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## Ocean Acidification: What is it?

There is a new term being bantered about related to climate change – ocean acidification. Simply put, ocean acidification refers to a fundamental change in ocean water chemistry resulting from more carbon dioxide (CO<sub>2</sub>) being dissolved in seawater. This is a result of the increasing concentration of CO<sub>2</sub> in the earth's atmosphere due to our burning of fossil fuels (oil, gas, coal, etc.).

About one-third to one-half of the CO<sub>2</sub> released into our atmosphere ends up in the oceans. The more CO<sub>2</sub> in the water, the more acidic it becomes. Although scientists have been talking about increases in CO<sub>2</sub> resulting in climate change for decades, the concept of ocean acidification is relatively new.

When CO<sub>2</sub> dissolves in water it produces a weak acid called carbonic acid. It may be a weak acid, but it helps shape our surrounding geology in Florida. It is the mechanism that produces the notorious sinkholes found here (notorious if you happen to build your home near one). When CO<sub>2</sub> is dissolved in rainwater it creates this weak acid which can, over 1000s of years, dissolve limestone. Limestone primarily consists of calcium carbonate which was originally from sea life such as clams, snails and other mollusks.

**So what?** Many marine organisms that produce calcium carbonate shells (clams, snails, sea urchins, etc) or skeletons (corals, certain types of phytoplankton, etc) are negatively impacted by increasing CO<sub>2</sub>. The change in water chemistry makes it harder for these organisms to secrete calcium carbonate. Also, acidic water actually dissolves calcium carbonate (remember the sinkholes mentioned above). Several researchers have reported that by the end of this century, coral reefs may erode faster than they can be rebuilt. Although scientists do not yet fully understand the ecological consequences of ocean acidification, it is feared that there could be widespread impacts on Earth's marine ecosystems.

## Spectacular Addition to Lee County Artificial Reef System Coming this Summer

### Anglers and Divers in for a Treat

The 165-foot' Coast Guard cutter, the USS Mohawk, is scheduled for deployment this summer as part of the [Lee County Artificial Reef Program](#). The vessel has just been towed from Key West to Ft. Myers Beach and will be deployed after it has been properly cleaned and prepared. The cost of deployment, approximately \$1.3 million, is mostly funded by the West Coast Inland Navigation District. Scuttled military ships such as the Hoyt S. Vandenberg and Spiegel Grove in the Keys, and the Oriskany in the Panhandle, have become economic

boosts for the communities where they have been sunk as artificial reefs. Research conducted by the Florida Sea Grant College Program has clearly documented the [economic benefits](#) of artificial reef development in southwest Florida.

The [USS Mohawk](#) had a distinguished military career during WWII. She was assigned to North Atlantic escort operations with the Greenland Patrol, where she served for the entire war, launching a total of 14 attacks against submarine contacts. She was the last vessel to radio Gen. Dwight Eisenhower that the weather would be clear enough to launch the invasion of Normandy on June 6, 1944.

She will complete her proud service to our country as the Veteran's Memorial artificial reef, approximately 20 miles off the Lee County coastline.



USS Mohawk, 1935. Photo courtesy U.S. Coast Guard



USS Mohawk, 2012, being towed to Ft. Myers .  
Photo courtesy of Bob Wasno.

Check it out!

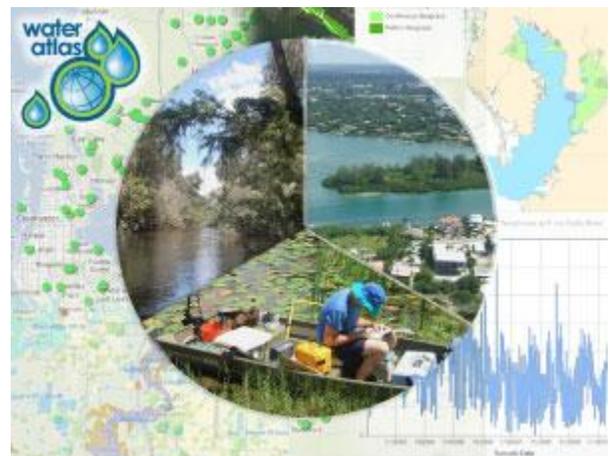
## Water Atlas — Detailed Data for Scientists of All Ages

From kids to senior scientists, researchers in Tampa Bay depend upon the [Water Atlas](#) website for the most up-to-date and in-depth data available on ecosystems in the region. Now, the Water Atlas has become easier to use, particularly for citizen scientists concerned about water quality in lakes and rivers near their homes. The goal is to allow people from every walk of life to understand the issues facing the region as it continues to grow.

While an enormous amount of data is contributed by trained scientists, the Water Atlas also includes information collected by citizen scientists.

Some of the data on the Water Atlas dates back to 1907 and some is updated daily. The Tampa Bay Water Atlas contains information on 797 water resources, including 12 bays, 555 lakes, 229 rivers and the Gulf of Mexico. Water quality data comes from over 90 sources through 33 different providers. The Water Atlas also serves as a central location for participating groups to post information on various conservation outreach initiatives, including brochures and information on community events. Other information available on the Water Atlas includes:

- Aerial photography
- Bathymetry (bottom contour) maps
- Boat ramps and parks
- Conservation advice
- Current news about water and ecosystems
- Dynamic maps
- Ecological reports
- Education curricula
- Fishing reports
- Historical photography and maps
- Near real-time data on currents and tides
- Research Reports
- Total Maximum Daily Loads (TMDLs)
- Water levels, flows and rainfall
- Water quality data, dating back decades in some cases



Source: *Bay Soundings*



## Scalopalooza 2012 -- June 9<sup>th</sup>

This event is a fundraiser organized by [Sarasota BayWatch](#). All proceeds go to funding scallop restoration in Sarasota. Remember, information on August scallop counts will be in the next edition of *The Marine Scene*.

## New Boat Sales Are At Historical Lows

At a recent Florida Sea Grant sponsored conference (Stem to Stern II), I had the opportunity to listen to Mr. Dusty McCoy, CEO of Brunswick Corporation, discuss recent trends in the U.S. boat building industry.

The decades of the 1980s and 1990s were good to the boat construction industry, in part fueled by the popularity of Personal Power Craft (PWCs – “jetskis”). However, for the past 20 years, ownership of traditional water craft (Non-PWC) has remained at the same level and has not kept pace with population growth. Furthermore, sales of new boats have declined significantly. In 2000, new boat sales totaled 344,000 in 2011 new boat sales totaled 140,000.

However, sales of used boats and number of boating registrations have remained relatively stable. Consequently, the age of used boats has increased from about 15 years to slightly more than 20 years. The boat building industry usually considers 30-35 years as the maximum useable life of a boat. Coincidentally, the average age of boat owners has increased. Unfortunately, both folks and boats tend to breakdown more with age.

**Why the decline?** It should come as no surprise that new boat sales have been hard hit by the Great Recession. In recent years the boat building industry has seen the market stabilize, but only modest recovery is foreseen over the next 2-4 years.

Changing demographics is a powerful factor. As we grow older, health issues become more important. Even intensely loyal sailors find it difficult to handle winches and gear when they hit their 70s. Among ethnic groups, boating is most popular by far with white folks. It is a fact of life that our country is becoming more diverse, with other ethnic groups comprising a larger fraction of our total population.

By-the-way, the most powerful predictor of whether you own a boat is your childhood experience. Approximately, 80% of boat owners participated in boating as a child.

**What does the future look like?** The boat building industry estimates that 150 million Americans have never been involved in boating. If just 2% of these folks got the boating bug, there would be a growing and prosperous boat construction industry. Industry groups are now developing promotional efforts to involve people in boating. A good example of one of these is the [Recreational Boating and Fishing Foundation](#). The industry is also striving to drive down the costs of new boat ownership. My own feelings are that the allure of spending time out on the water and enjoying nature will endure as an important American pastime.



Photo courtesy of Bob Wasno

## Top Ten New Species List

Each year the International Institute for Species Exploration at Arizona State University announces a list of the Top 10 New Species for the preceding calendar year. The list contains some truly incredible wonders of nature. Check out this website for info. Here are a couple of examples to whet your appetite (perhaps appetite is not the best term to use).

### The Louisiana Pancake Batfish

**How it made the Top 10:** This species was discovered just before the Gulf of Mexico oil spill in 2010 and its entire known distribution is in the region of the spill. It is also a remarkably hideous (in a good way) animal. It is flat like a pancake, spikey, hops on its fins and has huge bulging eyes. Its discovery and precarious existence due to the oil spill was a lead article on [cnn.com](http://cnn.com) and a number of other outlets.



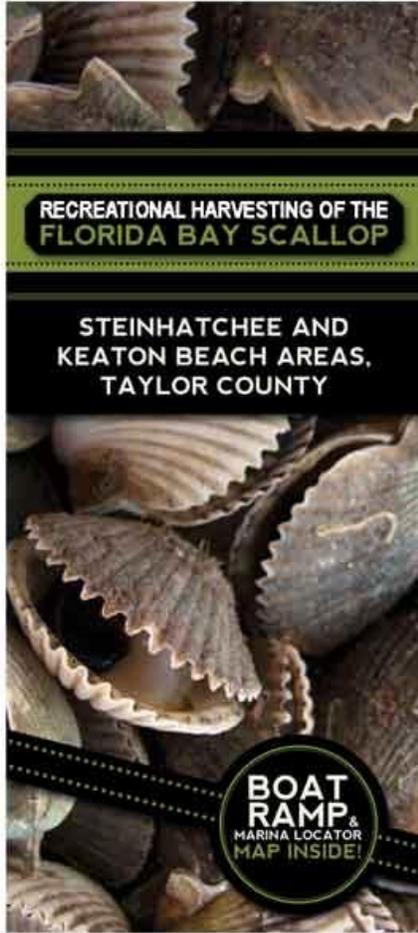
Photo courtesy of Arizona State University

### Psychedelic frogfish

**How it made the Top 10:** It has an unusual psychedelic pattern and is unique among frogfishes in being flat-faced.



Photo courtesy of Arizona State University



## 2012 Florida Bay Scallop Season

July 1 – September 10

If you're thinking of heading north to enjoy Florida's popular scalloping season, we have a new publication for you. Florida Sea Grant now has available a map of marinas and boat ramps for scallopers who visit the Steinhatchee and Keaton Beach areas of Taylor County. It's a companion to the popular map for the Citrus County area. You can obtain a free copy of the Taylor County map by emailing [info@flseagrant.org](mailto:info@flseagrant.org), and ask for publication number SGEF 191. The map is also online at the Florida Sea Grant website, [flseagrant.org](http://flseagrant.org).

Each year FWC biologist survey bay scallop populations in June, prior to the season opening. The data this year should be entered by June 22. So, if you want to check where the hot spots are, check out this [FWC website](#).

**Visit us now at *The Marine Scene Plus!***

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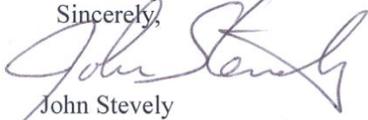
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More information on the Florida Sea Grant College Program can be found at: [Florida Sea Grant](#)

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Sincerely,  
  
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