivre entre terre et mer*.
- Lou Van Guelpen and Pat Fitzgerald were judges at the District 10 Science Fair, which was held in St. Andrews.
- The New Brunswick Marine Bioscience Workshop, which took place at the Fairmont Algonquin, included tours of the ARC and the new aquarium site.
- Results from the St. Andrews Bird Banding Station, located at the Huntsman and operated by Tracey Dean, Director of
- Education, were published in *North American Bird Bander*.
- The Huntsman was represented at a trade show booth promoting Charlotte County as a tourist destination at the Civic Center in Bangor.
- Muriel Jarvis attended the Economic Development Forum, as well as a tourism partnership meeting.