



## Cat's Paws to Grey Beards: Wave Theory - and Practice

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UNITED STATES COAST GUARD AUXILIARY



Waves can be the most beautiful and the most fearsome aspect of the sea. Whether you float above them or dive beneath them, you had better understand them and most certainly respect them. This column is about that.

### Winds Are Known From Whence They Blow, Currents By Where They Go

A northerly wind means a wind FROM the north, thus blowing you south. A northerly current means a current heading TO the north, setting you in the same direction - north. What does that have to do with waves? Largely, waves are the off-spring of the wind. Ignoring for the moment that wave action can be created by tidal forces sluicing through a narrow channel (see SSP, "Mastering the Inlet", 12/12/07), waves are created by the wind. When the water is fairly still, as you'll often see early in the morning, and the wind starts to pick up, those little over-lapping wavelets, called the Cat's Paws, will eventually build into something significant. The greater the distance that the wind has blown over the water unhindered by land (called its "Fetch"), the greater the size of the waves. If you ever wondered why mariners for centuries have feared Cape Horn at the bottom of South America, it is because the "fetch" there is essentially infinite. Wind can blow continuously, unimpeded by land, around the entire planet in the space between Cape Horn

and Antarctica. Again. Again. And again. 100' waves are not impossible...

### Packing a Punch

The "sea state", which can be characterized as the sum of the height, frequency and direction of waves, is the key to understanding comfort - and safety - of any passage over the water, even more so than the strength and direction of the wind. Anyone that has ever been caught in 6' seas that are but 6 seconds apart in frequency would gladly trade them for 10' waves that are 30 seconds apart. The first is a kidney-busting beating; the latter is a sleigh ride. Of boats that sink at sea, slightly more than 1 in 20 of them sink because they break apart from the pounding of the waves upon the hull (see SSP, "We're Sinking!", 12/13/06.) BTW, for very different reasons, four times as many boats sink at their dock than sink at sea (see SSP, "The Dangerous Dock!", 12/6/06.)

### So, I'm Heading Out To Sea - How Are the Waves?

One of the unsung heroes of our maritime services is NOAA (www.noaa.gov) and their National Ocean Service (http://oceanservice.noaa.gov). They, along with the Army Corps of Engineers, understand how important wave action is and maintain 70 wave-gauging stations placed around the coastline of the U.S. (including the Great Lakes) collecting data on wave height and direction in near-shore areas. Now you can get an

hourly update from these stations, direct to your cell phone. I get Buoy #44017, which is 23 nautical miles southeast of Montauk. Go to <http://www.buoyalarm.com/> to find the buoy or buoys you want to monitor. Oh, and it is your favorite price. Free. "Surf Happens" - But How Do I Gauge It?

For the more scientifically inclined, the energy within a wave is proportional to the square of the wave's height. Like many things in nature, a 4' wave isn't four times as powerful as a 1' wave. Four-foot seas are 16 times as energetic as one-foot seas, all else being equal. How much energy is in one of those 100' "grey beards" passing by Cape Horn, compared to a 4' wave in Moriches Inlet? Do the math. Not 25 times more powerful (100' / 4') but 625 times more powerful! (100 squared / 4 squared)

But things are rarely equal. A long, slow, four-foot sea is one of life's great pleasures at sea. What matters is how close together and how steep those waves are. A good way to compare waves for steepness is the wave height divided by the square of the frequency period. This is essentially how fast your sleigh ride is going to be - or the beating you are going to take. Halving the frequency period (from, say, 10 seconds to 5 seconds) of a wave quadruples the acceleration of your sleigh ride, and more than likely multiplies the sea sick-

ness aboard the boat (see SSP, "Mal de Mer - Oh! My Stomach!", 2/21/07.) Another way to gauge what awaits you at sea is a Severity measurement. This indicates the amount of energy carried by each bit of wave and is proportional to the energy of a wave (the square of its height) divided by its wavelength (how much distance the waves are apart, measured from peak to peak.) As you can probably do in your head, 6' waves that are 6' (distance, not time) apart are more severe than 6' waves that are 12' apart. We don't need the Cray computer for that one...

In a subsequence column, we'll get into different kinds of waves - tsunamis, deep, shallow, non-wind, etc - and the effect they have on mariners. But this column will hopefully get you thinking about safety before you leave the dock.

Here's one more - what is the longest wave on Earth?

The wave that is created by the moon, pulling the water up and around the Earth. What is its Frequency..? Email me with the answer!

BTW, if you are interested in being part of USCG Forces, email me at [JoinUSCGAux@aol.com](mailto:JoinUSCGAux@aol.com) or go direct to the D1SR Human Resources department, who are in charge of new members matters, at DSO-HR and we will help you "get in this thing..."



## County Clerk Update

by SUFFOLK COUNTY CLERK  
JUDY PASCALE

### OBTAINING A VETERAN PEDDLER'S PERMIT

Suffolk County Clerk Judith A. Pascale would like to remind all honorably discharged members of the United States Armed Forces, and their spouses, that they are eligible to apply for a Veteran's Peddler License. This license provides Veterans with the right to sell goods, wares and merchandise.

"Service to our County is amongst the highest of callings in a person's life," commented Suffolk County Clerk Judith A. Pascale. "I am proud to offer this service to our Veterans and sincerely thank them for their service."

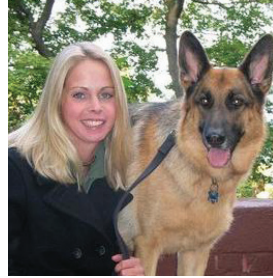
To apply, you must present a valid driver's license or photo identification, proof of residency for at least 6-months (a local utility bill can be used), and a copy of your DD-214 or Military Discharge papers. Licenses are issued free of charge and are valid as long as you maintain residency within the county. To get a license, you must appear in person and bring two (2) passport photos with you.

In addition to obtaining a Veteran's Peddler's License from the County Clerk, you will also be required to comply with village or town ordinances related to street peddling. Information can be obtained directly from the individual towns and villages in which the business will be conducted.

"Be sure to contact the respective municipality to learn about their rules and regulations regarding the peddling of wares within their town or village," commented Pascale.

Non-veterans who are interested in obtaining a peddlers permit may contact their respective town or village government for more information.

For a better understanding of all the services available to veterans within Suffolk County, individuals should contact the Suffolk County Veterans Services Agency at (631) 853-VETS (8387).



## Janice Harkins Dog Talk

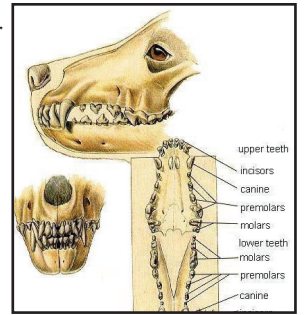
Dear Dog Talk,

I have had many dogs and not thought much about their teeth. Some of my friends keep pointing out my dog's breath is really bad. After hearing this a few times I smelled it and realized they were right. I looked in his mouth and his teeth look dirty. What do I do to fix this?

Thanks,  
Anonymous

Dear Anonymous,

Do not feel bad. You are not alone in this department! Now, let's go over the right things to do. First, you will want to take him to your vet and have him checked out to make sure that he has no oral or any other health related issues contributing to his bad breath and teeth. Once you have the clean bill of health, you will want to have to teeth cleaned properly at the vet. This is a costly procedure, but the hope is after they take care of him you will maintain his teeth. Unfortunately, it is found that a lot of health issues stem from dental issues. You will not want to wait on this make an appointment now. Once you have dealt with the vet, you will want to buy things to maintain his teeth. Like everything else out there they're endless amount of products you can buy. Depending on his likes and dislikes will help in picking what will work best. You can get dog tooth paste and they have two different types of brushes. There is a brush that looks like a person's tooth brush and there is a rubber finger brush. Personally, I think there are a lot of products out there that dogs, really do not like. For my two dogs I use all Pet Kiss products. There is nothing harmful for them and the best part is there is a product you put in his water and he will never know it is in there! Yes, there are products out there that say they do the same and they do not. I would suggest trying to brush his teeth and getting some Pet Kiss products. Do not be embarrassed that you did not know, these things a lot of people do not realize. Now that you know take the best care of your boy and share this information with people who have dogs too. The best of luck to you both and we would love to see your little guy's clean smile!



All our best,  
Dog Talk

Send questions to: [sspress2000@aol.com](mailto:sspress2000@aol.com), Attention: Dog Talk.