



Hunting for a **GREATER** good

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MALLARDS are a popular species for waterfowl hunting and wildlife viewing. So, when the Flyway Foundation members in South Carolina noticed a decline in the number of mallards they were seeing while hunting, they took it upon themselves to look into it. And then they came up with a plan to do something about it.

The foundation's concern about declining mallard numbers is justifiable; the North American Breeding Bird Survey indicates that although the number of breeding mallards in the Great Lakes has significantly increased in the past few decades, there is evidence of a decline in both the general population in parts of the Great Lakes region and in mallard productivity. So, although the number of mallards breeding in the Great Lakes is good overall, a declining number of ducklings being produced may indicate trouble.

When it comes to mallard production in the prairie, protecting nesting habitat is important. In the Great Lakes region including Pennsylvania, though, where mal-

lard nesting densities are lower, protecting and enhancing habitat may not be the most cost effective action. Ducks Unlimited research indicates that two main factors limit mallard production in the Great Lakes: nesting success and duckling survival. The research also points to mammalian predation as a leading cause of nest failure. The secret to production in the Great Lakes seems to lie in protecting the nest itself.

Years ago, Delta Waterfowl helped redesign a structure to protect nesting mallards. The hen house is a tube-shaped cavity nesting structure placed above water on a post or hung from a tripod and is designed to increase survival rates of hens and eggs during incubation as well as ducklings. Many of the available structures are used by mallards. Ducks using hen houses have higher success rates than typical ground nests because the structures offer more protection. They protect



hens, eggs and ducklings from raccoons and other mammalian predators because they are elevated off the water and from aerial predators such as owls and hawks because they are covered. Grackles and crows, however, can still do some damage because they are small enough to enter the cylinders. Flooding can also be a problem if high water swamps the tube or makes it accessible to predators.

The Flyway Foundation's first step toward a solution was to examine data from the Patuxent Wildlife Research Center's Bird Banding Laboratory to find out where the birds they were recovering in South Carolina had been banded. They wanted to know where the birds they hunt were coming from. As it turns out, "their" mallards are being produced and banded in northwestern Pennsylvania and southwestern Ontario. Banding studies indicate that

this particular area of the Great Lakes region is important for producing mallards in both the Mississippi and Atlantic flyways. In fact, mallards banded in northwestern Pennsylvania have been recovered in 51 states and provinces.

So, with the intent of increasing mallard production and, thereby, boosting the population that migrates to South Carolina, the foundation contacted the Game

Commission to donate and ship more than 200 mallard hen houses to the Northwest Region, hoping to have them distributed across a large geographical area. Game Commission personnel were excited about the idea and encouraged by the sportsmen's enthusiasm. But, it was pertinent to know about the effectiveness of the nest structures, because the PGC would be committing many man and vehicle hours to placing and maintaining them.

Thus, a South Carolina sportsmen driven, multi-state, international mallard nesting study was “hatched.” The project was developed through the University of Western Ontario, in conjunction with Long Point Waterfowl Wetland Research Fund, Delta Waterfowl, Northwest Pennsylvania Duck Hunters Association, the Susquehanna River Waterfowlers Association and the Pennsylvania Game Commission.

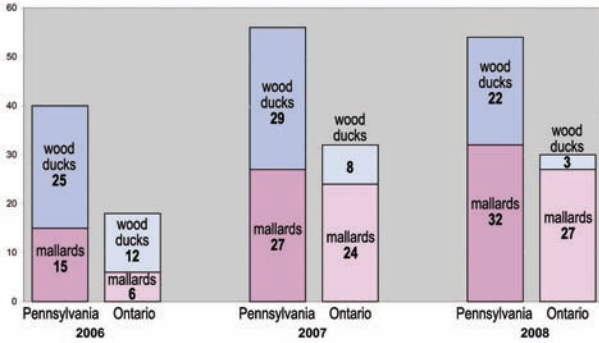
Under the direction of Dr. Scott Petrie, an adjunct professor at the University of Western Ontario, Jeremy Stempka is conducting his Masters research in northwestern Pennsylvania and his technician, Jim Cook, is assisting him in southern Ontario. Both men have been monitoring hen houses since mid-April of 2006. Commission employees, Kevin Jacobs, a wildlife biologist, and Roger Coup, a wildlife management supervisor, help supervise the project in Pennsylvania. Stempka’s study is investigating the possibility of using hen houses as a cost effective way to boost mallard production.

“We want to provide wildlife managers with information on where and how hen houses may be best utilized in the Great Lakes region. We want to know what key factors influence mallard and wood duck use of hen houses on both the Pennsylvania and Ontario sites and what effect they have on nest success, duckling production and recruitment, as well as hen philopatry [the tendency of a hen to return to a specific nesting site],” says Jacobs.

JEREMY STEMPPKA sneaks up on a hen house attempting to capture and band the mallard hen nesting inside. He and PGC biologist Kevin Jacobs count the eggs and check to see how close they are to hatching by candling them and listening for ducklings pipping away inside, before making a precarious trip back to shore. If there are ducklings in the nest, they bring them to shore in a bucket and tag a webbed foot of each one with a tiny metal tag. Stempka usually puts the ducklings back in the nest, but, in this case, the protective hen was waiting nearby and when he released the paddlers and backed away, their mother quickly led them far from us.



Figure 1. The number of occupied nesting structures in each study area. Northwest Pennsylvania had 180 available structures and southern Ontario had 170.



Stempka adds, “Hen houses are a relatively inexpensive, tangible product that wildlife managers can provide to people interested in helping waterfowl. Hen houses may give managers an opportunity to get to know landowners, encourage their interest in waterfowl and perhaps inspire them to enroll in conservation programs.”

This summer Stempka monitored about 185 structures in five counties: Butler, Crawford, Erie, Lawrence and Mercer. The location of each nest structure is marked using GPS coordinates and Stempka checks each nest about every 20 days. Once a nest has at least one egg, it is checked every 5 to 7 days until it hatches. He says he’s

spent a lot of time and miles behind the wheel.

Stempka attempts to capture and leg band all of the hens nesting in hen houses, both mallards and wood ducks. He sneaks up to the nesting structure with a dip net in each hand, then quickly covers both ends of the structure and, if all works, traps the exiting hen in a net. In cases where the

hen has been quick to exit and jumped the net, a remote trigger and two pieces of wire fencing that drop to cover the cylinder ends trapping her inside have been substituted. Each captured hen is fitted with a standard leg band, which will help identify her if she returns to a hen house next year. Then, to reduce nest abandonment, her head is tucked under her wing and she is rocked back and forth until she relaxes before being placed back into the hen house.

Stempka can estimate the hatch date for a nest by candling the eggs. He holds a cardboard toilet paper tube up to his eye and places an egg across the other end, then looks toward the sun to examine the silhouette of the chick inside. Based on the size and shape of the embryo, he can pre-



Hatched or predated?

These mallard eggs have hatched successfully as evident by the intact leathery shell membranes and the round shell caps.

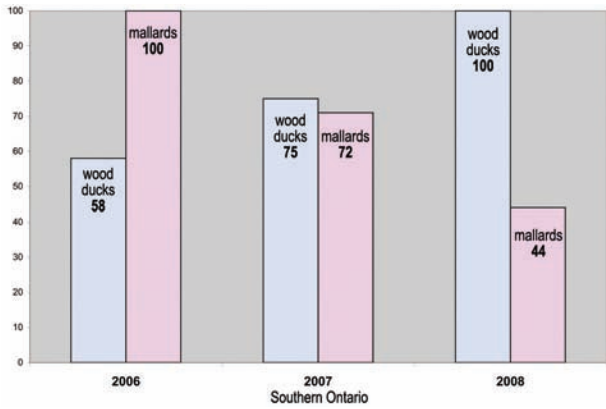
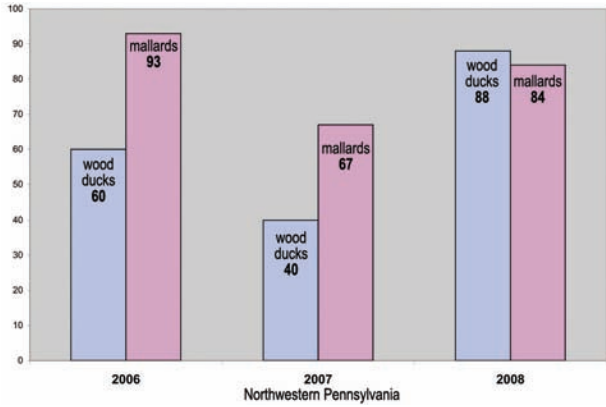
mallard eggs

dict a hatch date and, because all the eggs will hatch at the same time, he has a good idea of when to come back and check on the ducklings. Stempka also notes the number of eggs that are present, hatched and infertile, and whether a nest has been predated, abandoned or successful to determine the production of each structure.

When a mallard nest is due to hatch, Stempka returns to web tag the ducklings. If they haven't hatched, he checks their progress by candling the eggs and holding them up to his ear to listen for pipping. He also examines the eggs for starring, a small crack where the duckling is just starting to pip through the shell with its egg tooth. If many of the eggs already have small holes where the hatchlings are pipping through, the ducklings can be web tagged while they are still in the egg. A little duckling's feet happen to be right about where its beak is when it is still packaged in the egg. Stempka just widens the hole enough to gain hold of the duckling's foot, pull it out of the shell, clip a small metal ID tag on the webbing and tuck the foot back into the shell. If the ducklings have already hatched and are still present when Stempka arrives, he places them all into a small bucket, web tags them on his tailgate, places them back in the nest and covers them with nesting material so they'll sit tight until the hen returns. Sometimes those web-tagged hatchlings end up being captured and leg banded as juveniles later in the summer at duck banding stations.

Stempka also measures habitat variables

Figures 2 and 3. Nest success rates of wood ducks and mallards in each study area. When compared to other research that estimates ground nesting success in the Great Lakes region to be a mere 18 percent, the benefit of hen houses is evident.



to help determine what might influence the likelihood of a hen using a hen house. He records information about food abundance, surrounding nesting habitat and land use. He is also documenting characteristics of the wetlands; how much open water there is, how deep the water is, how long the water is there, what type of vegetation there is and what kind of invertebrates are present. He also notes how high above the water a hen house is as well as its distance from other hen houses, the shore and vegetation.

The day I spent with Stempka and Jacobs we visited hen houses in the Conneaut Lake area — the largest wetland system in the Common-

wealth. We donned our waders and headed to our first stop on SGL 213 where a nest had just hatched. Stempka snuck out to the nest with a bucket and a net; when the hen flushed, he and Jacobs quickly gathered the scattering ducklings into the bucket and waded back to the tailgate to tag them. Once they were all tucked safely back into the hen house we slopped back into the trucks and headed to SGL 284 in Mercer County. We drove on damp grassy two-tracks that appeared out of nowhere and disappeared just as quickly, we spun tires on slick muddy vegetation, and we held onto the cargo as we rocked through bumpy terrain, each time arriving at beautiful secluded wetlands.

Some of the other nests we visited weren't quite ready to hatch, but we could hear the ducklings pipping away inside, and when we candled one I could see the silhouette of its little head poking up above rest of the stuff in the egg. At another nest, several ducklings dropped out of the hen

house to the water when the hen flushed, and Jacobs and I helped gather them into the bucket. To make things easier while they were being processed, the ones sporting new web tags were placed in my vest pocket. After we released the clutch into the water near the anxiously awaiting hen and started the trek back to the truck, Jacobs asked, "How many ducklings were there?"

"A pocketful plus two," I answered. Which Stempka clarified as 11.

Results:

Are the structures increasing the nesting population? Are they adding nesting places or providing alternative nesting places? And, if they are alternative nesting spots, is the safer alternative worth the effort and expense involved? These are questions Stempka hopes to help answer. Nesting success and utilization rates will be determined for each study area. And, the bands and web tags will help determine philopatry and homing (the likelihood of a hatchling returning to nest in the area where it was hatched).

As of mid-July there were 32 mallards and 22 wood ducks using nesting structures

Who's Who?

The Flyway Foundation, beyond being the inspiration for this project, constructed, donated and shipped nearly 1,000 mallard hen houses and mounting tripods to Pennsylvania. They have donated more than \$16,000 in materials, labor and shipping. They also sent another 200 hen houses to MI for a similar study.

Delta Waterfowl helped redesign the hen house in response to declining nest success of mallards on the prairies years ago. They also provided \$35,000 to support this research.

Long Point Waterfowl & Wetlands Research Fund installed, maintains and is monitoring nearly 200 hen houses in southern Ontario and helped put the plan in place on the PA study site.

The Northwestern Pennsylvania Duck Hunters Association and The Susquehanna River Waterfowl Association committed \$4,000 toward the Ontario technician and supplies and maintenance of structures on both sites.

The PGC has committed time and resources to install the structures on State Game Lands as well as maintain them for the next 10 years. In-kind labor and vehicle costs for the first two years of the project totaled more than \$20,000. Food & Cover Crews monitor wood duck boxes and hen houses and, in winter, repair and replace existing structures as well as erect new ones. In spring they keep up with the beavers, undoing their work and keeping culverts clean to maintain water levels.

Other cooperators include: Canadian Wildlife Service, Pennsylvania Conservation Corps, DCNR-Presque Isle State Park and several private landowners.

Got eggs?

Both mallards and wood ducks will nest in hen houses. Mallard eggs are light green to gray or white buff colored and about 1½ by 2¼ inches while wood duck eggs are smaller, narrower and have a yellow cast to them.



wood duck eggs

on the Pennsylvania study area and 27 mallards and 3 wood ducks using structures on the Ontario site (Figure 1). On both areas, mallard occupancy has increased each year since 2006. While nest success rates for both species in Pennsylvania fluctuate, mallard success was better in 2008 than the previous two years. Mallard success has decreased each year in Ontario, while wood duck success has increased each year (Figures 2 and 3). The primary cause of nest failure in Pennsylvania was nest abandonment, and two nests were predated, one by grackles and the other unknown. In Ontario the majority of nest failures were due to predation by crows. During the three years of the study more than 130 mallard nests were initiated producing approximately 900 ducklings.

Some of the coolest information resulting from this study is the data on philopatry and homing. In 2008, 87 percent of the hens that returned to nest structures on the PA study site nested in either the same structure or an adjacent one. At the very least, 53 percent of the hens in Ontario did the same, but that number is probably low because predation made it difficult to assess. In 2007, 313 mallards hatched from structures on the two study sites, 251 of them were web tagged, and in 2008 four of those web-tagged ducklings returned to

nest in structures as adult hens. Three of the four nested in close proximity to where they were hatched. The fourth nested in the same cylinder she was hatched from the year prior, but only after her mother had successfully hatched out a clutch before her, earlier in the summer.

The 170 invertebrate samples, habitat measurements and surrounding land use data are still being analyzed to see what variables influence site selection by mallards and wood ducks. This information will be useful to land managers in areas where waterfowl congregate and nest. □

Get Involved!

Gather your friends this winter and make nest structures. Find hen house plans at www.deltawaterfowl.org or call Delta Waterfowl at 1-888-987-3695. Structures are easiest to erect when the water is frozen and can be walked upon. They should be placed by the first week of March, above the high water mark but not more than three feet above the high water mark. Avoid wetlands with large fluctuations in the water level. Tripod nests seem to be easier to move and adjust as water levels fluctuate. Sometimes pole structures sink continuously into mucky soil and are nearly impossible to move.