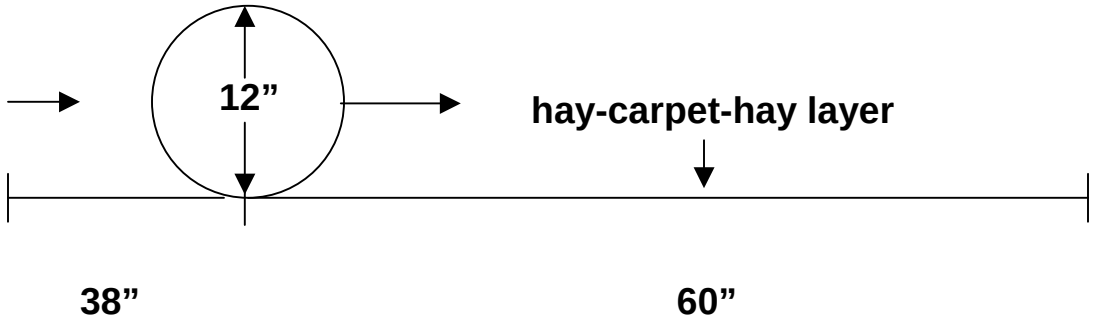
Using Cylindrical Nest Structures to Increase Mallard Nest Success

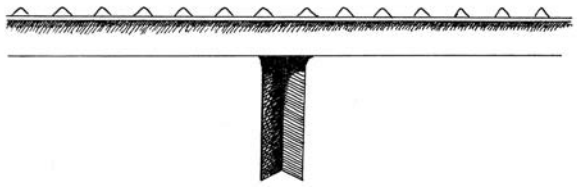
Cylindrical "hen houses" are one of the most cost effective management techniques known to increase mallard nest success. Nest success is usually >80%, and up to 95% of recruits from structures in west-central Minnesota are additional recruits to the landscape. Structures also offer great opportunities to partner with sportsman's groups and other organizations.

Construction

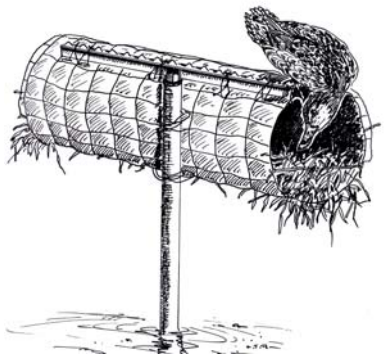
Construct cylinders from 12.5-gauge welded-wire fencing having 2" x 4" mesh. Begin by rolling 38 inches of a 98" x 36" piece of fencing into a cylinder 12 inches in diameter. Next, spread a layer of grass hay (or flax straw) on top of the remaining 60 inches of the segment. Place a 54" x 36" piece of brown indoor/outdoor carpet over the hay, and place more hay over the carpet. Finish by rolling the cylinder over the hay and carpet and fastening the end of the wire at 4 – 5 points. Tie a 20-guage wire across each opening of the cylinder 1" from the bottom. Finally, fill the cylinder half full of hay, tucking some underneath the 20-gauge wires to keep it from blowing out.



Fabricate a mounting bracket from a 30" section of fence post by welding a 4" piece of 1" angle iron perpendicularly to the center of the post. The angle iron will be forced into the end of a 1.5" galvanized well pipe approximately 10 feet in length to support the cylinder.



Mounting bracket



Deployed structure

Illustrations courtesy R. Hier

Deployment

Choosing a site – Deploy structures into open water portions (not in emergent vegetation) of

permanent and semi-permanent wetlands ≥10 acres in size, with as much perennial cover (WMA, WPA, CRP) as possible within 1 mile. This should maximize structure occupancy, especially early in the nesting season when nest success and duckling survival are the greatest.

Structure type – Use single-cylinder structures because they have greater nest success and are believed to be more cost effective than double-cylinder structures.

Installing the structure – Structures are often easiest to deploy through the ice. Drive the pipe ≥2' into the wetland substrate so that the cylinder will be 2 – 4' above the water in the spring. Orient the mounting bracket in a SW to NE direction to minimize hay loss to the wind. Hang the cylinder below the bracket and wire it to the bracket and the pole with 14-gauge galvanized electric fence wire.

Annual Management

Prior to ice-out – Half fill structures with hay.

Shortly after ice-out – Inspect all structures, straighten poles tipped or knocked over by ice movements, and replace damaged cylinders.

Research Needs

Eggs incubated in elevated structures lose excessive moisture, which might contribute to duckling mortality. Although more research is needed, very high nest success in structures likely more than offsets any additional duckling mortality.

Structure cost effectiveness depends primarily on the rate of damage structures experience at ice-out vs. structure productivity, and much remains to be learned about how to manage structures for maximum cost-effectiveness.

For more information see:

Eskowich, K., D. McKinnon, G. Brewster, and K. Belcher. 1998. Preference and use of nest baskets and nest tunnels by mallards in the parkland of Saskatchewan. Wildlife Society Bulletin 26:881-885.

Zicus, M. C., D. P. Rave, A. Das, M. R. Riggs, and M. L. Buitenwerf. 2006. Influence of land use on mallard nest structure occupancy. Journal of Wildlife Management 70:in press.

Zicus, M. C., D. P. Rave, and J. R. Fieberg. 2006. Cost effectiveness of single- vs. double-cylinder over-water nest structures. Wildlife Society Bulletin 34:in press.

Zicus, M. C., D. P. Rave, and M. R. Riggs. 2002. Mass loss from mallard eggs incubated in nest structures. Wildlife Society Bulletin 31:270-278.

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