COPPER IRIS, *Iris fulva* (Ker Grawl.), and a General Overview of Irises

Copper Iris is a Kentucky native, rhizomatous, perennial, monocot, herb-forb, wildflower endemic to southern/central United States (AL, AR, AZ, FL, GA, IL, KY, LA, MO, MS, OH, TN, TX). Natural occurring native populations are found in wetlands in southwestern Kentucky called the Mississippi Embayment. It is listed as endangered but, due to modern horticultural practices, this species is readily/reasonably available which decreases its vulnerability to theft/poaching, habitat loss, farm/herbicides, and wetlands/swamps drainage/dredging. Iris fulva is one of the easiest irises to establish and maintain. It is

now found in private gardens and natural areas throughout the state. Copper irises are 18-36 inches tall with reports of heights reaching 5 feet. Stems may have 1-2 branches with several blade/sword-like green leaves 18-36 inches long and up to 1 inch wide. Basal leaves are present. New leaves are produced in the autumn and survive until summer – plants tend to be leafless around August. Shallow green/red/brown rhizomes have ring-like scars of old leaves. Numerous dense roots and clonal off-shoots arise from the rhizomes.

Exposed rhizomes must be kept damp during the summer and hot spells. Copper iris blooms from April to June. 1-2 flowers develop in the axils and up to 6 flowers mat develop per stem.
The slightly fragrant flowers are short lived (3-4 days), but plants bloom profusely for about 3-4 weeks. Copper iris flower colors can vary due to hybridization. Most commonly they are copper red (reddish orange to brownish orange) and tawny. Other shades include red, red orange, brown-orange, rust red, brick red, deep red, bronze and infrequently yellow or white. The slightly drooping crestless/beardless sepals (falls) and the spreading petals (standards) are the same colors. The flowers are 2-3 inches across and are flatter-topped and smaller than some other native irises. Plants produce both nectar and pollen which attracts hummingbirds, butterflies, and moths. Six-sided seed capsules are 2-3 inches long and contain 10-20 dark, flat, irregular, 10-15 millimeter long, shaped seeds that are cork covered which allows them to float and establish new plants.

Iris fulva (copper iris) prefers full/partial sun, moist, well drained, rich, clay, loamy soil that is slightly acidic – Ph 6.8-7.2. It is drought intolerant but tolerant of poor drainage and standing water up to 6 inches deep. It is listed as an OBL species – obligate wetland species. Iris fulva are adaptable to several habitats: fresh water, sloughs, swampy woods, cypress swamps, pine savannahs, roadside ditches, stream banks, wet pastures, and gardens. It is hardy in USDA zones 5-10. Its floral formula is K3C3A3G3 – fruit capsule. Copper iris (all irises) are closely related to orchids. They have similar floral formulae and irises can have one of their 3 petals be longer and lipped as the third petal of an orchid. (See attached photos)

Copper iris is in the Iridaceae family named by British botanist/taxonomist John Lindley (1799-1865) while working on his project to improve the natural system of plant classification. This Family name is based on the Genus Iris coined by Linnaeus in 1753. The iris name is derived from the Greek word iris which translates to rainbow and “eye of heaven” – a name given to both eye color and the rainbow with its many colors. Iris was also a mythical Greek goddess and messenger for the Greek gods. She used the rainbow as a bridge between Heaven (the gods) and Earth (mankind). The legend of Iris was first written by the Greek poet Homer around 700 BC. The Greeks gave Iris her name as she was personified by the rainbow which displayed the many colors of irises. Linnaeus reportedly selected Iris as the genus name due to the brilliant rainbow colors equaling those of the irises. It is also speculated that he named the genus in honor of the goddess’ beauty and possibly to emphasize the brevity of the iris flowers which reflects man’s short life span.

Plant family Iridaceae has approximately 80 genera of irises with 2200+ species worldwide and 70,000+ hybrids/cultivars. Kentucky has 5 genera with 14 species in Iridaceae. The genera are Belamcanda (L.) (blackberry lily), Crocus, Gladiolus (L.), Sisyrinchium (L.) (blue-eyed grass), and Iris (L.). The Iris genus in Kentucky has 6 native species: I. brevicaulis (rare); I. cristata (frequent); I. prismatica (threatened); I. verna (infrequent); I. virginica (infrequent); and I. fulva (endangered). There are also 2 European irises which have been naturalized: I. germanica (infrequent) and I. pseudacorus (infrequent). Two Kentucky

native irises Iris fulva (copper iris) and I. brevicaulis are listed as Louisiana irises – a group of 5 irises all native to southern Louisiana. They have hybridized to produce 43 known-named cultivars which display spectacular colors not seen in other iris groups.

Copper iris (Iris fulva) was discovered in 1811 on the banks of the Mississippi River near New Orleans. A British botanist John Bellenden Ker Grawler (1765-1842) is credited with assigning the binomial name of Iris fulva to the copper iris. He was first to describe and publish this iris in the Botanical Magazine issue 36-1812. Fulva, the Latin species name means tawny orange, a color mixture of orange, brown, and yellow. Tawny is from an Anglo/French word taune, meaning tan or tannish. Copper iris is the most common name used. Other common names are rainbow flower, swamp iris, red iris, tawny iris, red-brown flag, copper flag, and poison flag. The word flag comes from the Middle English (1200-1400) word "flakken" meaning a flag and also to "flutter" in the wind. Flag initially was a general term for any reed or rush plant. Irises were later added as they too "flutter" in the wind and appear as actual flags waving. Infrequently irises are still referred to as flags – particularly those irises that are beardless and prefer wetland habitats as Iris fulva.

All irises are listed as toxic/poisonous as they possess glycoside compounds as irisin, irone, iridin, irisine, resinoids, and pentacyclic toxicterpencids present in all iris parts with highest concentration in the rhizome. The severity/effects of these toxins depend on the amount and from which iris part was utilized/ingested. Severe poisonings are primarily seen in inquisitive dogs, cats, sheep, and cattle with younger animals being more prone to tragic results. Toxicity in animals is manifested by increased salivation, nausea/vomiting, diarrhea, decreased appetite, blisters/sores on and in muzzles/lips, and bleeding in stomach/intestines which can lead to death. Human poisonings and/or deaths are rare as plants deliver a powerful acrid, blistering, burning sensation sometimes greater than the capsicum in hot chili peppers! One bite usually stops further ingestion. Human toxic signs include skin blistering from dermal exposure, severe nausea/vomiting/diarrhea leading to dehydration and excruciating abdominal pain. Treatment is symptomatic. Kentucky Poison Control has no reports of any deaths or serious poisonings from iris ingestion.

Whether an iris can be used for culinary or medicinal purposes depends on the specific toxicity of the iris. The same compounds causing toxicity are often needed in medicinal or culinary usages. Past and present practitioners must have been or now must be extremely knowledgeable of which iris and/or dosage to select to achieve desired medicinal/culinary effects without poisoning the patient. Sometimes there is a fine line between poisoning and curing. For these reasons most medical authorities do not recommend any iris species medications be taken internally. It is not unusual for several iris species to have the same usage(s). Multiple iris species in the same vicinity/habitat can hybridize and are often used interchangeably. A web search for medical/culinary usages of copper irises was negative. But as these irises can share habitats and hybridize then it is surmised interchangeable usages did/do occur. Culinary uses of iris species are practically non-existent due to their scarcity (especially Iris fulva) and their toxicity. The only iris culinary usage reported involve two distinctively different cultures. The French people and Alaskan Eskimos once used roasted iris seeds to make a coffee type beverage. (A Starbuck's shop probably stopped this practice!)

Irises have a long history of medical applications. It was listed in America Pharmacopeia from 1820-1895 as a diuretic, laxative, purgative, and an emetic. Hundreds of usages by American Native groups/tribes are cited for iris species in Kentucky. The Cherokee and Algonquin people used the iris plants for treating

snake bites, stomach ailments, dropsy, urinary disorders, wounds, sores, ulcers, liver diseases, cathartic, and as a poultice. Iris roots were said to treat sunburn by using a potion called calamis – which is the forerunner of today's calamine lotion! A rhizome concoction was taken internally for colds, fever, cholera, and earaches. The Chippewa/Ojibwa Indians used an iris as a snake repellant. When blueberry picking, they carried a piece of an iris plant and periodically handled it to increase its scent which was believed to repel snakes. Daniel E. Moerman (b. 1941), an American anthropologist/ethnobotanist in his book Native American Ethnobotany, cites irises as a panacea for almost any Native American complaint!

Homeopaths use homeopathic concentrations from iris rhizomes to treat urinary retention, liver diseases, skin diseases, severe indigestion/abdominal pain, headaches with blurred vision, respiratory diseases, infections, sepsis, and to increase bile production. Minor complaints treated include cough, colds, diarrhea, minor wounds, acne, rashes, arthritis, and halitosis. Irises are also cited in veterinarian medicine intreating farm animals with liver/gall bladder diseases and as a laxative.

Irises are one of the oldest cultivated plants. The oldest story reported about the iris dates to 1479 BC. An Egyptian king, Thutmose III, after conquering Syria, had pictures of the irises drawn on the Temple walls and established them in the royal gardens. Horticultural uses of the iris are numerous. All parts of irises are used in perfume and aromatherapy, alcoholic beverage flavors, and many different dyes. These are a few of their horticultural usages.

By far the greatest asset of irises such as our native copper iris (Iris fulva) is their aesthetic value/appreciation for their beauty. Iris flowers/petals reflect/showcase the many colors of the rainbow and possess scents equaling prized perfumes. There are over 70,000 cultivars/hybrids with about 1,000 new ones cultivated yearly. The competition to create the showiest/prettiest/largest iris flowers with aromatic scents is extremely challenging. Iris plants/seeds in the trade magazines net millions of dollars yearly. Irises' low maintenance add to their appeal. The copper iris is an excellent plant for those desiring native gardening. Copper iris is affordable and adapts readily to most habitats. Its dense roots retain soil and help decrease bank erosion. There is a Louisville Iris Society website offering advice and learning opportunities.

The beauty of irises has been an inspiration for artists through the years. Dutch artist Vincent van Gogh (1853-1890) painted 130 known iris masterpieces. John James Audubon has a pair of northern parula warblers in his Birds of Paradise Collection. The birds are perched on a copper iris (Iris fulva)! The iris symbolized in the French fleur-de-lis has been used for centuries because of its design/symbolism. It has been used as a royal coat of arms, as a symbol of purity of the Virgin Mary, and as ornate fence toppers. Lord Baden-Powell, a retired decorated British general, founded the Scouting movement in London in 1907. Baden-Powell stated that he took inspiration for the use of the fleur-de-lis for the Scouts emblem from its use on a compass as the Northpoint. He believed it symbolized that scouts are reliable and, like a compass, lead the way.

Propagation of Iris fulva is most efficient by division of rhizomes in late summer when plants are dormant. Pre-dug holes to about 6 inches deep with generous amount of organic matter will improve root growth. New rhizomes must be kept damp especially when exposed. Space plants 16-20 inches apart. All irises in general need dividing every 3-4 years to promote good flowering. Iris seeds are not difficult to raise but it can be a very slow process. It can take 3-12 months to germinate with a 50% germination average and may take 3-5 years to flower. Seeds should be harvested from mature capsules to prevent molding.

Irises are pollinated mainly by hummingbirds (particularly the ruby-throated hummingbirds), moths, butterflies, and bees. Iris plants reward pollinators with both nectar and pollen.

Iris fulva does not have many disease/insect problems. It can be susceptible to the iris fulva mosaic virus transmitted by aphids and can be fatal if the problem is not addressed early. Insecticidal soap can control the aphids and all diseased plants should be eliminated. Copper iris rhizomes can be fed upon by onion bulb fly, lesser bulb fly, tulip bulb aphid, ground mealy bug, and iris borer moth larvae. Virginia stenucha moth and agreeable tiger moth larvae feed on copper iris foliage. The dull-barred endothemia moth larvae bore into its seed capsules and picture-wing fly larvae feed on the flower buds. Thrips are known to feed on the flowers. Due to the iris plant toxicity most animals usually leave the foliage alone. However, muskrats will feed on the rhizomes and lower stems. Copper iris is listed as deer resistant.

Iris Folklore and Interesting Trivia – Floriography (Victorian language of flowers) and their cryptic meanings and powers is extensive for irises. They communicate/relay messages of courage, faith, fire, flame, friendship, good news, grace, burning love, ideas, personal messages, compliments, promise of love, pure heart, purity, rainbows, travel, victory, pain, and sorrow. Floriography powers of irises include authority, healing, magic energy, power, spirits, purification, and reincarnation since the 5th century AD. The iris has been a sacred symbol of divine power and royalty. The three petals symbolize faith, wisdom, and valor. The message of hope is attributed to the iris as it is an early bloomer known o come up through the snow. The Victorian language of the iris means that an important message was coming via a small bouquet called a mussie-tussie or a nosegay. Irises paired with bluebells represented humility in victory; when paired with clematis reflected admiration for ingenuity; iris paired with jasmine showed admiration for a friend's strength of character; and passionflower/iris combo was used as a gift for a religious leader.

In numerology (the meaning of the number of petals) the number denotes the union of two opposites and represents female sexuality. The triangle symbolizes geometric aspects of the three iris petals. According to the doctrine of signatures, the sword-shaped iris leaves represent wisdom cutting through ignorance and nonsense. (Teachers may consider an iris plant for their classroom.)

In early French history, the iris was the symbol of Gaul victories since the first century AD when King Clovis I had three irises on his shield. The ampulla (flask) that held the sacred oil which anointed Clovis I was adorned with an iris also. As time went on the iris came to represent French monarchy and their divine right to rule. It is still used on the French coat of arms. Around the 12th century French King Louis VII selected the iris as his official house emblem. It became known as the fleur-de-lis, fleur-de-lys, or fleur-de-luce – all corruptions of fleur de Louis (flower of Louis). Fleur-de-lis is French for flower of the lily! However, the flower, whether a lily or an iris, has been hotly debated for centuries. Most authorities recognize the iris as the flower depicted on the fleur-de-lis, based on extensive research, descriptions, and drawings.

Interesting Iris Trivia – Iris, the Greek messenger goddess, also guided souls, especially those of women, to eternity/Elysian Fields after death. As a tribute to Iris, Greek men placed irises on the graves of their beloved. Egyptians held all irises as sacred and as a symbol of power. Irises are found carved into pyramids, the Temple of Karnac, and grace the Sphinx's brow. The trinity of iris petals/sepals are dedicated to the Virgin Mary. Irises are one of Mary's garden flowers. Irises have also been used to represent the Christ Child.

There is a story that the Greeks used a machairon iris root ground with wheat flour to create a pasta. The Italians later shortened the pasta's name to macaroni!

Irises are used as state flowers in 3 states:

Louisiana – Iris giganticaerulea – one of the 5 Louisiana irises – state flower

Michigan – Iris lacustris – Dwarf Lake Iris – state wildflower

Tennessee – Iris genus (official state cultivated flower)

Nashville has been known as Iris City for its mail order iris sales since 1931. White irises symbolize purity, sorrow and mourning. Muslims plant them on graves of loved ones.

All parts of irises have been used to create dyes that span the spectrum. Researchers in India have shown that iris rhizomes can increase fat conversion to waste and are using them in treating obesity. Flowers for a 25th Anniversary are irises. Iris is the traditional western culture flowers of the month of February. Iris is one of the zodiac flowers for Gemini (May 21-June 20). It is the national flower of France, Croatia, and Jordan.

Orris, a compound in some irises, possess a strong violet scent used in cosmetics and can also be used as a fixative which causes perfumes to hold their scent longer. An extract from orris irises is used in making gin. This extract is suspected to be the reason some people are allergic to gin! Today iris usage in making perfumes/cosmetics (especially in Mexico) ranks second to the horticultural purposes of iris. Iris leaves have been used for centuries to make toy boats for children of many cultures.

As a native Louisvillian I should not forget to comment on the fleur-de-lis iris as an emblem for the city of Louisville. The current (2003) symbol is a fleur-de-lis iris in honor od King Louis XVI, for whom Louisville is named in honor of his support in the American Revolution. There are also two stars representing Louisville and Jefferson County, whose governments merged in 2003. This symbol graces Louisville's flag, seal, documents, and many municipal vehicles and buildings.

Iris fulva is a native endangered Kentucky wildflower whose populations are continued victims of habitat loss, agricultural herbicides, dredging, and (worst of all) deliberate poaching. Fortunately, horticultural measures have made Iris fulva available and affordable and can be found in gardens throughout the commonwealth. This article has hopefully increased the reader's appreciation of all the symbolic, religious, political/heraldic, artistic, dynastic, horticultural and medical usages that irises serve. On your nature walks, especially around wetlands, keep an eye out for Iris fulva, all the other native Kentucky irises, and any iris you may be lucky enough to encounter. Remember to look, smell, admire, and take pictures to share with other nature lovers. Don't pick or eat! Thanks.

Chris Bidwell – naturalist, past president of the Kentucky Society of Natural History

Mary Alice Bidwell – without her typing skills this paper would never be seen

Susan Wilson – Photographer

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