

Waterfowl Habitat--Banana Water Lily By: Jim Hills

Banana Water Lily, *Nymphaea mexicana* or *Castalia mexicana* as it used to be called, is an underappreciated and under utilized waterfowl food that is gaining acceptance as a real winner. Long known to be a great diver duck food source, it has been shown in our demonstration impoundment at Ingleside Plantation in Georgetown, South Carolina, to be a superior waterfowl food source for dabblers as well. We have approximately 15 acres of Banana Water Lily in a 19 acre impoundment that consistently held approximately 600 waterfowl from late October, 2010 till mid-March, 2011, with the peak of approximately 3000 birds in mid-November, just prior to duck season. A short video of the Ingleside impoundment last fall can be viewed on You Tube at the link:
<http://www.youtube.com/watch?v=hjVSbYIXsWo>

The surprising thing we discovered in 2010, was that when we lowered the water level from our normal 21-35 inches of water to 12-18 inches of water, the number of different species of waterfowl increased dramatically. We went from primarily Ring Necks, Coots and Green Wing Teal, to adding Blue Wing Teal, Shovellers, Gadwall, Widgeon, Pintails, Mallards and a large number of Wood Ducks. We held this diversity of birds throughout the season and added about 40 Canvasbacks in February, a first for us. This has led us to recommend that Banana Water Lily be managed at a lower water level in the winter if maximum waterfowl usage is desired. This water level change allowed us to carry approximately 50% more waterfowl on average than we have experienced before at the higher water level. Time will tell if this will hold up in the future. It has prompted us to convert an additional 100 acres to Banana Water Lily with another 62 acres to follow this coming year. Cost is a big reason we are converting, as input costs continue to rise in our sport. Anything that can lower the cost of our duck hunting gets our attention. Although there is a cost associated with acquiring and planting the Banana Water Lily, the costs diminish dramatically after the first year. We will not have to plow it, fertilize it, spray it with herbicides, or fence out the deer, so the labor cost to manage it will be dramatically lowered after the initial installation cost. Banana Water Lily is not as dependent on good weather as dry land crops, thus it is more dependable. **The bullet points for Banana Water Lily are: (1) permanently flooded (2) natural regeneration (3) lower input costs over time (4) superior food source.** I have had this plant in my impoundment for almost 20 years and believe it is a way to have quality hunting at a much lower cost.



Duck's Eye View of Banana Water Lily



Banana Water Lily growing in a Georgetown, South Carolina Impoundment

Banana Water Lily flowers emerge from the water on day one and open at around 11 a.m. to be pollinated and close around 4 p.m. The flower stays above water for a second day, opening and closing as the previous day, then submerges to form a fig-like fruit underwater that produces as many as 60 seeds, each the size of Milo. Every flower you see stays visible for two days only so it is easy to see why this plant, that begins to flower in early May and continues into the fall, is such a prolific food source. Every day the numbers of blooms, in the thousands, are submerging after pollination to produce fruit and new blooms are emerging to get pollinated. The numbers of blooms seem to never diminish until later in the fall as the plants begin to form the starchy banana-like tubers that hibernate below the root system until a duck eats it or it sprouts next spring. The Banana Water Lily reproduces in three ways: from seeds, from rhizomes that sprout from another plant and from the banana hibernacula that awaken in the spring to form a new plant. Waterfowl will consume the fruit, seeds, banana tubers and small plants. They will even uproot entire large plants that will float to the surface to then be picked apart by the feeding waterfowl.

Propagation

Establishment is commenced in February, March and April by planting the live plants in shallow water 12 to 18 inches deep. We have planted all of the way through the summer with diminishing success as the season begins to shorten. The best success is a late winter-early spring planting with plants at 5 foot intervals for coverage in one year or 10 foot intervals to get decent coverage in two years. If you have a well established plant population in an existing pond and you wish to change to Banana Water Lily, you may need to prepare your pond the previous fall with herbicide work to eliminate the potential competition the following spring. There may be management options with water control or salinity that will help on competition. We can help with advice on how best to accomplish this.



**Upland Impoundment at Mt. Pleasant Plantation near Andrews, S.C.
Planted to Banana Water Lily**

We recently assisted Nat Ruth, manager of Mt. Pleasant Plantation, in establishing Banana Water Lily in an upland impoundment that had been previously drained, planted and re-flooded annually. We have been pleased at the success of this project and how well the plants adjusted to this application.

Banana water lily has a long and storied history dating to the late 1800's and early 1900's when wealthy business titans learned of its merits at attracting and holding waterfowl, especially the prized Canvasback. Edward McIlhenny had Banana Water Lily at Avery Island, Louisiana, home of Tabasco Sauce. Isaac Emerson inventor of Bromo-Seltzer had Banana Water Lily at Arcadia Plantation in Georgetown, SC, and Senator Gayer Dominick, of Dominick and Dominick on Wall Street, had Banana Water Lily at his hunting retreat on Bull's Island just south of McClellanville, S.C. Dominick sold Bull's Island in 1936 to the Fish and Wildlife Service to become part of the Cape Romain Wildlife Refuge. In 1937 the CCC Corps set up camp on Bull's Island and built the Jack's Creek Pond, a 750 acre impoundment on the northern end of Bull's Island. When Jack's Creek Pond was completed, the Fish and Wildlife Service planted Banana Water Lily in this impoundment to complement the 400 acres of other impoundments that Dominick had planted in Banana Water Lily. John Cely, retired SCDNR biologist, reported in 1979 that 37% of the estimated Canvasbacks wintering in 1977 in South Carolina were eating Banana Water Lily.

W.L. McAtee, USDA Biologist, author, and waterfowl food expert, wrote about Banana Water Lily in USDA Bulletin 465 in 1917.

The following is an excerpt from the above mentioned USDA Bulletin:

BANANA WATER LILY

VALUE AS DUCK FOOD:

The writer has investigated the value of the Banana Water Lily (*Castalia mexicana*) as a food for wild ducks in only one locality-Lake Surprise, Tex. The proofs of its importance are so great, however, that they should be brought to the attention of American sportsmen. At Lake Surprise the Banana Water Lily alone made up nearly half of the entire food of the 10 vegetarian species of ducks occurring there at the time. This showing is much more significant from the fact that sago pondweed (*Potamogeton pectinatus*) also was abundant in the lake. The latter plant (see p. 17), in the writer's opinion, is the best all-round duck food in North America, yet at Lake Surprise it furnished somewhat less than 29 per cent of the food of the ducks, in comparison with more than 48 per cent supplied by *Castalia mexicana*.

Thirty-seven Canvasbacks collected at Lake Surprise had eaten various parts of this plant to the extent of 71.6 per cent of their diet. This is a second illustration of the unusual phenomenon of the Canvasback's being attracted to shallow water by a highly prized food. Six Ringneck Ducks, or Blackjacks, made more than 91 per cent of their food of this plant, and two southern Black Ducks (*Anas fulvifilla*) 98 per cent. The following ducks also were feeding on the plant: Mallard, Pintail, Lesser Scaup, Redhead, and Shoveller. The parts eaten are the rootstocks, stolons, tubers, and seeds. Mr. Charles W. Ward has furnished rootstocks of *Castalia mexicana* from Avery Island, La., with the information that this plant and wild celery (*Vallisneria spiralis*) furnish the bulk of the food of Canvasbacks in that locality.

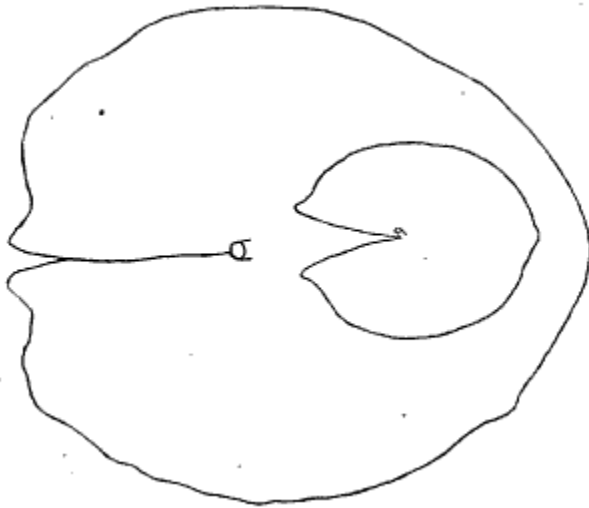


FIG. 32-Two types of leaves of Banana Water Lily (The larger outline half natural size)

DESCRIPTION OF PLANT:

The Banana Water Lily is the only native species of the group of true Water Lilies (as discussed above) that has yellow flowers. But the leaves and flowers of this species may either float on the surface of the water or stand a few inches above it. The leaves are green above with brown mottling and vary from greenish to purplish red below with small black markings. The edges of the cleft of the leaf are either somewhat separated or overlapping (fig. 32). The plant springs from an upright rootstock (fig. 33) which bears some resemblance to an unopened pine cone. The rootstocks vary in size up to 2 inches thick and 12 inches long. The smaller ones (at least up to 12 inches long by three-fourths of an inch thick) are swallowed by ducks.

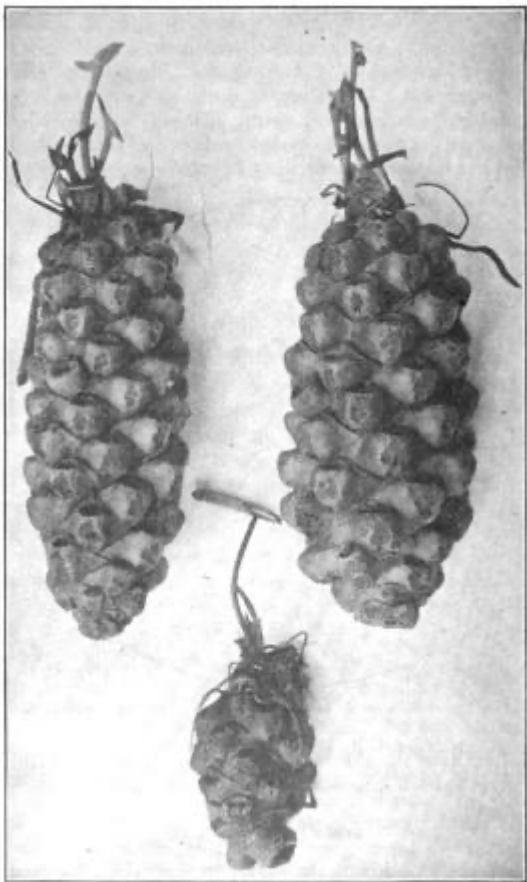
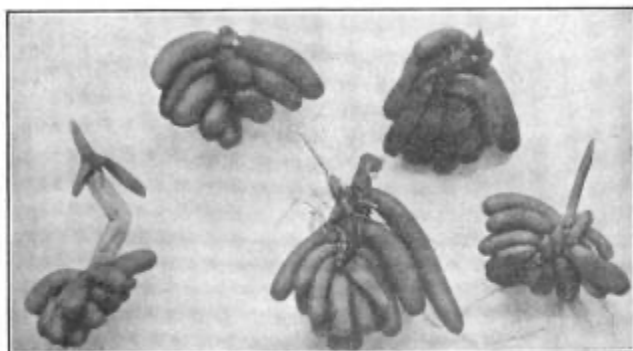


FIG. 33.—Small rootstocks of Banana Water Lily (Natural Size)

Tender white stolons or runners extend in various directions from the rootstock. These runners are from a quarter to half an inch in diameter. During the active growing season they give rise to new plants, but in autumn they form peculiar hibernating bodies. These consist of the short modified tip of the stolon, which bears several (1 to 7) upwardly directed buds on one side and a cluster (2 to 17) of thick tuber-like roots on the other. The appearance of these (fig. 34) is strongly suggestive of a miniature "hand" of bananas, and for this reason the name Banana Water Lily has been proposed for this plant, which has no distinctive vernacular appellation. The name has the additional merit of suggesting the yellow color of the tubers and of the flowers.



BIMM
FIG. 34 - Hibernating bodies of Banana Water Lily (Two-thirds natural size)

DISTRIBUTION:

The Banana Water Lily has been known chiefly as a native of Florida, and the plants of that State have long gone under the name *Castalia flava*. Plants identified from a few localities in Mexico and from Brownsville, Tex., have been called *Castalia mexicana*. Dr. H. S. Conard, who has monographed the genus, unites these species, as he is fully justified in doing, on the basis of their possession in common of characters unique among Water Lilies. The new records of the plant from Galveston, Tex., and Avery Island, La., go far toward bridging the previous apparent gap in distribution of the plant and toward corroborating Dr. Conard's views. The accompanying map (fig. 35) shows the probable natural range of the species along the Gulf coast and in Mexico.

Publication No. 4, Carnegie Institution, 1905



FIG. 35.—Range of banana waterlily.

PROPAGATION:

Although the Banana Water Lily is native to only a small portion of the United States, it can be successfully grown over practically the whole country. The plant has long been familiar in cultivation and is sold by most dealers in ornamental aquatics. The Water Lily expert of one of the largest firms in the United States reports that *Castalia mexicana* is perfectly hardy as far north as New York City when covered with a foot of water, and he believes that if covered with 2 feet of water it would be hardy at Boston.

The Banana Water Lily needs an abundance of sunlight, water from 1 to 3 feet deep, and a mud bottom. It is not injured by a trace of salt, as is shown by its growing in lakes very near the coast. The rootstocks may be planted by weighting them with stones and dropping where desired. Having great vitality, they may be shipped with only moderate precautions to prevent them from drying, and may be transplanted at almost any time of the year. When established it will spread to places where the water is even 5 feet deep.

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