

Hand-reared Mallard Releases on 3 Private Farms in Maryland

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Abstract: Histories of releasing and hunting hand-reared mallards (*Anas platyrhynchos*) on 3 private farms in Maryland were examined. Since 1962, 171,800 mallards were released; annual releases now total 7,300 birds. Hand-reared mallards averaged 65–90% of the ducks harvested on the 3 farms. Hunters on the farms harvested 24–43% of the mallards released during 1980–84; hunters off the farms harvested an additional 4–11%. Hand-reared mallards were sedentary; 83% were harvested on the release sites, and an additional 14% within 79 km. In 1985 it cost Remington Farms \$4.96/bird released and fed until October.

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Releasing of hand-reared mallards by state wildlife agencies and private individuals is controversial in the Atlantic Flyway (Atlantic Waterfowl Council 1979, 1980, unpubl. minutes). Decline of waterfowl populations (Steiner 1984: 163–181) and evidence for increasing rates of hybridization between mallards and black ducks (*Anas rubripes*) (Brodsky and Weatherhead 1984) have fueled the controversy. Pennsylvania and New York have discontinued mallard release programs; but Maryland has a large and growing mallard release program, mandated by legislation effected by avid waterfowlers lobbying the state legislature. In Maryland an estimated 100,000 mallards are released annually (L. Hindman, pers. commun.). The state is currently releasing 28,000 birds each year; but most releases in Maryland are made by farmers, hunting clubs, and leasees.

This paper details the history of 3 private hand-reared mallard programs, examining recovery and harvest rates and dispersal of released birds, with the purpose of providing information that will aid in judging the effectiveness of private releases of hand-reared mallards.

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Methods

Study Area

Mallard releases were made on 3 private farms: Money Point Farm, Remington Farms, and Tall Timbers Farm, located on the Eastern Shore of Maryland, an area of intensive cash-grain agriculture. The combination of agriculture, the Chesapeake Bay and its many tributaries, and thousands of farm ponds attract a wintering population of a half-million Canada geese (*Branta canadensis*) and 140,000 ducks. This large wintering population of waterfowl supports an extensive commercial hunting industry.

Money Point Farm, a 95-ha grain farm, is located in Cecil County on the north shore of the Sassafras River. Remington Farms is a 1,330-ha grain farm and wildlife management area. Located in Kent County, it borders an estuarine creek of the Chester River. Tall Timbers Farm, a 312-ha grain farm and wildlife management area, is located in Dorchester County near the Blackwater National Wildlife Refuge. Waterfowl hunting is limited to invited guests and employees. Canada geese are the primary attraction at Money Point and Remington Farms, whereas at Tall Timbers Farm the emphasis is on duck hunting.

Each farm maintained records that varied in completeness on duck releases and daily hunting activity. Each complied with state and federal hunting regulations.

Hand-reared Mallard Releases

Money Point Farm—About 1,000 mallards are raised and released each year. Ducklings were purchased during 1971–73. Since then, the farm has produced and hatched its own eggs. Each spring 80 carry-over, second-year hens and 20 drakes are selected as breeders. The ducklings produced are raised in a brooder house until 10 weeks old, then released in groups on the 3 ponds and creek shore. Birds are fed until 10 days before the start of the waterfowl season. Feeding sites are shifted around the farm once the ducks begin to fly.

Remington Farms—The previous owner maintained a flock of breeders and released 10,000–20,000 mallards annually between 1951 and 1955. Remington continued the breeding flock until 1973, then switched to purchasing 1-day-old ducklings. In recent years, Remington has raised 6,000 ducks. Batches of 2,000 ducklings are started in April, May, and June. Ducklings are raised under cover for 5 weeks and then 5,700 are released on 3 ponds. Birds are fed until 20 days before the start of the waterfowl season. Feeding sites are shifted around the farm once ducks begin to fly.

Tall Timbers Farm—The farm annually purchases 6,000 1-day-old ducklings. Birds are raised and released in a manner similar to Remington Farms. At 8 weeks of age, about 600 ducks are released at 4 ponds. The remaining ducks are sold to other landowners.

Banding and Marking

Ducklings at each farm are toe-clipped by removing the right hallux. Money Point Farm banded a sample of young ducks in summers 1971–73 and 1976–84 with USFWS leg-bands. Private leg-bands were placed on young mallards released at Remington Farms from 1951–62, and USFWS bands were placed on a sample of young mallards during the summers 1963–78. Tall Timbers Farm banded every mallard released with a private leg-band.

Only recoveries for birds reported as shot or found dead during hunting seasons were used in recovery analyses. Harvest rate estimates were made from banding data adjusted for reporting rate as suggested by Henny and Burnham (1976:11). Bands recovered on the 3 farms were reported at the rate of 100%.

Results

Hunter Harvest On Farms

Money Point Farm—From 1962 to 1985, hunters harvested 19.9% of 26,902 mallards released (Table 1). During the 1980–84 USFWS stabilized hunting regulation experiment, hunters harvested 30.9% of 4,747 mallards released. Hand-reared ducks, as a percent of the harvest, increased over the years at Money Point Farm (Table 1). In the 1960s, wild ducks averaged 52% of the hunters bag. During 1980–85, the number of wild ducks bagged decreased to 14%. In the 1970s and 1980s, the few wild ducks shot were mostly mallards.

Remington Farms—During 1962–85, hunters harvested 19.7% of the 130,000 birds released (Table 1). During the 1980–84 stabilized regulations, hunters harvested 23.9% of the mallards released, averaging a daily bag of 2.7 ducks per hunter. Hand-reared ducks were the greater part of the harvest (Table 1). In the early 1960s, wild ducks were 24–35% of the total kill. Since 1980, only 2–12% of the ducks harvested were wild. Sixty percent of the wild ducks bagged were mallards.

Tall Timbers Farm—Hunters harvested 36.6% of 6,609 birds released since 1975 (Table 1). During 1980–84, hunters harvested 45.9% of the mallards released, bagging nearly 4 ducks per hunter per day. Wild ducks, mostly mallards, were an important part of the total duck harvest, comprising 34% since 1975. In the 1950s and 1960s black ducks were most common in the hunter's bag.

Band Recoveries

Money Point Farm—Of the 9,402 young mallards banded during 1971–84, 27.8% were recovered including 35.6% of the males and 18.7% of the females (Table 2). Recovery rates averaged 26.1% during 1971–84 and 31.8% during 1980–84. Money Point hunters accounted for 96.6% of the band recoveries from males and 94.4% from females. The proportion of banded birds recovered on the release site increased slightly in the second and later seasons (Table 2). A few birds were recovered as far south as North Carolina and as far north as Ontario, but most

Table 1. Numbers of hand-reared mallards released, percent of released mallards harvested, and released mallards as percent of total duck kill on 3 farms on the Eastern Shore of Maryland.

Year ^a	Money Point			Remington			Tall Timbers		
	Release	Harvest ^b	Total	Release	Harvest ^b	Total	Release	Harvest ^b	Total
1962	350	16.5	21.3	10,220	4.3	67.2			
1963	700	18.3	33.8	4,840	6.9	65.2			
1964	1,504	14.8	52.2	3,960	15.5	74.7			
1965	1,078	11.8	28.9	3,630	13.9	76.3			
1966	1,564	8.1	28.5	3,940	20.8	75.0			
1967	430	27.9	36.6	4,500	21.5	89.5			
1968	1,343	12.0	48.5	7,000	10.6	89.3			
1969	1,283	11.3	28.5	6,500	16.3	89.7			
1970	958	20.4	78.5	6,500	18.2	84.8			
1971	1,300	21.9	73.5	6,500	19.3	88.3			
1972	987	22.8	90.3	6,000	27.4	93.4			
1973	1,373	20.4	76.7	5,900	25.4	95.6			
1974	1,185	19.0	88.0	7,700	19.4	92.2			
1975	2,000	7.1	87.6	5,500	27.3	85.4	478	19.9	34.5
1976	1,500	18.0	90.0	5,500	21.9	91.1	770	26.6	61.4
1977	1,200	26.0	85.4	5,500	21.6	96.8	506	36.0	45.4
1978	1,300	19.5	94.0	5,700	20.3	95.4	999	37.7	80.9
1979	1,000	25.5	85.8	5,700	30.0	91.3	839	30.5	82.8
1980	1,200	23.0	82.0	5,700	23.5	87.6	650	51.4	71.2
1981	1,000	28.7	80.0	5,700	22.3	89.5	650	52.5	82.4
1982	1,000	34.9	93.3	4,700	27.3	96.3	600	38.5	57.5
1983	1,000	32.3	80.3	5,700	24.9	96.0			
1984	547	41.0	90.3	5,700	26.5	98.4	542	39.9	66.9
1985	1,100	30.8	86.9	5,700	19.3	96.4	575	32.3	55.3
Total/avg	26,902	19.9	65.7	138,290	19.7	89.6	6,609	33.6	64.7

^aNo data was collected on Tall Timbers Farm in 1983.

^bIncludes current and previous years' cohorts.

Table 2. Distribution of band recoveries from hand-reared mallards banded as young on 3 farms on the Eastern Shore of Maryland.

Recovery location	Percent of total recoveries					
	Money Point		Remington		Tall Timbers	
	First year	2nd + years	First year	2nd + years	First year	2nd + years
Males						
On the farm ^b	96.6	96.9	91.3	75.1	a	a
<9 km	2.2	0.5	5.2	14.1		
9-79 km	0.5	1.6	3.0	2.7		
>80 km	0.6	1.0	0.6	8.1		
Females						
On the farm ^b	94.4	97.1	86.5	74.5	97.6	92.4
<9 km	3.1	1.8	6.4	13.0	0.6	1.1
9-79 km	1.5	0.4	5.1	6.2	1.0	3.2
>80 km	1.0	0.7	2.0	6.2	0.8	3.2
No. total recoveries						
Males	1,309	425	873	185	a	a
Females	611	273	356	161	2029	277
Rec. % of no. banded						
Males	26.9	8.7	24.0	5.1		
Females	12.9	5.8	11.1	5.0		
Total	20.4	7.4	17.9	5.0	33.6	4.6

^aData not available by sex. Sexes are combined under female.

^bBand reporting rate is 100%.

recoveries away from the release site were from sportsmen hunting the adjacent Sassafras River and nearby areas.

Hunters off the farm harvested an estimated 3.7% of the mallards banded as young. First-season harvest rates averaged 22% for 1971-84; 29% for males and 15% for females. During 1980-84, first-season harvest rates averaged 32%. Estimated total harvest was 2,804 banded birds (30%); 38% of the males, and 21% of the females. Hunters on the farm took 88% of the total harvest.

Remington Farms—Hunters recovered 23.0% of the 6,854 mallards banded as young during 1963-78; 29.1% of the males and 16.1% of the females (Table 2). Remington hunters harvested 19.9% of these banded birds. Recoveries on the farm accounted for 88.5% of the male, and 82.8% of the female mallards reported by hunters. The proportion of recoveries on Remington Farms declined in the second and later years after banding (Table 2). A few birds were recovered by hunters in distant locations such as Quebec and North Carolina, but most recoveries were from nearby Chester River and Chesapeake Bay locations.

Hunters off the farm harvested an estimated 11.2% of the banded ducks. First-season harvest rate was 22%; 29% for males and 14% for females. Total harvest of banded mallards was estimated to be 30.3%, 1,350 males and 729 females. Remington hunters shot 66% of these mallards.

Tall Timbers Farm—Hunters reported recoveries from 38.2% of the 6,034 mallards banded. Ninety-seven percent of the birds were recovered on the farm. Recoveries off the farm increased slightly in second and later years after release

Table 3. 1985 costs of releasing hand-reared mallards at Remington Farms, Kent County, Maryland.

Item	Cost	
Ducklings		
6,000 1-day-olds ^a	\$4,700	
Air freight	1,029	\$ 5,729
Feed		
Starter, 3.4 t	\$ 829	
Grower pellets, 37.4 t	8,699	
Shelled corn, 44.23 t ^b	5,407	\$14,935
Labor (salary and fringe benefits)		
To age 5 weeks, 470 man-hours	\$4,277	
After 5 weeks, 165 man-hours	1,502	\$ 5,779
Electricity		
15,000 kwh's	\$1,088	\$ 1,088
Building (amortized)	\$ 610	\$ 610
Truck		
To age 5 weeks, 1,062 km	\$ 198	
After age 5 weeks, 1,416 km	264	\$ 462
Bedding	\$ 771	\$ 771
Supplies	\$ 100	\$ 100
Administration	\$ 90	\$ 90
TOTAL		\$29,764
Cost/duck		\$ 4.96

^aReceived in three shipments of 2,000 ducklings each on 22 April, 13 May, and 2 June 1985.

^bIncludes an estimated 9 t of shelled corn that is eaten by carry-over ducks and wild ducks at the several release ponds.

(Table 2). Recoveries were reported from Florida to Wisconsin, but the majority of the off-site recoveries were from nearby locations.

An estimated 3.4% of the banded birds were harvested off the farm. First-season harvest rates averaged 35% for 1975–84, and 42% for 1980–84. Total harvest was estimated to be 40.8% of the birds released, and 90% of this harvest was by Tall Timbers hunters.

Cost of Remington Farms Mallards

Remington Farms maintained a detailed accounting of expenses for rearing and releasing 6,000 birds in 1985 (Table 3). Cost per bird started in April was \$5.57; in May, \$4.87; and in June, \$4.44. The cost to put a mallard in the bag of a Remington Farms hunter was about \$21, and, assuming similar production costs, \$16 at Money Point, and \$11 at Tall Timbers.

Discussion

Money Point, Remington, and Tall Timbers Farms released 171,800 hand-reared mallards since 1962. Annual releases now total about 7,300 birds. The objectives for the releases at the 3 farms differ, but with varying degrees of impor-

tance, they have been: to supplement the dwindling numbers of wild ducks and provide duck shooting for guests, to establish local breeding populations, and to better utilize the large investments made in habitat development and management.

As wintering populations of wild ducks declined in Maryland, hand-reared mallards have become the mainstay of duck hunting on each farm. Since 1980, 82% to 98% of the ducks bagged annually on Money Point and Remington Farms were hand-reared. Only at Tall Timbers, located within the most extensive wetland area of Maryland, have wild ducks remained important, averaging 34% of the ducks bagged. The small proportion of wild ducks is not due solely to the decline in wild ducks, but because the managers intentionally direct hunters to locations frequented by the released mallards.

Mallards are now the most common duck among the wild ducks killed, rather than black ducks and diving ducks which were important in the 1950s and 1960s. Although there is no direct evidence that a significant proportion of wild mallards in hunters' bags are locally produced, the yearly additions to the Maryland population by repeated releases has increased the production of local mallards (Stotts 1971:127).

The success at each farm of harvesting its own released mallards has varied. The combination of large releases, restrictive hunting regulations, and light hunting pressure produced harvests as low as 4–8%. Smaller releases, liberal hunting regulations, and heavy hunting pressure produced harvests as high as 53%. During 1980–84, years of stabilized and liberal hunting regulations, Money Point, Remington, and Tall Timbers Farms harvested 31%, 24%, and 46% of their mallards, respectively.

Hunters off the 3 farms harvested an additional 4% to 11% of the mallards released, equal to an estimated 10% to 34% of the total number of birds harvested. But because estimates of band reporting rates for Maryland are probably inflated (Stotts et al. 1971:35), these are minimum estimates. For example, not one band has been reported to Money Point or Tall Timbers Farms by hunters from adjacent properties, notwithstanding observations of released mallards being shot.

Harvest rates of birds banded as young averaged 22% for Money Point and Remington mallards and 35% at Tall Timbers Farm. Harvest rates for 4- to 5-week-old and 6- to 9-week-old mallards released by Maryland were 8% and 15%, respectively, and 14% based on wing collections (Stotts unpub. rep. 1981). Pennsylvania's program has averaged a 23.8% harvest rate (Pratt 1971). Anderson (1975) reported harvest rates for wild mallards banded in the northeastern United States to be 21% for males and 19.1% for females.

Hand-reared mallards were essentially sedentary. Hunters on the 3 farms bagged 83% of the harvested birds. An additional 14% were bagged by hunters within 79 km of the release sites, most were within 20 km. Evaluations of the Wisconsin, Pennsylvania, and Maryland wildlife agency mallard releases have similarly found that the distribution of band recoveries is concentrated near release sites (Hunt et al. 1958, Pratt 1971, Stotts, et al. 1971).

The release program is expensive. But the \$5 that it cost to release a bird is less than the \$8–\$580 cost of producing a wild duck by means of habitat development and management (Lokemoen 1984), and the likelihood of bagging the release duck is far more certain. Habitat development and management are, however, an integral part of the hand-reared mallard release and hunting programs on each farm. Yet, neither habitat nor the dwindled numbers of wild ducks can alone sustain the demand for duck hunting that exists on the 3 farms or on Maryland's Eastern Shore. Among waterfowlers in Maryland, there is the sentiment that promoting hand-reared duck releases and making some allowance for these ducks to be a bonus bird can be an incentive to landowners to develop waterfowl habitat by allowing for a reasonable return on the large investments that habitat development requires (Atlantic Waterfowl Council unpubl. minutes 1985).

Although controversial, mallard releases have met the needs and objectives of Money Point Farm, Remington Farms, and Tall Timbers Farm.

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