1990 FLATHEAD VALLEY DUCK NESTING STUDY PROGRESS REPORT

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Lake County Predator Removal Area

Two searches were completed between 5 May and 7 July 1990 on 675 acres; 249 usable nests were located (Table 1). The Mayfield nest success of 58.9% (95% CI 51.1-67.9%) found this year represents a substantial increase over the 44.3% found last year, although, the increase cannot be shown to be statistically significant ($Z=1.62$, $P>0.10$). Nest success on the removal area for 1989-1990 was significantly higher than for 1986-1988 (20.7% vs 52.9%, $Z=4.30$, $P<0.01$). Mallard nest success also increased significantly between 1986-1988 and 1989-1990 (9.9% vs 45.9%, $Z=3.23$, $P<0.01$). Nearly as many mallard nests hatched this year (52) as the past 4 years combined (55). Nest densities on the WPA's reached 0.44 nests per acre this year, a value comparable to those on many predator exclosures in the Prairie Pothole Region. Nest densities are predicted to continue increasing because of the increased number of successful hens and their offspring homing to the area.

A total of 32 skunks was removed during 5768 trap nights (180.3 trap nights/skunk) between 14 March and 5 July 1990. This represents a substantial decrease from captures in 1988 (N = 109) and 1989 (N = 77). I suggest that the decline represents an effect of the removal program because skunk populations were known to remain high in 1990 at Pablo NWR and other area of Western Montana (upper Flathead and Bitterroot Valleys).

A pair of ravens nested adjacent to Sandsmark WPA this year, and the large (15-20) roving flock of ravens was never observed hunting at Sandsmark. The large flock foraged mostly south and west of Ninepipe Reservoir during the months of April and May, then left the area during the first week of June and were not seen again. The nesting pair appeared to have little if any adverse impact on nest success at Sandsmark (70%), and in fact may have been beneficial in keeping other ravens away.

Table 1. Nests found by species on the removal area during 1990.

	Sandsmark WPA 320ac			All WPA's 420ac			State WMA 255ac			All Areas 675ac		
Species	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days
Mallard	53	42	677.4	56	45	717.4	11	7	100.5	67	52	817.9
Pintail	6	6	56.0	6	6	56.0	1	1	24.0	7	7	80.0
Teal	42	36	655.3	53	46	812.8	28	19	373.0	81	65	1185.8
Shoveler	28	27	424.2	34	32	478.7	7	5	87.0	41	37	565.7
Gadwall	17	16	270.0	21	19	332.5	10	6	103.8	31	25	436.3
Redhead	7	6	129.5	7	6	129.5	2	0	13.5	9	6	143.0
Wigeon	8	5	120.5	9	5	128.0	4	2	38.5	13	7	166.5
	161	138	2332.9	**186**	159	2654.9	**63**	40	740.3	**249**	199	3395.2
	0.50 Nests/ac			0.44 Nests/ac			0.24 Nests/ac			0.37 Nests/ac		
	Mayfield = 70.3% 95% CI 61.0-81.0%			Mayfield = 70.3% 95% CI 61.0-81.0%			Mayfield = 33.2% 95% CI 20.7-52.9%			Mayfield = 58.9% 95% CI 51.1-67.9%		

Mallards, all areas. Mayfield = 52.9%, 95% CI 38.4-72.8%.

Table 2. Nests found by species on the removal area during 1989.

Species	Sandsmark WPA 320ac N	N Hatch	Exp. Days	All WPA's 420ac N	N Hatch	Exp. Days	State WMA 255ac N	N Hatch	Exp. Days	All Areas 675ac N	N Hatch	Exp. Days
Mallard	**28**	19	357.4	**30**	21	401.4	**15**	7	203.0	**45**	28	604.4
Pintail	**4**	2	48.5	**4**	2	48.5	**1**	0	5.5	**5**	2	54.0
Teal	**18**	14	235.5	**28**	18	435.5	**15**	12	310.0	**43**	30	745.5
Shoveler	**12**	10	262.0	**13**	10	276.5	**5**	2	79.5	**18**	12	356.0
Gadwall	**10**	7	208.1	**11**	7	221.6	**8**	3	129.7	**19**	10	351.3
other	**3**	3	75.0	**3**	3	75.0	**5**	2	50.0	**8**	5	125.0
Total	**75**	55	1186.5	**89**	61	1458.5	**49**	26	777.7	**138**	87	2236.2
	0.23 Nests/ac			0.21 nests\ac			0.19 nests\ac			0.20 nests\ac		
	Mayfield = 54.9% 95% CI 41.2-72.9%			Mayfield = 51.1% 95% CI 39.8-65.5%			Mayfield = 34.4% 95% CI 22.3-53.0%			Mayfield = 44.3% 95% CI 35.7-54.9%		

Mallards, all areas. Mayfield = 37.0%, 95% CI 23.1 - 58.9%.

Nests found by species on Sandsmark, Montgomery and Herak WPA's and State Wildlife Management Area. All numbers have been corrected so that direct comparisions can be made. Predator removal on both areas during 1988.

	Waterfowl Production Areas (420 acres)									State Wildlife Management Area (255 acres)						Total		
	1986			1987			1988			1987			1988			All Years		
Species	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days	N	N Hatch	Exp. Days
Mallard	12	5	112.8	14	5	148.2	25	9	216.4	5	2	39.0	14	4	188.6	70	25	705.0
Pintail	4	2	52.5	4	1	20.2	04	1	23.2	0	0	0.0	0	5	0.0	12	4	95.9
Teal	16	6	221.0	14	8	200.2	14	11	167.4	19	11	294.2	12	5	168.4	75	41	1051.2
Shoveler	12	6	145.2	12	9	182.4	15	6	177.4	0	0	0.0	9	5	163.0	48	26	668.0
Gadwall	8	2	101.4	4	3	56.4	10	6	121.4	11	6	162.6	8	2	75.8	41	19	517.6
other	4	1	40.0	1	0	2.8	0	0	0.0	2	1	13.8	3	1	47.6	10	3	104.2
Total	56	22	672.9	49	26	610.2	68	33	705.8	37	20	509.6	46	17	643.4	256	118	3141.9
	Mayfield= 16.0% 95% CI 8.5-29.8%			Mayfield= 25.8% 95% CI 14.9-44.3%			Mayfield= 16.6% 95% CI 9.1-29.8%			Mayfield=30.9% 95% CI 24.8-54.9%			Mayfield= 20.0% 95% CI 11.0-35.7%			Mayfield= 20.7% 95% CI 16.0-26.7%		
	All three years combined Mayfield 19.2% 95% CI 13.3-27.7%									Both years combined Mayfield=24.0% 95% CI 16.6-34.4%								

Mallards all years and areas. N=70, N Hatch=25, Exp. Days= 705.0; Mayfield nest success = 9.9% 95% CI 5.0-19.2%.

No significant difference of nest success on state and federal areas with all years combined (P>.50).

Pablo NWR Nonremoval Area

Pablo NWR was searched twice during the same time period as the removal area. The 1990 Mayfield nest success for this area was 19.2% (95% CI 9.2-39.8%), although the sample size of 38 nests is marginal.

The total number of nests found in the alfalfa doubled this year to 22, and apparent success of these nests increased from 27% to 45% (Table 3). The older alfalfa fields were dominated by quack grass this year and were not used as much as the newer field which was primarily alfalfa.

Both nest numbers and apparent success remained the same this year in the tame grass pasture habitat. The majority (70%) of the nests located here were Blue-winged/Cinnamon Teal, which have been shown not to home and were probably attracted to this area due to the high water conditions in the main reservoir and the DU project extending into the tame grass cover.

Nest success at Pablo has not changed significantly between 1986-1988 (26.7%, N=32 nests) and 1989-1990 (23.9%, N=66 nests) ($Z=0.19$, $P>0.80$). However, nest densities have approximately doubled between the two time periods; in 1990, densities reached 0.13 nests/acre, or about 1/3 of those on the removal area. Ecological maturation of the DU impoundments and population "spillover" from the Ninepipe area are the most likely factors accounting for the increase. Depending on the species involved, the nest success rates documented at Pablo should have resulted in slowly declining to slowly increasing populations.

Table 3. Nests found at Pablo NWR nonremoval area during 1990.

Area	Acres Searched	Nests Found	Nests/ Acre	Nests Hatched
Alfalfa	100	22	0.23	10
Tame Grass Pasture	200	16	0.08	10
Total	300	38	0.13	20

Mayfield = 19.2% 95% CI 9.2-39.8%

Nests found at Pablo NWR nonremoval area during 1989.

Area	Acres Searched	Nests Found	Nests/ Acre	Nests Hatched
Alfalfa w/ Residual	60	10	0.17	3
Alfalfa, No "	40	1	0.02	0
Tame Grass Pasture	200	17	0.08	11
Total	300	28	0.09	14

Mayfield =28.7% 95% CI 10.6-39.8