

PILOT STUDY TO EVALUATE A 2-SEASON BANDING PROGRAM TO MONITOR BLACK DUCK SEASONAL SURVIVAL

Standard Operating Protocols for winter banding operations 2010/2011



INTRODUCTION

The goals of American black duck management are to ensure the future sustainability of the population and provide recreational opportunities, including sport harvest. To meet these goals managers and researchers require information about the distribution, abundance, and vital rates (i.e., production, survival, and cause-specific mortality rates) of the population. Researchers and managers have principally relied on large-scale banding programs to obtain information on annual survival and harvest rates. These programs have typically consisted of a single banding period just prior to the hunting season (i.e., preseason; July-September) because it is the most efficient design for estimating harvest rates (Brownie et. al. 1985, Nichols and Hines 1987). However, single-season banding programs do not provide information about seasonal survival rates thus limiting our ability to model and contrast alternative hypotheses of population regulation (e.g., additive harvest mortality vs. post-season density dependence through changes in survival). This is particularly important because previous research and experience suggest that population goals cannot be attained through harvest management alone. Further, predictions of large-scale landscape and system changes (e.g., climate change) may influence the black duck population in ways not experienced or anticipated in harvest management programs. To address current management needs and address the impact of anticipated landscape and system changes on black ducks managers and researchers we need estimates of seasonal survival rates.

GOALS AND OBJECTIVES

The Black Duck Joint Venture (BDJV) and partners will implement a 5-year pilot project, beginning in 2009-10 to assess the potential of a 2-period (pre- and post-hunting season) banding program to estimate seasonal survival rates. A 2-period banding program will provide data to estimate survival during the summer/fall (August–January) and winter/spring (February–July). Since it will include a preseason banding component the pilot banding program will continue to provide reliable harvest rate estimates needed for harvest management. The overall goal of this effort is to improve our ability to model black duck population dynamics and identify limiting factors that can be mitigated through habitat and harvest management. Our objectives are:

1. Implement a 5-year pilot effort to test field and data analysis protocols. Resulting banding and recovery data will be used to evaluate success of field operations (i.e., meeting banding quotas), assumptions, data quality and applicability (i.e., precision and utility of seasonal survival rate estimates);
2. Use data from the pilot effort to estimate the required post-season banding sample needed to assess the hypothesis that post-season survival is density dependent;
3. Revise protocols and make recommendations for operational implementation of a 2-season banding program for American black ducks.

RESPONSIBILITIES

This pilot effort will build on the existing cooperative pre-season banding program for black ducks. **Responsibilities for pre-season banding remain unchanged.** The winter banding aspect of this pilot effort is intended to be a cooperative effort among agencies that benefit from the results. The BDJV will provide *limited* financial support to State and Provincial Agencies for banding activities. The States and Provinces provide support by conducting field banding activities using internal financial and human resources. The BDJV Science Coordinator, the Atlantic Flyway Council Technical Section's Banding and Black Duck Committees, and the Mississippi Flyway Technical Section's Banding Committee will share responsibility for coordination. The BDJV Science Coordinator will process and analyze data and produce reports regarding the program's progress and success.

Banders are responsible for coordinating with Provincial, State and Federal Law Enforcement officials (see Appendix B for partial list) and U.S. Fish and Wildlife Service National Wildlife Refuge staff to address issues related to banding access and baiting during trapping operations (see below for contact information for Resident Agents in Charge). Banders are also required to apply for and acquire all applicable permits.

PROTOCOLS

Changes from 2009 protocols:

1. Mallards and hybrids captured during black duck banding efforts should be banded, sexed, aged, released, and reported using BANDIT.
 - a. Banding locations and techniques should focus on black duck banding—mallards and hybrids are not target species.
 - b. Specific quotas for mallard and hybrid are not provided because they are not target species. However, a continental total of $\geq 3,000$ mallards should allow statistical assessment of mallard vital rates similar to that proposed for black ducks.
2. New hybrid classifications including diagnostic criteria, species numbers, alpha codes, and common names have been developed (and incorporated into BANDIT) to distinguish hybrids as black duck-dominate hybrid, mallard-dominate hybrid, intermediate hybrid, or undetermined (unknown) hybrid.
3. Banding period expanded from 1 January—28 February to **1 January—20 March**.
4. Banders can use 7A bands with either the toll-free/mailling inscription or toll-free/internet inscription.

Banding periods: The preseason banding period and protocols will be the same as in previous years. The winter banding period can be initiated anytime after **31 December** and must be terminated by **20 March**. In some jurisdictions duck hunting seasons extend into January and goose seasons into February which may conflict with baiting and trapping activities. To avoid or minimize conflicts the exact timing and location of black duck trapping activities will be the purview of Provincial, State or National Wildlife Refuge (NWR) biologists and Law Enforcement.

Winter banding field methods: Trapping techniques will be determined by Federal, Provincial, State and NWR biologists based on local conditions and resources. Black ducks, mallards, and hybrids (including black duck dominantXmallard hybrid; mallard dominantXblack duck hybrid, mallardXblack duck intermediate hybrid, and mallard black duck hybrid, Table 1 & Fig. 1) will be banded. Other species should be released at the trap site without bands or other markers. Captured birds should be classified as second year (SY) or after second year (ASY) according to method developed by Ashley et al. (2006 ; Table 2). If a bird cannot be aged as SY or ASY according to Ashley et al. (2006) banders should age them as after hatch-year (AHY). The sex of each bird will be determined from cloacal examination and/or morphological characters such as wing plumage (Carney 1992). Wing plumage identification methods described by (Carney 1992) and other resources can be accessed through the Bird Banding Laboratory website (<http://www.pwrc.usgs.gov/BBL/homepage/resource.cfm>). Each captured bird is to be fitted with a standard U.S. Fish and Wildlife Service leg band (No. 7A butt-end aluminum bands with the toll-free/address inscription of toll-free/web address inscription) and released at the trap site.

Specific, local banding quotas or goals are not prescribed. Cooperators are asked to capture and band as many black ducks as possible based on available resources and conditions. The banding effort should be spread out to the greatest extent possible during the banding period and throughout the banding area to ensure that a representative sample is achieved.

Reporting: U.S. and Canadian banders will record banding data and send banding schedules to their respective banding labs using program BANDIT. In addition, banders are requested to

submit a summary report to the BDJV detailing total number of new captures and recaptures by species, sex, and age class, trapping effort (as indexed by trap nights), and estimated cost for trapping activities (see Appendix A for format). Reports should be submitted via email to Pat Devers, BDJV Science Coordinator (Patrick_devers@fws.gov) by 15 April 2011. Banders are asked to also submit a copy of electronic banding schedules to Pat Devers. This will allow the BDJV to conduct a rapid assessment of each winter banding season and report progress to the Atlantic and Mississippi Flyways and other partners.

CONTACT INFORMATION

Questions, inquiries or other comments should be sent to:

Patrick Devers
Science Coordinator, Black Duck Joint Venture
U.S. Fish and Wildlife Service
11510 American Holly Drive
Laurel, MD 20708
Patrick_devers@fws.gov
301-497-5549

LITERATURE CITED

- Ashley, E. P., N. R. North, S. A. Petrie, and R. C. Bailey. 2006. Age determination of American black ducks in winter and spring. *Wildlife Society Bulletin* 34:1401–1410.
- Brownie, C., D. R. Anderson, K. P. Burnham, and D. S. Robson. 1978. *Statistical inference from band recovery data – a handbook*. United States Department of Interior, U.S. Fish and Wildlife Service Resource Publication No. 131. Washington, D.C., USA.
- Carney, S. M. 1992. Species, age and sex identification of ducks using wing plumage. U. S. Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online.
<http://www.npwrc.usgs.gov/resource/tools/duckplum/index.htm>
(Version 05DEC97).
- Nichols, J. D., and J. E. Hines. 1987. Population ecology of the mallard VIII. Winter distribution patterns and survival rates of winter-banded mallards. United States Department of Interior, U.S. Fish and Wildlife Service Resource Publication No. 162. Washington, D.C., USA.
- Norm, N. *In Preperation*. Handbook of American black duck capture and banding techniques. Black Duck Joint Venture, Laurel, MD USA.

Table 1. Identification criteria, species number, alpha code, and common names for black ducks, mallards, and hybrids captured and banded as part of the pre- or post-hunting season banding programs, 2011.

Common Name	Species	Code	Anterior Line	Posterior Line	Underwing	Neck Ring
Black Duck	ABDU	133.0	Absent or lightly buff	Absent, Faint, or thin white	≥ 11 dark feathers on leading edge	Absent
Black Duck Dominate X Mallard Hybrid	ABDX	133.7	Absent, lightly buff, or thin white	Absent, thin white	Usually ≤ 10 dark feathers on leading edge; maybe more	Absent or faint
Mallard-Black Duck Hybrid Intermediate ^a	MBDX ^a	132.5 ^a	White	White	Usually ≤ 10 dark feathers on leading edge; maybe more	Absent, Faint, or Prominent
Mallard-Black Duck Hybrid ^b	MBDH ^b	132.6 ^b
Mallard-Dominate X Black Duck Hybrid	MALX	132.7	White	White	Usually ≤ 10 dark feathers on leading edge; maybe more	Faint or Prominent
Mallard	MALL	132.0	White	White	No or few dark feathers on leading edge	Prominent

^a Intermediate hybrid: characteristics are a combination of both black ducks and mallards; characteristics do not favor one parental species over the other. Bander was able to assess characteristics of the birds and determined them to be intermediate to black duck and mallard.

^b Unknown hybrid: This code is to be used for birds that could not be identified as 133.0, 133.7, 133.5, 132.7 or 132.0 due to escape, inexperience, or other reason. Bander was unable to evaluate the characteristics of the bird or could not make a determination.

Table 2. Age class scoring procedure for aging winter and spring American black ducks (from Ashley et al. 2006).

Characteristics	Score
1. Color: Is there evidence of buffy cream color pigmentation (edging) along the feather margins of primary coverts 4-7? (Yes = 0; No = 1)	_____
2. Shape: Are the primary coverts 4-7 pointed/rounded or squared? If none of the primary coverts are square score = 0. If ≥ 1 primary coverts is square score = 1.	_____
3. Shape: Is the tertial covert 5 pointed/broadly pointed and frayed or rounded/square? If pointed or broadly pointed score = 0. If rounded to square score = 1.	_____
4. Condition: Is tertial covert 5 -- 1) obviously frayed, faded or translucent, 2) faded with structural damage to feather, 3) slight fraying or wear and dark to opaque, and 4) no wear and dark or opaque. If classification 1 or 2 score = 0. If classification 3 or 4 score = 1.	_____
5. Age Class Score (ACS) (summation of scores)	_____
Age Classification	
ACS 0-1	Second Year (SY) Female
ACS 0-2	Second Year (SY) Male
ACS 2-4	After Second Year (ASY) Female
ACS 3-4	After Second Year (ASY) Male

Figure 1. Description of species identification for black ducks, mallards, and hybrids (*Norm in preparation*).

a. **Black Duck**
Alpha Code: ABDU
Numeric Code 133.0

- Anterior line to speculum absent or lightly buff;
- Posterior line absent, faint or thin white;
- ≥ 11 dark feathers on leading edge of the underwing;
- Neck ring absent;
- General plumage is overall dark.



NOTE: the presence of iridescent green in the head is not diagnostic of a black duckXmallard hybrid (photo credit Joshua Choquette, NY DEC, 2010)



b. **Black Duck DominateXMallard Hybrid**

Alpha Code: ABDX

Numeric Code: 133.7

- A hybrid that has more characteristics of a black duck than a mallard.
- Line anterior to speculum absent, lightly buff, or thin white.
- Line posterior to speculum absent, faint or thin white.
- Some dark feathers on the leading edge of the underwing usually numbering ≤ 10 , but sometimes more.
- Neck ring is absent or faint.
- General plumage color similar to black ducks.



c. **MallardXBlack Duck Hybrid Intermediate**

Alpha Code: MDBX

Numeric Code: 132.5

- A hybrid that has neither dominate characteristics of a black duck nor mallard;
- Variable white line anterior and posterior to the speculum;
- Some dark feathers on the leading edge of the underwing usually numbering ≤ 10 , but sometimes more;
- Neck ring absent, faint, or prominent;



d. **Mallard DominateXBlack Duck Hybrid**
Alpha Code: ABDX
Numeric Code: 132.7

- A hybrid that has more characteristics of a mallard than a black duck;
- White line anterior to speculum;
- White line posterior to speculum;
- Some dark feathers on the leading edge of the underwing usually numbering ≤ 10 but sometimes more.
- Neck ring faint or prominent;
- General feather color more brownish than that of a black duck type bird.



e. **Mallard**
Alpha Code: MALL
Numeric Code: 132.0

- White line anterior to speculum;
- White line posterior to speculum;
- No or few dark feathers on the leading edge of the underwing;
- Neck ring prominent.



Domestic Mallard and DomesticXMallard hybrid
Alpha Code: NA
Numeric Code: NA

- *Often darkish larger wing;*
- *Dark and grayish underwing feathers.*

Appendix A. Report format for Black Duck Joint Venture post-season banding program.

- I.** Brief overview of efforts (0.5-1 page) including number of trapping locations, dates of operation, number trap nights (or person hours) and success (total number of black ducks, mallards, and hybrids captured).
- II.** Summary Results
 - a. Banding station names and UTM's
 - b. Total captures by species and age/sex class
 - c. Total recaptures of ABDU by age/sex class
- III.** Estimated costs for winter banding efforts
- IV.** Copy of electronic banding schedule submitted to BBL/BBO

Appendix B. Contact information for US Fish and Wildlife Service Law Enforcement

Sal Amato
Special Agent in Charge (Northeast Region)
413-253-8340
Sal_amato@fws.gov

CT, ME, MA, NH, RI, VT
Chris Dowd
Resident Agent in Charge
617-889-6616 ext. 15

NY
Bill Anderson
Resident Agent in Charge
516-825-3950 ext. 231

NJ and PA
Carmine Sabia
Resident Agent in Charge
908-787-1321 ext. 319

DE, MD, VA, WV
Dan Rolince
Resident Agent in Charge
804-771-2883 ext. 24

MI and OH
Bob L. Lumadue
Resident Agent in Charge
734-995-0387

TN and KY
Steve Middleton
Resident Agent in Charge
615-736-5532

NC
Resident Agent in Charge
919-856-4786