



TUZIGOOT

Tavasci Marsh 1865 - Present

Transferred to the National Park Service in 2005, Tavasci Marsh is a unique riparian area within the Verde River watershed. Separated from the Verde River some 10,000 years ago, Tavasci Marsh and the adjacent Peck's Lake existed as a spring-fed oxbow ecosystem until the late nineteenth century when EuroAmerican settlers began to pour into the valley.

Upon acquiring Tavasci Marsh, the National Park Service embarked on a study to recreate the history of the marsh (Stoutamire 2011), summarized below, and began endeavors to study, rehabilitate, and enhance this unique marsh habitat, now one of the largest freshwater marshes in northern Arizona.

History of Land Use

According to L.A. Hawkins, one of the earliest settlers in the Upper Verde Valley, in the 1860s, the Verde River "bottom was from on half to one mile wide, and was covered with a dense forest of trees, with thick underbrush, which it was very difficult to even get through on foot, every half mile or mile there would be a beaver dam."

One hundred fifty years of irrigation, cultivation, mining, and grazing activities have greatly altered the waterways, plants, and wildlife associated with this region, creating a new landscape that scarcely resembles the condition described by Hawkins and observed by the first generation of settlers in the Verde Valley.

1865 – Cattlemen and farmers begin to enter the Upper Verde River Valley.

1876 – Morris Andrew Ruffner claims the first copper ore deposits near present-day Jerome.

1884 – The first Tavasci Marsh area homesteader's deed is issued to Harriet M. Hawkins. The Hawkins family irrigates 37 acres of their property, located on the western side of Tuzigoot Hill, with water drawn from the river. Known as Hawkins Ditch, this minor irrigation system is the first American attempt to irrigate and cultivate the riparian zone in the vicinity of the marsh. By the 1890s, other homestead-

OVERVIEW



NATIONAL PARK SERVICE (NPS 2011)

View of Tavasci Marsh from the viewing platform, 2011.

ers also use the ditch, as well as the spring (later named Shea Spring) to the north of the marsh.

1896 – Hawkins Ditch is abandoned in favor of Brewer's Tunnel, which redirects water from the Verde River across the property of Hugh Brewer, through a pipeline spanning Peck's Lake, around the north and east sides of Tuzigoot Hill, and back to the river to the south. Brewer's Tunnel remains in use until 1991.

1900 – The O'Shea family acquires the property to the northeast of Tuzigoot Hill, and in 1906, add 80 acres, including the north side of Tuzigoot. Middle Ditch, a canal running through the marsh itself, is likely built at this time, simultaneously draining the marsh of water for irrigation, while creating drier grazing lands for cattle. Like Brewer Tunnel, Middle Ditch remains operable until 1991.

1911 – The United Verde Copper Company purchases the O'Shea Family Ranch, along with a number of other independent ranches, for a total of 2,000 acres of property buffering the Clarkdale Smelter. These purchases are meant to prevent future lawsuits regarding pollution damage to crops.

1912/1913 – The Upper Verde Farm and Orchard Company is established to manage the holdings of the United Verde Copper Company, including the O'Shea Family Ranch. The company builds the Verde Valley Golf Club around Peck's Lake, drawing supplemental water from the Verde River





Clarkdale Dairy, ca. 1930s. Courtesy of John Tavasci, Sr.



View of the Verde Valley from Tuzigoot, ca. 1940, with the Clarkdale Smelter visible in the distance. Tavasci Marsh is to the left.

1915 – Clarkdale Smelter is completed. The tailings pond is located immediately south of Tuzigoot Hill and southwest of Tavasci Marsh.

1928 – The Upper Verde Farm and Orchard Company reconveys their properties to the United Verde Copper Company, which in turn, leases the Tavasci Marsh area to the Tavasci family (for which the marsh is named) and their partners for use as a dairy farm. The Tavascis are also granted the use of four adjoining sections of lands to the north and east for grazing purposes.

1930s – By now, the Tavascis have created a three-tiered drainage system that effectively reduces the marsh to 15 acres and expands the irrigation capacity of the farm. To maintain the pasturelands, the Tavascis conduct annual controlled burns of the pervasive native cattail, dynamite mesquite bosques to clear additional land, trap and shoot the beaver that dam up the irrigation ditches (the dams caused the canals to flood), and introduce Bermuda grass, which provides both fodder for the cattle and stabilizes the irrigation system.

1939 – The National Park Service establishes Tuzigoot National Monument.

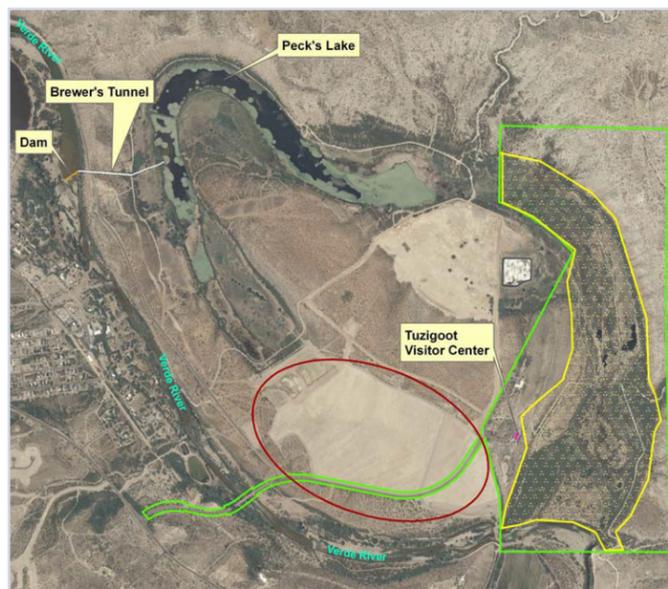
1946 – The Tavascis triple their herd and the dairy reaches maximum capacity. With so many workers, the Tavascis supplement their food with fish (collected using dynamite, which proved just as effective for fishing as it was in removing mesquite), hunting the local duck, and by introducing bullfrogs, the latter of which, although successful as a food resource and profitable in the markets of Cottonwood and Clarkdale, ultimately overpopulate all of the Upper Verde Valley.

1950s – Increased public awareness and technological advances in pasteurization, homogenization, and dairy transport cause financial problems with the dairy, which had been hand delivering their produces since the 1920s. Working with the Bridgeport Soil Conservation District, the Tavascis level 109 acres of the old farm to create permanent pastures. Brewers Tunnel is deepened and widened, with new irrigation structures added, and ryegrass, orchard grass, tall fescue grass, and a variety of legumes are introduced.

1953 – The mines in Jerome close.

1958 – The Clarkdale Dairy closes, but the Tavascis maintain their beef operation, for which they had been preparing since 1951. In the late 1950s, the Tavascis permit the Uribe family to use one acre of land in the southern fields to grow corn, tomatoes, string beans, and sugar cane.

1970s/1980s – The Tavascis allow elementary school educational tours and high school graduation parties, ultimately fostering within the community a public attachment to the marsh.



Location of Tavasci Marsh area at Tuzigoot National Monument (yellow). The green is the Monument boundary, and the red oval marks the Clarkdale Smelter tailings pond. Original image, National Park Service, 2005.

NATIONAL PARK SERVICE

Habitat Percentages for Tavasci Marsh (NPS 2011)*

	Habitat	Current
	Open Water (Both deep and shallow)	2.3
	Freshwater Marsh (Cattails and bulrushes)	69.5
	Wet/Moist Meadow (Short sedges and rushes)	11.1
	Wet/Moist Grassland (Wild rye)	4.0
	Riparian Scrub-Shrub (Arrowweed, scrub willows)	0.1
	Riparian Forest (Cottonwood, Gooding willow)	1.9

* From Ryan and Parsons (2009).

1986 – Phelps Dodge Corporation plans to build a large residential neighborhood – the Verde Valley Ranch – west of Tavasci Marsh, but after not being able to acquire the land, turn to the marsh itself.

1990 - Pressure from both the public and the National Park Service (as well as the realization that the marsh lay below the 100-year floodplain) resulted in Phelps Dodge entering a cooperative agreement with the Arizona Game and Fish Department for the management and restoration of Tavasci Marsh.

1991 – The Tavascis’ grazing lease is canceled, and the cattle (and remaining Tavasci family) are removed from the old ranch. With funding from U.S. Fish and Wildlife, Game and Fish installs water control features that restore the marsh to its historic size (80 acres), and add an observation deck and small trail system to create what is now considered an important birding site by the Audubon Society.

1993 – The road through Tavasci Marsh (used to access Dead Horse Ranch State Park) is no longer maintained and becomes clogged with debris. Beavers begin to anchor their dams to the old roadway.

1998 – A large beaver dam brings marsh waters to 18 inches above Fish and Game’s water control features. The marsh expands, flooding the former pasturelands and crop fields.

2005 – The National Park Service acquires Tavasci Marsh, now approximately 96 acres in size. The Park Service begins plant and vertebrate inventories and water quality sampling.

Tavasci Marsh Today

Since acquiring Tavasci Marsh in 2005, the National Park Service has actively pursued restoring and enhancing the marsh habitat. While addressing the threat of West Nile Virus (carried by mosquitoes), the National Park Service began seeking funding to collect baseline environmental data. The Arizona Water Protection Fund was granted in 2008, and in 2009, the National Park Service completed the Tavasci Marsh Wetland Assessment (Ryan and Parsons 2009). In 2010, the Tavasci Marsh Interagency Wildlife Habitat Workshop was held, during which the National Park Service and other interested parties discussed and settled on management and research priorities.

While the marsh appears healthy overall, the preliminary data from these research projects indicate the presence of contaminants in the marsh, including copper, arsenic, and barium, as well as lower, background levels of cadmium, nickel, lead, and zinc. The long history of use as farmland and pasture has also altered the hydrology of the marsh, and as a result, the diversity of plant and animal communities. Cattail dominance within the marsh, for example, has increased 650 percent since 1988, while the riparian habitat along the perimeter of the marsh has steadily decreased (Ryan and Parsons 2009). A host of non-native plant and animal species also now reside within the marsh, while many native species, including the lowland leopard frog can no longer be found in Tavasci Marsh (NPS 2011).



Cattails in Tavasci Marsh.

NATIONAL PARK SERVICE



View of Tavasci Marsh from Tuzigoot Pueblo in July, 2010.

The Future

The National Park Service continues to investigate Tavasci Marsh to determine the nature and extent of the contamination, while focusing on enhancing the wildlife and fish habitat, promoting long-term sustainability, and increasing the recreational, interpretive, and educational use of the marsh.

Literature Cited

National Park Service

2011 *Tavasci Marsh Management and Habitat Enhancement Plan Environmental Assessment*. Tuzigoot National Monument, Yavapai County, AZ. National Park Service, U.S. Department of the Interior.

Ryan, Amelia and Lorraine Parsons

2009 *Tavasci Marsh Wetland Assessment: Wetland Vegetation Communities, Condition, and Functions*. Tuzigoot National Monument, Yavapai County, AZ. National Park Service, U.S. Department of the Interior.

Stoutamire, William

2011 *Water in the Desert: A History of Arizona's Tavasci Marsh, 1865-2005*. Tuzigoot National Monument Tavasci Marsh Special History Study. Intermountain Cultural Resource Management Professional Paper No. 77. National Park Service, Intermountain Region, Cultural Resource Management, Santa Fe.