Refuge	:				Observ	er:		
Date:_	Des La	s Wildlife	Refuge	194		Seth H. L	ow & Wm. I	Long,
Estima	ted popu	lation: Serd	icks.	0		shorebird	s	
			1,0	000			1,000	
Date	Sick	accounted Died in	Dead	Wind		Maximum	Precip-	Water Level
	Birds	Hospital	Birds	Direction	Miles	Temperature	itation	on gauge
9-76 8		7946	***	northeast	-5-	76		
9-9	8		9-	north	-20-	- 57	-:11	-48
9-10		3		calm		- 65		- 14
9-11			2	south	10-	72		2.08
9-12				north	10	78		-
Total	2		- 3	southeast	-5	67	~~	
9-15			- c	southeast	15	72		-
Condit	ion of w	Upper Des			r #2 to	south end;	mostly alo	ong
					S	tagnant	_Circulat	ing
Relati	on of wi	nd directi	on and v	elocity to	water d	istribution:		
	Wind b	lows water	off of a	and out on t	e flats			
Newly	flooded sout	or drying	nding of	escribe):	tion.			
		ng from spr	ing leve	of 1939;	1939 la	ake bed refle	ooded afte	r
	being d	(Water-	oloom:	; water mos	ely our	of areas of	uplana ve	getation
Condit	ion of			es				
vegeta	tion of tion in ss areas	(Pondwe	dus:					
sickne Condit	tion in	Pondwee (Marsh) (Leeches (Crustae	plants:	10				
vegeta sickne Condit aquati life i	tion in ss areas ion of c animal	(Pondwer (Marsh) (Leeche: (Crustae (Insect:	plants:					

no

Remarks:

WEEKLY OBSERVATIONS RELATIVE TO DUCK SICKNESS Observer: Seth H. Low & Wm. B. Long. Jr. Refuge: Des Lacs Wildlife Refuge Date: August 31 toSeptember 6,1940 Estimated population: ducks 1.000 shorebirds 1.000 Birds accounted for Water Date Sick Died in Dead Wind Maximum Precip-Level Birds Direction | Miles Temperature itation Birds Hospital on gauge 8-31 10 81 -south -9-1 -south 10 89 ----9-2 --87 --9-3 4 18 south 10 4 97 --2.20 9-4 -3 southwest 20 88 .36 -9-5 west 5 85 --.02 -9-6 1 -west 5 86 Total 6 If no accurate count was made, give estimate of total sick and dead: Dead birds: Sick birds: Describe location of losses and probable source of poisoning: Upper Des Lacs Lake from Tower #2 to south end; mostly along west shore and south end. Condition of water in sickness areas: (Check two) High Normal Low x Stagnant Circulating Relation of wind direction and velocity to water distribution: Wind blows water off of and out on to flats at south end depending on wind direction. Newly flooded or drying areas (describe): Receding from spring level of 1939; 1939 lake bed reflooded after being dry several seasons; water mostly out of areas of upland vegetation. (Water-bloom: yes Condition of yes (Algae: vegetation in (Pondweeds: no sickness areas: (Marsh plants: no (Leeches: no Condition of (Crustaceans: yes aquatic animal

Remarks:

life in

sickness areas:

(Insects: yes

(Fishes: no

		_	st 30 ,					
Estima	ted popu	lation: d	ucks2	.000		shorebird	2,000	
	<del></del>			·				717
Date	Sick	e.scounted Died in	Dead	Wind		Maximum	Precip-	Water Level
Date		Rospital		Direction	Miles	Temperature	itation	on gauge
8-24	***	5		calm_		61	.16	***
8-25	STR AUG		1	-		62	58	-22
8-26	1	2	- 5	south	10	73		33
8-27	5	3	12	south	10	88	-	10.08
8-28	5		5	west	_5	74	-09	
8=29	G0 507	3		north	10	73		
8-30		3	3	north	5	77	75.00	1919
Total	11	16	25					
(Che	ck two)		Normal	Low_		tagnant_x	_Circulat	ing
				of and out ing on wind escribe):				
Newly	Re	ceding fro	m spring	g level of 1	1939; 19	39 lake bed n ly out of area		
Condit-	Re be	(Water- (Algae:	bloom:	yes	1939; 19	39 lake bed 1		
Condit vegeta sickne Condit aquati	ion of tion in ss areas	(Water-(Algae: (Pondwe (Marsh)) (Leeche (Crusta))	bloom: eds: plants: s:ne ceans: s: yes	yes	1939; 19	39 lake bed 1		

	-ugusu I	to Aug	ust zo,	194				
Estima	ted popu	lation: d	lucks 2,0	000		shorebird	ds 3,000	
		e.3counted		]				Water
Date	Sick	Died in	Dead	Wind	377.3	Maximum	Precip-	Level
8-17	Birds	Hospital	22 1418	Direction north	Miles	Temperature	itation	on gaug
8-18		13		northwest	5	75	.04	-
8-19	32	7	136			78		
8-20	3-	9	9	southwest		82		
8-21	7	6	-22	southeast		68		2.28
8-22	1	2	12	southeast	10	63		
8-28	7	4	17		***	67	-	
Total	57		204					
escri	be locat Uppe west	ion of los r Des Lacs shore and	ses and lake fr	probable some for the sound of	urce of to sou	poisoning:	ly along	
ondit	ion of w	ater in si	ckness a	nd.				
ondit	ion of w	ater in si	ckness a	nd.		poisoning: th end; most		ing
ondit (Che	ion of wo ck two) on of wi wind blat sout	ater in si High  nd directi ows water h end depe	ckness a Normal on and v off of a ending on areas (d	reas:  Low :  elocity to not out on to wind direct escribe): 1 of 1939:	water do flats		Circulat	
Condit (Che Relati Newly	ion of wo ck two) on of wi wind blat sout	ater in si High  nd directi ows water h end depe or drying g from spr ry several  (Water- (Algae: (Pondwe	on and voff of a anding on areas (ding level seasons	reas: Low indicate to not out on to wind direct escribe): l of 1939; water most	water do flats	Stagnant X listribution:	Circulat	

lata.			e Befug	0		er: Seth E.	Low & Wm.	me mones
,a 00	August 1	to Augu	st 16 '	1940				
Estima	ted popu	lation: d	ucks .	200		shorebird	ls _	
			19	900	W-74-10-10-10-10-10-10-10-10-10-10-10-10-10-		5,000	,
	Birds	accounted	for	T		T		Water
Date	Sick	Died in	Dead	Wine	đ	Maximum	Precip-	Level
	Birds	Hospital	Birds	Direction	- Contract C	Temperature	itation	on gauge
8-10		2	2	south	5	95		
8-11		- 0		south	5	89		2.50
8-12	29	2	123	south	10	94		2.00
8-13	7	14	30	south	15	- 90		
8-14	20	7	31	south	10	92		
8-15	7	-	12	northwes	4 - 5		20	
8-16	EE	0	118	oalm		- 80	.37	
Total	118	46	310	Oct Tall		79	-	
escri'	Uppe	r Des Lacs	Lake fr	rom Tower #		poisoning:	ly along	
Condit	Uppe west	r Des Lacs shore and	Lake fi	rom Tower #	2 to sou	poisoning:		ing
Condit (Che	uppe west ion of work two) on of wing the state of the st	ater in si High  nd directi nd blows w south end or drying ceding fro	Lake from south of ckness a Normal on and water off depending areas (com spring	rom Tower # and.  areas: Low relocity to f of and out age on wind describe):	water dt on to directi	repoisoning:  th end; most!  Stagnant  istribution:	Circulat	after
Conditation (Checker Checker C	uppe west ion of work two) on of wing the state of the st	ater in si High  nd directi nd blows w south end or drying ceding fro ing dry se  (Water- (Algae: (Pondwe	lake from south of ckness a Normal on and water off depending areas (com spring veral second)	rom Tower # dend.  areas: Low relocity to f of and out age on wind describe): g level of it easons; wate	water dt on to directi	repoisoning:  the end; most!  tagnant  istribution:  flats on.  39 lake bed r	Circulat	after

Estima		lation: d				shorebird	ls 10,0	00
	I Binds	accounted	for	T				Water
Date	Sick	Died in	Dead	Wind		Maximum	Precip-	Level
Dato	Birds	Hospital	Birds	Direction	Miles	Temperature	itation	on gauge
8-3	96	4	154	west	5	79	.11	
8-4	****	26	-	north	10	72		
8-5	46	18	323	northwest		79		-
8-6	16	17	122	south	10	85		
8-7	10	29	71	north	10	91		
8-8	21	12	31	southeast		90		***
8-9	4	16	22	south	15	92		
Total	193	122	723	1				
escri	Sick bi	ion of los	s Lacs L		urce of	birds: 'poisoning: to south end;	mostly a	long
Condit (Che	be location of work two)	ion of los Upper De west show ater in si High	ckness a	ake from Towouth end. reas:	urce of	poisoning: to south end;		
Condit (Che Relati	ion of work two) on of wire at flooded	ion of los Upper De west show ater in si High  nd directi nd blows of south end or drying ceding from	ckness a Normal on and v ff water dependit areas (d m spring	reas: Low elocity to off of and escribe):	water directi	r poisoning: to south end; stagnant x sistribution: n to flats	Circulat	ing
Condit (Che Relati Newly	ion of work two) on of wire at flooded	ion of los Upper De west show ater in si High  nd directi nd blows of south end or drying deding from ing dry se  (Water- (Algae: (Pondwe	ckness a Normal on and v ff water dependiareas (d m spring veral ser bloom:	reas: Low elocity to off of and escribe): level of 1: asons; water	water directi	repoisoning: to south end; stagnant x stagnant x stagnant x stribution: n to flats on.	Circulat	ing

D			Refuge		Observ	er: Seth H. L	ow & Wm.	B. Long, Jr.
Date:	July 27	to Augr	st 2	1940				
Estima	ted popu	lation: d	ucks 1	,000		shorebird	s 10,000	
	Birds	accounted	for	T				Water
Date	Sick	Died in	Dead	Wind		Maximum	Precip-	Level
	Birds		Birds	Direction	Miles	Temperature	itation	on gauge
7-27		9	***	southeast	15	63	.93	
7-28		8	***	***		74	**	
7-29	45	6	173	north	5	72		
7-30	21	17	125	southeast	10	84	.01	
7-31	17	7	40	southeast	5	92		***
8-1	27	11	66	east	10	88	.07	•••
8-2 Total	110	72	404	ca.lm		79	.73	
		west shor	e and so	uth end.				
(Che	ck two) on of wi	nd directi Wind blows at south e or drying Receding f	Normal on and v water c nd depen areas (c	Low relocity to ff of and o ding on win describe): ng level of	water dut on t	tagnant x istribution: o flats tion. 1939 lake bed tly out of ar	refloode	d after

Remarks:

ate:	July 20	to Jul	y 26 ,	194 0				
Stimat	ted popu	lation: d	ucks_1	.000		shorebird	s 5,000	
D. I.		accounted	-			Ι., .		Water
Date	Sick Birds	Died in Hospital	Dead	Wind Direction	Miles	Maximum Temperature	Precip- itation	Level on gauge
7-20		3	**	oa.lm		91		
7-21		4	-	southeast	10	92	-21	
7-22	61	7	84	south	5	90	.22	
7-23		8	25	calm	-	90		2,65
7-24	36	10	46	north	10	76	**	
7-25	31	9	67	north	5	69	-10	
7-26	The second secon	19	426	calm	**	73	***	
i no a	accurate	count was	made. F	ive estimat	e of to	to I as als and	dead.	
escril	Sick bi	rds:ion of los	ses and 1	probable so	Dead urce of	tal sick and birds:		
	Sick bi	rds: ion of los Upper Des west shor	ses and p	probable so ke from Tow with end.	Dead urce of	birds:		long
onditi (Chec	Sick bi	ion of los Upper Des west shor ater in si High	ses and post lace Lace and so ckness a:	probable so ke from Tow with end. reas:	Dead urce of mer #2 t	birds: poisoning: to south end;  Stagnant	mostly al	
Checkelatic	Sick bi	ion of los Upper Des west shor ater in si High  nd directi blows wat outh end do or drying eding from	ses and process and so ckness	probable so ke from Townuth end.  reas: Low_ elocity to f and out of and out of escribe):	Dead urce of wer #2 t	poisoning: to south end; tagnant istribution:	mostly al	ing
Condition (Checkelatic	Sick bi	ion of los Upper Des west shor ater in si High  nd directi blows wat cuth end or drying ding from g dry seve  (Water- (Algae: (Pondwe	ses and process and second sec	probable so ke from Townuth end.  reas: Low_ elocity to f and out of and out of escribe):	Dead urce of wer #2 t	poisoning: to south end; stagnant istribution: lats late bed re:	mostly al	ing

Estima	ted popu	lation: d	ucks 2,00	90		shorebird	3,000	
	Birds	accounted	for					Water
Date	Sick	Died in	Dead	Wind		Maximum	Precip-	Level
2400	Birds	Hospital	Birds	Direction	Miles	Temperature	itation	on gauge
7-13								0 0
7-14	16	17	92	south	10	92		
7-15	30	16	75		-	77		
7-16	5	20	15	east	5	79		
7-17	20	6	13	south	10	86		
7-18	11	4	21	east	10	89		
	1 100	8	11	south	10	92		
7-10 Total	82	77	227	Boath	0	87	•35	
		ion of los Upper De west sho	s lacs le	ake from To	urce of	birds: poisoning: to south end;	mostly a	long
ondit	be locat	ion of los Upper De west sho	s Lacs Le re and so ckness an	ake from To outh end.	urce of	poisoning:	mostly a	
ondit (Che	ion of work two)	ion of los  Upper De  west sho  ater in si  High  nd directi	ckness and Normal	ake from To outh end. reas: Low_	wer #2	poisoning: to south end; tagnant istribution:		
ondit (Che	ion of work two) on of wire Wind 1	ion of los Upper De west sho ater in si High nd directi	ckness and Normal on and ve	ake from To outh end. reas:	wer #2	poisoning: to south end; tagnant istribution:		
ondit (Che	ion of work two) on of wire wind to at sor flooded	ion of los  Upper De  west show  ater in si  High  nd directi  clows water  or drying  ing from si  dry severe	ckness and so ckness and Normal on and very off of pending areas (depring level season	Low_elocity to and out on wind directibe):	water d to flacection.	poisoning: to south end; tagnant istribution:	Circulat	ing
ondit (Che elati Wewly	ion of work two) on of wire wind to at sor flooded	ion of los  Upper De  west sho  ater in si  High  nd directi  clows water  th end de  or drying  ing from si  dry severe  (Mater- (Algae: (Pondwe	ckness and so ckness and Normal on and very off of pending of areas (depring level season bloom: years and years	Low elocity to and out on wind directibe):  well of 1939 as; water m	water d to flacection.	poisoning: to south end; tagnant istribution: ts	Circulat	ing

					Observ	er: Seth H. I	ow & Wm.	B. Long,
Date:_	July 6	to July	y 12	1940				
Estima	ted pop	ulation: di	ucks_3,	000		shorebird	2,00	0
	Bird	s accounted	for	<del></del>				Water
Date	Sick	Died in	Dead	Wind		Maximum	Precip-	Level
7-6	Birds	Hospital	Birds	Direction	Miles	Temperature	itation	on gauge
7-7				north	1.0	97		
	143	30	257	calm		82	•08	
7-0	88	69	518	southeas		63	•09	***
7-9	24	20	125	calm		95		
7-10	AV 40	89	6780	northeas		64	•42	***
7-11	18	28	45	southeas	t 10	71		
7-12	70	1.2	259	south	10	83		
Total	383	208	1100					
escri)	be loca	tion of loss Upper Des Le west shore s	ses and	probable so		poisoning:	stly alon	g
Condit	be loca	tion of los: Upper Des Le west shore s	ses and ces lake and sout	probable so from Tower h end.	urce of #2 to	poisoning:		
Condit (Che Relati	ion of ck two)	tion of loss Upper Des Le west shore s  water in sid High  ind directic lind blows wat south end	ses and contact lake where the ses a Normal on and verter of	probable so from Tower h end.  reas: Low_ relocity to f of and owing on wind	water of	poisoning: south end; mo stagnant x listribution: flats		
Condit (Che Relati	ion of ck two) on of w	water in side High water in direction of loss water in side ind direction or drying a seeding from	ckness a Normal on and v ater of depend areas (despring	probable so from Tower h end.  reas: Low_ relocity to f of and outing on wind describe): level of li	water direct.	poisoning: south end; mo stagnant x listribution: flats	_Circulat	ing
Condit (Che Relati Newly	ion of ck two) on of w	water in side of loss water in side high ind direction of loss water in side high ind direction or drying a ceding from dry several (Algae: (Pondween loss of	ckness a Normal on and vater of depend areas (depend areas (depend) areas serving	probable so from Tower h end.  reas: Low_ relocity to f of and outing on wind describe): level of liasons; wate:	water direct.	r poisoning: south end; mo  Stagnant *  Stagnant to the stagna	_Circulat	ing

stima	ted popu	lation: d	ucks6	,000		shorebird	2,000	
Date	Birds Sick	Died in	for Dead	Wind		Maximum	Precip-	Water Level
	Birds	Hospital	Dirds	Direction	Miles	Temperature	itation	on gaug
6/29	66		321	-west	10	79		2.95
6/30	85	7	784	north	2			
7/1	141	24	2058	co.lm		77		
7/2	51	26	524	- ca.lm		83		-
7/3	59	34	172	- south	10	86		
7/1 7/2 7/3 7/4 7/5	13	25	128	- south	2	94		2.60
7/5 Total	28	15	4101	- oalm		94		
w	pper Des	lacs lake	from To	wer #2 to s		poisoning:	ong	
ondit (Che	pper Des est shor ion of w ck two)	lacs lake e and sout ater in si High	from To th end. ckness a Normal	reas:	outh en	tagnant	-	ing
ondit (Che	pper Des est shor ion of w ck two) on of wi Wind bl at sout flooded Recedin	ater in si High  Ind directi Ows water the end depe or drying or from 193	ckness a Normal on and v off of a nding on areas (d	reas: Low_elocity to nd out on twind directoribe): level; 193	water de flats	tagnant	Circulat	ing
woondit (Che delati	pper Des est shor ion of w ck two) on of wi Wind bl at sout flooded Recedin	ater in si High  Ind directi  Ind directi  Ind dependent in the si  Ind directi  In	ckness a Normal on and v off of a nding on areas (d spring ns; wate	reas: Low_ elocity to nd out on to wind direct escribe): level; 193 r mostly ou	water de flats	tagnant x	Circulat	ing