

AN EVALUATION OF CAPTIVE-REARED MALLARD RELEASES IN VIRGINIA



Prepared by
DGIF Mallard Release Committee
July 2007

Table of Contents

- I. EXECUTIVE SUMMARY**
 - II. INTRODUCTION AND BACKGROUND**
 - III. CONCERNS REGARDING CAPTIVE-REARED MALLARD RELEASES**
 - A. Diseases**
 - Avian Influenza
 - Duck Viral Enteritis
 - Botulism
 - Avian Cholera
 - B. GENETIC DIVERSITY AND HYBRIDIZATION**
 - C. CONFOUNDING WATERFOWL MANAGEMENT PROGRAMS**
 - Aerial Waterfowl Surveys
 - Waterfowl Breeding Population Surveys
 - Banding Programs
 - Harvest Surveys
 - D. LAW ENFORCEMENT ISSUES**
 - E. ADMINISTRATIVE ISSUES**
 - F. ECOLOGICAL AND SOCIAL CONCERNS**
 - Nuisance issues
 - Impact to waterfowl habitat
 - IV. Illegal Releases**
 - V. DEFINITIONS, LAWS AND REGULATIONS PERTAINING TO THE RELEASE OF CAPTIVE-REARED MALLARDS**
 - VI. CONCLUSION**
- APPENDIX A GEOGRAPHIC LOCATIONS OF MRA IN VIRGINIA**

AN EVALUATION OF CAPTIVE-REARED MALLARD RELEASES IN VIRGINIA

I. EXECUTIVE SUMMARY

This paper is a review of the practice of releasing captive-reared mallards on shooting preserves in Virginia and will be used by the Department of Game & Inland Fisheries (VDGIF) in evaluating this activity. This review details the potential problems associated with the release of captive-reared mallards. The issues have been well documented and include: disease risks to wild waterfowl and the domestic poultry industry, genetic mixing with wild mallard ducks and hybridization with black ducks, difficulties in surveying and assessing wild duck populations for management and regulatory purposes, ambiguities in wildlife law enforcement concerning live decoys and baiting regulations, and effects on habitats and the ecological community. These factors, along with the costs of controlling disease outbreaks and nuisance duck problems, far outweigh the short-term benefits that mallard release programs offer to a very small percentage of Virginia's waterfowl hunters. Currently, there are only four MRA shooting preserves licensed in Virginia. None of these have been operating as an MRA for more than 4 years.

Releasing captive-reared mallards is an oversimplified and short term approach to increasing harvest opportunities and fails to address the problems of decreasing duck populations and habitat degradation. Such temporary solutions may divert resources from biologically sound waterfowl management programs. Attention should be focused on the critical factors affecting wild waterfowl populations such as habitat loss, reproductive success, and harvest management. The more long-term approach that would benefit waterfowl and waterfowling opportunities is to concentrate efforts on proven waterfowl conservation practices, rather than releasing captive-reared mallards.

This report was prepared by the Department of Game and Inland Fisheries' Ad Hoc Mallard Release Committee. Members of the committee were from the Department's Wildlife and Law Division and the Permits Section. Members included Robert Ellis (chair), Glen Askins, Tom Bidrowski, Gary Costanzo, Todd Engelmeyer, Robert Everidge, Steve Garvis, Richard Goszka, Galon Hall, Ben Lewis, Mike Minarik, Brian Moyer, Ed Steinkoenig, Phil Townley, Dianne Waller, Mack Walls and Phil West.

II. INTRODUCTION AND BACKGROUND

The release of captive-reared mallards (*Anas platyrhynchos*) for the purpose of shooting dates back to the 1930's. Traditionally, most mallard releases were conducted in a controlled situation such as tower shoots, where mallards were released from a designated stand or tower and immediately harvested by shooters positioned in areas adjacent to the tower. Precautions were generally taken to contain captive-reared birds so that they would not become free-ranging. Most of the released birds were shot. The ducks that were not shot were recaptured at feeding stations to be used for the next shoot. In the 1950's private landowners and a few state agencies, including those in New York, Pennsylvania, Ohio, and Maryland, experimented with releasing birds into the wild to supplement wild populations and provide sportsmen with additional birds to harvest. However, most state agencies discontinued release programs due to negative ecological impacts and economic reasons.

Throughout the 1980's, the numbers of wild ducks declined and hunting regulations became more restrictive. With declining stocks of wintering mallards, the practice of releasing captive-reared mallards gained some interest as a quick fix. Proponents believed that local breeding populations of mallards could be established as they had for resident Canada geese. As a result, the interest in shooting captive-reared ducks increased and federal regulations that allowed the shooting of captive-reared mallards became more broadly interpreted (Smith and Rower 1997). In 1985, private shooting preserves in Maryland began the first large-scale releases of free-ranging mallards. This practice (referred to as a Regulated Shooting Area (RSA's) in Maryland), differs from the traditional shooting preserves and tower shoots. On RSA's, the mallards are purchased as ducklings, raised to flight stage, and released to range free on and off the area. The birds are placed in brooders or released onto brooding ponds where they are fed and afforded a measure of protection. The birds are not restricted and could leave the site once they reach flight stage.

The release of captive reared mallards is a concern among wildlife managers and law enforcement officials for a number of reasons including: the potential introduction of disease and increased risks of disease transmission, genetic introgression and hybridization, confounding established waterfowl-management databases and data-collecting efforts, detrimental effects on habitat and the ecological community, and greater potential for violations of regulatory statutes stemming from these activities. In general, harvest rates of pen raised mallards are generally low and survival can be high (80% if supplemental feeding is provided) (Hindman et al 1992 and USFWS 2003).

In Virginia, shooting preserves are regulated by the VDGIF (§ 29.1-600). A Mallard Release Area (MRA) is an area within a shooting preserve where captive-reared mallard ducks are released prior to September 15th. Released mallards are allowed to move freely on the land and waters of the preserve as well as on other public and private lands and waters. This is different from other shooting preserve practices (i.e. quail and pheasants) in that released mallards are not confined to the boundaries of the shooting preserve and release rates are not the same as expected harvest rates.

Currently, there are four MRAs licensed in Virginia. Three are on the lower portion of the Eastern Shore (two are operated by the same landowner), and one is on the lower James River near Hopewell. None of these MRAs have been operating for more than 4 years. Though

no disease outbreaks have occurred, concerns have been heightened due to potential epidemics of avian influenza and West Nile virus. There have been issues with all MRAs particularly relating to permitting. Some MRAs have released birds without a proper permit, or failed to follow permit renewal procedures or adhere to permit conditions. Two of the shooting preserves have also been charged with committing waterfowl hunting violations. VDGIF staff has received complaints from adjoining landowners regarding conflicts with release operations. In addition, VDGIF staff fields hundreds of general “nuisance” complaints regarding feral mallards annually. Since captive-reared mallards are conditioned to artificial feeding they may contribute to an increasing number of general nuisance complaints.

The four MRAs are also situated close to some of the state’s most important waterfowl habitats including VDGIF Wildlife Management Areas and USFWS National Wildlife Refuges, where there is a high degree of interactions with wild waterfowl. This heightens disease concerns since released mallards are often imported and not always tested for disease as required by the Virginia Department of Agriculture and Consumer Services. The birds are free-ranging and many leave the MRAs as indicated by VDGIF waterfowl surveys and reports of birds harvested in other areas of the state. Released mallards affect the integrity of the VDGIF waterfowl surveys and the surveys for the Atlantic Flyway overall. In addition, released mallards can displace native waterfowl and compete for essential resources. The Eastern Shore is one of the Atlantic Flyway’s most important wintering areas for black ducks, and is one of the last strongholds for nesting black ducks in Virginia. Surviving captive-reared mallards can greatly impact Virginia’s black duck population through competition and hybridization.

The following section provides more detail on the concerns and issues with the release of captive-reared mallards.

III. CONCERNS REGARDING CAPTIVE-REARED MALLARD RELEASES

A. Diseases

Wild and captive animals are host to a wide variety of diseases (Davidson and Nettles 1995). Activities that promote interactions between wild and captive-reared animals increase the potential of disease risks. Current outbreaks such as chronic wasting disease and avian influenza demonstrate the potential dangers of interactions between wildlife and captive-reared animals. Releasing captive-reared mallards increases the risk for disease transmission.

The release of large numbers of captive-reared mallards in a relatively small area creates an environment conducive to the establishment and spread of disease. In these situations, the probability of a bird having an infectious disease and passing it on to other birds increases. The disease can be spread rapidly and can easily be passed to wild birds. Losses of wild ducks to introduced diseases could undermine expected benefits from habitat restoration and other conservation measures. In addition, commercial poultry operations could be adversely affected. Some of the diseases that affect captive and wild waterfowl also affect domestic poultry, due to their close phylogenetic relationship (Wobeser 1981).

The National Wildlife Health Center (NWHC) of the USGS, the Southeastern Cooperative Wildlife Disease Study (SCWDS), and the U.S. Fish and Wildlife Service (USFWS) has expressed concerns about disease risks among pen-raised waterfowl and the transmission to wild birds. The NWHC is a federal research and diagnostic center that assists with identification

and control of wildlife disease outbreaks throughout the country. They have identified a number of highly infectious diseases including avian cholera, duck virus enteritis (DVE), duck virus hepatitis, avian influenza, and botulism, which could cause major problems for wild waterfowl. SCWDS has emphasized the difficulty in trying to control disease in wild waterfowl populations, which are highly mobile and widely distributed. They have stressed the fact that it is much easier to prevent diseases by prohibiting the release of captive-reared mallards of uncertain disease status than to attempt to control a disease problem after it develops. In addition, the cost of containing and resolving diseases can be substantial, and not necessarily successful. Significant amounts of time and money have been spent in controlling past disease outbreaks.

When a disease outbreak occurs, the standard procedure for containment is to destroy all waterfowl using the site (wild and domestic). This protocol is necessary to remove all potential disease carriers, because non-symptomatic carriers could shed the infectious agent at any time in the future and cause another outbreak. If necessary, the site of the disease outbreak is chemically treated in an attempt to kill the infectious agent, and hazing techniques are used to prevent other birds from using the area. The public does not always understand or agree with this protocol, which can make disease containment even more difficult.

Avian Influenza

Influenza viruses are found in domestic and wild avian species, humans, swine, horses, and marine mammals, including whales and seals. Avian influenza (AI), commonly called “bird flu,” is an infectious disease of birds caused by type A strains of influenza virus. Waterfowl and shorebirds are the natural reservoirs for avian influenza viruses. Many low pathogenic strains of AI exist in wild birds, and are not of conservation, public health or regulatory concern. However, highly pathogenic strains (HPAI) can cause mortality in wild birds and domestic poultry and have the potential to mutate to a form that is transmissible to humans. In 2005, a Eurasian strain identified as HPAI H5N1 spread through much of Asia and parts of Europe.

An outbreak of low pathogenicity avian influenza (LPAI) virus occurred in 2002 in domestic poultry in the Shenandoah Valley of Virginia. Eradication of the disease costs more than \$60 million and resulted in the destruction of more than 17 million domestic birds. Recommendations from the Poultry Industry to reduce the risk of AI transmission are to prevent the release of poultry, limit the use of free-range poultry flocks, and eliminate the contact between domestic poultry and wild birds. Similar action should be taken to reduce the risk of AI transmission from captive-reared mallards.

Duck Virus Enteritis

A major disease of concern in relation to the release of captive-reared mallards is duck virus enteritis (DVE) or duck plague (Davidson and Nettles 1995). Duck plague is caused by a herpes virus. The disease was first confirmed in the United States in the commercial duck industry on Long Island, New York in 1967. The disease spread into the wild duck population and since that time has caused significant mortality in waterfowl. The most notable outbreak of DVE occurred in the Dakotas in 1973 and led to the death of 40,000-50,000 wild waterfowl (Wolf and Burke 1982). Since then it has been reported in captive and feral waterfowl in 20

states and 4 Canadian provinces. The greatest frequency of reports each year comes from Maryland and Virginia (Converse and Kidd 2001).

Typical of other herpes viruses, duck plague virus establishes a carrier state in waterfowl that survive primary infection. Duck plague has not been shown to be enzootic in free-ranging, migratory waterfowl in North America (Friend 1999). Captive-reared waterfowl often remain more concentrated than wild waterfowl, even after release. These higher densities of waterfowl provide a greater potential for duck plague, when present, to be transmitted quickly between individual birds, establishing a high prevalence of infection. The release of captive-reared waterfowl and the mixing of captive-reared ducks with wild waterfowl create a greater risk to wild waterfowl. Evidence to support this scenario was provided by a study of waterfowl on Maryland's Eastern Shore in 1998. Duck-plague virus shedding or exposure (presence of neutralizing antibodies) was found in 32 percent of mallards raised in captivity, either locally or imported as ducklings and released for hunting, compared to 8 percent of the free-flying mallards sampled from the surrounding area. The presence of duck-plague virus was also detected in 17 percent of the free-flying Canada geese examined from Blackwater Refuge in 1998, and 29 percent in 2000, which is located near shooting preserves where captive-reared mallards were also found positive for duck-plague virus. However, the status of duck plague in wild populations is poorly understood and controversial (Hansen and Converse NWHC unpublished report). The association of most duck-plague outbreaks in the wild with occurrences in captive flocks does not necessarily indicate direction of transmission, and methods used in past surveys of migratory waterfowl were not able to detect infections in carrier birds, if present.

Botulism

Botulism is another disease of concern to wild, domestic, and captive-reared waterfowl. Botulism is a bacterial disease that generally occurs during the warm summer months when water quality in ponds can deteriorate. Five to ten cases of botulism occur each year in the Hampton Roads and Virginia Beach area, usually occurring in settling ponds and housing development ponds. Many domestic and semi-wild mallards use these sites and are killed by this disease. At least 50 man-days are spent each year in dealing with botulism and nuisance duck problems in Virginia. Mallards released from captive-rearing programs are likely to use these areas and increase the risk of nuisance and disease problems.

Avian Cholera

Avian cholera is a disease that originated in domestic poultry and has since spread to wild waterfowl. A highly infectious bacterial disease, avian cholera can kill large numbers of birds in a short period of time. An avian cholera outbreak killed an estimated 100,000 ducks in the Chesapeake Bay in 1994 and lasted nearly 2 months (Costanzo and Askins 1994). Birds with avian cholera were reported from Baltimore, Maryland to the Outer Banks of North Carolina. An estimated 8,119 work hours and \$182,588.00 were spent in Virginia alone in containing and cleaning up this disease outbreak.

B. Genetic Diversity and Hybridization

Black ducks (*Anas rubripes*) are a species of special concern as identified in the North American Waterfowl Management Plan (NAWMP) (USFWS 1998). Hybridization and displacement by the mallard have been identified as causes of the black duck decline. A specific initiative of the NAWMP has been established for black ducks (The Black Duck Joint Venture Plan), and special management programs are being conducted to restore black duck populations. It would be counterproductive to these considerable efforts if released mallards were competing or interfering with the black duck recovery.

The mallard was considered a wanderer or occasional visitor in most of the northeastern United States in the beginning of the twentieth century (Heusmann 1974, 1991). Over the past 100 years, mallard numbers in the northeastern United States and Canada have increased and populations have expanded into traditional black duck nesting range (Johnsgard and DiSilvestro 1976). Also, there were large-scale release programs in several states, mainly New York, Pennsylvania, and Maryland, where mallards were raised and released to augment declining duck populations (Foley et al 1961, Dunn et al 1995, Hindman et al 1992). Concurrent with mallard intrusion into black duck breeding and wintering range, black duck populations have declined. Although the nature of the relationship between mallard expansion and black duck decline is uncertain, the release of game-farm mallards adds competition pressure on black duck populations, including the increased likelihood of hybridization.

Black ducks and mallards are genetically closely related (Ankney et al 1986, Ankney and Dennis 1988, Hepp et al 1988, Avise et al 1990). Mallards and black ducks hybridize and the offspring of such mating are fertile (Heusmann 1974). Hybridization between these species is well documented; however, the consequences of genetic introgression are uncertain (Cade 1983). Plumage-coloration traits of hybrids are detectable and have been well described (Kirby et al 2000). However, detection becomes increasingly difficult as backcrossing with parent stocks increases (Phillips 1915). The net effects on survival, reproduction, and behavioral characteristics of hybrids and backcrosses are less well known. These performance traits are key parameters relating directly to the status of black ducks and have adaptive significance to various habitats and landscapes preferences.

The large scale releases of captive-reared mallards are a concern in relation to the genetic integrity of wild mallards and hybridization with native black ducks. The quality of captive-reared mallards is questionable and the breeding stock often contains domestic or domestic-type birds. Wild mallards that winter in Virginia originate from populations that breed in both the Northeastern and Prairie Regions of North America. Released mallards mix and could interbreed with both of these stocks of migratory mallards and alter the genetic composition of the wild populations.

There are also substantial numbers of native black ducks that breed in Virginia. In the Chesapeake Bay and Atlantic coastal marshes, black ducks are still a predominant breeding species. Releasing mallards in these areas promotes mixing and hybridization of the two species. Studies have shown that mallard drakes can out-compete black duck drakes for black duck hens. In Maryland, in areas where development has altered habitats and large numbers of mallards have been released, mallards have replaced black ducks as the predominant breeder. Released mallards have the potential to displace the local breeding black ducks in Virginia, and further contribute to the black duck population decline. Pairing and interbreeding of captive-reared mallards with wild mallards, black ducks, and mottled ducks have been documented. Further, adverse effects have been observed in local breeding black ducks in Maryland and mottled ducks

in Florida. In Virginia, there were no mallards found nesting on the Mockhorn Island Wildlife Management Area (WMA) on the Eastern Shore of Virginia in the early to mid 1990's. This salt marsh habitat is predominantly a black duck nesting area. Three mallard released areas were established within 2 miles of the WMA in the last four years. Nest searches conducted on the WMA in 2006 found 5 mallard nest. Although there is no direct evidence that these were birds released from the MRAs, this is cause for considerable concern.

Another concern of biologists is the potential to introduce gene-linked traits that reduce fitness under natural conditions to populations of wild mallards (Banks 1971, Shoffner 1971, Smith 1999). Although largely speculative, the concern is that captive-reared mallards from various game-farm stocks may interbreed with wild mallards and adversely affect the wild characteristics of the native stock. Studies comparing these different mallard strains indicate that differences in egg production, fertility, growth rates, and body weights may be linked to genetic differences. Such studies relied on breeding and back-crossing experiments to determine the genetic nature of these differences, but differences between these groups were not determined with molecular-genetics techniques. It would be difficult to do so, as it is not known which genes control such traits. Game-farm mallard hens began egg-laying earlier, laid for a longer time, laid larger clutches, and had greater incubation time than wild hens bred in captive breeding situations (Prince et al 1970, Greenwood 1975). These differences might explain the frequent reproductive failure of released mallards (Cheng et al 1980). These traits may lead to improper timing of migration and nest initiation. The large clutch size and decreased broodiness could be the cause of a high rate of nest and brood abandonment.

Forced copulation is another route that could produce hybrids (Seymour 1990). Forced copulation is a common reproductive strategy in wild mallard males, but infrequently observed in black duck males (Morton 1998). Captive-reared male mallards may have an even greater tendency toward forced copulation because the breeding systems used in captivity tend to select for those males that force-copulate rather than pair (Morton 1998). Thus, the release of large numbers of captive-reared mallards into areas with limited black duck breeding populations may pose a serious threat.

C. Confounding Waterfowl Management Programs

The management of migratory waterfowl is dependent upon a series of coordinated research, surveys, banding and monitoring programs to assess the status of waterfowl. This information is used to promulgate hunting-season frameworks, to justify purchase and management of important waterfowl habitats, and to guide activities among various Joint Ventures coordinated under the North American Waterfowl Management Plan (USFWS 1998). The release of large numbers of captive-reared mallards confounds state, federal and flyway data-gathering and population-monitoring activities because released birds cannot be differentiated from wild birds in many of these monitoring programs.

Aerial Waterfowl Surveys

The Midwinter Waterfowl Survey (MWS) is the longest-term source of information on wintering waterfowl populations in the United States. This coordinated effort among the states and the US Fish & Wildlife Service is used to assess wintering waterfowl populations and

distribution. The information is used to evaluate long-term trends in waterfowl populations and to provide information for setting waterfowl hunting regulations. This survey is conducted in early January, mid-way through Virginia's waterfowl hunting season. Similar to the MWS, the November Goose and Swan Survey covers the major waters and wetlands east of Interstate 95 and has been conducted in part since 1965. This survey is particularly helpful in evaluating pre-season waterfowl habitat conditions, waterfowl distribution, and migration status. Virginia's four MRAs are located within the survey area. Potential conflicts exist because captive-reared mallards cannot be differentiated from wild mallards on the aerial surveys. Consequently, large numbers of captive-reared mallards are likely counted on the surveys and compromise the integrity of the surveys. This impacts the ability of wildlife agencies to prescribe appropriate management strategies, such as hunting seasons.

For example, in the early 1990s, winter surveys of migrant Canada geese were confounded by the rapidly growing resident Canada goose population, and managers failed to detect a significant decline in the migrant goose population. A breeding ground survey was initiated to resolve this problem but by then the migrant goose population had crashed. The Canada goose hunting season had to be closed throughout the Atlantic Flyway for 4-5 years to allow the population to recover. Winter surveys are no longer useful for monitoring migrant Canada goose populations. Breeding grounds surveys, which are much more difficult and expensive, must now be used.

Waterfowl Breeding Population Surveys

In 1989, the States in the Northeast and Mid-Atlantic Regions of the Atlantic Flyway, including Vermont, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, and Virginia, established waterfowl breeding-pair surveys to improve knowledge of eastern mallard populations (Heusmann and Sauer 2000). Results of these surveys are combined with mallard population estimates derived from the USFWS May aerial surveys in the North-central States, Western and Eastern Canada, and Maine. This information is used in the Adaptive Harvest Management (AHM) process to set hunting regulations for duck seasons. The release of free-flighted captive-reared mallards into areas where states annually conduct waterfowl breeding-population surveys could confound the breeding population estimates and influence hunting season frameworks.

In addition, large-scale releases of captive-reared mallards at specific locations would almost certainly influence the results of the Breeding Bird Survey conducted by the U.S. Geological Survey. The BBS is a long-term, large-scale, international avian monitoring program initiated in 1966 to track the status and trends of North American bird populations.

Banding Programs

Information from the leg-banding and recovery of migratory waterfowl is an important management tool used by Federal/State/Provincial wildlife agencies and researchers to assess distributions, harvest pressure, and survival rates, and to evaluate the effects of hunting regulations on wild waterfowl. The bird-banding program in North America is jointly administered by the USGS Bird Banding Laboratory (BBL) and the Bird Banding Office of the

Canadian Wildlife Service. These agencies issue permits and bands. They maintain records of species and numbers banded, and records of bands recovered.

Large-scale releases of banded captive-reared mallards may affect reporting rates of bands on wild ducks. Reporting rates tend to be lower near sites where large numbers of banded ducks are marked, presumably because of a loss of “novelty” among hunters about shooting banded birds (Henry and Burnahm 1976). The suppression of band-reporting rates caused by the increased frequency of harvesting banded birds makes federal banding programs less efficient, so more ducks must be banded to get reliable information. This potential bias in reporting rates adds uncertainty to harvest-rate estimates for wild mallards, which affects the development of annual hunting regulations and, more specifically, the population models used in the AHM process. Each year, hundreds of recoveries of non-Federal bands (private bands) are reported to the federal agencies in both the U.S. and Canada and thus interfere with agency operations.

In addition, because large numbers of released mallards have private bands, problems arise when hunters try to report these to the bird banding laboratory. Although BBL staff can often distinguish private bands from Federal bands, staff time is required to respond to the reporting party and explain that the band is not official and that no information is available from the BBL. These reports have become so frequent that the BBL has developed a form letter to send to those reporting non-Federal bands. Some individuals become quite argumentative when informed that the BBL has no information about the banded bird. When the BBL began use of an answering service to accommodate overflow calls from the 1-800-327-BAND reporting system, these bands were usually not distinguished from valid reports and many errors were introduced into the database that had to be tracked down and corrected manually, consuming more staff time. The inscription and number on some private bands so closely resembles those used on Federal bands that they are routinely missed in the data-editing procedures. Thus, inaccuracies are introduced into a database critical to the management of wild birds.

Federal regulations require captive-reared mallards be toe-clipped or marked with a “seamless” metallic band. However, thousands of captive-reared mallards are banded with removable, non-Federal bands every year on shooting preserves by private individuals and organizations in violation of Federal regulations § 21.22 (c)(1). These bandings may have an influence on reporting rates for wild birds and therefore effect the development of annual hunting regulations. Thus, the confounding influence of captive-reared mallards that are banded illegally should be actively discouraged wherever possible to ensure the accuracy and reliability of these databases.

Harvest Surveys

Waterfowl harvests are estimated annually by the US Fish & Wildlife Service from a Hunter Questionnaire Survey (HQS) and a Parts Collection Survey (PCS). These surveys sample approximately 50,000 hunters each year and collect more than 80,000 waterfowl parts (wings and tails) from hunters to assess the species, sex, and age composition of the harvest. Captive-reared mallards shot outside of shooting preserves are often reported and sent in to these surveys. In a study of Maryland’s now discontinued release program, it was found that released mallards accounted for an average of 13.9 percent of immature mallard wings and 3 percent of the total duck wings submitted to the PCS from Maryland (Hindman et al 1992). Because there is no reliable technique to distinguish captive-reared mallard from a wild mallard wings, these captive-

reared mallards are added to the total harvest estimate. Also, mallards that are released on shooting preserves are predominantly young-of-the-year birds, and their inclusion in the PCS overestimates the number of young birds produced in the wild (young per adult) and further bias inferences drawn from the harvest surveys. This, in turn, could affect the Federal hunting regulations which are based on harvests age ratio information.

D. Law Enforcement Issues

Problems often exist because released birds occur in proximity to blinds being used to hunt wild birds. In these situations, the regulation prohibiting the use of live decoys may be violated. Live-decoy violations can occur when wild ducks are attracted to the presence or audible calls of captive-reared mallards on sites operated as shooting preserves. In addition, the baiting prohibition may be violated if wild birds are harvested as they come to the feeding sites provided for the released mallards. Hunters shooting birds adjacent to MRAs are at risk of hunting within the “zone of influence” of live decoys and/or taking with the aid of bait.

Law enforcement personnel have also expressed concerns about their ability to enforce or monitor the management plans and record keeping submitted by a permit holder. Specifically, a permit holder can submit accepted management practices for an MRA (i.e. shoot all released mallards, condition release mallards to remain on the MRA etc) in order to get the permit but once the permit is secured the permittee is free to pursue his own management plan.

There have been repeated permit violations on most of the MRAs in Virginia. In addition 2 of the current MRAs have been charged with wildlife hunting regulations violations.

E. Administrative Issues

Although there are only four MRA in Virginia; they have created an administrative burden affecting many divisions in the Department. The permitting branch of the Department has had problems with all four applicants ranging from submitting incomplete forms resulting in multiple communications to clarify paperwork, not abiding by deadlines and circumventing the process. The Law Enforcement Division investigates a large number of complaints regarding MRAs. Complaints include waterfowl hunting violations, permit violations and zoning issues. Both the Law Enforcement and Wildlife Divisions receive several complaints annually regarding these operations. The Wildlife Division also spends considerable staff time in reviewing management plans, often repeatedly, to bring MRAs up to standard.

F. Ecological and Social Concerns

Another important concern is that programs that release captive-reared mallards are taking an oversimplified approach to solve the complicated problems of declining duck populations or attempting to satisfy over enthusiastic harvest expectations. Such programs may be diverting attention and resources from other important issues. Concerns are that wetland restoration and habitat conservation programs may be abandoned as interest is switched from hunting wild ducks to raising and releasing captive-reared mallards. Focus needs to be maintained on the critical factors affecting wild waterfowl populations such as habitat loss, recruitment levels, and harvest rate. Wild ducks have a tremendous reproductive potential when habitat conditions are adequate. To benefit waterfowl populations over the long-term it is best to

concentrate efforts on habitat conservation and management rather than on releasing captive-reared mallards. The reproductive potential of wild ducks was evident in 1994 when mallard populations increased 36% over 1993 levels in response to improved pond conditions on prairie breeding areas.

Mallard Release Area owners suggest that a number of benefits are derived from their program. They claim that shooting preserves generates income for the local economy. Sportsmen who come to use their facilities patronize local restaurants, motels, and other businesses. However, none of the current MRAs have been commercial ventures until this year when one became a commercial shooting preserve. MRA supporters also suggest that the habitat they are creating for captive-reared mallards is beneficial to wild waterfowl. In addition, they suggest that by shooting released birds they are reducing the hunting pressure on wild duck populations. However, wild ducks are often shot on MRAs, and whether fewer wild birds are taken because of MRA operations has not been substantiated.

Many MRAs actively manage their habitats for wild waterfowl. Such feeding and/or habitat-management practices on shooting preserves may attract wild ducks and thereby, increase the potential for interactions and conflicts between captive-reared and wild waterfowl. These situations usually occur in areas where MRAs release free-flighted mallards in close proximity to habitats occupied by migratory waterfowl. All the MRAs in Virginia are located close to important waterfowl habitat areas.

Nuisance issues

Captive-reared mallards are conditioned to artificial feeding environments. They are easily attracted to areas where domestic or feral ducks are being fed such as parks, housing developments, or urban ponds. Such situations also lead to nuisance duck problems as residents complain about the numbers of birds and quantity of bird droppings. The risk of disease increases as the number of birds increase and the quality of the water declines. Similar issues as those created by resident Canada geese also exist for feral duck populations.

Impact to waterfowl habitat

Considerable efforts and resources are expended in Virginia by Federal, State, local government, private organizations and individuals to restore and protect waterfowl habitats. Captive-reared mallards that leave MRAs move into these areas and compete with native waterfowl and other wildlife species. Blackwater National Wildlife Refuge (NWR) in Maryland and Bombay Hook NWR in Delaware each estimated upwards of 1,000 captive-reared mallards using these refuges annually. They have indicated that these birds did affect their duck-banding operations and population surveys. Some Refuges indicated concerns about pairing with wild mallards, interbreeding with black ducks and mottled ducks, and exploiting and competing for habitat used by wild waterfowl. During aerial surveys in Virginia it is evident that released mallards do not stay on release sites. Captive-reared mallards have been harvested on Hog Island WMA, Princess Anne WMA and Sandy Point Forest Preserve. In addition all the MRAs in Virginia are within close proximity to some of Virginia's most vital waterfowl habitats. These include Hog Island WMA, Presquile NWR, Land's End WMA, Rappahannock NWR, Eastern Shore NWR, and Mockhorn Island WMA.

IV. Illegal Releases

While it is difficult to estimate the total number of captive-reared mallards that are illegally released in Virginia, there are reports that it could be hundreds to thousands annually. Most of these releases are conducted on a small scale where a landowner releases birds to augment hunting opportunities and/or to increase viewing opportunities on and around their property. These releases are often a hard release where the birds are directly released onto the property or public waters directly from the hatchery. In addition, mallards that are used in tower shoots and for field trials/dog training are released in greater numbers than needed for those purposes and once these birds are released they remain free-ranging.

V. DEFINITIONS, LAWS AND REGULATIONS PERTAINING TO THE RELEASE OF CAPTIVE-REARED MALLARDS

Definition of Mallard Release Area in Virginia: A Mallard Release Area (MRA) is an area within a licensed shooting preserve where captive-reared mallard (*Anas platyrhynchos*) ducks are released prior to September 15th for the purpose of shooting on the preserve.

Definition of a Mallard Tower Shoot in Virginia: A mallard tower shoot for captive-reared mallard (*Anas platyrhynchos*) ducks is an activity on a licensed shooting preserve where captive-reared mallard ducks are released from a designated station and are shot on the preserve the same day of the release. Birds shall not remain free-ranging in the environment.

Federal Regulations and Authority

§ 21.13 of title 50 of the Code of Federal Regulations (CFR), allows licensed shooting preserves to release captive-reared mallards, provided they are properly marked prior to 6 weeks of age by removal of the right hind toe, banding with a seamless metal band, pinioning, or tattooing, to be possessed and disposed of in any number, at any time, by any person, without a permit. Further, this regulation stipulates that such birds may be killed by shooting only in accordance with all applicable hunting regulations governing the take of mallard ducks from the wild, with the exception provided; that such birds may be killed by shooting, in any number, at any time, within the confines of any premises operated as a shooting preserve under State license, permit, or authorization. Because captive-reared mallards are classified as a “migratory bird” by definition in 50 CFR 10.12, and simply excepted by regulations in § 21.13 allowing their take, they remain protected under the Migratory Bird Treaty Act. *This regulation however does not prevent states to be further restrictive in permitting the release of captive-reared mallards.*

Under the Migratory Bird Treaty Act (16 U.S.C. 703–712), the Secretary of the Interior has responsibility for setting appropriate regulations for the hunting of migratory birds, with due regard for maintaining such populations in a healthy state and at satisfactory levels. The Fish and Wildlife Act of 1956 (16 U.S.C. 742 a–j) more specifically authorizes collection of such information as is necessary and to take steps as may be required to protect wildlife resources.

Virginia Regulations and Authority

Code of Virginia

§ 29.1-100. Definitions of Game and Non-migratory Game Birds.

"Game" means wild animals and wild birds that are commonly hunted for sport or food. "Migratory game birds" means doves, ducks, brant, geese, swan, coot, gallinules, sora and other rails, snipe, woodcock and other species of birds on which open hunting seasons are set by federal regulations. "Non-migratory game birds" means grouse, bobwhite quail, turkey and all species of birds introduced into the Commonwealth by the Board.

§ 29.1-521 (10). Unlawful to hunt, trap, possess, sell or transport wild birds and wild animals except as permitted; exception; penalty.

A. The following shall be unlawful:

10. To hunt, trap, take, capture, kill, attempt to take, capture or kill, possess, deliver for transportation, transport, cause to be transported, by any means whatever, receive for transportation or export, or import, at any time or in any manner, any wild bird or wild animal or the carcass or any part thereof, except as specifically permitted by law and only by the manner or means and within the numbers stated. However, the provisions of this section shall not be construed to prohibit the (i) use or transportation of legally taken turkey carcasses, or portions thereof, for the purposes of making or selling turkey callers or (ii) the manufacture or sale of implements, including, but not limited to, tools or utensils, made from legally harvested deer skeletal parts, including antlers.

§ 29.1-547. Trapping, selling, purchasing, etc., migratory game birds.

Notwithstanding the provisions of § 29.1-546 and §29.1-553, any person convicted of trapping or attempting to trap any migratory game bird, as defined in § 29.1-100, or convicted of possessing any such migratory game bird taken by means of a trap, shall be guilty of a Class 1 misdemeanor. Any person convicted of offering for sale, selling, offering to purchase, or purchasing any migratory game bird shall be subject to penalties as provided in § 29.1-553.

§ 29.1-600.1. Board to promulgate regulations.

The Board shall promulgate regulations necessary to carry out the provisions of this chapter, including, but not limited to, requirements for the licensing and operation of all shooting preserves located within this Commonwealth. In promulgating such regulations the Board shall follow the procedure established in § 29.1-501 through § 29.1-504. The Department may recover from the licensee actual costs incurred by the Department for investigating or disposing of shooting preserve animals that exhibit disease or are not properly confined in violation of Board regulations.

§ 29.1-601. Applicant to own or have land under lease; boundaries.

No shooting preserve license shall be granted unless the applicant owns or leases the areas for which the shooting preserve license is desired. Boundaries of the area licensed shall be clearly defined by posting as shall be prescribed by the Board.

§ 29.1-602. Applicant to develop land, release game and comply with other provisions.

The applicant shall (i) develop the lands to be licensed as a shooting preserve so as to meet such requirements as the Board may make, (ii) release game birds and animals as may be designated by the Board, and (iii) comply with such other provisions as the Board deems advisable.

§ 29.1-603. No taking of game before compliance with requirements of Board.

Until the requirements specified by the Board have been fulfilled by the applicant to the satisfaction of the Board and certified to and accepted by the Board, it shall be unlawful to shoot, attempt to shoot, or to take any game of the species licensed under this chapter on premises so licensed.

§ 29.1-609. Revocation of license.

Any shooting preserve license may be revoked by the Director upon evidence that the provisions of the contract entered into by the license holder are being violated.

§ 29.1-422. Permits for field trials.

The Board is authorized to grant permits to bona fide field trial clubs and associations to hold field trials with dogs under such regulations it deems proper. The fee established by the Board for a field trial permit shall be an amount sufficient to defray the costs of processing the permit and administering the permitted activity, but shall not exceed twenty-five dollars per event. It shall be unlawful to hold such trials without the permit herein authorized during the closed season for game. If wild game is to be shot over or in front of dogs engaged in such field trials, the person actually shooting must have a license permitting him to do so. Captive birds of any species released and immediately shot or recovered during such trials shall not be considered to be wild birds under this chapter or § 29.1-521.

4 VAC 15-20-50 Native Animal—those species and subspecies of animals naturally occurring in Virginia, as included in the department’s 1991 official listing of “Native and Naturalized Fauna of Virginia.”

4 VAC 15-20-50 Domestic Animal—This term is commonly accepted to mean animals which humans have tamed in captivity or bred for particular genetic traits. Although all domestic animals at one time had their origin in wild species, they no longer share those distinguishing “wild” traits. This would include domesticated races of ducks and geese distinguishable morphologically from wild birds.

4VAC15-30-10. Possession, importation, sale, etc., of wild animals.

Under the authority of § 29.1-103 and § 29.1-521 of the Code of Virginia it shall be unlawful to take, possess, import, cause to be imported, export, cause to be exported, buy, sell, offer for sale, or liberate within the Commonwealth any wild animal unless otherwise specifically permitted by law or regulation. Unless otherwise stated, for the purposes of identifying species regulated by the board, when both the scientific and common names are listed, the scientific reference to genus and species will take precedence over common names.

4VAC15-30-20. Permit required importing, liberating or possessing predatory or undesirable animals or birds. Under the authority of §29.1-542 of the Code of Virginia, live

wolves or coyotes, or birds or animals otherwise classed as predatory or undesirable, may not be imported into the Commonwealth or liberated therein, or possessed therein, except under a special permit of the board. Before such permit is issued, the importer shall make application to the department, giving the place of origin, the name and address of the exporter and a certificate from a licensed and accredited practicing veterinarian, or certified fish pathologist, certifying that the animal to be imported is not manifesting any signs of infectious, contagious, or communicable disease.

VI. CONCLUSION

VDGIF is obligated to safeguard Virginia's native waterfowl. Therefore, it is prudent that VDGIF consider actions that sufficiently protect migratory waterfowl if there are any potential adverse effects from releasing captive-reared mallards. Upon review, there is significant evidence of the potential for increased risks for disease transmission, genetic introgression and hybridization, confounding of established waterfowl-management databases, potential for violations of existing regulatory statutes and ecological and social concerns. An objective of some MRAs is to increase survival of released mallards so that those birds that are not shot will survive to nest, and increase the local mallard breeding population. However, this is the main concern with captive-reared mallards that they will survive and mix with wild waterfowl. Preventing birds from becoming free-ranging would help reduce some of the environmental impacts of the mallard releases. The cost of controlling disease outbreaks and nuisance duck problems along with the other potential negative effects on wild birds far outweigh the possible benefits that might be obtained from large-scale mallard release programs. A more long-term approach to improve duck hunting opportunities is to concentrate efforts on habitat improvements and other conservation measures.

Based on the potential risks and concerns of releasing captive-reared mallards into the wild, the committee recommended that a permanent moratorium be enacted on the permitting of any new MRAs, there be modifications in the permitting process and that the Department adopt more stringent permit conditions for shooting preserves that are releasing captive mallards. Releasing mallards for put-and-take shooting operations such as tower shoots have been permitted and may be continued as long as surviving birds are removed from the wild. If there are violations to current conditions/regulations, if permits are revoked, or if permits are not renewed, preserves would no longer be permitted to release captive-reared mallards on their shooting preserve. In addition, the committee recommended that current regulations (4VAC15-30-10 and 4VAC15-30-20) regarding the release of wildlife specifically state that the release of captive-reared mallards or other animals is prohibited. Lastly, the committee recommended that those supplying preserves with captive-reared mallards must notify the Department of Game & Inland Fisheries in writing two weeks prior to shipment that captive-reared mallards are being imported and they must provide the recipients names and addresses.

BIBLIOGRAPHY

Ankney, C. D., D. G. Dennis, L. N. Wishard, and J. E. Seeb. 1986. Low genic variation between Black Ducks and Mallards. *Auk* 103:701-709.

Ankney, C. D., and D. G. Dennis. 1988. Response to Hepp et al. *Auk* 105:807-808.

Ankney, C. D., D. G. Dennis, and R. C. Bailey. 1987. Increasing mallards, decreasing American black ducks: coincidence or cause and effect? *Journal of Wildlife Management* 51:523-529.

Ankney, C. D., D. G. Dennis, and R. C. Bailey. 1989. Increasing mallards, decreasing American black ducks-no evidence for cause and effect: a reply. *Journal of Wildlife Management* 53:1072-1075.

Avise, J. C., C. D. Ankney, and W. S. Nelson. 1990. Mitochondrial gene trees and the evolutionary relationship of mallard and black ducks. *Evolution* 44:1109-1119.

Banks, R. C. 1971. A systematist's view. Pages 117-120 *in* Role of hand-reared ducks in waterfowl management: a symposium. Bureau of Sport Fisheries and Wildlife, and the Max McGraw Wildlife Foundation.

Cade, T. J. 1983. Hybridization and gene exchange among birds in relation to conservation. Pages 288-309 *in* C. M. Schonewald-Cox, S. M. Chambers, B. MacBryde, and L. Thomas, editors, *Genetics and Conservation*. Benjamin/Cummings, Menlo Park, California, USA.

Cheng, K. M. R. N. Shoffner, R. E. Phillips, and F. B. Lee. 1980. Reproductive performance in wild and game-farm mallards. *Poultry Science* 59:1970-1976.

Converse, K. A., and G. A. Kidd. 2001. Duck plague epizootics in the United States, 1967-1995. *Journal of Wildlife Diseases* 37:347-357.

Costanzo, G.R., and G.R. Askins. 1994. Avian cholera outbreak, Chesapeake Bay, Virginia. Virginia Department of Game and Inland Fisheries report.

Dardiri, A. H. 1975. Duck viral enteritis (duck plague) characteristics and immune response of the host. *American Journal of Veterinary Research* 36:535-538.

Davidson, W. R. and V. F. Nettles. 1995. Preliminary assessment of release of gamefarm waterfowl for hunting purposes: disease considerations. Pages J1-J5 *in* W. R. Whitman, T. Strange, L. Widjeskog, R. Whittemore, P. Kehoe, and L. Roberts, Editors, *Waterfowl Habitat Restoration, Enhancement, and Management in the Atlantic Flyway*, third edition. Environmental Management Commission, Atlantic Flyway Council Technical Section, and the Delaware Division of Fish and Wildlife, Dover, Delaware, USA.

Dunn, J. P., D. R. Diefenbach, and F. E. Hartman. 1995. Survival and recovery distribution of wild and captive-reared mallards. *Transactions of the Northeast Section of the Wildlife*

Society 52:21-28.

Foley, D. D., D. Benson, L. W. DeGraff, and E. R. Holm. 1961. Waterfowl stocking in New York. *New York Fish and Game Journal* 8:37-48.

Friend, M. 1999. Duck Plague. Pages 141 to 151 *in* M. Friend and J. C. Franson, Technical Editors. *Field manual of wildlife diseases*. Biological Resources Division Information and Technology Report 1999-001. U.S. Geological Survey, Washington, DC, USA.

Greenwood, R. J. 1975. Reproduction and development of four mallard lines. *Prairie Naturalist* 7:9-16.

Henny, C. J., and K. P. Burnham. 1976. A reward band study of mallards to estimate band reporting rates. *Journal of Wildlife Management* 40:1-14.

Hepp, G. R., J. M. Novak, K. T. Scribner, and P. W. Stangel. 1988. Genetic distance and hybridization of black ducks and mallards: a morph of a different color? *Auk* 105:804-807.

Heusmann, H. W. 1974. Mallard-black duck relationships in the northeast. *Wildlife Society Bulletin* 2:171-177.

Heusmann, H. W. 1991. The history and status of the mallard in the Atlantic Flyway. *Wildlife Society Bulletin* 19:14-22.

Heusmann, H. W., and J. R. Sauer. 2000. The northeastern states' waterfowl breeding population survey. *Wildlife Society Bulletin* 28:355-364.

Hindman, L. J., W. F. Harvey, IV, and V. D. Stotts. 1992. Harvest and band recovery of captive-reared mallards released by the State of Maryland, 1974-1987. *Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies* 46:215-222.

Johnsgard, P. A., and R. DeSilvestro. 1976. Seventy-five years of changes in mallard-black duck ratios in eastern North America. *American Birds* 30:905-908.

Kirby, R. E., A. Reed, P. Dupuis, H. H. Obrecht, II, and W. J. Quist. 2000. Description and identification of American black duck, mallard, and hybrid wing plumage. U.S. Geological Survey, Biological Sciences Report 2000-0002. Bismark, North Dakota, USA.

Morton, E. S. 1998. Pairing in mallards and black ducks: A new view on population decline in American black ducks. *Animal Conservation* 1:239-244.

Phillips, J. C. 1915. Experimental studies of hybridization among ducks and pheasants. *Journal of Experimental Zoology* 18:69-144.

Rohwer, F. 1989.

Seymour, N. R. 1990. Forced copulation in sympatric American black ducks and mallards in Nova Scotia. *Canadian Journal of Zoology* 68:1691-1696.

Shoffner, R. N. 1971. A summary on the genetic implications of hand-reared birds introduced into wild populations. Pages 113-115 in *Role of hand-reared ducks in waterfowl management: a symposium*. Bureau of Sport Fisheries and Wildlife, and the Max McGraw Wildlife Foundation.

Smith, D. B. 1999. Survival, behavior, and movements of captive-reared mallards released in Dorchester County, Maryland. Dissertation, Louisiana State University and Agricultural and Mechanical College, Baton Rouge, Louisiana, USA.

Smith, D. B., and F. C. Rowher. 1997. Perceptions of releases of captive-reared mallards with emphasis on an intensive program in Maryland. *Transactions of the North American Wildlife and Natural Resources Conference* 62:403-411.

U.S. Fish and Wildlife Service, Instituto Nacional de Ecologia - SEMARNAP, and Canadian Wildlife Service. 1998. *Expanding the Vision: 1998 update, North American Waterfowl Management Plan*. Canadian Wildlife Service, Hull, Québec, Canada, U.S. Fish and Wildlife Service, Arlington, Virginia, USA, Instituto Nacional de Ecologia - SEMARNAP, San Angel, México.

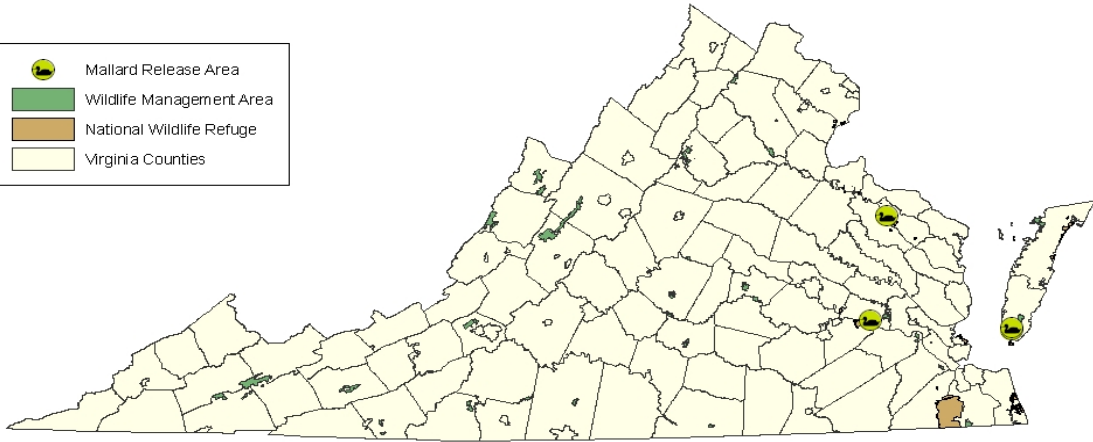
Wobeser, G. A. 1981. *Diseases of wild waterfowl*. Plenum Press, New York, New York, USA.

Wolf, K., and C. N. Burke. 1982. Survival of duck plague virus in water from Lake Andes National Wildlife Refuge, South Dakota. *Journal of Wildlife Diseases* 18:437-440.

U.S. Fish and Wildlife Service. 2003. *Review of captive-reared mallard regulations on shooting preserves*.

Geographic Locations of Mallard Release Areas in Virginia

-  Mallard Release Area
-  Wildlife Management Area
-  National Wildlife Refuge
-  Virginia Counties



Map created 6/15/06 Wildlife Division - TFB

0 25 50 100 Miles

