

# Results of Fall and Spring Sowing of Wild Rice Seed in the La Crosse River Marsh



Friends of the La Crosse River Marsh  
September 2016

## Introduction

Wild rice (*Zizania sp.*) is an extremely important native aquatic plant providing food for waterfowl, song birds and habitat for birds and nursery areas for small fish and invertebrates. Wild rice is found along the Mississippi River bordering Wisconsin and its abundance has increased noticeably in recent years. Wild rice has also been found in the La Crosse Marsh in 2014 and 2015, but only a few isolated plants have been found. The Friends of the La Crosse River Marsh obtained permission from the City of La Crosse and the Wisconsin DNR (property owners) in September 2015 to conduct a pilot study to see if it would be possible to increase the abundance of this important plant in the La Crosse Marsh by sowing locally obtained wild rice seed into the marsh at select locations.

## Methods

Wild rice seed was collected in September 2015 from the Upper Mississippi River National Wildlife and Fish Refuge after obtaining a special use permit for this activity. Seed was harvested by canoe from the east side of Dresbach Island in lower Pool 7 using traditional means. This consisted of poling through wild rice beds and carefully dislodging seeds from mature plants with 3 ft long planting stakes into an opened canoe. The seed was then gathered from the canoe and placed in a plastic bag and returned from the field in a cooler with ice. Upon return from the field, the seed was placed in a large plastic or glass jars. Tap water was added completely filling the jars leaving little air space. The jars were placed in a refrigerator and kept at a temperature of 35 F to 40 F until sowing.

Rice seed was sowed in the La Crosse Marsh by canoe on November 18, 2015 along two transects (sites) where wild rice plants have been noticed in previous surveys. The beginning and ending locations of the sowing transects were geo-located using a Garmin 76 GPS receiver using the WGS84 datum. Spring sowing occurred on April 17, 2016 in the southeast portion of the marsh near the inflow of Silver Creek (Map 1). The purpose of the two sowing periods was to test potential differences in plant response from fall versus spring sowing. The areas selected for sowing were in areas of open water and adjacent to existing beds of emergent vegetation (primarily bulrush and bur-reed). Water depths ranged from about 1 to 2.5 ft at the time of sowing.

Germination tests were performed on stored seed in March 2016. Batches of 20 refrigerated seeds were placed in small glass jars with water and exposed to a

cycle of 12 hrs light and 12 dark at temperatures of 80 F and 60 F, respectively for a period of two weeks. Successful germination was determined based on the development of a root shoot. The average germination rate of these tests was about 70%.

Field surveys in the spring and fall of 2016 were conducted by canoe. It was necessary to use a pole to propel the canoe due to the presence of moderately thick mats of duckweeds, filamentous algae, submersed and emergent vegetation. Site locations were again determined with a GPS receiver.

## Field Results

The first field inspection of wild rice sowing sites was conducted by canoe on May 22nd. Small seedlings were emerging from the water and were only observed at the east site that was sowed on November 18<sup>th</sup> (Photos 1 & 2). A few hundred rice stalks and leaves were noted at or near the water's surface. The seedlings formed a linear pattern on the water's surface that closely covered the area sowed the previous fall. The reasons for the complete absence of rice at the west site sowed in the fall and the south site sowed in the spring was not certain. However, both areas had thick mats of duckweed and or filamentous algae in late May. Further, the west site had dense submersed aquatic vegetation consisting of coontail and Canadian waterweed. It is suspected that these plants may have reduced light availability for wild rice seedling development. An additional potential factor was foraging of young seedling plants by geese and muskrats, which are common in the marsh. This factor was confirmed in a subsequent survey on May 29<sup>th</sup> when the emerging rice wild rice at the east site showed signs of heavy foraging by wildlife (Photo 3).

A second canoe survey of wild rice sowing sites was conducted on August 14<sup>th</sup> at a time when wild rice was expected to be forming its flowering head on tall stalks. For the spring and fall sowing sites, rice was only observed at the east site where about 30 to 40 small plants (less than 3 ft above the water's surface) were scattered over the sowing area (Photo 4). Only a few plants contained developing seed heads. There was evidence of foraging which likely greatly restricted rice development. A few tall, robust wild rice plants (5 to 8 ft tall) were present within nearby emergent plant communities, but these likely developed from seeds produced from plants present in the marsh last summer or germination of dormant seed that was present in the sediment.

A third canoe survey was conducted on August 21<sup>st</sup> over a large portion of the La Crosse Marsh. The purpose of this survey was to identify locations, abundance and general habitat conditions where wild rice was growing. Wild rice plants were identified by the presence of seed heads which normally towered over other emergent vegetation or the water's surface. This approach likely underestimated wild rice plant abundance since plants without seed heads were likely overlooked. The survey revealed wild rice tended to be concentrated in the east-central portion of the marsh (Map 2). Highest plant abundance was in or near the east site that was sowed in November 2015. Although fall sowing likely increased the abundance in this area, a large portion of the plants found in adjacent areas were likely the result of natural seeding from mature plants that grew last year or the germination of dormant seed present in the sediment.

The spatial survey conducted August 21<sup>st</sup> revealed wild rice was generally found in water depths ranging from 2 to 3.5 ft and was mostly mixed in with other emergent vegetation including bulrush, bur-reed and cattails. Plants growing in open water areas were noticeably smaller and evidence of foraging by wildlife was common. This survey also revealed that wild rice was present in the western portion of the La Crosse Marsh study area, but in very low abundance (Map 2).

### Recommendation

It is recommended a second effort at sowing wild rice seed be conducted in the La Crosse Marsh in late fall of 2016. Sowing should concentrate on distributing the seed within emergent plant beds that are growing adjacent to open water areas. It is suspected that seedlings may have a greater chance to reach maturity since they may be more difficult to find by foraging wildlife. Areas selected for sowing should be in locations where wild rice plants were absent this year to more closely evaluate the success of this seeding. Evaluations of seedling and plant development should again be made the following spring and summer to establish if this plant management activity was successful.



Map 1. La Crosse River Marsh showing wild rice sowing dates and locations. Start and ends of sowing transects are indicated by lat/lon coordinates.

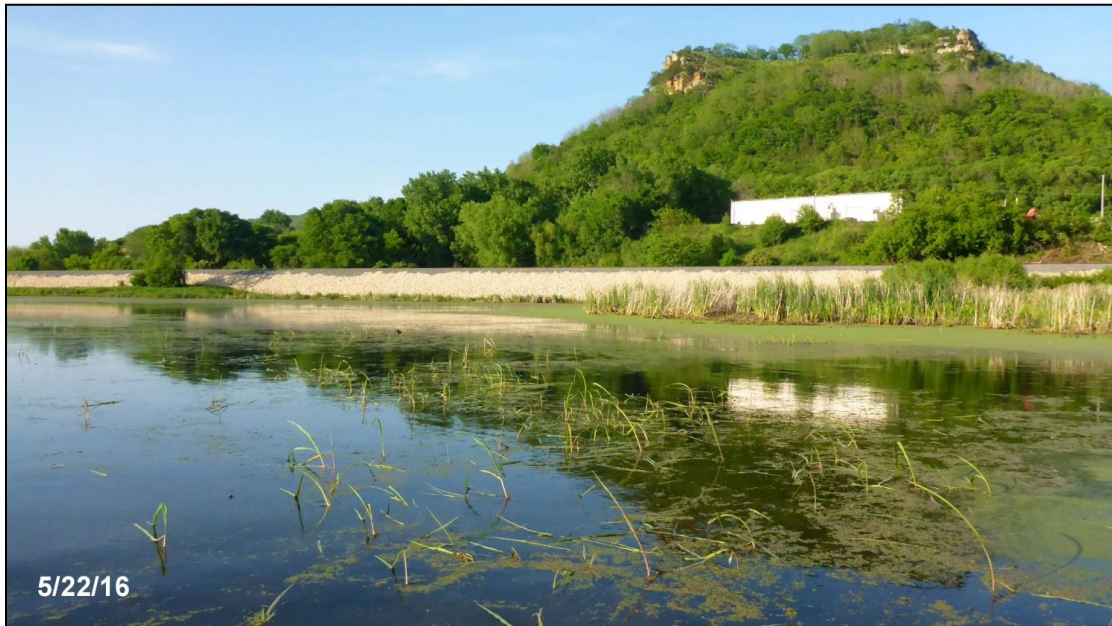


Photo 1. Wild rice at the east side of the La Crosse Marsh on May 22, 2016.



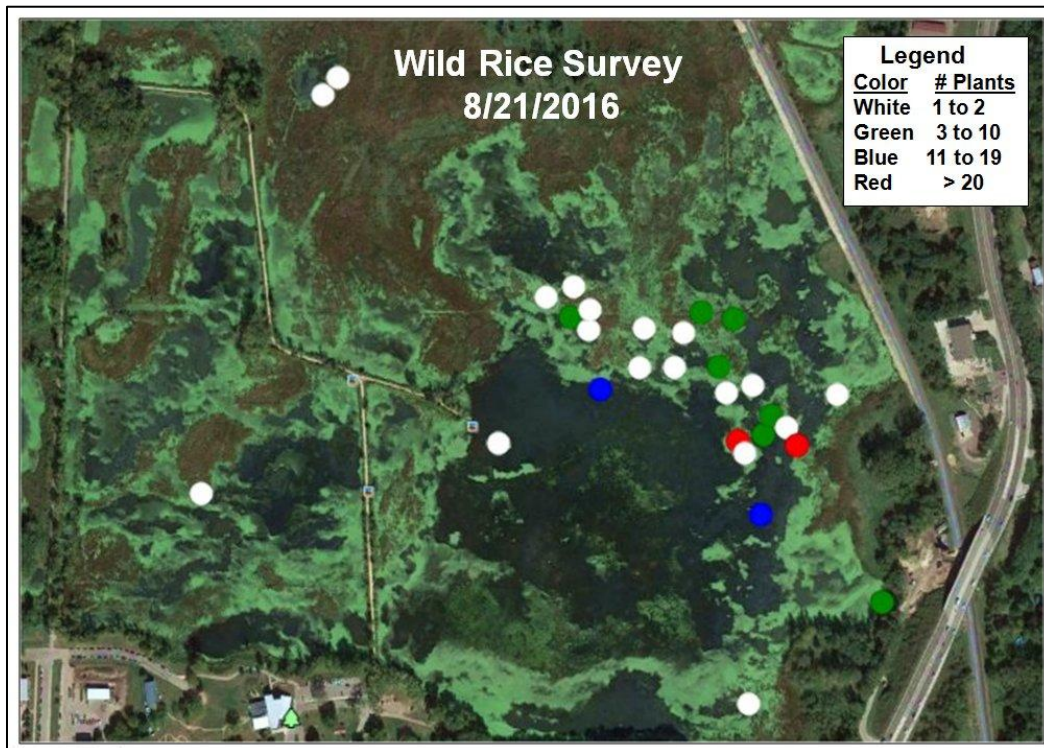
Photo 2. A closer view of wild rice on May 22, 2016.



Photo 3. Evidence of heavy foraging of wild rice on May 29, 2016.



Photo 4. Wild rice growing at the east sowing site August 14, 2016.



Map 2. Wild rice distribution and abundance August 21, 2016.

**Table 2. Wild rice survey results of the La Crosse Marsh on August 21, 2016.**

| Lat. deg. | Lon. deg. | Site No. | No. Plants | Size | Depth ft | Habitat | Other Emergents   |
|-----------|-----------|----------|------------|------|----------|---------|-------------------|
| 43.82234  | -91.21930 | 188      | 1          | T    | 2.0      | Emerg.  | Bulrush           |
| 43.82333  | -91.21745 | 189      | 3          | T    | 2.0      | Emerg.  | Bulrush           |
| 43.82421  | -91.21910 | 190      | 12         | S    | 2.5      | OW      | None              |
| 43.82489  | -91.21859 | 192      | 40         | S    | 2.0      | OW      | None              |
| 43.82539  | -91.21803 | 193      | 2          | S    | 2.5      | OW      | None              |
| 43.82622  | -91.21988 | 195      | 6          | T    | 2.0      | Emerg.  | Bulrush           |
| 43.82615  | -91.21944 | 196      | 3          | T    | 2.0      | Emerg.  | Bulrush           |
| 43.82549  | -91.21919 | 197      | 2          | T    | 2.0      | Emerg.  | Bulrush, Bur-reed |
| 43.82519  | -91.21894 | 198      | 5          | T    | 2.0      | Emerg.  | Bulrush, Bur-reed |
| 43.82507  | -91.21873 | 199      | 1          | S    | 2.5      | OW      | None              |
| 43.82500  | -91.21905 | 200      | 3          | T    | 2.5      | Emerg.  | Bulrush           |
| 43.82482  | -91.21931 | 201      | 2          | S    | 3.0      | OW      | None              |
| 43.82494  | -91.21940 | 202      | 35         | S    | 3.5      | OW      | None              |
| 43.82542  | -91.21955 | 203      | 2          | S    | 3.0      | OW      | None              |
| 43.82568  | -91.21965 | 204      | 6          | T    | 2.5      | Emerg.  | Bulrush           |
| 43.82568  | -91.22026 | 205      | 2          | T    | 3.0      | Emerg.  | Bulrush           |
| 43.82602  | -91.22013 | 206      | 1          | T    | 2.5      | Emerg.  | Bulrush, Bur-reed |
| 43.82607  | -91.22067 | 207      | 1          | T    | 2.0      | Emerg.  | Cattail, Bulrush  |
| 43.82568  | -91.22074 | 208      | 1          | T    | 2.0      | Emerg.  | Cattail, Bulrush  |
| 43.82547  | -91.22128 | 209      | 15         | T    | 2.5      | Emerg.  | Bulrush           |
| 43.82606  | -91.22143 | 210      | 2          | T    | 2.5      | Emerg.  | Bulrush           |
| 43.82619  | -91.22168 | 211      | 4          | T    | 2.5      | Emerg.  | Bulrush           |
| 43.82626  | -91.22141 | 212      | 1          | T    | 3.0      | Emerg.  | Bulrush           |
| 43.82649  | -91.22163 | 213      | 1          | T    | 2.0      | Emerg.  | Bulrush           |
| 43.82639  | -91.22201 | 214      | 1          | T    | 2.5      | Emerg.  | Bulrush           |
| 43.82842  | -91.22504 | 215      | 2          | T    | 2.0      | Emerg.  | Bulrush, Bur-reed |
| 43.82859  | -91.22483 | 215b     | 1          | T    | 2.5      | Emerg.  | Bur-reed          |
| 43.82495  | -91.22269 | 216      | 1          | T    | 4.5      | Emerg.  | Bulrush           |
| 43.82449  | -91.22678 | 217      | 1          | T    | 2.5      | Emerg.  | Bulrush           |

Notes:

Latitude & Longitude are in decimal degrees using WGS84 datum

T = Tall ~ 3 to 8 ft, S = Small ~ 1 to 3 ft

Emerg. = Emergent Plants, OW = Open Water