AQUANEWS

30th Anniversary of the AquaNews

Volume 30, No. 9 *September 2006*

Fossil Called Missing Link From Sea to Land Animals

By JOHN NOBLE WILFORD
New York Times

Scientists have discovered fossils of a 375-million-year-old fish, a large scaly creature not seen before, that they say is a long-sought missing link in the evolution of some fishes from water to a life walking on four limbs on land.

In two reports today in the journal Nature, a team of scientists led by Neil H. Shubin of the University of Chicago say they have uncovered several well-preserved skeletons of the fossil fish in sediments of former streambeds in the Canadian Arctic, 600 miles from the North Pole.

The skeletons have the fins, scales and other attributes of a giant fish, four to nine feet long. But on closer examination, the scientists found telling anatomical traits of a transitional creature, a fish that is still a fish but has changes that anticipate the emergence of land animals — and is thus a predecessor of amphibians, reptiles and dinosaurs, mammals and eventually humans. In the fishes' forward fins, the scientists found evidence of limbs in the making. There are the beginnings of digits, proto-wrists, elbows and shoulders. The fish also had a flat skull resembling a crocodile's, a neck, ribs and other parts that were similar to four-legged land animals known as tetrapods.

Other scientists said that in addition to confirming elements of a major transition in evolution, the fossils were a powerful rebuttal to religious creationists, who have long argued that the absence of such transitional creatures are a serious weakness in Darwin's theory.

The discovery team called the fossils the most compelling examples yet of an animal that was at the cusp of the fish-tetrapod transition. The fish has been named Tiktaalik roseae, at the suggestion of elders of Canada's Nunavut Territory. Tiktaalik (pronounced tic-TAH-lick) means "large shallow water fish."

"The origin of limbs," Dr. Shubin's team wrote, "probably involved the elaboration and proliferation of features already present in the fins of fish such as Tiktaalik." In an interview, Dr. Shubin, an evolutionary biologist, let himself go. "It's a really amazing, remarkable intermediate fossil," he said. "It's like, holy cow."

Two other paleontologists, commenting on the find in a separate article in the journal, said that a few other transitional fish had been previously discovered from approximately the same Late Devonian time period, 385 million to 359 million years ago. But Tiktaalik is so clearly an intermediate "link between fishes and land vertebrates," they said, that it "might in time become as much an evolutionary icon as the proto-bird Archaeopteryx," which bridged the gap between reptiles (probably dinosaurs) and today's birds.

The writers, Erik Ahlberg of Uppsala University in Sweden and Jennifer A. Clack of the University of Cambridge in England, are often viewed as rivals to Dr. Shubin's team in the search for intermediate species in the evolution from fish to the first animals to colonize land.

H. Richard Lane, director of paleobiology at the National Science Foundation, said in a statement, "These exciting discoveries are providing fossil 'Rosetta Stones' for a deeper

(Continued on page 3)

AquaNews

The official publication of the Rockland Aquanauts Organization. Written contributions & photographs are always welcomed & encouraged. Submit materials for publication by the 19th of the month

Contributing Editors

Peter Bein
Allan Block
Melissa Bogen
Max Estroff
Paul Galeazzi, Jr
Steve Improte
Les Parker

Newsletter Coordinator

Paul A. Galeazzi

Change of Address

To change mailing address, phone number or e-mail, please notify:
info@rocklandaquanauts.org

Next Meeting: Tuesday September 12th, 2006

7:00-9:30 pm at the **Palisades Mall**
Level 4, East End
The Besso Community Room
West Nyack, NY

This months meeting will start at 7:00 PM. The Topic is to be announced later

Directions:
The Palisades Mall is located on the New York Thruway (I87 and I287 at exit 12 West Nyack, Route 303). You can't miss it.
The Besso Community Meeting Room is located on the 4th level (top floor) at the east end of the Mall, directly above Filene's. The Besso Room - and other meeting rooms - are in a hallway leading to the Ice Skating Rink (also above Filene's).
The best and easiest way to get into the mall is to drive into the underground parking area. Proceed to the east end of the parking garage to parking areas "M" or "N" near the "East Mall Entrance". Take the escalators in the East Mall Entrance all the way to level 4. When you come off the escalator, turn around and you are looking right at the Ice Rink.

Members of the Rockland Aquanauts Organization Inc.
We need articles for our newsletter! Any help is appreciated.
Contact our webmaster webmaster@rocklandaquanauts.org

Rockland Aquanauts Organization Inc.
Mission Statement:

To provide, promote, and advance environmental protection, care, and voluntary clean-up of waterways by any and all lawful means; to promote the importance and care in every manner possible by environmental awareness and otherwise; to purchase, print, publish, and circulate literature to promote the importance and care of the waterways and the work of the Corporation. To perform all acts the Corporation may deem appropriate or advisable in such operation; to establish, provide, and voluntary clean-up waterways, to encourage, support and subsidize the cleaning and protection from pollution.

Fossil Called Missing Link From Sea to Land Animals

(continued from page 1)

understanding of this evolutionary milestone — fish to land-roaming tetrapods."

The science foundation and the National Geographic Society were among the financial supporters of the research. Besides Dr. Shubin, the principal discoverers were Edward B. Daeschler of the Academy of Natural Sciences in Philadelphia and Farish A. Jenkins Jr., a Harvard evolutionary biologist. Casts of the fossils will be on view at the Science Museum of London.

Michael J. Novacek, a paleontologist at the American Museum of Natural History in Manhattan, who was not involved in the research, said: "Based on what we already know, we have a very strong reason to think tetrapods evolved from lineages of fishes. This may be a critical phase in that transition that we haven't had before. A good fossil cuts through a lot of scientific argument."

Dr. Shubin's team played down the fossil's significance in the raging debate over Darwinian theory, which is opposed mainly by some conservative Christians in this country, but other scientists were not so reticent. They said this should undercut the argument that there is no evidence in the fossil record of one kind of creature becoming another kind.

One creationist site on the Web (emporium.turnpike.net/C/cs /evid1.htm) declares that "there are no transitional forms," adding: "For example, not a single fossil with part fins, part feet has been found. And this is true between every major plant and animal kind."

Dr. Novacek responded: "We've got Archaeopteryx, an early whale that lived on land, and now this animal showing the transition from fish to tetrapod. What more do we need from the fossil record to show that the creationists are flatly wrong?"

Duane T. Gish, a retired official of the Institute for Creation Research in San Diego, said, "This alleged transitional fish will have to be evaluated carefully." But he added that he still found evolution "questionable because paleontologists have yet to discover any transitional fossils between complex invertebrates and fish, and this destroys the whole evolutionary story."

Dr. Shubin and Dr. Daeschler began their search on Ellesmere Island in 1999. They were attracted by a map in a geology textbook showing an abundance of Devonian rocks exposed and relatively easy to explore. At that time, the land had a warm climate: it was part of a supercontinent straddling the Equator.

It was not until July 2004, Dr. Shubin said, that "we hit the jackpot." They found several of the fishes in a quarry, their skeletons largely intact and in three dimensions. The large skull had the sharp teeth of a predator. It was attached to a neck, which allowed the fish the unfishlike ability to swivel its head.

If the animal spent any time out of water, said Dr. Jenkins, of Harvard, it needed a true neck that allowed the head to move independently on the body.

Embedded in the pectoral fins were bones that compare to the upper arm, forearm and primitive parts of the hand of land-living animals. The joints of the fins appeared to be capable of functioning for movement on land, a case of a fish improvising with its evolved anatomy. In all likelihood, the scientists said, Tiktaalik flexed its proto-limbs mainly on the floor of streams and might have pulled itself up on the shore for brief stretches.

In their report, the scientists concluded that Tiktaalik was an intermediate between the fishes Eusthenopteron and Panderichthys, which lived 385 million years ago, and early tetrapods. The known early tetrapods are Acanthostega and Ichthyostega, about 365 million years ago.

Tiktaalik, Dr. Shubin said, is "both fish and tetrapod, which we sometimes call a fishapod."

Shipwreck Trail

www.sanctuaryfriends.org.

A trail of historic shipwrecks is scattered along the treacherous coral reefs and buried in the sandy shallows a few miles off the Florida Keys. These wrecks have many a tale to tell. They can tell us about individuals who came before us, why they were here, and their difficulty in navigating these waters.

There are many reasons these ships lie broken on the bottom, including an inability to accurately determine position, inaccurate charts, lack of navigational aids, unpredictable currents, lack of wind, storms and human error.

The nine sites on the Shipwreck Trail represent three broad periods of Keys maritime history: European Colonial, American and Modern.

One of the goals of the National Marine Sanctuary System is to provide opportunities for people to learn about our maritime heritage. Through the Shipwreck Trail, the Florida Keys National Marine Sanctuary is seeking to make our rich Maritime heritage more visible, and to encourage an appreciation and understanding of these irreplaceable remnants of our past.

The diversity of the sites and locations covered by the Shipwreck Trail provide something of interest for everybody. While teaching about our nation's history and maritime culture, the Trail will also divert diving pressure from the major natural reefs. Not only do historians, biologists, and fishermen seek out these shipwrecks, but so do the fish. Shipwrecks become artificial reefs, providing a special setting for brightly colored tropical fish to perform their nature-choreographed water ballets.

Each of these sites were chosen because of the historic, biologic and aesthetic values. Visitors are asked to help protect them, so that they may be enjoyed by future generations. Remember to control your buoyancy when diving the wrecks, as shipwreck structures may be as fragile as the underwater life they support. Repeated human or anchor contact will hasten site degradation. Removing artifacts or damaging these cultural resources in any way is forbidden by law, and violates the public trust by depriving others of the opportunity to view and appreciate these submerged assets.

For each of the nine Shipwreck Trail positions, there is an underwater site guide available which provides shipwreck and mooring buoy positions, history, and charts, and also identifies underwater life that you may expect to encounter.

Conditions of Shipwreck Trail locales vary from easy shallow dives to deeper dives of 100 feet and more, where swift currents may be present.
Some of the deeper dive sites require mooring to submerged buoys.

Diving and snorkeling charters, underwater site guides and additional information on the condition of each area are available from local dive shops.
For information on becoming a member of SFFK call (305)289-2288 of visit www.sanctuaryfriends.org.

Subject: 9/16 - LIDA Beach Clean-Up

The Annual Long Island Divers Association Beach Clean-Up, in conjunction with the American Littoral Society, will take place at Clark's Beach (Secret Beach) in Greenport on Saturday September 16, 2006, beginning at 9AM and going on for the entire day. Directions to Secret Beach are printed below. Your help and assistance is needed and encouraged.

As you know, The Village of Greenport has determined that it is going to sell the property. LIDA is actively engaged in encouraging the County of Suffolk to be the purchaser and create a Marine Park accessible to divers and other public users. Recently, access to Secret Beach has been severely restricted due to what was reported to be misuse of the Beach over the recent 4th of July holiday. This Beach Clean-Up presents a perfect and unique opportunity for divers to demonstrate to both the Village and the County that we are good, responsible users of the Beach, good neighbors, and that we are deserving of access to the Beach and the hopefully to be created Marine Park.

We have confirmed with the Village that the "chain" will be down for the clean-up and that a dumpster will be available. LIDA will arrange for garbage bags and other necessary supplies. Bringing a pair of gloves for your own use is a good idea, although we will also try to have gloves available as well. A nice dive after the clean-up may well be the Order of the Day, so bring your gear!!!!

Please do all in your power to attend and actively participate in the important event. Please encourage your friends, Dive Clubs, Shops and anyone else to participate. Help us prove that divers DESERVE access to Secret Beach!

Steve Burke
President, LIDA
++
Directions to Clark's Beach(Secret Beach)

Located in Greenport, Clark's Beach can be reached by taking the LIE to the very end, exit 73, which is County Road 58. Take this to route 105, make a left (northbound). This road will end at Sound Avenue. Make a right (eastbound) and continue about 11 miles until you enter the limits of Greenport. The entrance to Secret Beach is just past a motel with a beach that you will see on your left. It is not well marked and looks like a dirt driveway between the bushes on your left hand (north) side. Here's the proverbial "you know you've gone to far" bailout!! If you see a large sign for "Campgrounds" on your right, you went about 100 yards too far. Simply make a u-turn and the entrance is about 100 years to the west of that sign on the north side.
- - - - - - -

Well-Known Divemaster Dies During Rescue After Weekend Dive

Roy Cowan was truly a remarkable man and gave his life yesterday Sunday August 14, 2006 while performing the heroic role of a divemaster and doing what he loved the most…diving and helping others.

The seas of the 'Graveyard of the Atlantic' were running a stiff current and one of the divers was separated from the boat and in distress. Roy who was the head DM for the Diver Down out of Morehead City, NC and had been for over 10 years was in top form noting the diver's problem immediately. In typical Roy form, he was off the deck swimming to assist the diver who was now floating past the drift ball. He successfully got the diver back to the boat but as the crew turned to help him aboard, he had slipped out of site and was floating behind the stern of the boat. Upon retrieving him he was administered CPR for over 2 hours but was not able to be revived.

The Coast Guard was called and he was airvac'd to the local hospital where he was pronounced dead and awaits confirmation of the official cause of death. He is believed to have had a heart attack which would be the only plausible cause as Roy had not dove yet that day and he was a tremendous swimmer, performing many such in water and under water rescues. I know, I was one of those fortunate people who was rescued by this tremendously capable man as he later laughed saying…"never on my watch…no one will be hurt or lost on MY watch." And no one ever was and in true Roy Cowan form, no one ever will. While I believe that he was needed elsewhere, lest he be called from this place prematurely, I am like many others devastated by the loss.

Please include Roy in your prayers and thoughts today as well as his family and friends so that they will find peace in this darkness. And please keep in mind that while we all love this sport and fortunately incidents such as this are rare...we are not immortal and even the best trojan horses can be stopped suddenly...way too suddenly. For more information on this truly remarkable diving professional or to add your own comments regarding the loss of this diving hero please join the community discussion here. And please check in for updates on the "Roy Cowan Memorial Diving Fund" being created to support the diving causes he loved the most. – Kamala Shadduck, SingleDivers.com

Proposed Dive schedule
For
Hessian Lake, Lake Sebago, Lake Welch

Hessian Lake
Saturday June 3rd 2006 at 9:00 AM
Sunday July 9th 2006 at 9:00 AM
Saturday August 5th 2006 at 9:00 AM
Sunday September 10th 2006 at 9:00 AM
Saturday September 30th at 10:00 AM
Sunday October 8th at 10:00 AM
Saturday October 14th at 10:00 AM

Lake Sebago
Saturday June 24th at 9:00 AM
Sunday July 23rd at 9:00 AM
Saturday August 26th at 9:00 AM

Lake Welch
Sunday September 17th at 10:00 AM

Only the Lake Welch dives are still pending approval, all other dives are confirmed

Rockland Aquanauts
Post Office Box 387
New City, NY
10956

September 2006

Fossil Missing Link, Ship Wreck Trail, Lida Beach Cleanup, Well Known Dive Master Dies

Don't forget

The Next Dive of Hessian Lake is scheduled for:

Sept. 10th 9:00 AM
Sept. 30th 10:00 AM

Lake Welch
Sept. 17th 10:00 AM