

DUCK BOX INSPECTION REPORT – 2021/22

DUCK NEST BOX USAGE AT RECORD LOW

A total of 177 wood duck nest boxes were inspected and cleaned. New wood chips were added. Flight paths for ducks to the entrance holes were improved, and brush around the posts trimmed as needed. After the 2021 nesting season 20 new duck boxes were added. Most were used to replace missing or damaged boxes in productive areas. Three posts with predator guards were relocated from areas engulfed with vegetation to areas that are more suitable for ducks to use. A new box was installed on the post in the pond off Pleasant Plains Road. Another was installed on the post in the pond adjacent to the Sportsmen blind. These two locations are readily visible by the public.

DUCKS USED ONLY 26% OF BOXES IN 2021

Chart 1 presents a 17-year history of nest box usage. A box is considered used if a duck was successful in fledging young, laid eggs and/or put down feathers in the box. Wood ducks do not make nests but use their down feathers as insulation. Wood chips are provided to support their eggs. As shown on Chart 1 there is a distinct trend of decreased box usage over time. In 2021 only 26% of the nest boxes were used by ducks. This was record low usage. The previous low was 41% usage in both 2016 and 2019. In years from 2005 to 2011 over 70 % of the nest boxes were used. In the previous 4 years duck usage was stable at around 40%.

Pool 1 is the largest amount of open water in the Refuge. The Spring drawdown of water in the impoundment likely contributed to the significant reduction in the usage of the nest boxes in 2021. Hopefully the usage will rebound in 2022 if Pool 1 is not drawn down.

The multiyear trend in lower nest box usage indicates the Refuge habitat is becoming less attractive for nesting wood ducks. The gradual reduction in open water is the likely cause of the decline in nest box usage and is being addressed by the Refuge. The relocation of nest boxes from areas surrounded by thick vegetation

to more open areas under trees should marginally improve duck usage of the boxes.

Map 1 shows the nest boxes used by ducks in red, and boxes not used in yellow. As shown on Map 1, there are areas where nest boxes used by ducks are concentrated as well as areas with little usage. Ducks favor nest boxes near quiescent water and tree cover such as boxes near Pool 1 and along the creek adjacent to Pool 2.

HOODED MERGANSER NESTING TYPICAL

Hooded mergansers are also cavity nesters and use the duck boxes in the Refuge. The Refuge is at the southern end of the hooded merganser nesting range in New Jersey. If there are unhatched eggs in the nest box, they can be identified as wood duck or merganser eggs. Hooded merganser eggs are rounder and whiter than wood duck eggs. Their eggs also have thicker shells. Hooded mergansers feed on live animals and have sufficient calcium in their diet to produce sturdier eggs.

Unhatched hooded merganser eggs were found in three nest boxes this season. This is within the range of 2-6 merganser nests found in past annual inspections. The nesting hooded merganser population is small in the Refuge. These ducks feed on live food and need more area than wood ducks or mallards.

ONE SCREECH OWL FOUND IN DUCK BOXES

The wood duck boxes are also used by Eastern screech owls. These owls roost in the boxes in the winter and may nest in the boxes in the spring. One unbanded red phase screech owl was found while inspecting the duck boxes this season. This was the second consecutive season since the Refuge began banding owls in 2009 that an owl was not found that was banded in a prior year. Figure 1 is a photo of Jason Vassallo who was fortunate to participate in the session when a screech owl was found.

Chart 2 plots the history of screech owls found during winter inspections. This illustrates the decline in screech owl population in the Refuge. Three or fewer owls have been found in the last three annual nest box inspections. The Refuge

habitat is becoming less attractive for screech owls that prefer more open wooded areas adjacent to fields. There are sufficient nest boxes and prey in the Refuge to sustain a robust screech owl population. However, the vegetation in the Refuge is evolving into a wooded wetland that attracts the larger barred owl, also known as the swamp owl. Barred owls are reported being seen more frequently than in past years. Their owlets have also been photographed in the Refuge. Barred owls do prey on the smaller screech owls as they are both active at night.

Owls are known to roost in a few boxes in their territory. Signs (pellets or prey) of owls roosting in the nest boxes in the Refuge are noted. Four boxes in one area had one or more owl pellets. The only rodent prey found in the nest boxes was the short-tailed shrew shown in Figure 1. This rodent was stored by a screech owl for later consumption. Feathers from prey were found in three boxes. Both pellets and prey were lower than normal.

In April boxes in areas where screech owls roosted in the winter are checked for screech owl nests. The last screech owl nest located in a nest box was in 2014. A total of 12 screech owl nests have been found in the duck boxes since 2009.

NO RODENTS WERE FOUND DURING BOX INSPECTIONS

Three mammals occasionally use wood duck boxes if they can gain access. Both flying and gray squirrels have roosted and nested. No squirrels were found in the boxes during this season's inspections. No stored acorn hoards were found. Flying squirrels are more common because they can glide from distant trees to the box. Gray squirrels need the help of a missing predator guard, fallen tree branch or shrub to gain access to a box.

White-footed mice are the third mammal and only mouse species that nest in duck boxes. Mice cannot climb a smooth metal post. However, they can climb a rusty post and get through small holes that may exist between the predator guard and the post. They also can climb nearby vegetation to get around a predator guard.

Both red oaks (leaf lobes with pointed ends) and various white oaks (leaf lobes with rounded ends) had extremely poor acorn yields in 2020. The Fall and

Winter of 2020/21 were difficult times for squirrels and others that depend upon acorns as a major part of their diet. During bust years the acorn dependent wildlife population struggles to find sufficient food and often decreases in numbers.

White oak species produced a large crop of acorns during the Fall of 2021. Red oaks that need two years to produce acorns did not have a significant acorn yield. White oak acorns germinate in the Fall and are consumed but not stored. Red oak acorns sprout in the Spring and are stored in caches for later consumption during the Winter months. It is expected that red oak species will produce a bumper crop in the Fall of 2022.

BRUSH TEAM BUILDS NEW WOOD DUCK BOXES

Joe Balwierczak is a former Friends of the Great Swamp board member and past board president. Joe enjoys inspecting duck boxes. He volunteered to obtain funding from the Friends' and order white cedar lumber to build 30 new wood duck boxes. These new boxes will replace boxes damaged by falling trees, or have reached the end of their useful life. There are many duck boxes made of red cedar that are still in use that were built and installed in the last century.

Lee Brush used his carpentry skills to lead the effort of making boxes out of the lumber. He used as his guide one of Lou Pisane's boxes. Lou's last batch of boxes were installed in 2016. Both Richard Hiserodt and Tom Gula were Lee's major helpers. Figure 3 is a photo of the Brush team at work building boxes in the Refuge shop.

TEN PEOPLE HELPED INSPECT/CLEAN THE NEST BOXES

Nine different volunteers and one Refuge staff member participated in at least one session of inspecting and cleaning of the wood duck boxes. Tom Gula, Christine Pirog, Richard Hiserodt and myself were regular participants. This was first season that Lee Brush and Richard Hiserodt participated in checking the duck boxes.

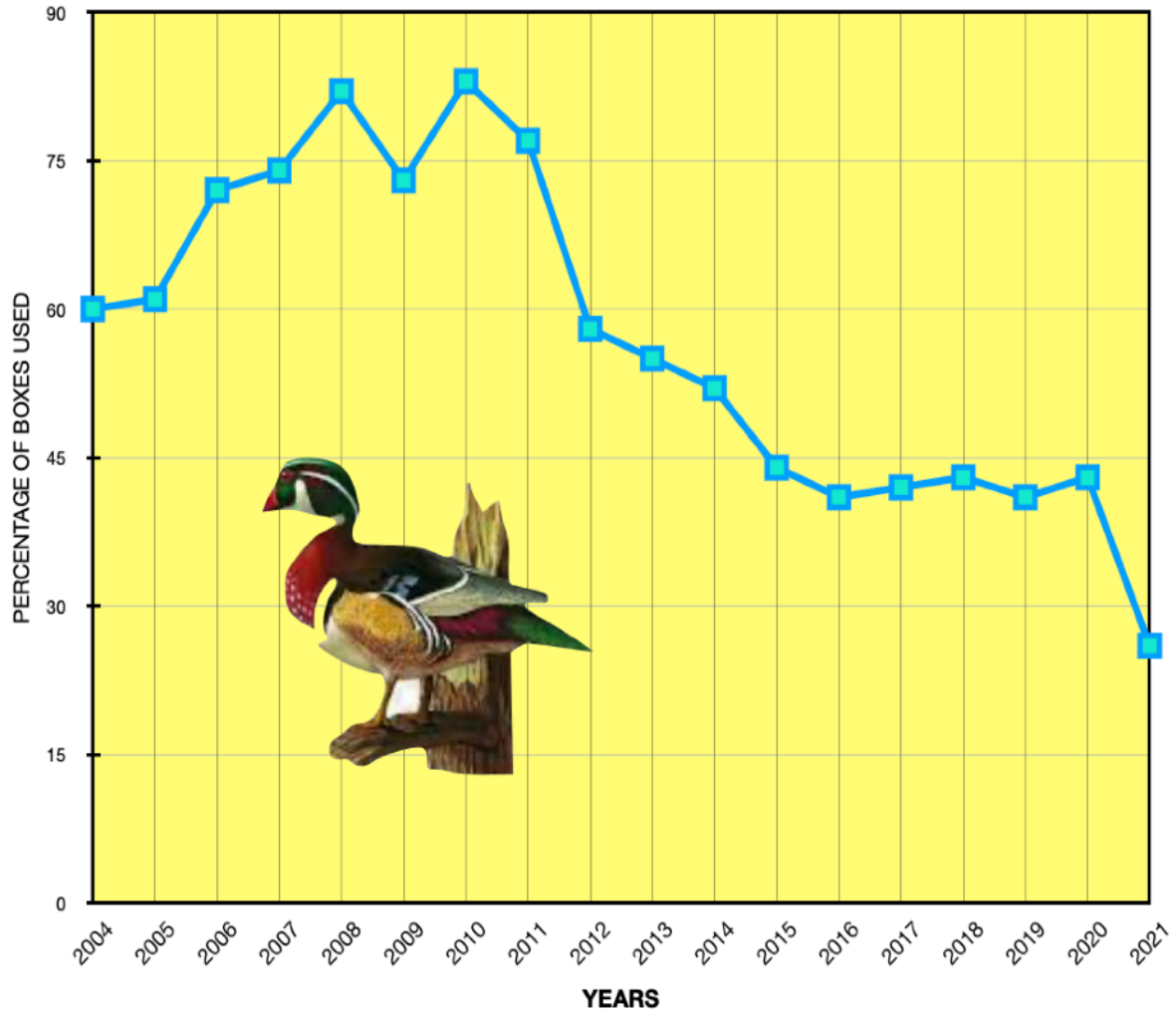
A session typically takes about 3 hours and usually involves 10-15 boxes depending on the terrain and water/ice level. Part of the process involves minor maintenance, trimming brush around the support post and improving the flight path to the entrance hole if necessary. This season 18 new nest boxes were installed as part of the inspection process.

Leo Hollein & Tom Gula

February 23, 2022

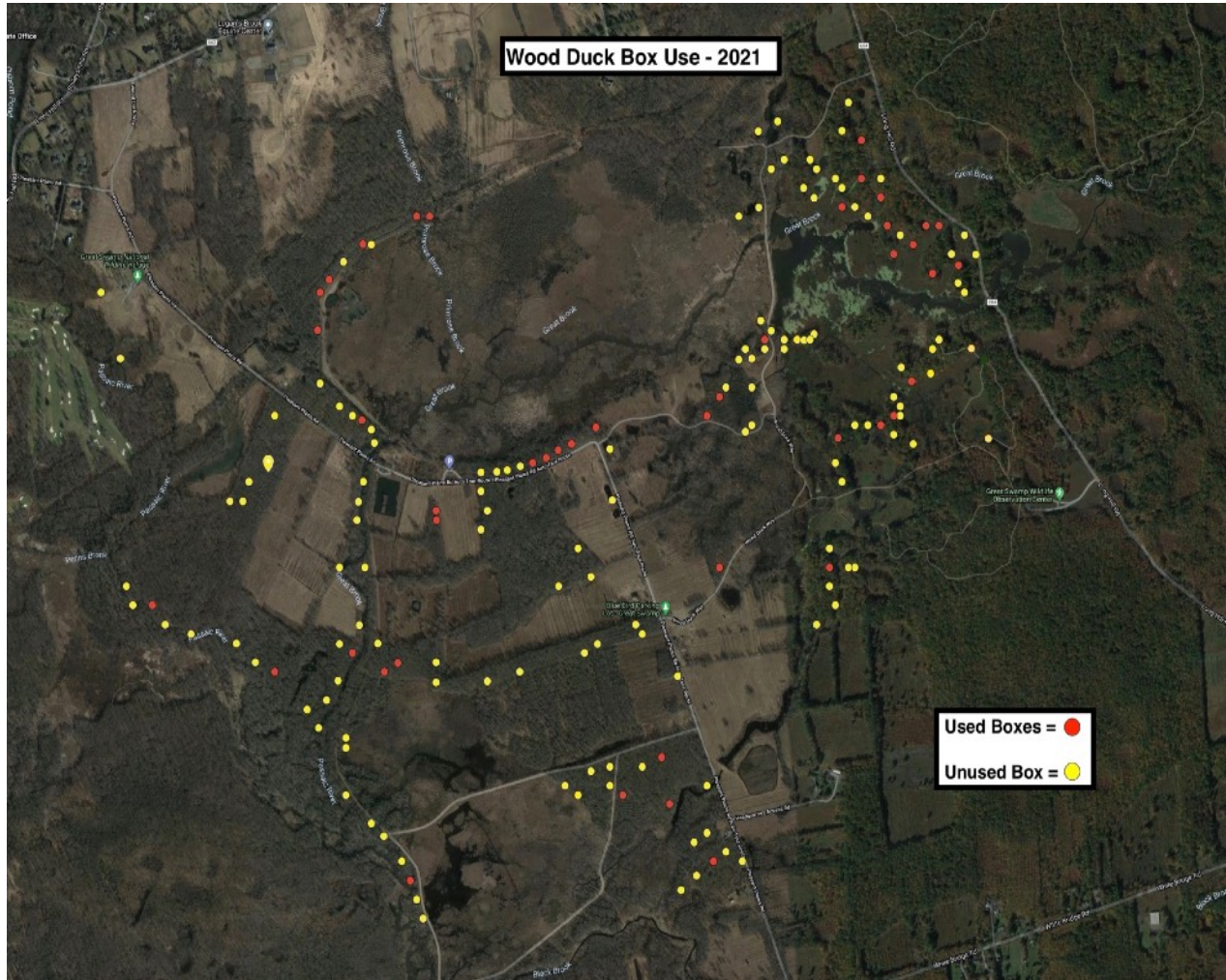
CHART 1

CHART 1 - WOOD DUCK NEST BOX USAGE %



MAP 1

WOOD DUCK BOX USE - 2021



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CHART 2

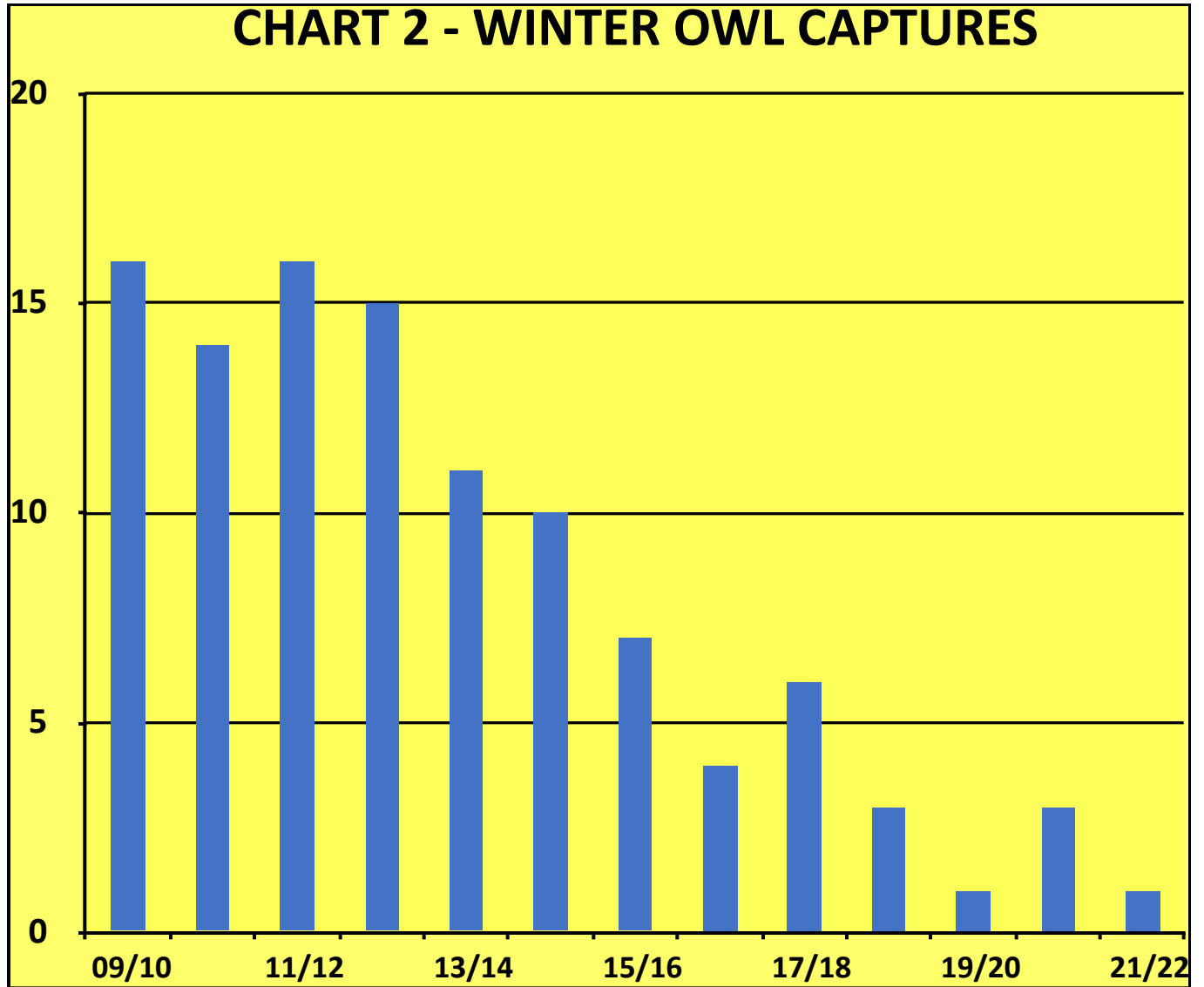


FIGURE 1 – OWL PELLET & PREY (SHREW)





FIGURE 2 – JASON HOLDING SCREECH OWL



FIGURE 3 – BUILDING NEST BOXES
Lee Brush (left) and Richard Hiserodt (right)