Data File

A Basic Interpretation of Mallard and Black X Mallard Hybrid Population Data for the Atlantic Region

W. R. Barrow

Canadian Wildlife Service
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The potential for Mallard-Black Duck hybridization and subsequent dilution of pure Black Duck stock is a concern for waterfowl managers. The recruitment of Mallards from western Canada is one source which can be interpeted. Computer program #86-0019 from Ottawa summarizes the Mallard band returns from those birds banded in Canada west of, but recovered in the Atlantic Region (Table 1). The lack of band return information was surprising considering that hundreds of thousands of Mallards have been banded west of this region (Table 2).

Table 1. Atlantic Region recoveries; Mallards banded in Canada west of the Atlantic Region.

	Recovery Location					
Area Banded	N.B.	N.S.	P.E.I.	Nfld.	Lab.	Total
Northwest Terr.	-	1	-	-	1	2
Alberta	2	-	-	-	-	2
Saskatchewan	1	3	1	-	-	5
Manitoba	-	1	-	-	-	1
Ontario	5	2	3	5	-	15
Quebec	4	8	6	-	-	18
Total	12	15	10	5	1	43

The earliest known recovery was a Mallard from Manitoba banded in 1949 and recovered near Halifax in 1953. Two recoveries from the Northwest Territories (north of Alberta) banded in 1978 and 81 were recovered at Shubenacadie, N.S. and Tinker Harbour, Labrador in 1985 and 83, respectively. One Saskatchewan bird banded in August 1973 was recovered in the Miramichi Bay area two months later and was the only direct recovery from the grain belt of Canada.

Two-thirds of the Mallard recoveries are from Ontario and Quebec. Both provinces had five direct recoveries (5 of 10 P.Q. birds were banded W. of 70° long.) which had migrated in an easterly direction deviating from the normal north-south pattern. The influence of the St. Lawrence River may explain the direct recoveries or such birds may be the forerunner in the eastern movement of the Mallard range. The mixing of birds at the southern limits of their migratory flyways (Mississippi and Atlantic) would also increase the Mallard population in the Atlantic Region.

Table 2. Atlantic Region Mallard recoveries related to area and number of Canadian bandings.

Banding Location	Total banded 1949–1985	Atlantic Region Recoveries	Percent
Northwest Territories	19104	2	
Alberta	134122	2	
Saskatchewan	253891	5	
Manitoba	186996	1	.00006%
Ontario	151193	15	
Quebec	25695	18	
Total	771001	43	

The recovery percentage (< 1%) for western Mallards in the Atlantic Region is infinitely small and any negative effect on Black Ducks would be minimal. The total number of Mallard recoveries from all sources in the Atlantic Region during the 1949–1985 period was 354. The impact of stray migrants on blacks is impossible to access or control and further effort in this direction would be to the detriment of the Black Duck.

The eastern movement of Mallards into Ontario and Quebec from points west is well documented but these data suggest that this influence has not penetrated the Atlantic Region. Production surveys on impounded areas, which are ideal as Mallard habitat support this theory. Table 3 summarizes nine years of helicopter surveys on four areas, two each in Nova Scotia and New Brunswick. In brief this data suggests that there is approximately 1 Mallard brood per 1500 other broods produced on these areas.

Table 3. Numbers of Mallard broods in relation to total observed waterfowl broods at four developed wetland sites in north-eastern N.S. and southeastern N.B. during 1977 to 1985. Mallard brood numbers in brackets.

Year	Wallace Bay NWA	Amherst Point Sanctuary	Tintamarre NWA	Shepody NWA	Total	Percent of Total
77	N.S.[1]	N.S.	52	37	89	1.1
78	47(0)	48(0)	61(2)	63(0)	219(2)	0.9
79	N.S.	42(0)	N.S.	117(1)	159(1)	0.6
80	78(0)	66(0)	N.S.	N.S.	144(0)	0.0
81	63(0)	55(3)	N.S.	105(2)	223(5)	2.2
82	63(1)	48(0)	N.S.	102(0)	213(1)	0.4
83	N.S.	71(1)	71(0)	N.S.	142(1)	0.7
84	N.S.	55(0)	N.S.	N.S.	55(0)	0.0
85	N.S.	95(1)	N.S.	135(0)	230(1)	0.4
Total	251(1)	480(5)	184(3)	559(3)	1474(12)	0.8

[1] N.S. - no survey

All waterfowl broods observed during helicopter surveys.

It should be noted that while Mallards may occupy Black Duck range there is little competition for habitat and that the "flyway Mallard and/or hybrid situation" is definitely that - bred, reared and in many cases released by wildlife managers within our flyway.

Over the last two decades several surveys have indicated an increase in Mallard numbers (Table 4, 5, 6):

Table 4. Mallard returns - Atlantic Provinces Species Composition Survey 1974-1984.

	Year											
	74	75	76	77	78	79	80	81	82	83	84*	85*
N.S.	11	9	62	66	56	45	66	59	39	93	62	55
N.B.	36	19	30	24	39	51	52	58	17	40	36	38
Nfld.	1	8	6	2	4	6	-	6	2	3	17	12
P.E.I.	3	4	16	6	9	9	8	20	7	14	3	6
Total	51	40	114	98	108	111	126	143	65	150	118	111

*figures not adjusted for late wing returns

Table 5. Atlantic Region Mallard Harvest - National Harvest Survey 1974-84

	Year										
	74	75	76	77	78	79	80	81	82*	83*	84*
Nfld.	295	733	708	1149	782	456	-	2398	460	1138	811
PEI	191	424	292	212	297	450	1001	1398	399	1013	747
NS	539	928	1485	2261	1176	711	3216	2379	1376	4133	2061
NB	1287	688	802	730	1525	1604	1388	2486	1848	2528	1628
Total	2312	2773	3287	4352	3780	3281	5605	8661	4083	8812	5247

*figures not adjusted for late wing returns

Table 6. Total Mallards & hybrids banded Co-operative Waterfowl Banding Program 1974-86.

	Year												
	74	75	76	77	78	79	80	81	82	83	84	85	86
Mallard	47	17	37	40	41	67	108	45	34	47	63	78	87
Hybrids	5	3	2	3	17	15	34	49	32	36	20	19	31

The upward trend in Mallard numbers is evident in most surveys, and in personal correspondence received from biologists, hunters and the general public. Assuming that the western USA and Canada export a similar number of Mallards to this region the impact remains minor. Our regional population is however expanding at a steady rate. It is supplemented by release programs, free-flying captive flocks, and will escalate if permitted.

The following listing of Mallard and hybrid wing receipts were received in the 1985-86 Atlantic Province Species Composition Survey.

	N.S.	N.B.	Nfld.	P.E.I.	Total
Mallard	55	38	12	6	111
Blk x Mal. Hybrid	46	12	4	9	71

When plotted by area of harvest on maps with aviculture permittee locations, a definite relationship is evident. Both locations are nearly identical in N.S., P.E.I. and Nfld. The pattern is more dispersed in N.B. but the relationship is still present.

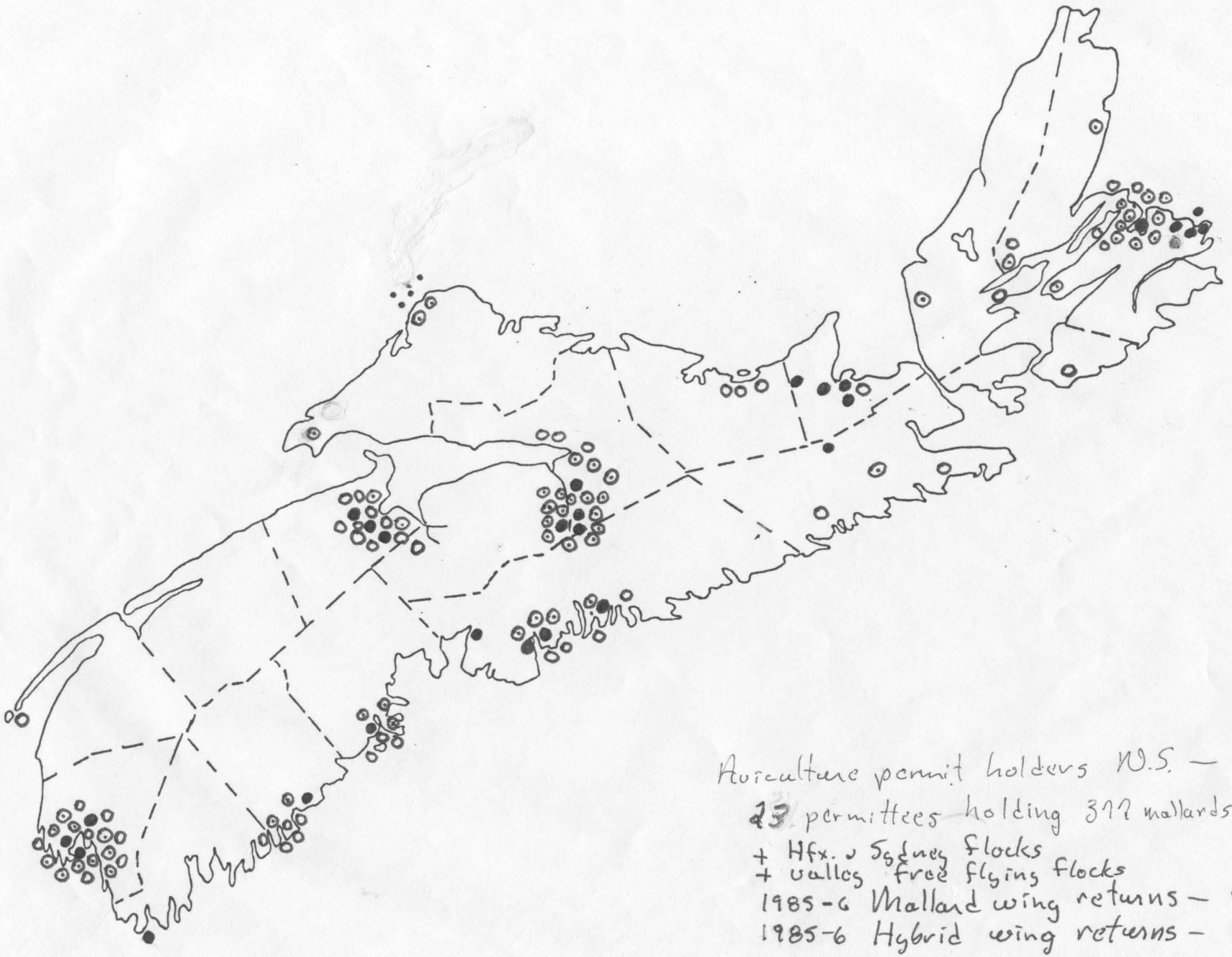
In 1985-86 the Canadian Wildlife Service had records for 71 permit holders maintaining 855 Mallards. In addition many renegade flocks are kept within the region under no permit. It is interesting to note that if all Mallards held under permit were controlled as stated in the MBCA there would be insufficient data for the Atlantic Region Mallard harvest estimate.

The promiscuous behaviour of Mallards and the resultant dilution of pure Black Duck stock has been a USF&W concern for nearly 20 years. Mallard type birds ranging in size from teal to turkey ducks were showing up in various surveys. Although our situation is not as severe, we are receiving Mallard and/or hybrid wings with signs of albinism and many variations in size and color patterns.

Chemical analyses of tissue samples by Morgan 1973-76 and Ankney 1983-86 have shown that both species are closely related and that the Mallard-Black Duck gene pool is being contaminated in the east. Assuming that the Black Duck is the desired species, control measures should be implemented by the CWS in Atlantic Canada.

(1) Aviculture permit holders should have control of their Mallard flocks.
(2) Free flying flocks maintained artifically should be removed from the system.
(3) Mallards and hybrids captured in banding operations or other studies should be culled.
(4) Additional study is an expensive waste of time and detrimental to the Black Duck population.

Further procrastination will end the debate of whether the Black Duck is a species or color morph of the Mallard. We as waterfowl managers should initiate immediate action in this region and strive to continue these efforts along the flyway.

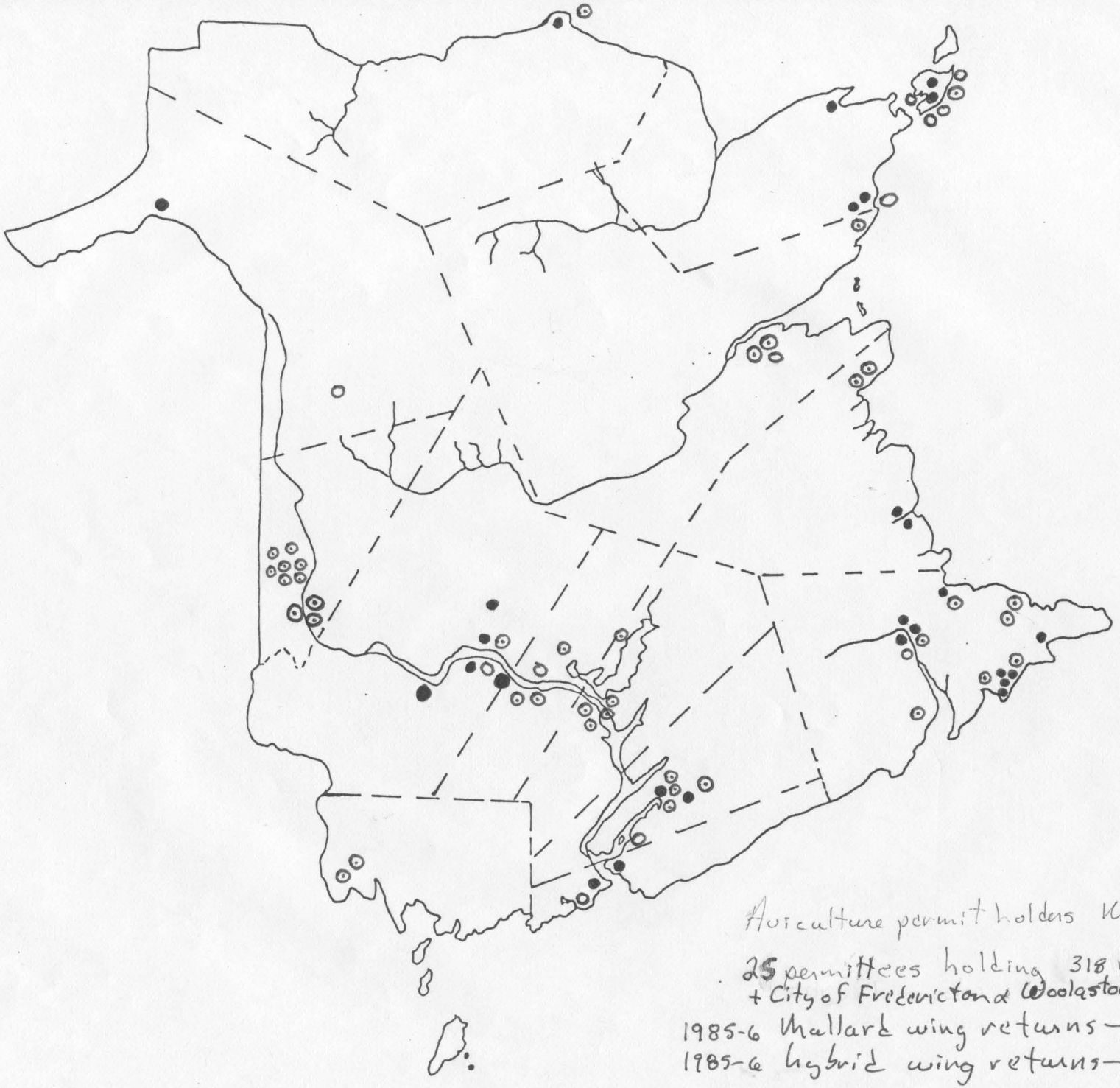

Aviculture permit holders N.S. — •
13 permittees holding 311 mallards
+ Hfx. & Sydney flocks
+ valley free flying flocks
1985-6 Mallard wing returns — ⊙
1985-6 Hybrid wing returns — ○

Aviculture permit holders PEI — ●

19 permittees holding 133 birds

1985-6 Mallard wing returns — ⊙

1985-6 hybrid wing returns — ○


Aquaculture permit holders 1986 - •
25 permittees holding 318 mallards
+ City of Fredericton & Woolastook Parks.
1985-6 Mallard wing returns — ⊙
1985-6 hybrid wing returns — ○


Aviculture permit holders Nfld - ●
4 permittees holding 27 mallards
1985-86 Malland wing returns — ⊙
1985-86 hybrid wing returns — ○

Barrow, W R

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