

# AQUANEWS

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## Anatomy of a Free Flow manual controls are a marketing gimmick

It's very annoying when, just as you are about to start a dive, your regulator suddenly and uncontrollably gushes air. Those who dive in cold freshwater can experience a similar effect while underwater, and that can be life-threatening if air reserves are low. Free flows due to regulator freeze-up are caused primarily when ice forming around the mechanicals of a regulator first-stage disallows it from functioning properly. However, this doesn't explain why your regulator goes out of control just at that moment when you are about to enter a warm tropical sea.

Assuming that the first-stage of a regulator is working properly, air is delivered to the second-stage at 120 to 150 psi greater than ambient pressure. The pressure-sensing diaphragm at the front of the regulator (it doubles as a purge button) presses down a lever and opens the valve so that the exact right amount of air at a matching pressure enters the regulator body and allows you to inhale. It should be able to give you exactly the amount of air you require, neither more nor less.

Regulator designers strive to make the flow of air through the body of the second-stage clean and uninterrupted so breathing is as effortless as possible. They try to design in a "Venturi" effect, which results in a very clean flow of air rushing past the back of the pressure-sensing diaphragm. A sudden rush of fastflowing air can cause an apparent drop in pressure behind the diaphragm.

This in turn is pushed in to compensate, thereby opening the valve more and causing the flow to increase. This effect can happen where pressure differences are dramatic, at the cusp between water and air. That's why your regulator so often free-flows as you dip it in and out of the water, when you walk into the sea or plunge off the deck of a dive boat.

Many manufacturers get around this problem by including a PreDive/Dive switch on the second-stage. It positions a simple vane in the airflow to break up the Venturi effect. There is also an initial effort to "crack" open the valve. It can often be adjusted by means of a knob that can tighten the spring tension on the second-stage valve. If you want to inhale less air, simply draw on the valve more lightly. However, these spring-tensioners can often be used to make it slightly harder for the pressure-sensing diaphragm to lever the valve open -- that can have the effect of correcting a badly set-up regulator's second-stage that might be leaking through its valve. Many top-end regulators come with these two manual controls, the Venturi Plus/Minus or PreDive/Dive switch and a spring-tensioner to make breathing less effortless. It seems the market demands it. People want added value with their purchases, and divers are no different. But you don't need them.

Mares has designed away the need to disrupt the Venturi effect by using a

*(Continued on page 2)*

## AQUANEWS

THE OFFICIAL PUBLICATION  
OF THE ROCKLAND  
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WRITTEN CONTRIBUTIONS &  
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patented bypass tube that feeds the air supply directly to the mouthpiece and not through the regulator's main chamber. The company also eschewed the use of a method to increase inhalation resistance, but people want knobs. So Mares has just introduced the Prestige 32 NTT, which has such a control. It doesn't operate a movable vane as used by other manufacturers because the designers have already designed out the need for it. It simply restricts the amount that the second-stage valve can be opened to when in the "minus" setting.

Atomic regulators use a vane that is actually adjusted by a mechanical depth sensor, meaning you never need to touch it. Some Italian manufacturers, notably Effesub, have also adopted this approach. If you just bought the regulator or had it serviced, it's a good idea to take it on a local dive to check that the technician has set it up properly before going on a dive trip abroad.

If you have no Prediver/Dive or Venturi Plus/Minus switch, how do you avoid the annoying loss of gas that can occur just as you are about to start a dive? Avoid dipping the second-stage and the octopus of your regulator in and out of the water if you are shore diving. Also be aware that should your regulator free-flow in temperate conditions, you'll simply need to increase the air pressure inside the body of the second-stage by blocking the mouthpiece or turning the front diaphragm upward for a moment. There is never any need to smack it with your hand!

*John Bantin is the technical editor of DIVER magazine in the United Kingdom. For 20 years, he has used and received virtually every piece of equipment available in the U.K. and the U.S., and makes around 300 dives per year for that purpose. He is also a professional underwater photographer.*

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.**

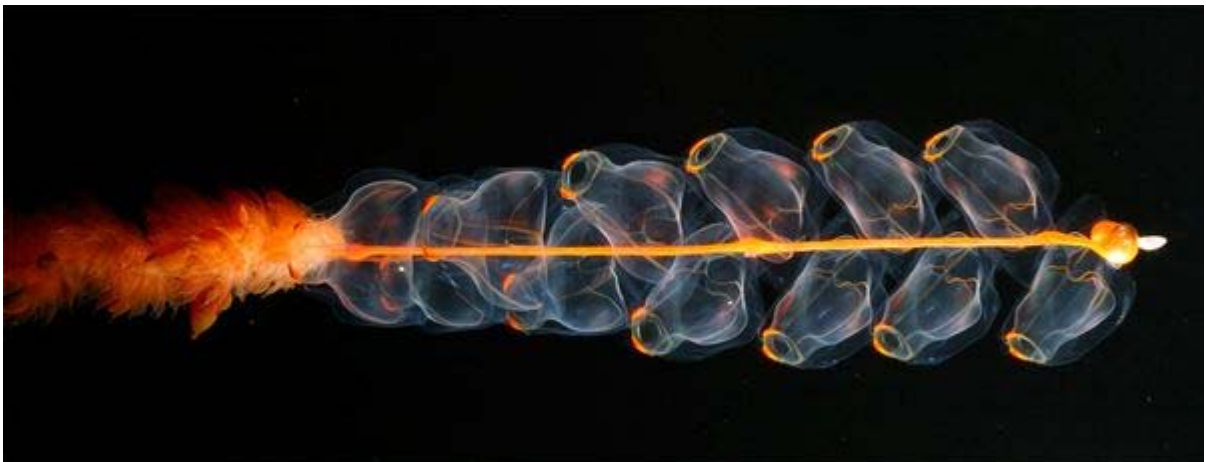
## "Alien" Jellyfish Found in Arctic Deep" National Geographic *Month Four*

For 2010 we've decided to add a new series of mini articles that have been featured in National Geographic. Every month, another part of the article "Alien" Jellyfish Found in Arctic Deep" will be posted here.

### **Siphonophore Colony**

Each siphonophore, such as the one seen above in 2005, is actually a colony of creatures related to jellyfish—such as the nectophores, or swimming bells, on the right half above, which provide propulsion for the colony. The members of the colony share a tubular stem (shown in orange), which delivers nutrients.

Reaching 10 feet (3.1 meters) in length, some siphonophores are among the largest animals in the deep sea, Monterey Peninsula College's Raskoff said in December 2009.



Photograph by Kevin Raskoff

## **“Reef comes to life” FLORIDA TODAY STAFF – June 6, 2010**

It took less than two minutes for the Gen. Hoyt S. Vandenberg, a ship with ties to the Space Coast *used for missile tracking* , to reach the ocean bottom off Key West on May 27, 2009. Yet within a year, it has bloomed into a timeless circle of life in the Florida Keys National Marine Sanctuary.

The Vandenberg is exceeding all expectations since it became the world's second-largest vessel purposely sunk to become an artificial reef, organizers said. "We have giant schools of fish, there's all kinds of invertebrate life covering the ship, and great big bait balls show up to the point where you can't even see the ship through the fish sometimes," project organizer Joe Weatherby said in a news release. "It's like a big party going on."

Keys dive operators agree. Capt. Lauren Brancel, a divemaster with Key West's Lost Reef Adventures, said sea life has exploded with thousands of arrow crabs "bigger than your hand" scouring the ship's surface and stairwells, while about 75 large barracuda patrol the wreck. "A huge goliath grouper has parked itself on the bow, and a green moray eel lives in one of the cubbyholes mid-ship near an elevator shaft," Brancel said in the release.

The Vandy's steps, railings and superstructure are glazed over with Gorgonian corals, sponges and sea urchins eating algae as quickly as it grows. Eric Schaaf, manager of Southpoint Divers, said any growth on the wreck adds to the habitat, and divers who spend their time looking for the little things will see a lot more. "There are tons of algae and coral growths, and when we see blennies, shrimp, tiny lobsters, fish eggs, sponges, feather dusters and tube worms, they all add to the wreck's life," Schaaf said. The giant bait balls seen this time of year -- clouds of blue runners and round scad that attract schools of snapper, jacks and barracuda -- fill the entire wheelhouse, Brancel added. Lad Akins of the Reef Environmental Education Foundation, an organization leading a multiyear fish population study at the Vandenberg site, confirmed 113 species of fish have been documented. Ceci Roycraft, who leads the Keys tourism council's dive advisory board, said her polling of Key West dive shops indicated about 15,000 divers have descended on the Vandenberg via chartered dive boats. She estimated at least another 7,000 divers have submerged from recreational boats.

Sent in by Steve Improte's Father



## MARINE TRIVIA

### Compiled by Lada Simek

What does the sea urchin *Archeopneustes hystrix* carry in its intestines?

Ans: A fire worm, which can live outside the sea urchin but stays inside for protection.

Tiny particles of magnetite have been found inside the skulls of Chinook salmon. What might be their function?

Ans: They may allow the fish to detect the earth's magnetic field, hence act as an internal compass.

The parasitic barnacle *Sacculina carcini* are known to do what and to whom?

Ans: They pierce a hole in one kind of crab, the larva enters the host, multiply, seek out and lodge in the gut. From there the invader spreads throughout the crab, eventually castrating it.

Gray snappers on Grand Bahamas Island eat what unusual food?

Ans: Brown flower bats. The fish swim underground 1000 feet to a cave where the bats give birth and feed on the babies that fall in the water.

Some sea snakes see light not only with their eyes but also with what other part of the body?

Ans: Their tails have light-sensitive organs which tell them when they are completely hidden.

True or false: Camels eat fish.

Ans: True. The oil sardine *Dardanelle longiceps* found in the Arabian Sea is commonly fed to camels.

Traditionally, what do fishermen in Guam and Saipan use to poison fish?

Ans: Some sea cucumbers when squeezed into crevices in tide pools make fish go unconscious.

Walruses in the Bering Sea normally eat shellfish as clams, but in 1970's, what other item was found on their menu?

Ans: Seals-they capture them by stabbing them with their tusks.

If all the dissolved salts in the oceans were dried and spread out over the land, how many feet thick would the layer be?

Ans: 150

*Luffariella variabilis* is an encrusting sponge from Palau, produces what useful substance?

Ans: *Manoalide*, an effective pain killer and anti-inflammatory agent.

What do tropical trigger fish in Alaska, starving seabirds in Peru and drought in Africa have in common?

Ans: All of them are caused by a severe El Ninos.

True or false: Gnathostomulida have greatly reduced parenchyma, monociliated epidermis and a tubular intestinal sac

Ans: Obviously true

What gas is found in the floats of the giant kelp, *Macrocystis pyrifora* ?

Ans: Carbon monoxide

Many squids can change color rapidly, switching from one to another in seconds. What is curious about this ability?

Ans: Squid do not appear to be able to see colors.

What is the most widely distributed reptile in the world?

Ans: The leatherback turtle, which is found in all the oceans in the world between the tropics and the arctic.



## **Approved Hessian Lake Dive's 2010**



**Saturday June 19th @ 9am**

**Saturday August 14th @ 9am**

**Sunday September 5th @ 10am**

**Saturday September 25th @ 10am**

**Sunday October 10th @ 10am**

**Saturday October 23rd @ 10am**

**Everyone must meet at parking lot 1 by the administration building, at the designated time. The timing is very important now because we need to have a park escort take us to our parking area by the Lake. Anyone that misses the escort will have to stay parked in the upper lot and walk down to the Lake. We also have to leave by escort all at the same time. These are new Park rules.**

**ANNUAL MEMBERSHIP FEES**

Rockland Aquanauts Organization  
2010 Dues

I guess it is that time of the year again, Membership Dues are due.  
Last year all our members received much more than they gave out to the Organization.

As usual you will be receiving a tax donation for the first \$25.00. Don't forget we have all the BBQ lunch's after every Lake Dive.

So please send in your dues to;  
So please send in your \$42 dues to;

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**May-June 2010**

Anatomy of a Free Flow, Reef Comes To Life, Alien Jellyfish, Hessian Lake, 2010 Dues

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**We are currently looking for a place to have our 2010  
Annual Dinner...**

**Any suggestions?**

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