

A DRAKE'S TERRITORY

By Norman Seymour

A cornerstone of North American waterfowl management is the attempt by biologists to increase juvenile production to sustain or increase duck populations. No one knows how many ducks actually enter the fall flight as a result of management's efforts, but research has shown that some initiatives increase production. It is, therefore, considered worthwhile.

However, from time to time a dubious scheme comes along.

When I was a student in the 1960s at Manitoba's Delta Research Station, some biologists espoused a spring hunting season for drake mallards. They argued that because adult males typically outnumber females and sexual harassment can disrupt nesting females, killing unpaired males (which were described as "surplus") would reduce disturbance of incubating females and increase nest success. The biologists were quick to point out this also would provide more hunting opportunities.

Even if such a hunt was feasible (How does a hunter distinguish a paired from an unpaired drake?), the premise is flawed. There is no biological evidence that unpaired males reduce nest success. Unpaired "surplus" males rarely harass incubating females. Instead, it is the paired males or those that have been recently paired that press their unwanted sexual advances on females. Thankfully, saner minds prevailed before this scheme was implemented.

More recently, it's been suggested that killing older male mallards could boost juvenile production. The underlying rationale involves "territories" – a wetland area that a drake defends as his exclusive domain, driving out other males of the same species. Proponents assert that older drakes claim larger territories than young males. Presumably, younger drakes would claim a smaller territory and therefore on any given wetland the number of territories – and thus the number of breeding pairs – could be increased if females paired with younger males.

In theory, this could be useful where there are more ducks attempting to breed than can be supported by the available habitat. But even if it can be demonstrated that lack of habitat is keeping some females from successfully reproducing, this scheme is based on false assumptions and implementing it would be, like my earlier example, a sportsman's nightmare. (How does a hunter distinguish on the wing an old from young drake?)

I've studied territorial behavior in black ducks, mallards and other ducks for more than three decades. My research supports the generally held view that territorial behavior disperses breeding pairs of the same species (conspecifics), possibly resulting in reduced competition for resources and decreased risk of predation of hens, nests and broods. This has obvious implication to the reproductive success of pairs and consequently to population recruitment.

One notable example involved the reproductive success of black duck females that nested at low and high densities. The former on average fledged about twice as many young (7.05 vs 3.5). More intense predation was the probable reason for the increased

mortality at higher densities. This suggests that increasing densities of breeding pairs may have unexpected and undesirable consequences.

Other problems emerge when we look more closely at the behavior of breeding ducks. When a pair searches for a place to breed, the female is the decision-maker. She has three requirements. Her priority is suitable brood rearing habitat, invariably a wetland or mosaic of wetlands where eventually she can take her ducklings to find food and cover. She then turns her attention to finding a site where she can locate her nest. Only then does she choose a secluded water surface where she and her mate can copulate away from the prying eyes of other conspecifics.

There also is the matter of sex. In waterfowl, copulation between the male and female of a pair occurs only over water. However, females sometimes go to land to avoid being raped by males, including their own mates, which sometimes occurs. Generally, a female will submit to her mate's sexual advances only on a specific body of water. It is usually the body of water closest to her nest. They may copulate 3 or 4 times a day during the period when she is laying her eggs. Not surprisingly, the drake defends this water surface against intrusion by other conspecific males. This becomes his territory.

Theoretically, as a consequence of the male keeping other ducks away from his territory, his mate and ducklings will have exclusive and undisturbed access to its food and security. However, this is not what motivates the male to defend his territory. Sex drives his behavior. Sex keeps him with the female and on his territory. The territory enables him to guard his mate and, in a sense, protect his investment in her. Since most other females will be paired during the breeding season, and he may have been hanging around this particular female since October or November, now that she's producing eggs and consequently interested in sex, he wants to be sure that he has exclusive access to her. His immediate sexual gratification and ultimately his paternity are at stake. To understand territorial behavior, one has to view it from this perspective.

There is no evidence that territory size is correlated with the age of the male. In general, territory size is roughly linked to the size of the species of duck. For example, teal defend territories that are rarely more than a tenth of an acre, while mallard territories can be many times that size. However, because the size of the territory depends on many things, both biological and physical, mallard territories can range from a temporary puddle of just a few square yards, to a permanent wetland of 3 or 4 acres.

The size of the territory is probably defined more than anything else by the physical boundaries of the wetland -- the banks of a slough, pond or river where the pair copulates. Almost certainly the male uses such boundaries as points of reference. Because seclusion from other ducks is what is being sought, the size of the water surface may not be particularly relevant. Furthermore, if the female changes her preference and chooses another water surface to copulate on, the male will desert his old site and establish the new site as his territory. In effect, it is the female that is being defended. In her absence (when she's on the nest) he defends the site to which he anticipates she will return.

The distribution of breeding pairs is linked to territorial behavior. Most females nest within their mates' territory. But there are exceptions. In areas where predation is severe, clusters of hens nesting in close proximity to one another often are found on islands where predation is less likely. When this occurs, a male usually defends a territory far removed from the nest site. It may be half a mile or more distant, and the nests of other hens may be found within his territory. Similarly, a female may or may not raise her

brood on her drake's territory. Broods are so highly mobile that females often desert a location regardless of availability of food, continually moving their ducklings from one location to another. This mobility probably evolved to diminish the risk of predation.

In my studies of black ducks, whose territorial behavior is similar to mallards, females rarely take their broods to their mate's territory, much less depend on it for food. It is common in ducks for several females to raise their young on the same wetland, regardless of previous territorial behavior by males.

There are generalizations that can be made about the territorial behavior of ducks, but there is considerable variation among species and even within a species. Territorial behavior may vary with the topography of the habitat. It can depend on the circumstances and flexibility of the male. Some drakes defend their territories far more vigorously than others, with a tendency for older, experienced males to be more aggressive. However, young or old, the first male to establish a territory at a site will usually prevail over intruders. Prior ownership seems to instill confidence in a male. Sometimes, males that have fared poorly in previous encounters may become less willing than formerly to defend their territories, especially if their mates are incubating eggs. After the female lays her last egg and is no longer having sex with her mate, his sex drive wanes and he loses interest in both her and his territory. At such times he may only casually defend his territory, if at all. This leaves it available for another pair to take over.

Occasionally, two pairs simultaneously try to establish themselves on a wetland. The males may skirmish but neither dominates. After 2 or 3 days they may resolve the conflict by ignoring each other and, in effect, sharing the wetland. When this happens the males may be seen together chasing intruders.

Sometimes unpaired males that have not competed successfully for a mate loiter at the edge of another male's territory. Initially, they are chased away but after a few days the resident male loses interest in the interloper, who he presumably no longer views as a threat. Soon the pair and the bachelor are feeding and loafing together, and occasionally the two males combine efforts to defend the territory.

I recall one occasion when a female's mate had deserted her after she began incubating her eggs. The bachelor "inherited" the territory. Ten days into incubation the female lost her eggs to a predator. It was early enough in the breeding season for her to lay another clutch of eggs, but she needed a male to fertilize them. The bachelor was available. He became her new mate and provided the sperm she needed. This suggests so-called "surplus males" perform an essential function and are therefore not surplus.

My observations over the years lead me to conclude that managers sometimes try to reward hunters with initiatives, especially those involving waterfowl behavior, that are based on questionable or inadequately researched science. Some are just plain crazy.

We do not know how many ducks production management contributes to the fall flight. However, we know that reducing hunter-related mortality can protect breeding stock. Indeed, this is the basic premise of hunting regulations. I believe regulating the kill is the only truly effective and reliable way that we can manage our breeding populations. Thus, both hunters and managers should operate on the principle that increasing the size of our breeding stocks is more important than increasing the daily bag limit or season length.

Editor's Note: For further information on waterfowl behavior and other issues related to biology, management and hunting, we recommend Seymour's newly published book, *Living a Dream: The Education of a Duck Hunter*, available from The Minnesota Waterfowl Association, 3750 Annapolis Lane, Suite 135, Plymouth, MN, 55447, phone 763-553-2977.

If we take care of the ducks, the ducks will take care of us.
