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This article was published in the January 12, 2012, edition of *The Bar Harbor Times*. In this week's column, Rich discusses snow and words for snow. If you like etymology and nature trivia, be sure to read this piece.

## **The Nature of Things....**

By Rich MacDonald

I grew up with the “knowledge” that the Inuit—those First Nations people spanning Arctic regions—had over 100 words for snow. I also grew up an asthmatic kid who spent untold hours in and out of emergency rooms and multi-week stints cooped up in pediatric ward oxygen tents fighting the complications of asthma. For me, snow represented seasonal atmospheric purity and a modest weaning from myriad medicines, the time of year activity meant a relatively low risk of incurring an asthma attack. For years, sledding, skiing, and snowshoeing were my sole cardio-vascular workout. When the forecast calls for some solid form of precipitation, endorphins course through my veins.

Year-round I think of snow and everything it represents. Now that we are firmly ensconced in the winter season, I am pulling at the lead of anticipation of snow. So a rambling primer on the word seems in order.

Let's start with the Inuit. Do they really have more than 100 words for snow? According to a 1986 *American Anthropologist* article, the “100 words for snow” turns out to be something of a misconception. Four root words, combined with a liberal use of prefixes and suffixes, created the false linguistic impression by allowing a seemingly limitless frigid vocabulary.

Whether we realize it or not, snow, along with everything it represents, plays a significant role in our society...and the natural world. While it is the generic term for frozen precipitation, the English language is rife with an icy vocabulary.

Snow does not only accumulate, as in snowfall, it can also accrete. An insignificant snowfall is a dusting while a major accumulation is a dump. Snow flurries are a light snow shower of short duration and producing little accumulation, driven by wind; significant snowfall and high winds are the stuff of blizzards.

Clouds are generally composed of liquid. In the right conditions, that liquid is super-cooled, remaining aqueous until it has something solid to adhere to, such as a snowflake, to which it accretes, or freezes.

During my tenure studying high-elevation ecology atop Whiteface Mountain in New York State's Adirondack Park, a falling barometer meant a descending cloud cover which would encompass the summit in feathery veins of rime ice. Rime formed on everything—rocks, trees, buildings—that the super-cooled cloud-water came in contact with. It can also accumulate on snowflakes, rounding them into hardened pellets known as graupel (graupel is sometimes mistakenly called hail, which is actually frozen raindrops).

When snow evaporates, we say it ablated. Ablation implies going through the physical steps from snow to liquid to gas. Snow can also evaporate directly into gas through the process of sublimation.

Skiers and people who recreate in the mountains have their own vocabulary. We leap off cornices, frozen waves of snow overhanging a precipice, hoping for a champagne powder landing, the softness of which is either a sign of low humidity or freshness, meaning the snow has not had a chance to metamorphose into a more cohesive pack. Boilerplate is the bane of skiers, snow that has hardened beyond hardpack, either through cycles of freeze and thaw or rain, to the point that skis do not hold an edge. When temperatures are well into the negative integers, the squeaky sound leads us to call it Styrofoam. Soft, forgiving (and very wet) corn is fun to ski. Crust can form on the surface of corn or powder when overnight temperatures plummet.

A whole vocabulary surrounds ice, or crystalline water. Everyone knows what an iceberg is, even if they cannot tell you that it is actually a house-sized chunk of ice calved from a glacier—massive ice-sheets, the product of untold years of accumulating ice, the weight of which compacts the snow to the point of ice; when it leaves land and moves out over water, it becomes an ice shelf, a change in name only. If you have traveled to the Newfoundland or further north, you may have even seen an iceberg (pronounced “hiceberg”

in Newfoundland). But did you know we say a sub-critical cluster of water molecules, in the moments before it coalesces into ice, is referred to as an ice embryo?

Ice needs a solid substrate around which to form. A particle of dust can serve as this condensation nuclei, as can the edge of a stream, river, pond, or lake. In the latter case, we call this border ice or fast ice. Lake ice forms atop a lake. If you have ever seen ice in the bottom of a swiftly moving river, that is anchor ice, which forms from a combination of super-oxygenated and/or super-cooled water. Anchor ice, coupled with ice that forms at the surface of a stream or river, can lead to a freezeup jam or a breakup jam, both of which can result in flooding.

As salt water at polar latitudes freezes, it goes through several stages. Frazil ice manifests in fine, needle-like structures or thin, flat, circular plates. Frazil ice then coagulates into a soupy layer known as grease ice. If you have never traveled to the Arctic, you may have seen pancake ice on televised specials where the adventurer or scientist or sealer falls through an ice flow of slush ice whose rim is raised by repeated collisions with surrounding pans.

Historically, pack ice covered the Arctic Ocean year-round. With rising global temperatures, we hear of thawing permafrost, those vast areas of terra firma where the ground is permanently frozen, and pack ice decreasing to the point we are contemplating commercial navigation and exploring offshore oil reserves. Of course, there is the ever-present danger presented by ice floes, pack ice that moves with the ocean currents.

Some terms for frozen water have fun and evocative names. Hoarfrost radiates away from its point of origin, whether on a window pane or tree branch, the result of atmospheric water vapor freezing directly. Pipkrake are feathery columns of frozen water that extrude from the ground in fall, after a hard frost, but before the ground is frozen. Sastrugi are those wave-like patterns that forms atop a sun-baked snowpack.

And no discussion of snow and ice would be complete with a few we all know. On a hot summer evening, crushed ice chills many a cocktail while ice cubes are an important ingredient to chill a dark and stormy. And my favorite: ice cream, in a waffle cone.

**Rich MacDonald runs The Natural History Center, located in downtown Bar Harbor, alongside the Village Green. If you would like to share your observations of the natural world that is Mount Desert Island, you may contact him at [Rich@TheNaturalHistoryCenter.com](mailto:Rich@TheNaturalHistoryCenter.com).**