**Merrior - The Good Flavors of Oysters**

By Michael A. Rice*

It has been known for eons by ostreophiles (lovers of oysters) that oysters of the same species will taste very differently depending upon where they are grown and the season of the year.

This variation in taste in oysters parallels very closely a similar phenomenon that occurs with varietal wine grapes. In varietal wines, **terroir** is the concept that their flavors are derived from a sense of place. The vineyard’s soil characteristics, terrain and drainage, sunlight, water quality, microclimate, etc. all contribute to a unique flavor that encapsulates a particular place and time. Those who market wines are well-acquainted to the value of terroir, as wines from particular vineyards and château wineries can command very premium prices due to their reputations, which have built up over time as a result of the terroir of their grapes.

In French, the word _mer_ means sea, so the portmanteau term _merrior_ was coined to describe a sense of **terroir** for oysters, and the term has become popular around oyster bars, particularly in North America. Each oyster is intimately impacted by the body of water it comes from, the algae it feeds on, the strength of currents and tides, the mineral content of the seafloor, rainfall, temperature, season and more. Although oysters can be the same species and grown in a similar manner, just a difference of a few hundred meters in location can have a big effect on their flavor.

The flavors of oysters are most often described as having three phases: an initial first impression stage involving saltines, a second stage involving body and sweetness, and a final third stage, often described in terms like floral, fruity, or metallic aftertastes or finishes. But what are the factors that affect the flavors of oysters and how? Of course the species of an oyster has a great influence upon its taste. For instance, various popular oysters such as the Eastern oyster, _Crassostrea virginica_, the Pacific oyster _Magallana (Crassostrea) gigas_, the Olympia oyster, _Ostrea lurida_ and the European flat oyster, _Ostrea edulis_, all have distinctive flavors that are characteristic to the species. Pacific oysters have what is described as a robust full bodied flavor, whereas Eastern oysters are often described as having a salty taste of the sea and a more delicate, sweeter flavor. The Olympia and European oysters are frequently described as having a full-bodied flavor but with a slight metallic finish.

The merrior of an oyster is most prominently experienced when eating oysters of the same species, but harvested at different times of the year or harvested from different water bodies. One of the largest differences in taste of oysters at different times of year has to do with how ripe the gonads of the oysters might be during a particular season. During the spring season in the northern hemisphere for example, oysters emerge from inactivity during the cold winter and are met by lengthening days and warming waters. These conditions are favorable for spring phytoplankton blooms and intense filter feeding by the oysters. During this period of abundant food and relatively cool waters, oysters undergo rapid gonad maturation and build-up of an energy storage molecule called glycogen that is a complex carbohydrate consisting of a string of glucose (sugar) molecules in a chain.

Oysters are the fattest just prior to their late spring or early summer spawning period, with ripe gonads, displaying a creamy-colored appear-

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*Figure 1. A green-gilled _Crassostrea gigas_ oyster grown in the Marennes Oléron Bay Region and finished in claires for greening of the gills with marreinne algal pigment. Photo courtesy of Cagette Canteen and Deli, Bangkok, Thailand.*

*Figure 2. Oyster claires near the village of La Cayenne, in the Marennes-Olémon region of France.*
Oysters in the temperate zone will typically regain some stored glycogen, and thus some their flavor, as the result of autumn phytoplankton blooms and building up glycogen stores to fuel their gills over winter period of low temperature inactivity. The salinity of growing waters also has a profound influence on the flavors of oysters. Oysters, like many marine invertebrates, physiologically adapt to higher or lower water salinities by adjusting the concentration of dissolved substances in their cells to match the salinity or osmotic concentration of their aquatic environment. This physiological process of maintaining relatively constant cell volume by oysters in variable salinity is referred to by physiologists as osmoregulation, or matching the osmotic pressure of fluids inside and outside of the cells. If the concentration of dissolved (osmotically active) molecules inside the cell is higher than the concentration of dissolved osmotically active ions in the seawater, then water will be drawn into the oyster cells from the seawater and the cells will swell, or even burst if the concentration difference is drastic. Conversely, if the concentration of dissolved osmotically active ions in seawater becomes higher than the concentration of dissolved osmotically active ions in oyster tissues has a profound influence on oyster taste. Indeed, one free amino acid, glutamic acid, in its monosodium form (MSG) has been used for many decades as a food flavor enhancer. And umami taste receptors have been discovered on the human tongue, providing a neurophysiological basis for adding umami to the list of basic human tastes that have traditional basis for adding umami to the list of basic human tastes that have traditional value to oysters, thus contributing to the list of good flavor to oysters, so oyster grounds in areas with frequent blooms of favored phytoplankton species would have the best mentir. The oyster farmers likely to have the best understanding of the marketing value of merrior are those of Marennes Oléron (45.78N, 1.11E) in the Charente-Maritime Department of southwestern France. This region has a long history of oyster farming dating back to well before the 17th century, and part good flavor to oysters, so oyster grounds in areas with frequent blooms of favored phytoplankton species would have the best merrior. The oyster farmers likely to have the best understanding of the marketing value of merrior are those of Marennes Oléron (45.78N, 1.11E) in the Charente-Maritime Department of southwestern France. This region has a long history of oyster farming dating back to well before the 17th century, and that oysters fattened and developed a good flavor to oysters, so oyster grounds in areas with frequent blooms of favored phytoplankton species would have the best merrior. The oyster farmers likely to have the best understanding of the marketing value of merrior are those of Marennes Oléron (45.78N, 1.11E) in the Charente-Maritime Department of southwestern France. This region has a long history of oyster farming dating back to well before the 17th century, and that oysters fattened and developed a good flavor to oysters, so oyster grounds in areas with frequent blooms of favored phytoplankton species would have the best merrior. The oyster farmers likely to have the best understanding of the marketing value of merrior are those of Marennes Oléron (45.78N, 1.11E) in the Charente-Maritime Department of southwestern France. This region has a long history of oyster farming dating back to well before the 17th century, and that oysters fattened and developed a greenish color to their gills (Figure 1). King Louis XIV of France was reported to be fond of these green-gilled oysters, thus contributing to their enormous popularity, at least among the French aristocracy of the time. As time went on, the practice of fattening oysters prior to sale evolved into a process of placing them into shallow managed ponds called claires in which the pond water could be managed to at least partially control the blooms of various phytoplankton species (Figure 2). It was eventually found that the greening of the oyster gills was caused by oysters eating a specific opportunistic diatom, Haslea ostrearia, that produces a water-soluble green pigment now known as chlorophyll a (See: Sollid and Stephens. 1987. Aquaculture 199:73-91). Thus the oyster farmers of Marennes Oléron Bay truly show that assuring good merrior in oyster farming need not necessarily be a haphazard process of farm site selection, but it can also be a managed process that adds considerable value to the product.

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