

**Contract No. 001-005**

“North Dakota Hen House Project 1”  
Submitted by Delta Waterfowl  
Principal Investigator: Matt Chouinard  
Directives C & B

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
Delta Waterfowl	<u>\$ 4,500</u> (in-kind)
Subtotal In-kind Cost Share	\$ 4,500
North Dakota Industrial Commission	<u>\$34,000</u>
Total Project Cost	\$38,500

Project Schedule – 10 years  
Contract Date – 5/30/2014  
Start Date –6/01/2014  
Completion Date –4/30/2024

Project Deliverables:  
Expenditure Status Report: November 30, 2014 ✓  
Status Report: April 30, 2015 ✓  
Status Report: April 30, 2016 ✓  
Status Report: April 30, 2017 ✓  
Status Report: April 30, 2018 ✓  
Status Report: April 30, 2019 ✓  
Status Report: April 30, 2020 ✓  
Status Report: April 30, 2021 ✓  
Status Report: April 30, 2022 ✓  
Status Report: April 30, 2023  
Final Report: April 30, 2024

**OBJECTIVE/STATEMENT OF WORK:**

This project will establish 200 new Hen Houses (each with 10 year maintenance agreements.) It is anticipated that this will produce over 400 additional mallards per year and nearly 4,500 over the course of the project. OHF funds will be used for contractor maintenance agreements and construction and installation of the hen houses at two new Hen House supersites (one east of Bismarck and one near Woodworth).

**STATUS:**

The original request was for \$60,530. The amount awarded was \$34,000 with stipulations that the OHF funding cannot be used for staffing and those items identified in the budget as Annual Reporting, Contractor Recruitment and Training and Annual Evaluation and Mapping which totaled \$8,000. As a result of the partial funding there will either be one larger Hen House Supersite near Bismarck or Woodworth, ND, or one smaller Supersite (59 structures per site) in both of the proposed areas. The number of hen houses will be reduced from 200 to 118. Contract 001-005 - Executed

**12/14** - Status Report received. In June 2014, Delta Waterfowl began purchasing the necessary materials for the project, including steel posts and cradles, as well as flax straw and welded wire fencing (for nest tunnels). Currently, all materials are on location in North Dakota. During early December the contractors began constructing the tunnel portion of the Hen Houses. These are created by rolling a layer of flax straw between two layers of wire fencing. This provides a durable outer layer for the nest structure, protecting the hen and her nest from predators. By December 15, 2014 118 complete hen houses were ready to be installed in North Dakota wetlands. The contractors also built 22 replacement

tunnels for use in future maintenance of the structures. The Outdoor Heritage Fund hen houses will be installed in northwestern Stutsman County creating what is called a Supersite. A supersite is a collection of 100 (in this case 118) or more hen houses installed within a relatively small geographic area to maximize duck production and minimize installation and maintenance costs. Delta Waterfowl currently has one hen house supersite in this area, located just north of Woodworth. These structures have been very productive, with nearly 60% of them used by nesting ducks annually. Most of this region hosts over 100 breeding duck pairs per square mile and contains numerous semi-permanent and permanent wetlands. These types of wetlands are optimal for nest structures because they have water nearly every spring, providing feeding and escape habitat for hens and their ducklings. On May 6, 2014 Delta Waterfowl biologists met with staff at the Chase Lake Wetland Management District to discuss potential location for the 118 hen houses. Chase Lake staff actively works with landowners in Stutsman County on conservation programs and projects. They are currently assisting Delta Waterfowl by locating suitable wetlands for the hen houses, as well as securing landowner permission. Delta Waterfowl staff and contractors will have locations for all project structures by December 31, 2014. Within the next few weeks contractors will begin installing the hen houses when ice thickness is safe for travel via ATV. They anticipate completion in mid-January 2015 well before mallards return from wintering grounds in the southern United States. Upon completion of installation Delta Waterfowl staff will create a spreadsheet of all Outdoor Heritage Fund nest structures, including GPS coordinates. After the first year, this spreadsheet will be updated with usages rates for all structures, providing an accurate estimate of duck production. Maps of the Outdoor Heritage Fund hen house project will also be created and made available.

**4/30/2015** Status Report received and is posted on the website. Between late December 2014 and March 30, 2015 118 henhouses were installed and ready for occupancy by nesting mallard hens. Over the next month, Delta Waterfowl staff and/or contractors will visually inspect a sample of the Hen Houses to determine if any damage occurred during spring thaw. Early reports indicate that several hens have already begun nesting in OHF Hen Houses. (See status report for more details.)

**4/26/2016** Status Report received and is posted on the website. Included in the posted status report is a map showing the location of the hen houses. The status report states: This grant report covers Delta Waterfowl activities on North Dakota Hen House Project I from 5/1/2015 to 4/30/2016. In winter 2014-2015, contractors installed 121 Hen Houses near Woodworth, North Dakota. In May 2015, Delta Waterfowl staff inspected the new nest structures and found most to be in great shape, with several already occupied by mallards. For first-year structures, usage rates (percentage of structures occupied during the nesting season) typically start low (10-30%) but increase over time. It was encouraging to see several new Hen Houses already used in the first year.

In late December 2015, Delta Waterfowl Hen House contractors began to visit project Hen Houses to complete annual maintenance. This work is typically conducted when wetlands are frozen to facilitate easy access to the nest structures. During maintenance visits, contractors remove old nest remains (eggs, eggshells, feathers, etc.) replace grass nesting material, and repair any damage to the Hen Houses. For each structure, contractors document evidence of nest(s) during the previous breeding season. This information is submitted to Delta Waterfowl staff, entered into a database, and evaluated to determine usage rate (percentage of Hen Houses used during a nesting season).

In 2015, 15% of the new Hen Houses were used by nesting mallards. This is a typical usage rate for new Hen Houses in North Dakota and will likely increase significantly in 2016 when nesting hens and their

offspring return to nest in them again. The usage rate of existing Hen Houses (Installed in 2004) in Woodworth area was 57% in 2015.

Contractors completed the Hen House evaluations and maintenance in late March 2016. During maintenance visits, contractors found 5 Hen Houses that were damaged by ice movement and another 13 that were inadvertently burned, along with cattail and other wetland vegetation, by the producer renting the property. The posts and cradles were salvaged and placed in alternate locations, along with rebuilt tunnels. In total, 22 replacement Hen Houses were installed and 125 project structures will be ready for nesting mallards in 2016. *(This is four extra than what had been included in the application.)*

Over the next month, Delta Waterfowl staff and/or contractors will visually inspect a sample of the Hen Houses to determine if any damage occurred during spring thaw. On occasion, the thick sheets of ice covering wetlands will shift as they melt, bending or pushing over nest structure posts. Usage rates and estimated duck production for 2016 will be provided in the April 2017 project report. Delta Waterfowl sincerely appreciates the Outdoor Heritage Fund and the support of this project by the State of North Dakota.

**4/28/2017** Status Report received and is posted on the website. The status report states in part:

This grant report covers Delta Waterfowl activities on North Dakota Hen House Project I from 5/1/2016 to 4/30/2017. The original goal of this project was the installation and management of 121 Hen Houses, a type of mallard nest structure. In 2015, 121 Hen Houses were installed, with another five added prior to the 2016 nesting season to bring the project total to 126 nest structures. In May 2016, Delta Waterfowl staff inspected the accessible Hen Houses and found most to be in great shape, with several already occupied by mallards. Though some Hen Houses were occupied by mallards, most wetlands near Woodworth had low water levels and some were dry for the first time in several years. Delta staff had concerns that the dry conditions would have an impact on breeding pairs and occupancy rates of Hen Houses.

Winter maintenance of our project Hen Houses began in February 2017. This work is typically conducted when wetlands are frozen to facilitate easy access to the nest structures. However, temperatures can vary greatly each year during late winter. During the maintenance visits, contractors remove old nest remains (eggs, eggshells, feathers, etc.), replace grass nesting material, and repair any damage to the Hen Houses. For each structure, contractors document evidence of nest(s) during the previous breeding season. This information is submitted to Delta Waterfowl staff, entered into a data base, and evaluated to determine usage rate (percentage of Hen Houses used during a nesting season).

Heavy snowfall in December 2016 and January 2017 made early field work very difficult, but contractors were able to maintain nearly all of the nest structures by early April. Contractors noted that ice movement during spring thaw damaged eight Hen Houses rendering them unsuitable for nest sites by ducks. Four were replaced to bring the project total back up to 122 (just above project goal) for the 2017 nesting season. Of the 118 Hen Houses found to be suitable condition for use by ducks, contractors were able to definitively determine the presence or absence of a nest in 113 and found evidence of 34 nest attempts by ducks.

Despite the dry conditions, overall usage rates of OHF Hen Houses doubled from 15% in 2015 to 40% in 2016. This is a great usage rate for second-year nest structures. Successful nesting hens and their female offspring frequently return to the same area and nest in a Hen House. Over time, we suspect usage rates in the Woodworth area could exceed 50%. Based on previous research on nest success in

North Dakota Hen Houses (86%), we estimate that 280 mallard ducklings were hatched in OHF nest structures in 2016.

Over the next couple months, Delta Waterfowl staff and/or contractors will visually inspect a sample of the Hen Houses to determine if any additional damage occurred during spring thaw. Usage rates and estimated duck production for 2017 will be provided in the April 2018 project report. Delta Waterfowl sincerely appreciates the Outdoor Heritage Fund, program staff, and the support of this project by the State of North Dakota.

### **May 2018**

Prior to the 2017 waterfowl nesting season, there were 122 Hen Houses available for nesting ducks. Wetland habitat experienced a prolonged drought through spring and summer. In early June 2017, Delta Waterfowl staff inspected the accessible HH and found most to be in great shape and sustained little damage during the spring thaw.

Preparation for winter maintenance of Hen Houses began in October 2017. With Delta staff assistance, contractors picked up flax straw bales in Carrington from the NDSU Ag Research Extension Center. Flax straw is used for the Hen Houses exterior because it is very durable. The bales were transported to the Woodworth area for maintenance of the nest structures in late winter.

Extreme cold in January 2018 delayed field work until February, but contractors were able to maintain all of the nest structures by mid-April. During the maintenance visits, contractors remove old nest remains (eggs, eggshells, feathers, etc.), replace grass nesting material, and repair any damage to the Hen Houses. Contractors also document evidence of nest(s) during the previous breeding season. This information is submitted to Delta Waterfowl staff who enter it into a database and evaluate to determine usage rate (percentage of HH used during a nesting season.)

Of the 122 Hen Houses found to be in suitable condition for use by ducks, contractors were able to definitively determine the presence or absence of a nest in 104 and found evidence of 39 nest attempts by ducks. Despite the dry conditions, usage rates of the OHF Hen Houses continue to improve, increasing from 30% in 2016 to 37% in 2017 (use was 15% in 2015.) Considering the dry conditions, the usage rate in 2018 was very good and bodes well for future years. Based on previous research on nest success in ND Hen Houses (86%), we estimate that 350 mallard ducklings were hatched in OHF nest structures in 2017.

In the coming months, Delta Waterfowl staff and/or contractors will visually inspect a sample of the Hen Houses to determine if any additional damage occurred during spring thaw. Usage rates and estimated duck production for 2018 will be provided in the April 2019 project report. Delta Waterfowl appreciates the support of the OHF. Pictures are available in the full report on the web page.

### **May 2019**

There were 122 Hen Houses (HH) available for nesting ducks in 2018. Due to drought, there were fewer ducks counted in the 2018 ND Game & Fish breeding duck survey.

Preparation for winter maintenance began in October 2018. Flax straw and other materials were transported to the project site. Maintenance is typically conducted December – March. However, this was extended into April due to weather concerns. All 122 HHs were ready at the start of the 2019 nesting season.

Contractors documented evidence of nests during the previous breeding season and it was entered into a database. Overall usage rate for Woodworth and Carrington area was 31% in 2018, down from 2017 (37%.) This decrease was likely due to the drought. Additional details are available in the full report, along with pictures.

### **May 2020**

Maintenance efforts began in October 2019 and continued into early April. All 122 HHs were ready for nesting at the start of the 2020 nesting season. Contractors documented evidence of nests during the previous breeding season and it was entered into a database. Overall usage rate for Woodworth and Carrington area was 35%, a slight increase from 2018 (31%.) It is estimated that 370 ducklings hatched in 2019 as part of this project. Though water levels were higher in 2019, many wetlands were still drier than normal, allowing cattail and other vegetation to encroach upon nest structures which leads to lower usage rates than those in open water. Additional details are available in the full report.

### **June 2021**

Delta Waterfowl contractors visited all 122 HHs in early 2021 to ensure the structures were ready for the nesting season. Each visit included placing fresh nest material, repair of the exterior, and an assessment of each structure to determine usage the previous season. Once maintenance was complete, contractors activated a mobile phone app called QuickCapture. The app uploads the GPS location and HH status data in a database.

HH contractors detected usage for 2020 in over 60% of the structures, a significant increase over 2019 (35%.) In some portions of the project area, usage exceeded 80%. Using nest success from previous HH research in North Dakota, Delta Waterfowl staff estimate that over 580 mallard ducklings hatched in 2020 as a result of this project. Additional details and photographs are available in the full report.

### **April 2022**

Contractors visited all 122 project hen houses in March and early April of 2022. Contractors replaced grass for nest material, repaired the houses as necessary, and assessed each structure for use the previous season. Two hen houses were damaged beyond repair and required replacement.

52% of the hen houses were used by ducks in 2021, down from 61% in 2020. This decrease is attributed to the 2021 drought. Nest success averaged 85%, which once extrapolated, led to an estimate of 512 mallard duckling hatches in 2021.

Update 8/25/2022