



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Northern Prairie Wildlife Research Center
8711 37th St. SE
Jamestown, North Dakota 58401-7317

March 21, 2005

Memorandum

To: Bruce Toay, Kulm Wetland Management District

From: Thomas Buhl, Biological Science Technician *Tom*

Subject: 2004 Mayfield Report

Enclosed are the Mayfield results for the 2004 nesting season.

Your crew did a good job on filling out the data forms.

However, three consistent errors did occur on the forms. 1) Please use a "T" on the terminal visit. 2) Please count membranes or end caps on hatched nests. You need to place a value in Host Eggs Hatched if you have a Full Clutch and the eggs hatch. 3) Please fill in zeros on the Nest Depredation Form. I was not sure if the boxes should be zeros or if you forgot to look at egg shells and the nest bowl. Thanks.

Feel free to call me at 701/253-5530 or email thomas_buhl@usgs.gov if you have any questions.

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NESTING RESULTS BY SAREA AND FIELD, ALL SPECIES COMBINED

COOPERATOR OR RESEARCH PROJECT=KULM WMD YEAR=2004

STUDY AREA	SPECIFIC FIELD WITHIN A STUDY AREA	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESSFUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD	MAYFIELD	MAYFIELD
								LOWER 95% CONF. LIMIT	HATCH RATE	UPPER 95% CONF. LIMIT
KLE	001	73	56	17	0	1165.1	0.767	0.476	0.607	0.772

NESTING RESULTS BY SAREA AND SPECIES

COOPERATOR OR RESEARCH PROJECT=KULM WMD YEAR=2004

STUDY AREA	HOST SPECIES	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESSFUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD	MAYFIELD	MAYFIELD
								LOWER 95% CONF. LIMIT	HATCH RATE	UPPER 95% CONF. LIMIT
KLE	MALLARD	51	38	13	0	808.3	0.745	0.424	0.576	0.781
KLE	GADWALL	11	7	4	0	155.8	0.636	0.169	0.413	0.989
KLE	B-W-T	1	1	0	0	22.0	1.000	1.000	1.000	1.000
KLE	SHOVELER	3	3	0	0	61.0	1.000	1.000	1.000	1.000
KLE	PINTAIL	7	7	0	0	118.0	1.000	1.000	1.000	1.000

NESTING RESULTS BY STUDY AREA, ALL SPECIES AND FIELDS COMBINED

COOPERATOR OR RESEARCH PROJECT=KULM WMD YEAR=2004

STUDY AREA	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESSFUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD	MAYFIELD	MAYFIELD
							LOWER 95% CONF. LIMIT	HATCH RATE	UPPER 95% CONF. LIMIT
KLE	73	56	17	0	1165.1	0.767	0.476	0.607	0.772
ALL	73	56	17	0	1165.1	0.767	0.476	0.607	0.772

NESTING RESULTS BY SPECIES, ALL STUDY AREAS COMBINED

COOPERATOR OR RESEARCH PROJECT=KULM WMD YEAR=2004

HOST SPECIES	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESSFUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD LOWER 95% CONF. LIMIT	MAYFIELD HATCH RATE	MAYFIELD UPPER 95% CONF. LIMIT
MALLARD	51	38	13	0	808.3	0.745	0.424	0.576	0.781
GADWALL	11	7	4	0	155.8	0.636	0.169	0.413	0.989
B-W-T	1	1	0	0	22.0	1.000	1.000	1.000	1.000
SHOVELER	3	3	0	0	61.0	1.000	1.000	1.000	1.000
PINTAIL	7	7	0	0	118.0	1.000	1.000	1.000	1.000
ALL	73	56	17	0	1165.1	0.767	0.476	0.607	0.772

NESTS NOT USED IN MAYFIELD CALCULATIONS

OBS	PROJECT	SAREA	FIELD	SPECIES	YEAR	NEST	NESTFATE	CAUSE	INCUB	COMMENT
1	KULM	KLE	001	1320	2004	5	2	6	0	EXPOSURE DAYS LE 0
2	KULM	KLE	001	3310	2004	31	1	.	.	"OTHER" SPECIES
3	KULM	KLE	001	3310	2004	38	1	.	.	"OTHER" SPECIES
4	KULM	KLE	001	3310	2004	50	1	.	.	"OTHER" SPECIES
5	KULM	KLE	001	3310	2004	52	5	.	.	"OTHER" SPECIES
6	KULM	KLE	001	1320	2004	75	1	.	55	EXPOSURE DAYS LE 0

	REMOVE, KEEP, OR ASSIGN	=<14 DAY VISIT LAPSE			=<21 DAY VISIT LAPSE			=<28 DAY VISIT LAPSE		
		NO. AFFECT	NO. REMAIN	% OF N	NO. AFFECT	NO. REMAIN	% OF N	NO. AFFECT	NO. REMAIN	% OF N
TOTAL CLUTCHES			73		73		73		73	
DEST BY PREDATOR		16	16		16	16		16	16	
GE SIX EGGS		11	11		11	11		11	11	
VI LAPSE		4	4		11	11		11	11	
MISSING DATA		0	4		0	11		0	11	
SAMPLE SIZE (N)			4			11			11	
NO EGGSHELLS	K	0	0	0.0	1	1	9.1	1	1	9.1
TRACE OR MORE FRAGMENTS	R	0	0	0.0	1	0	0.0	1	0	0.0
DUG AREA	R	0	0	0.0	0	0	0.0	0	0	0.0
CARCASS/CARCASS PARTS	R	0	0	0.0	0	0	0.0	0	0	0.0
CACHED EGGS	R	0	0	0.0	0	0	0.0	0	0	0.0
- - - - - LIKELY FOX - - - - -										
> TRACE AERIALLY										
DISPLACED NEST MATERIAL	R	0	0	0.0	0	0	0.0	0	0	0.0
WHOLE EGGS	R	0	0	0.0	0	0	0.0	0	0	0.0
- - - - - ASSIGNED TO FOX - - - - -										
>25% OF NEST MATERIAL										
DISPLACED ON GROUND	R	0	0	0.0	0	0	0.0	0	0	0.0

--- SUMMARY ---

MAX % LIKELY DESTROYED BY REDFOX	0.0	0.0	0.0
TOTAL % ASSIGNED TO REDFOX	0.0	0.0	0.0

SKUNK
KULM 2004

	REMOVE, KEEP, OR ASSIGN	=<14 DAY VISIT LAPSE			=<21 DAY VISIT LAPSE			=<28 DAY VISIT LAPSE		
		NO. AFFECT	NO. REMAIN	% OF N	NO. AFFECT	NO. REMAIN	% OF N	NO. AFFECT	NO. REMAIN	% OF N
TOTAL CLUTCHES			73		73			73		
DEST BY PREDATOR		16	16		16	16		16	16	
GE SIX EGGS		11	11		11	11		11	11	
VISIT LAPSE		4	4		11	11		11	11	
MISSING DATA		1	3		1	10		1	10	
SAMPLE SIZE (N)			3			10			10	
HEN KILLED	R	0	3	100	1	9	90.0	1	9	90.0
CACHED EGGS	R	0	3	100	0	9	90.0	0	9	90.0
EGGSHELLS OF >60% OF DEPREDATED EGGS	K	1	1	33.3	2	2	20.0	2	2	20.0
>50% OF EGG SHELLS HAVE SMALL HOLES	R	0	1	33.3	0	2	20.0	0	2	20.0
>50% OF OPENINGS IN EGGSHELLS ON AN END	R	0	1	33.3	0	2	20.0	0	2	20.0
EGGSHELL WITH MULTIPLE OPENINGS	R	0	1	33.3	0	2	20.0	0	2	20.0

EGGSHELL WITH >25% OF CONTENTS PRESENT	R	0	1	33.3	0	2	20.0	0	2	20.0
> TRACE OF AERIALY DISPLACED NEST MATERIAL	R	0	1	33.3	0	2	20.0	0	2	20.0
- - - - - LIKELY SKUNK - - - - -										
>25% OF EGGSHELLS >1 M FROM NEST	R	1	0	0.0	1	1	10.0	1	1	10.0
CRUSHED EGGSHELL	R	0	0	0.0	0	1	10.0	0	1	10.0
DUCK AREA	R	0	0	0.0	0	1	10.0	0	1	10.0
- - - - - ASSIGNED TO SKUNK - - - - -										
WHOLE EGG	R	0	0	0.0	1	0	0.0	1	0	0.0
- - - - - SUMMARY - - - - -										
MAX % LIKELY DESTROYED BY SKUNK				0.0			10.0			10.0
TOTAL % ASSIGNED TO SKUNK				0.0			0.0			0.0

RACCOON
KUN 2004

REMOVE, KEEP, OR ASSIGN	=<14 DAY VISIT LAPSE			=<21 DAY VISIT LAPSE			=<28 DAY VISIT LAPSE		
	NO. AFFECT	NO. REMAIN	% OF N	NO. AFFECT	NO. REMAIN	% OF N	NO. AFFECT	NO. REMAIN	% OF N
TOTAL CLUTCHES		73			73			73	
DEST BY PREDATOR	16	16		16	16		16	16	
GE SIX EGGS	11	11		11	11		11	11	
VISIT LAPSE	4	4		11	11		11	11	

MISSING DATA		1	3		1	10		1	10	
SAMPLE SIZE (N)			3			10			10	
HEN KILLED	R	0	3	100	1	9	90.0	1	9	90.0
CACHED EGGS	R	0	3	100	0	9	90.0	0	9	90.0
DUG AREA	R	0	3	100	0	9	90.0	0	9	90.0
EGGSHELLS OF >60% OF DEPREDATED EGGS	K	1	1	33.3	2	2	20.0	2	2	20.0
>5% OF EGGSHELLS HAVE SMALL HOLES	R	0	1	33.3	0	2	20.0	0	2	20.0
>50% OF OPENINGS IN EGGSHELLS ON SIDE/SIDE-END	R	1	0	0.0	1	1	10.0	1	1	10.0
EGGSHELL WITH MULTIPLE OPENINGS	R	0	0	0.0	0	1	10.0	0	1	10.0
EGGSHELL WITH >25% OF CONTENTS PRESENT	R	0	0	0.0	0	1	10.0	0	1	10.0
> TRACE OF AERIALY DISPLACED NEST MATERIAL	R	0	0	0.0	0	1	10.0	0	1	10.0
- - - LIKELY RACCOON - - - -										
>25% OF EGGSHELLS >1 M FROM NEST	R	0	0	0.0	0	1	10.0	0	1	10.0
CRUSHED EGGSHELL	R	0	0	0.0	0	1	10.0	0	1	10.0
>25% OF NEST MATERIAL DISPLACED ON GROUND	R	0	0	0.0	0	1	10.0	0	1	10.0
- - - - -ASSIGNED TO RACCOON - - - - -										
WHOLE EGG	R	0	0	0.0	1	0	0.0	1	0	0.0

>25% OF CONTENTS	R	0	3	100	1	7	70.0	1	7	70.0
>4 TRACE OF AERIALY DISPLACED NEST MATERIAL	R	0	3	100	0	7	70.0	0	7	70.0
EGGSHELLS OF <75% OF DEPREDATED EGGS	K	2	2	66.7	5	5	50.0	5	5	50.0
CRUSHED EGG SHELL	A	0	2	66.7 (0.0)	0	5	50.0 (0.0)	0	5	50.0 (0.0)
>50% OF EGG SHELLS HAVE OPENING IN ENDS	R	0	2	66.7	0	5	50.0	0	5	50.0
>5 OF NESTS WITH >2 EGGSHELLS ARE FRACT/TRAMPLED A	A	1	1	33.3 (33.3)	2	3	30.0 (20.0)	2	3	30.0 (20.0)
- - - - LIKELY BADGER - - - - NO FRAGMENTS	R	0	1	33.3	0	3	30.0	0	3	30.0
- - - - - SUMMARY - - - - -										
MAX % LIKELY DESTROYED BY BADGER				66.7			50.0			50.0
TOTAL % ASSIGNED TO BADGER				33.3			20.0			20.0

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DEPREDATED NESTS COOPERATOR OR RESEARCH PROJECT=KULM YEAR=2004 STUDY AREA WITHIN PROJECT

NEST	SPECIES	VISITS	DATEDEST	AGEDEST	MXAGEERR	VSTLAPSE	DAYSICUB	CLUTSIZE	PSHL_EGG	AMTFRAGS	EGSATNST
24	MAL	1	05/11	17	4	7	4	9	11	<1	8
1	MAL	2	05/18	32	4	12	19	9	11	<1	3
14	MAL	2	05/16	36	2	12	23	9	33	>1	0
39	MAL	1	05/20	12	6	12	0	6	83	>1	0
54	GAD	1	06/24	21	13	21	4	9	44	>1	0
56	MAL	1	06/24	16	13	21	0	8	63	Tr	3
57	GAD	1	06/24	16	13	21	0	8	13	>1	6
59	MAL	1	06/24	14	13	21	0	6	50	>1	0
76	GAD	1	07/12	31	5	21	15	11	45	>1	0
77	MAL	1	07/15	22	11	21	7	7	57	>1	0
78	GAD	1	07/14	25	7	21	11	7	0	<1	0

NEST	SHLATNST	PSMALL	PLARGE	PFRACT	PTRAMP	PCRUSH	PSHLINST	PSH_20CM	PSH_LE1M	PSH_GT1M	SMLGSHEL
24	1	0	100	0	0	0	0	0	100	0	1
1	1	0	0	100	0	0	0	0	0	100	0
14	3	0	0	0	100	0	0	67	100	0	0
39	5	0	100	0	0	0	20	20	40	60	5
54	4	0	0	100	0	0	75	100	100	0	0
56	5	20	60	20	0	0	80	100	100	0	4
57	1	0	100	0	0	0	0	100	100	0	1
59	3	0	0	100	0	0	33	100	100	0	0
76	5	0	60	40	0	0	0	60	100	0	3
77	4	0	100	0	0	0	25	100	100	0	4
78	0	.	.	.	.	.	.	.	.	.	0

NEST	PSIDE	PENDS	PBOTH	MULTIPLE	YOLK	PNESTGRD	PNESTAIR	CACHEGGS	DUGAREA	HENDEAD	PREDATOR
24	.	.	.	1	1	8	0	0	N	0	
1	.	.	.	0	0	0	0	0	N	0	b
14	.	.	.	0	0	8	0	0	N	0	B
39	0	40	60	0	0	0	0	0	N	0	
54	.	.	.	0	0	0	0	0	N	Tr	
56	50	50	0	0	0	0	0	0	N	0	rs
57	100	0	0	0	1	8	0	0	N	0	
59	.	.	.	0	0	13	0	0	N	0	B
76	0	0	100	0	0	63	0	0	N	0	b
77	0	25	75	0	0	13	0	0	N	0	b
78	.	.	.	0	0	63	63	0	N	0	

HATCHED AND DESTROYED NESTS, Z= -1.876

P= 0.061

OBS	FATES	COOPERATOR OR RESEARCH PROJECT	YEAR	Total No. Nests	No. 2 Vis. in Incub	% with Missing Eggs	Mean No. Days	St. Dev. Days	Mean Egg loss rate	St. Dev. Loss Rate
1	Hatched	KULM	2004	56	30	6.6667	12.5000	6.02151	0.000563	0.002266
2	Destroyed	KULM	2004	16	3	66.6667	11.6667	8.08290	0.022751	0.020471

2004 Nest Success Results from Klettke WPA Predator Exclosure

Total nests = 79

Species breakdown: 52 Mallard
12 Gadwall
7 Pintail
3 Northern Shoveler
1 Blue-Winged Teal
4 Northern Harrier

Waterfowl Nest Success:

$n = 75$
 $N_s = 57$
 $N_u = 18$
 $E = 1257$
 $h = 25.55$
 $f = 15.35$

$P_1 = 0.76$ (*Apparent Nest Success*)
 $P_2 = 0.6918$ (*Mayfield Exposure Method*)
 $P_3 = 0.5029$ (*Shortcut Method*)

Klettke Predator exclosure was dragged six times in 2004, starting on May 7, and ending on July 24.