

Endangered Foods: Grapes

Wine under fire!

STORY BY *Pria Graves*

MANY OF US HAVE ENDEAVORED TO PAINT GRAPES AT SOME POINT.

They're a difficult subject: all those little orbs, each catching the light a bit differently, the classic study of highlights and reflected light. Between translucence and dusty bloom, woody stems and delicate tendrils, they're enough to drive us mad! But how many of us have ever thought about their origins? Or future?

Like apples, grapes have a long history of human use. Neolithic foragers gathered wild fruit, discovering the wonders of fermentation some 8000 years ago near the Black Sea. Over time, farmers domesticated *Vitis vinifera* (literally 'Grape winebearing'), a vine native to Mediterranean and central Asia. Varieties proliferated and spread across Europe with the Romans.

During the 18th and 19th centuries the popularity of wine exploded and vineyard acreage expanded dramatically. Soon France was producing over a billion gallons per year and had more than half the vineyard acreage in the world. Many varieties of grapes we still know and love were already widely planted – ancient Pinot Noir and Zinfandel, Cabernet Sauvignon (and its parents, Sauvignon Blanc and Cabernet Franc), Riesling, and Chardonnay among others.

Meanwhile, European grapes arrived in the new world with the Conquistadores. Later, immigrants from France, Italy, and Germany also brought vines with them. Some plantings thrived but the majority European vines failed, mystifying the colonists. Instead, they began trying the native vines. *Vitis labrusca*, the "fox grape", is familiar to us from the Concord table grape but while

some selections of natives are used for wine making, generally their "foxy", earthy flavor is unappealing to the palate accustomed to *V. vinifera* wines. In the hope of producing grapes with the desired flavor that would succeed in America, breeders began experimenting with crosses between native and European vines.

Enter phylloxera!

In the 1860s, at the height of the wine boom, vines in France and elsewhere across Europe suddenly began dying. The swath of death marched across the land at 12 miles per year and within two decades as many as half the vines in France had died. Vineyards in other parts of the world, Australia, New Zealand, and South Africa, were also hit hard. Only a few remote locations survived unscathed. The wine industry was devastated.

The culprit was "vine lice", an aphid-like creature called phylloxera. It's a complex little beast, with a life-cycle of up to 18 stages, and four very different forms, three of which lay eggs without mating. A North American native, it apparently hitched a ride to Europe on some of the vines brought over for experimentation and grafting trials. In its home habitat, the native



Vitis vinifera, Chardonnay Grapes, colored pencil on paper, 13"x9", ©Victoria Kochergin. This variety dates back hundreds of years, possibly to 1330.

grapes evolved tools for coping: tough roots exude a sticky sap that repels it and clogs its mouthparts. And even if a wound is created, the vines respond by forming a protective layer of tissue to exclude secondary infection. Unfortunately the European grape has no such protective mechanism. Phylloxera attacks its roots, injecting poison and causing lesions that end with the vines collapsing and dying.

Many things were tried in an effort to combat this blight: chemicals, free ranging poultry in the vineyard and even toads buried under each vine. Nothing worked. In the end, the only approach that was really successful was to graft the European vines onto resistant American rootstock. And this still remains the only sure defense today.

Initial grafting attempts failed to thrive in French soil but eventually, with the help of



Vitis 'Ellen Scott', watercolor on paper, 11"x8", ©Pria Graves, 2010. The Ellen Scott Grape was developed in 1902 by T.V. Munson and named for his wife.

Texas grape-breeder T.V. Munson, suitable rootstocks, tailored to the needs of the various grape varieties and soils, were developed. There were a number of North American species to breed from: crosses of *V.*

berlandieri, *V. riparia*, and *V. rupestris* have proven most successful and today most *V. vinifera* grapes are grafted onto their descendants.

Unfortunately, grapes still remain vulnerable. Many California vineyards were planted using a rootstock called AxR1. Long believed to be phylloxera-resistant, this rootstock contains some *V. vinifera* parentage and has now succumbed requiring the replanting of many vineyards. European vineyards also continue to use rootstocks with *V. vinifera* parentage, risking a resurgence of phylloxera. Of course, there are also many other diseases and pests that threaten grapes including mildew, nematodes and phytophthora. Like all crops propagated by cuttings, grapes cannot "out evolve" these changing challenges.

With luck, our favorite grapes will continue to thrive but no one knows when the next great threat will arrive or even how long American rootstock will continue to outmaneuver the wily phylloxera.

So next time you open a bottle of wine or think about painting a beautiful grape, be thankful that we still have them. Let's all celebrate these wonderful fruits in our art. Here's to grapes! 🍷