



A Quarterly Publication from the Division of Fish and Wildlife, RI Department of Environmental Management

Molluscan Post-script of the Ice Age by Christopher Raithel

Most of Rhode Island's modern landscape was influenced by the last glaciation. About 18,000 years ago, after a long period of global cooling, much of North America was buried under a thick sheet of ice. The ice moved southward about as far as present-day Block Island and then stalled for several millennia. Finally, as the global climate warmed, the glacier retreated, with periods of withdrawal punctuated by occasional re-advances, until most of the continent was again free of ice. During the glacial maximum, the sea level was much lower than it is today, and a broad "coastal plain" of dry land extended out many miles from the present shoreline's position. As the glacier receded, huge amounts of



Worden Pond
Photo: C. Raithel

meltwater flowed to the sea. These flows scoured out river valleys but also deposited beds of finer soils behind impoundments or in deeper basins. Washington County offers ample opportunity to see this glacial legacy. One of the most dramatic glacial features is the Charlestown Recessional moraine, which is the hill that parallels the north side of Rt. 1 in Westerly and Charles-

town. A moraine is a long pile of gravel deposited at the glacial margin. Think of the process as a conveyor belt, with the glacial ice inching forward but the ice margin holding its position. Gravel and stone carried by the ice dropped off and formed a sinuous **Continued on page 2**

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New Biologist Dedicated to RI's Marine Recreational Fisheries by Kevin Smith

The Division of Fish and Wildlife has hired Kevin Smith as a new principal marine biologist. This is the Division's first position dedicated to Rhode Island's marine recreational fisheries. This position, as well as other related recreational programs carried out by the Division, is supported by the U.S. Fish and Wildlife Service's Wildlife and Sport Fish Restoration Program and the new RI saltwater recreational license program.

Marine recreational boating and fishing are an important part of Rhode Island's culture and economy. It is estimated that marine recreational fishing contributes more than \$160 million to Rhode Island's economy and provides over 1,000 recreational fishing-related jobs (Ninigret Partners, 2007).

Continued on page 4



Photo: A. Valliere

THE DIVISION OF FISH AND WILDLIFE MISSION STATEMENT

Our mission is to ensure that the Freshwater, Marine and Wildlife resources of the State of Rhode Island will be conserved and managed for equitable and sustainable use.



Janet Coit, Director
Rhode Island Department of
Environmental Management

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Bureau of Natural Resources

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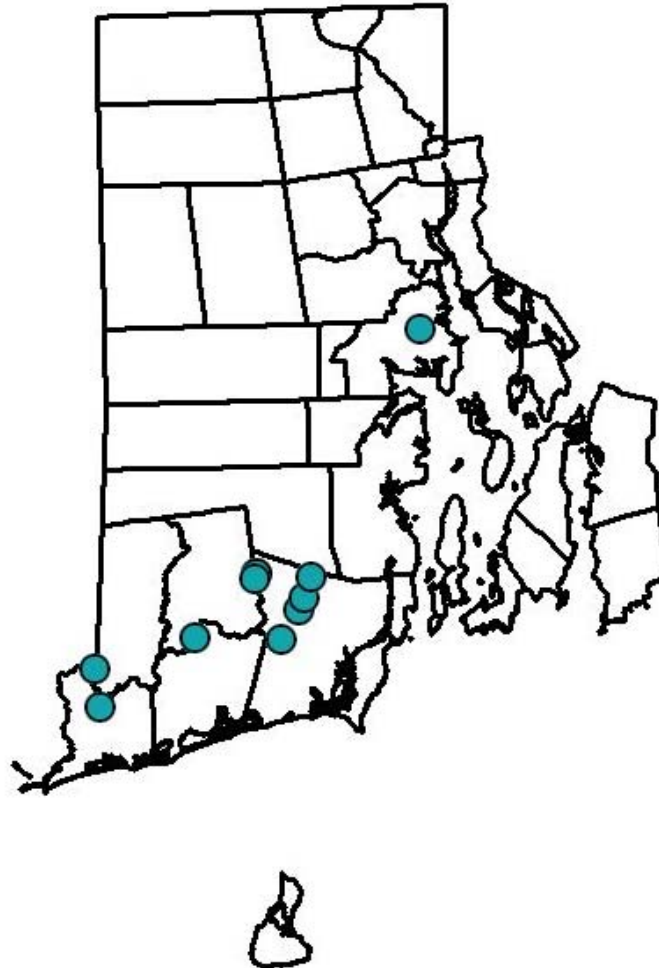
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Molluscan Post-script of the Ice Age

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Distribution of the Eastern Pond Mussel in Rhode Island.



hill along the base of the ice. As the glacier moved northward again, the moraine prevented water from flushing directly into the sea. The ancestral Pawcatuck River therefore flowed westward, where it had to make yet another detour (around a hill in northern Westerly) to finally reach the ocean. The impounding effect of the Charles-town Moraine created post-glacial lakes, whose vestiges are still evident as Indian Cedar Swamp, Chapman Swamp, and Great Swamp. These are among Rhode Island's largest wetlands and still contain some of the state's largest natural lakes, including Chapman, Watchaug, and Worden Ponds, respectively.

Zoogeography is the study of faunal patterns and ancestral dispersal routes. In our area this topic mostly involves

Lampmussel



Molluscan Post-script of the Ice Age *by Christopher Raithel* *cont. from page 2*

how species re-occupied New England after the glacier left. The ancestral condition of the fauna and flora prior to glaciation remains somewhat speculative, but it is generally accepted that there wasn't too much happening beneath a mile-thick sheet of ice. Species were forced to adapt by shifting their ranges southward and biding their time until they could recolonize New England. If you were a species living in southern New Jersey and a whole bunch of unoccupied habitat suddenly (in geological terms) became available, your first thought might be Woo-hoo! But not so fast! To plant your flag in a new area - you have to get there.

As it turns out, certain animals and plants are better at moving around than others. If you are a bird - no problem - reaching a new piece of real estate requires only a few minutes of flight time. But if you are slow afoot or have a restricted habitat (like fish), it's a different story. As freshwater fish and other aquatic organisms began to move up the coast toward New England, they were faced with several obstacles, including the rising levels of salty oceans, inhospitable climate, and marginal or rapidly-changing habitat conditions.

To colonize the post-glacial landscape, such species not only had to navigate within stream systems, but also had to move *between* streams. In the era before plastic buckets and stocking trucks, this was tricky indeed. It was even more difficult for freshwater mussels. Among the most sedentary of organisms as adults, their larvae must latch onto fish to complete their reproductive cycle. For them to colonize, they have to literally ride on fish and hope their hosts bring them to a new area that is suitable. The present distributions of certain freshwater mussels, especially the Eastern Pond Mussel (*Ligumia nasuta*), and the Lampmussel (*Lampsilis radiata*), suggest that the proto-Pawcatuck River system was a major route that aquatic species used to re-occupy Rhode Island.

Several aquatic species, as well as several types of plants, are restricted to or more common in that drainage today. Plants also colonized Worden Pond via the same pathway including Plymouth Gentian and Golden Club, depicted at right. The South Branch of the Pawtuxet River and certain minor coastal drainages also demonstrate this effect. Therefore, rare species like the Eastern Pond Mussel are not only of conservation interest simply because they are rare. They may also allow inferences to be made about past processes which, in turn, help refine wildlife conservation priorities in the 21st century and beyond.

Eastern Pond Mussel valves.



Photo: C. Raithel

Plymouth Gentian.



Photo: M. House

Golden Club.



Photo: I. Stukey

New Marine Recreational Fisheries Biologist *by Kevin Smith*



Photo: A. Valliere

The Division of Fish and Wildlife has long recognized the role and value of recreational fishing in RI, and is now pleased to have the opportunity to intensify its focus through this new position.

Since the Rhode Island saltwater recreational license program took effect in 2010, the number of licenses obtained by recreational fishers has increased steadily, reflecting an impressive pattern of understanding, support, and compliance. To date, over 42,000 licenses have been issued, generating approximately \$273,000. A portion of the revenue from the license sales goes to covering the administrative costs associated with issuing the licenses, and the balance is deposited in a restricted receipt account, managed by DEM, to be used solely to support the priority needs and interests of the State's marine recreational fisheries. These license revenues are matched 3:1 with federal Sport Fish Restoration funds provided annually to RI by the U.S. Fish and Wildlife Service.

As set forth in the statute that established the new RI recreational license program (Rhode Island General Law Chapter 20–2.2), license fee revenues cannot be used for any purpose other than administering and enforcing the Rhode Island recreational license program, managing recreational fishing programs in Rhode Island, and improving recreational fishing access and infrastructure throughout the State. In DEM's first annual report on the program, issued in February 2012, the initial priorities for the program are to:

- ✳ Expand the recreational catch and effort data collection program for RI (under the federal MRIP program)
- ✳ Enhance recreational boating/fishing access opportunities by bolstering the Division's boating/fishing access site maintenance program
- ✳ Hire a new full-time employee in the Division, responsible for coordinating a range of projects and activities that relate directly to marine recreational fishing issues

- ✳ Support the development and implementation of an artificial reef plan for Rhode Island, and the continuation of finfish surveys in Rhode Island waters
- ✳ Conduct a public outreach campaign pertaining to the license program

Kevin's new position addresses the priority of hiring a new full-time employee. His work plan largely involves ensuring that the other priorities are addressed, following through on other issues described in the annual report, and moving forward in his new role as liaison to Rhode Island's marine recreational fishing community. Kevin plans on regularly attending meetings of various recreational fishing groups throughout the State to get a feel for the current issues and happenings in the Rhode Island recreational fishing community, and integrating those perspectives into the Division's programs.

Among the most important aspects of the work plan will be to work closely with the new Marine Recreational Information Program (MRIP), to achieve more accurate statistics on recreational fishing catch and effort in RI, obtained via augmented and targeted intercept surveys. Improved data quality, coupled with a generally stronger recreational fishing program, will assist fisheries managers in setting appropriate recreational fishing regulations that maintain healthy fish stocks while optimizing opportunities for recreational fishers.

If you have any questions about recreational fisheries or licensing requirements, or if you would like to be a part of a voluntary electronic recreational logbook program, please contact Kevin via email at Kevin.Smith@dem.ri.gov or by phone at (401) 423-1941.

Works Cited:

Ninigret Partners. (2007). *Rhode Island Recreational Saltwater Fishing Industry Trends and Economic Impact*. Narragansett, RI: Ninigret Partners. Retrieved from <http://www.risaa.org/EconomicStudy07.pdf>



Photo: A. Valliere

Let's Fish Rhode Island! *by Christine Dudley*

Carbuncle Pond Coventry

According to Merriam Webster's Collegiate Dictionary, a carbuncle is "any of several red precious stones." Carbuncle Pond in Coventry was acquired by the state of Rhode Island in 1970. The pond encompasses 48 acres, has a maximum depth of 24 ft. and an average depth of 15 ft.

Particulars:

The Carbuncle Pond fishing area has two gravel parking lots with room for up to 50 vehicles. The site has a cement plank boat ramp and a handicapped accessible fishing pier. Plenty of shore fishing sites are available on a first-come basis. Only electric trolling motors are permitted. It is stocked with trout for Opening Day of trout season in the spring, and further stockings are conducted in the fall and in the winter for ice fishing. Portable toilets are available for Opening Day only. Occasionally Carbuncle is stocked with domestic brood stock Atlantic salmon. Other species found there are largemouth bass, chain pickerel, yellow perch, white perch, bluegill sunfish, pumpkinseed sunfish, and redbreast sunfish. Use permits must be obtained from the Division for any fishing or boating activities of six or more persons and/or three boats with a minimum of three weeks notice. For more information on regulations, please see the 2012 Rhode Island Freshwater Fishing Abstract, which may be found on the DEM website, www.dem.ri.gov.

Directions:

Route 95 South to Exit 5 onto Route 102 N. to Route 117 W. Follow for 4.1 miles, then left onto Route 14 W. (Plainfield Pike), and follow for .9 miles. The access road is on the left. Follow the access road in for .3 miles to the parking lot.

Carbuncle Pond

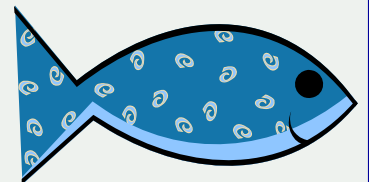


Photo: K. Sullivan

ICE SAFETY TIPS

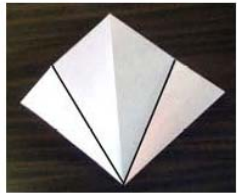
When venturing out on the ice, safety should be your number one priority!

- ❄️ Be cautious! There is no such thing as safe ice. Make sure the ice is at least six inches thick. Test the ice as you go with an ice auger. If there is a path, stick to it.
- ❄️ Ice thickness varies throughout a pond and is usually thinnest around shore and protruding objects such as rocks, trees and docks. Beware of areas where there are springs or inlets to a pond—the ice may also be thinner in these areas.
- ❄️ Stay dry and dress warmly. Wear many layers with "long johns" and a wind-breaking over-layer. Wear appropriate footwear such as insulated boots and wool socks that will keep your feet warm and dry. Sunglasses or ski goggles are helpful for glare and wind. Rubber gloves are good for bait and fish handling and mittens are good for warmth. Bring a change of clothes and don't forget to wear a hat.
- ❄️ Remember to bring safety equipment including ice spikes, 50 feet of safety rope, and a flotation device such as a boat seat cushion.

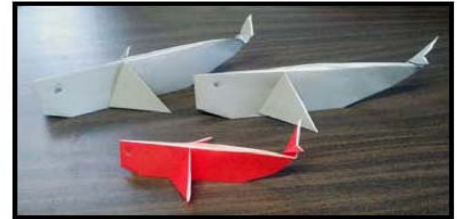


Interested in learning how to ice fish? Please contact Kimberly Sullivan at kimberly.sullivan@dem.ri.gov or 401-539-7333 for more information on upcoming ice fishing programs this winter.

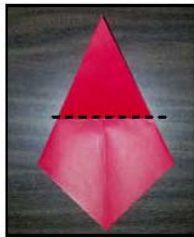
Kid's Corner! How to Make an Origami Whale by Kimberly Sullivan



Making an Origami Whale



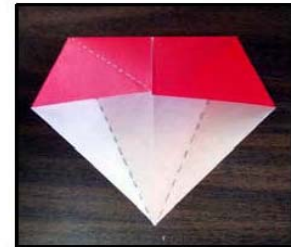
1. Take a square piece of paper, fold toward you on the black lines to make a kite-shape



2. Flip over, fold on dotted line



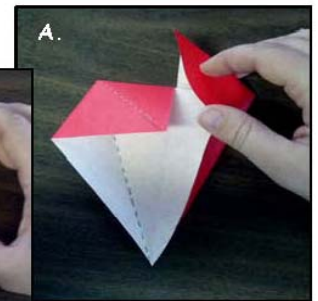
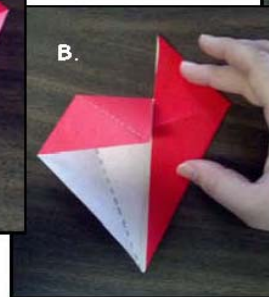
3. Flip over



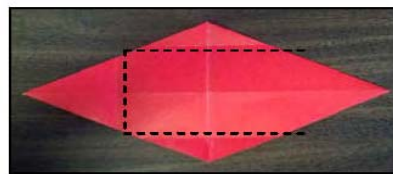
4. Fold inward on white dotted lines and open red flaps upward to create a kite-shaped figure (as seen below in A, B, C)



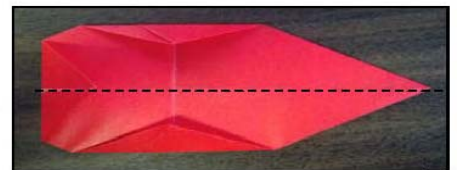
5. Open up kite to form diamond which will leave the upper points of kite in the center of the shape



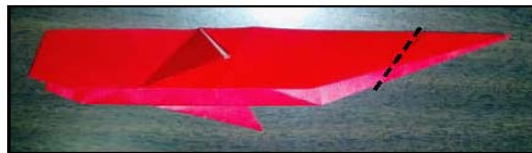
6. Flip diamond shape over



7. Fold along dotted lines



8. Fold in half along dotted line



10. Fold tail behind to create upward fluke



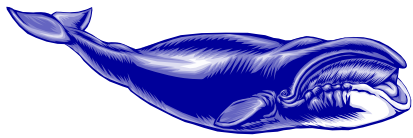
9. Fold flaps down to create fins



11. Cut the tail and fold one flap down to create split tail



Kid's Corner! Presented by the Aquatic Resource Education Program

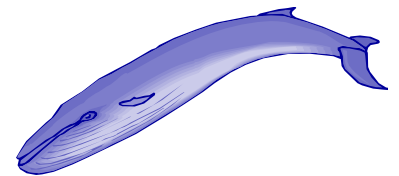


Whales in Rhode Island?

Yes, even the little state of Rhode Island has whales that visit from the Atlantic Ocean. Some even come right up into Narragansett Bay!

Whales are large marine mammals. Like you, they are warm-blooded and they breathe oxygen from the air. Since they do not have gills, they use their blowhole to breathe and then they hold their breath as they dive in the water. A whale can hold its breath anywhere from 5 minutes to 90 minutes. That's an hour and a half! Whales have large tails, also known as flukes, which propel their large bodies through the water. Flukes also help whales jump out of the water and twirl around, which is called breaching. Whales are interesting creatures because, like bats, they use echolocation to determine the location of underwater landmarks. That means whales let out high-pitched sounds, which bounce off objects and return to the whale. That way the whale knows where it is. Since the ocean is rather cold, whales have special fatty tissue known as blubber, which keeps in body heat, helps buoyancy and also serves as a food storage system when food is scarce.

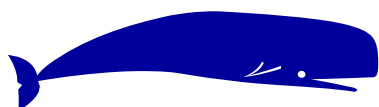
All of the whale species are grouped into a scientific order known as Cetacea. The group is divided into baleen and toothed whales. Baleen whales are generally larger, have 2 blowholes right next to each other, and have baleen plates to filter their food of plankton and small fish such as krill. Toothed whales, on the other hand, have one blowhole and are predatory and feed on fish, seals, sea lions and other whales. In Rhode Island we have four types of whales that are commonly found in our waters off shore. They are



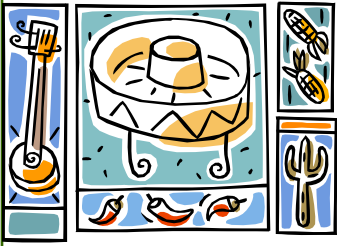
the Minke, Finback, Humpback, and Northern Right Whale. Some of these species, like the humpback and the Northern Right Whale, have been placed on the endangered list, which means that their numbers are so low that they may become extinct. This could be because of over fishing, entanglement in gillnets or ships accidentally hitting them. Other endangered whales that have been sighted in Rhode Island are the Sei and Sperm whales. As early as 1972, with the Marine Mammal Protection Act, groups around the world have increased their conservation efforts. With the increased knowledge and conservation, we may be able to see even more whales in Rhode Island.

So now that you know Rhode Island does indeed have whale sightings, try and sight the underlined whale words in the following word search. Look forward, backward and diagonal. There are 23 words in all.

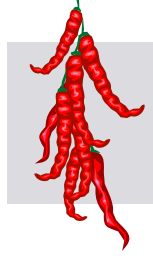
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B	A	L	E	E	N	S	V	J	W	E	F	U	Z	M	A	R	F	K
U	M	S	E	B	R	E	A	C	H	I	N	G	N	H	Q	T	N	K
V	M	P	L	A	N	K	T	O	N	X	I	C	W	O	M	O	A	P
E	A	R	L	Y	T	I	M	B	S	G	G	T	R	A	G	O	R	U
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C	O	N	S	E	R	V	A	T	I	O	N	K	Z	L	V	E	A	M
N	Q	N	E	Z	A	I	R	S	N	A	E	C	A	T	E	C	Y	A



Lazy Day Venison Chili *by Brian Tefft*



- 2 teaspoons of salt
- Red and black pepper (to taste)
- 2 tablespoons chili powder
- 1 cup chopped green onions
- 1 teaspoon Red Hot jalapeno sauce (to taste)



Ingredients

- 1 pound of cubed venison
- 1 tablespoon olive oil
- 1 cup of chopped onions
- 1 tablespoon Italian seasoning
- 1 ½ cups of chopped bell peppers
- 2 (14 ½ ounce cans) stewed tomatoes
- 2 cloves garlic finely chopped
- 2 (8 ounce cans) tomato sauce
- 2 cans red kidney beans and liquid

Brown cubed venison in a heavy pot in olive oil. Then add chopped onion, bell peppers and garlic, and sauté. Add remaining ingredients. Bring pot to boil and stir occasionally. Add your favorite red hot sauce to suit your taste. Reduce

heat and simmer the pot for 1 to 1.5 hours. This dish is best served with fresh baked hot cornbread and is a perfect accompaniment to your favorite winter sporting event. Yum!



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