GBA FPMR (4) CFR) 101-11.8

### UNITED STATES GOVERNMENT

# Memorandum

TO

Refuge Manager, Swan Lake NWR

**DATE:** January 21, 1980

FROM

Pathologist-In-Charge, NWHL

P.R. 1710-17,362 through 17,365

Bacteriology: Cultures of liver from accessions 17,362-17,365 reveal heavy growths of Pasteurella multocida. An acid-fast stain of the liver from goose 17,364 is negative for acid-fast organisms.

Diagnosis:

Avian cholera in 4 out 4 geese examined.

Lynns M. Lieg frield

LMS:ls





NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT Case No. 1710-17,362 Submitter's name and address Reference # Collected: Refuge Manager Received: 12/31/79 Swan Lake NWR Examined: 12/31/79 Box 68 Summer, MO 64681 Tel. No. Wild/captive Species: Canada goose Age: Adult Sex: Female Wt. Found dead/euthanized Preserved by: P.M. State Body Conditio Specimen Good Good Carcass Chilling Virology Histology Bacteriology Toxicology Liver RC Parasitology Photos Other History summary: Necropsy: Pectorals well developed, moderate amounts of fat Petechiae on heart Numerous pinpoint areas of focal necrosis in liver; centro-lobular veins songested Spleen normal size and color

Ovary that of inactive adult; oviduct 3-4 mm wide, convoluted, hyperemic (violet)

Intestine and proventriculus normal. No lesions suggesting duck plague



Provisional diagnosis: Avian cholera

Final diagnosis to follow

Diagnostician/technician

, N	NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT					Case No. 1710-17,363					
	Submitter's name and address Swan Lake NWR Tel. No.					Reference # Collected: Received: Examined: 12/31/79 Wild/captive					
Species: Canada goose			Age:	Adult	Sex: Fe	male	Wt.				
Preserved by: Chilling	Specimen Carcass	Found dead/euthanize	ď	P.M. S			Conditio				
Histology		Bacteriology Liver RC		Toxico	logy	Viro	logy				
Parasitology		Photos		Other							
History summary	<b>/</b> :										

Necropsy:

Well developed pectorals; multiple penetrating wounds in mid-pectorals jsut over keel. Abundant subcutaneous, abdominal and coronary fat

Widespread petechiae and ecehymoses on heart

A 20 x 30 x 2-3 mm clot lay over middle of right liver lobe; central vein was congested and a few small (pinpoint) areas of focal necrosis were seen

Hemorrhages, focal enngestion and fibrinous exudate in lungs

Small spleen, focal hemorrhages

Slight enlargement of intestines; no hemorrhages or ulcers

Provisional diagnosis: Avian cholera

Final diagnosis to follow

INL

Diagnostician/technician

Contributing/secondary

21306

N.	NATIONAL WILDLIF	E HEALTH LAB - NECROPSY REPO	ORT	Case	No.	1710-1	17,364		
Submitter's nam	ne and address Lake NWR	Tel. No.		Colle Recei Exami	ence # cted: ved: 12 ned: 12	2/31/	79 79		
Species: Canad	a goose		Age:	Adult	Sex:	Fem	ale	Wt.	
Preserved by: Chilling	Specimen Carcass	Found dead/euthanized		P.M. S Good	tate		Body C		ic
Histology		Bacteriology Liver RC and acid-fast		Toxico	logy		Virolo		7
Parasitology		Photos		Other					7
History summary Necropsy:		subcutaneous, abdominal and	coronar	v fat					

Scattered areas of focal necrosis (pinpoint to 1-2 mm) in both lobes of liver, liver dark purple. On left lobe there were 3 yellowish areas of necrosis 5 x 8 to 10 x 8 mm, these appear to be granulomatous

Petechiae along apex of heart

Dark, enlarged spleen (2 times) hemorrhages in spleen

No hemorrhages or ulcers in intestine

Proventriculus normal

Provisional diagnosis: Avian cholera; tuberculosis

Final diagnosis to follow

Diagnostician/technician

, , , , ,	NATIONAL WILDLI	FE HEALTH LAB - NECROPSY REA	PORT	Case	No. 17	10-17,36	55		
Submitter's name and address Swan Lake NWR			Reference # Collected: Received: 12/31/79 Examined: 12/31/79						
		Tel. No.		Wild/captive					
Species: Ca	nada goose		Age:	Adult	Adult Sex: Fe		Wt.		
reserved by: Specimen Found dead/eut Chilling Carcass		Found dead/euthanized		P.M. S Good	tate		dy Conditio Fairly good		
Histology		Bacteriology Liver RC		Toxico	logy	Vi	rology		
Parasitology	-	Photos		Other					
History summar	y:								
Necropsy:	rals slightly r	reduced (1+)							
Moder	ate amounts of	fat							
Petec	hiae on heart;	a few widely scattered areas	of focal	l necros	is in l	iver			
Intes	tines o.k.								
		*							

Provisional diagnosis: Avian cholera

Final diagnosis to follow

Cause of death

Diagnostician/technician

Contributing/secondary

CNL

N	NATIONAL WILDLIE	Case No. 1710-	-17,366						
Submitter's name and address  Swan Lake NWR  Tel. No.				Reference # Collected: Received: 12/31/79 Examined: 12/31/79					
Species: Canada	ı goose	Tel. No.	Age:	Wild/captive	ale Wt.				
Preserved by:	Specimen Carcass	Found dead/euthaniz		P.M. State	Body Conditio				
Histology		Bacteriology		Toxicology	Virology				
Parasitology		Photos		Other					
History summary	<b>y</b> :		•						
Necropsy:									
In goo	od flesh; good d	leppsits of fat							
No les	sions of avian o	cholera							
Massi	ve clot in perio	pardial sac encircling the	heart						
Hemory	rhage in lungs;	wound on right side							

Provisional diagnosis: Shot

Final diagnosis to follow

Cause of death

LNZ

Diagnostician/technician

, 1	NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT				Case No. 1710-17,367					
Submitter's na Swan	me and address Lake NWR	Tel. No.		Reference Collect Receive Examination Wild/co	nce # ted: ed: 12/31 ed: 12/31	/79				
Species: Cana	da goose	161. 110.	Age:	Immature	Sex: Male		WE.			
Preserved by: Chilling	Specimen Carcass	Found dead/euthanized		P.M. St.	ate	Body	Condition ly good			
Histology		Bacteriology		Toxicol	оду	Virol	ogy			
Parasitology		Photos		Other						
History summar	у:									
Necropsy:	oral musice moder	ately reduced (2+)								
	l amount of fat									
Fibr in	ino-necrotic peri testines. Intest	tonitis resulting from gunsh inal contents spilled into p	not wourk peritone	d to abdo	minal cavi	ty and				
Cong	estion and fibrin	ous exudate in lungs								
No 1	esions of avian o	holera								

Provisional diagnosis: Peritonitis

Final diagnosis to follow

Diagnostician/technician

LALL

Cause of death

Peritonitis

	me and address	Tel. No.	Col Rec Exa	erence # lected: elved: mined: 1/3 d/captive	3/80	
Species: Cans	ada goose		Age: Adult	1_	Male Wt.	
Preserved by: Chilling	Specimen Carcass	Found dead/euthanized	Espektikali G	State	Body Cond Good	itio
Histology		Bacteriology	Toxi	cology	Virology	7
Parasitology		Photos	Othe	r	V	7
History summar	ту:					
Necropsy:	i developed pecto	rals; good deposits of fat				
Wide		rosis of liver; scattered pi	npoint areas	of necrosis	on	
Inte	estines normal si lcers	ze, lumen with KAKAKAMI cat	arrhal exudate	e. No hemon	rrhages or	

Provisional diagnosis:

Final diagnosis to follow

Avian cholera

Diagnostician/technician

Contributing/secondary

CNL

200	NATIONAL WILDLIF	E HEALTH LAB - NECROPSY REP	ORT	Case	No. 1710-1	17,368				
	Submitter's name and address  Swan Lake NWR  Tel. No.				Reference # Collected: Received: Examined: 1/3/80 Wild/captive					
Species: Can	ada goose		Age:	Adult	Sex: Ma	ale	WE.			
Preserved by: Specimen Fo		Found dead/euthanized		P.M. S Good	tate	Body Condition				
Histology		Bacteriology		Toxico	logy	Virol	logy			
Parasitology		Photos		Other		V				
History summa	ry:									
Necropsy:	ındant fat									
foo	eal necrosis in li	ver, many pinpoint in size								
lur	ngs hyperemic with	some areas of focal hemorrh	age along	g right	ribs					
		rged (3 to 4 times); hemorrh ish except in areas of hemor		n ecchym	osis thro					
		lumen filled mizture of mucculcers in intestines	us (cata	rrhal) a	100, 100, 100, 100, 100, 100, 100, 100,					

Provisional diagnosis: Avian cholera

Final diagnosis to follow

Cause of death

Diagnostician/technician

LNZ

N.	NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT					Case No. 1710-17,370					
Submitter's name and address  Swan Lake NWR  Tel. No.					Reference # Collected: Received: Examined: 1/3/80 Wild/captive						
Species: Canad	a goone		Age:	Immature	Sex: Fe	nale	Wt.				
Preserved by: Chilling	Specimen Carcass	Found dead/euthanized		P.M. Sta Fairly	ate	Body	Conditio				
Histology		Bacteriology		Toxicolo	pgy /	Viro	logy				
Parasitology		Photos		Other							
History summary	·:										

No subcutaneous, abdominal fat; small amount of coronary fat present but undergoing serous atrophy

Peritonitis; Tibrinous deposits on intestinal loops, intestines adhering to each other; lead shot lodged in wall of peritoneum

Pectoral muscles markedly atrophyed (3 times)

Ovary largely destroyed by fibrino-necrotic membrane which fills left abdominal air sac

Provisional diagnosis: Peritonitis

Final diagnosis to follow

Cause of death Peritonitis

Diagnostician/technician

Contributing/secondary

CNE

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT Case No. 1707-17,341 Submitter's name and address Reference # Collected: Swan Lake National Wildlife Refuge Received: 12/31/79 P.O. Box 68 Examined: Summer, NO 64681 Tel. No. Wild/captive Age! mature Canada Goose male Wt.50 Sex: Species:

Preserved by:	Specimen carcass	Found dead/euthanized	P.M. State good	Body Conditio
Histology		Bacteriology	Toxicology	Virology
Parasitology		Photos	Other	

History summary:

## Necropsy:

Well-developed pectorals; good deposits of fat.

Widespread focal necrosis of liver; slightly enlarged, blackish-red spleen, spleen is firm.

Petechiae and ecchymosis on heart.

Lungs with few focal hemorrhages; hyperemic.

No hemorrhages or ulcers in Intestinal tract.

No lesions in proventriculus.



Provisional diagnosis: Avian cholera

Final diagnosis to follow

Diagnostician/technician

Submitter's name and address  Swan Lake National V  Box 68  Summer, NO 54681				Idlifa Refuge		Reference # Collected: Received: 12/ Examined: 12/			
				Tel. No.		Wild/c	aptive		
Species:	Canad	a Goose			Ageadul	Lt	Sex: fe	nale	WE.25
reserved	by:	Specimen carcass		Found dead/euthanized		P.M. St	ate irly good	Body	Conditio
Histology			1	Bacteriology		Toxicol	odà	Virol	ogy

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

Photos

History summary:

Parasitology

## Necropsy:

Large inactive adult ovary with ecchymosis in ovarian stroma.

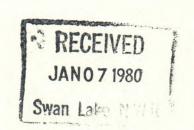
Many widely scattered petechiae on heart.

Early post-mortem discoloration of intestines - no hemorrhage or ulcers.

Fat goose - well-developed pectorals.

A few widely scattered areas of focal necrosis in liver; central veins congested.

Proventriculus - normal.



Case No. 1707-17,342

Other

Provisional diagnosis: Suspect avian cholera

Final diagnosis to follow

MPIN

Diagnostician/technician

Case No. 1707-17,343 NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT Submitter's name and address Reference # Collected: 12/28/79 Received: Swan Lake National Wildlife Refuge 12/31/79 Examined: Summer, MO 64681 Tel. No. Wild/captive Sex: W500 Agedult Species: male Canada Goose Found dead/euthanized P.M. State Body Conditio Preserved by: Specimen chill carcass Virology Bacteriology Toxicology Histology Parasitology Photos Other

History summary:

## Necropsy:

Well-developed pectoral muscles; abundant subcutaneous, abdominal and coronary fat.

Numerous small areas of focal necrosis (1 to 2mm in diameter) in both lobes of liver.

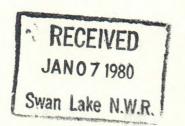
Petechiae and ecchymoses on heart.

Lungs congested; with focal hemorrhages.

Spleen enlarged - blackish-red; rather firm when cut.

Intestines swollen; no hemorrhages or ulcers.

Proventriculus and gizzard filled with muddy material, seeds; - No lesions in proventriculus.



SVL

LINL

Final diagnosis to follow

Provisional diagnosis: avian cholera

Diagnostician/technician

. Si	wan Lake National Wil ox 68 umner, MO 64681	Collect Receive Examine	18/79 28/79				
Species:	anada Goose		Age Imma	ture	Sex: mal	e	w247
Preserved by	y: Specimen carcass	Found dead/euthanized		P.M. State excellent		Body Cond excelle	
Histology		Bacteriology liver - RC spleen - special bot.		Toxicolo	- Pb.	Virol leen - ver -	DVE DVE
Parasitolog	У	Photos		Other			VON
History sum	oral cavity - appenda	ages normal.					
	Subcutaneous fat abu	ndant - pectorals well-devel	loped.				
	One area of necrosis	in posterior left pectoral	near kee	1. No o	bservable	cause.	
	One #00 steel shot e	mbedded in skin of neck, abo	out 1/2 o	f way do	wn neck.		
	Heart - several pete	chiae observed. Valves norm	sal - cor	onary fa	t present.		
	Liver - purple - blo	tchy, early pm color change					
	Gallbladder distende	ď.					
	Spleen enlarged, dar	k purple in color.					
	Lungs - trachea norm	al.					
	Esophagus - filled w	ith bright green watery mate	erial.				
	Kidneys normal.						
	Intestines normal -	no evidence of hemorrhage.	Contents	are yel	low & gree	n mucu	LS +
Provisional	l diagnosis: Suspec	t avian cholera	1 .	RECEIVI ANO 7 19 In Lake N	Pro-	CA	1

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

Final diagnosis to follow

Cause of death

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979-666-592

Contributing/secondary

Diagnostician/technician

Case No. 1704-17,344

	NATIONAL WILDLIF	E HEALTH LAB - NECROPSY REPO	ORT	Case N	0. 1707-1	7,345		
Submitter's name and address  Swan Lake National Wildlife Refuge Box 68 Summer, MO 64681  Tel. No.				Reference # Collected: Received: 12/28/79 Examined: 12/28/79				
		Tel. No.	-	Wild/e				
Species: Ca	nada Goose		Age adul	Lt	Sex: mal	.8	w2550	
Preserved by	: Specimen carcass	Found dead/euthanized		P.M. St	ate cellent		Conditio	
Histology		Bacteriology liver - RU intestine - RC		Toxicol	1	Virol spl liv	logy DVE een DVE	
Parasitology		Photos		Other				
History summ	ary:					1		
0	ral cavity appenda	ges normal.						
ŀ	leart - many petech	iae and larger hemorrhages a	long core	nary art	eries.			
I	Liver - dark, red-p	urple, blotchy. No obvious	focal nec	resis et	served.			
3	Spleen enlarged - d	ark red.						
	Intestines - intest	inal virus prominent; some s	light ent	teritis,	especially			

Kidneys normal but very reddened.

evident near testes and kidneys.

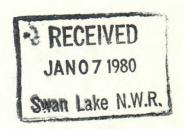
Testes normal, non-breeding condition. Testicle veins prominent.

Intestinal contents dark gray color - very thin, watery.

Gizzard normal - muscle lining eroded. Contents sand. No Pb shot observed

Esophagus filled with gray, watery material.

Traches and lungs normal.



LNZ

Suspect avian cholera Provisional diagnosis:

Final diagnosis to follow

Cause of death

Diagnostician/technician

	N.	ATIONAL WILDL:	IFE HE	ALTH LAB - NECROPSY REPO	RT	Case N	o. 1707	-17,346	
Submitter'	Swan Box 6	e and address Lake National 8 r, MO 64681		ife Refuge		Refere Collec Receiv Examin	ted: ed:	2/28/79	
				Tel. No.		Wild/e	aptive		
Species: Ganada Goose				Age adu	lt	Sex:	female	w8625	
Preserved chill	by:	Specimen carcass		Found dead/euthanized		P.M. St	ate cellent		Conditio
Histology			1	Bacteriology Fiver - RC spleen - 7		Toxicol		Viro C-swab-	-AI &
Parasitolo	ogy		1	Photos		Other			1

History summary:

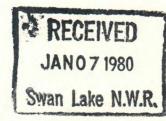
### Necropsy:

Oral cavity filled with mude. Pectorals slightly reduced (+1). Subcutaneous fat abundant. Area over abdomen has subcutaneous fat - green in color. Petechiae on heart. Heart valves normal. Liver grossly normal. Blotchy in color - No obvious necrosis. Ovary mature, non-breeding - no follicles over 2mm. diameter. Trachea and lungs normal. Spleen reddened. Kidneys appear normal, although somewhat reddened.

Intestines - no evidence of hemorrhages, contents are thin mucoid, varying from yellow to dark green.

Esophagus filled with corn and barley seeds.

Proventriculus - gizzard - normal. Gizzard lining sloughing and cracked. Impaction in proventriculus and gizzard due to swelling of moist barley seeds and corn.



Suspect avian cholera Provisional diagnosis:

Diagnostician/technician

Final diagnosis to follow

Submitter		e and address				Refere	ted:	28/79		
	Lake National 8 r, MO 64681	tional Wildlife Refuge 4681			Received: 12/28/79 Examined:					
	Tel. No.					Wild/captive				
Species: Canada Goose					Age adu	lt	Sex: mal	e	WE625	
Preserved chill	by:	Specimen carcass		Found dead/euthanized		P.M. St.	cellent		Conditio	
Histology			1	Bacteriology liver - RC spleen - ?		Toxicol	10	Virol swab n-DVE		
Parasitolo	ypo		1	Photos		Other	B	pieen	1	

History summary:

## Necropsy:

Oral cavity normal.

Pectorals slightly reduced (+1) and slightly pale.

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

Appendages normal.

Anterior end of neck has extensive area of edema and hemorrhage and a hole 10mm. x 10mm. overlying this area of unknown origin.

Area of subcutaneous edema - posterior edge of left pectoral.

Immediately medial to right lateral lobe of liver is embedded a lead shot (probably oo Buck)

Numerous petechiae and larger hemorrhage on heart.

Spleen dark purple and blotchy.

Liver dark purple and entire surface of both lobes covered with p.p. and larger necrosis.

Gallbladder distended.

Trachea and lungs normal.

Esophagus filled with olive green watery material.

Intestines filled with nucopurulent exudate.

Kidneys normal with slight retention of urates.

Brain grossly normal.

Gizzard shows evidence of gizzard worm infection (extensive).

EPJ normal,

Gizzard muscle normal and contains no lead shot.

No sign of enteritis or peritonitis from gunshot wound.

RECEIVED

Case No. 1707-17,347

Provisional diagnosis: Suspect avian cholera

Final diagnosis to follow

Diagnostician/technician

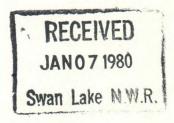
Submitter's name and address  Swan Lake National Willer 68  Summer, MO 64681				ife Refuge	Reference W Collected: Received: 12/28/79 Examined: Wild/captive				
Species: Preserved		Specimen	-	Found dead/euthanized	Age:dul	P.M. St.	Sex: mal	Body	Wt <sub>950</sub> Conditio
Histology		1	1	Bacteriology liver-RC heart - Bot. spleen - ? Esophageal		Toxicol	ogy (	Virol	
arasitol	ogy		1	Photos - RC		Other			

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

History summary:

### Necropsy:

Mud in oral cavity. Subcutaneous fat abundant (2mm+) Pectorals slightly reduced (+1) Area of subcutaneous edema - mid region of right pectoral. Heart has evidence of petechiae. Liver - both lobes covered with numerous pin point focal necrosis. Spleen normal size, splotchy purple and black. Trachea and lungs normal. Esophageal lining normal, contents olive green and runny. Good abdominal fat. Kidneys normal. Testes in non-breeding condition. Intestinal contents thick green purulent. Gizzard lining severely eroded due to gizzard worms. EPJ slightly hyperemic. Gizzard contents thin watery green liquid, grit and no lead shot.



CNZ

Provisional diagnosis: Suspect avian cholera

Final diagnosis to follow

Diagnostician/technician

Contributing/secondary

Case No.

soil - JIP

Submitter's name and address Reference # Collected: Swan Lake National Wildlife Refuge 12/28/79 Received: Box 68 Examined: Sumper, 10 654681 Tel. No. Wild/captive Age: adult Canada Goose WE . 00 Species: Sex: Specimen Found dead/euthanized Preserved by: P.M. State Body Conditio carcass excellent excellent Bacteriology eart - BJ Histology Toxicology Virology spleen - ? liver - Pb.

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

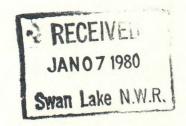
Photos

History summary:

Parasitology

### Necropsy:

External features are in excellent condition. Subcutaneous fat abundant. Pectorals well-developed. Good coronary fat. Overall appearance normal. Lungs excellent condition. Kidneys normal. Liver grossly normal, but has mottled color. Spleen slightly enlarged and dark purple. Gallbladder distended. Intestines grossly normal, contents thin olive-green watery material. Esophagus lining normal and filled with watery green liquid. Fairly severe infection of gizzard worms. Proventriculus and PEJ both normal. Gizzard muscle normal and pads worn. Cizzard contents beans and sand - no lead shot. Brain grossly normal, vessels very distinct.



CNL

1707-17,349

Case No.

Other

Provisional diagnosis:

62.1.1

Final diagnosis to follow

1232/101

Diagnostician/technician

Cause of death

OFTIONAL FORM NO. 18 JULY 1973 EDITION GBA FFMR 141 CFRJ 101-11.6

UNITED STATES GOVERNMENT

# Memorandum

TO : Refuge Manager, Swan Lake NWR

DATE: February 12, 1980

FROM : Pathologist-In-Charge, NWHL

OK IMM

SUBJECT: Laboratory Results P.R. 1707-17,344,

17,345, and 17,348

Toxicology:

The results of lead analysis of the liver, based on dry weight measure, are as follows:

17,344 Canada goose--2.8 ppm 17,345 Canada goose--less than 1 ppm

Bacteriology:

17,344 A light growth of <u>Pasteurella multocida</u> was obtained on cultures of the liver.

17,345 Liver cultures revealed a heavy growth of <u>Pasteurella multocida</u>. From the intestine was isolated heavy mixed colonies of bacterial growth which are predominantly <u>Bacillus</u> sp. and <u>Enterococci</u> sp.

17,348 Canada goose. From the liver was cultured a heavy growth of <u>Pasteurella multocida</u>. A culture of the soil present within the oral cavity failed to reveal any evidence of <u>Pasteurella</u> or other significant bacterial organisms.

## Virology:

17,345 Cloacal swabs were negative on embryonated chicken eggs for duck virus enteritis, avian influenza virus, or other viral agents. Preparations of liver and spleen were also negative for viruses on primary duck embryo fibroblast cultures.

Diagnoses:

Avian cholera--17,344, 17,345, and 17,348.

Note: In conclusion, all of the accessions within this case were diagnosed as positive for avian cholera or presumed positive based on gross necropsy findings.

Lynne M. Siegfried

Lynne M. Siegfried



LMS:1s

## UNITED STATES GOVERNMENT

# Memorandum

TO : Refuge Manager, Swan Lake NWR January 21, 1980

: Pathologist-In-Charge, NWHL

SUBJECT: P.R. 1707-17,346,, 17,347, 17,348, 17,349

Bacteriology: The liver tissue from all four accessions revealed heavy

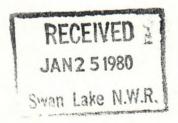
growth of Pasteurella multocida on culture.

Diagnosis: Avian cholera.

Lynne M. Liegbred

Lynne M. Siegfried

LMS:1s





QK CAM

UNITED STATES GOVERNMEN

# memorana

DATE: March 17, 1980

ATTN OF: Pathologist-In-Charge, NWHL

SUBJECT: Final Report on P.R. 1722-17,491, 17,493, 17,494, 17,495, 17,499

TO: Bill Bair, Special Agent

Bacteriology:

A culture of the air sacs from Canada goose 17,495 was negative for any evidence of fungus growth.

Toxicology:

Liver from the following accession numbers were assayed for lead content and the results are recorded by dry liver weight.

17,491 - 14.6 ppm } sneegle to bell met

17,494 - 9.2 ppm

17,499 - 19.2 ppm

## Diagnosis:

17,491 - Lead poisoning V

17,492 - Peritonitis secondary to gunshot

17,493 - Lead poisoning -

17,494 - Necrotic enteritis of undetermined cause

17,495 - Air Sacculitis of probable fungus etiology

17,496 - Presumptive systemic fungus infection V

17,497 - Presumptive avian cholera 17,498 - Presumptive avian cholera

17,499 - Lead poisoning

RECEIVED

MAR 2 4 1980

Swan Lake N.W.R.

Lynne M. Siegfried

LMS: kam

Tinal report on birds & sent in from your area - the attached sheets were preliminary analysis dates DEPTILL



A N	NATIONAL WILDL	IFE HEALTH LAI	B - NECROPSY REPO	RT	Case N	o. 17	722-1	7,491	
U.S. 227 P.O.	Bair Fish & Wildli Federal Buildi Box 250 re, SD 57501	fe Service ng Te	Budisen in by Son Osmo	Ban	Reference Collect Receive Examine Wild/Sol	ted:	19/8	0	
Species: Cana	da goose	N 200 ga tiran Paul (Philadelligh agus (Aris Prichadur anth Anggainn aid (Charles Angain		Age:	Inmature	Sex:	Male		WE.
Preserved by: Chilled	Specimen Carcass	Found	dead/eathanized		P.M. Starry			Body	Conc
Histology		Bacter	iology		Toxicol			Virol	ogy
Parasitology		Photos			Other				
History summary	: Picked up	at Swan Lake	: NWR						

Necropsy:

No fat; sternal keel prominent; breast muscles markedly reduced (4+)

Intestines distended with mixture of largely undigested food-grass, corn, etc.

No petechiae on heart; no necrosis on liver

Frothy fluid in lungs

Gizzard muscle normal. Gizzard lining stained light yellow-green. No lead shot. Gizzard contained corn and sand

Proventriculus distended with corn and grass

No lesions suggestive of avian cholers or DVE



Provisional diagnosis: Lead poisoning - drowning

Final diagnosis to follow

Cause of death

Diagnostician/technician

Case No. 1722-17, 492 NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT submitter's name and address Reference # Collected: 1/8/80 Received: 1/9/80 Bill Bair Examined: 1/9/80 Wild/Captive Tel. No. Species: Sex: Wt. Canada goose Age: Adult Female Preserved by: Found dead/guthanized P.M. State Body Cond Specimen Chilling Carcass Good Good Histology Bacteriology Toxicology Virology

History summary: Picked up at Swan Lake NWR 1/8/80

Photos

## Necropsy:

Parasitology

Good body condition; good fat deposits

Pectoral muscles fairly well developed

Bird shot in peritoneal cavity, penetrating wounds on right abdominal wall Posterior portions of both lungs are congested

Intestinal contents apilled into abdominal cavity due to penetration by shot Good amount coronary fat

No lesions suggestive of avian cholera or DVE



Diagnostician/technician

Provisional diagnosis: Peritonitis

final diagnosis to follow

Contributing/secondary Gunshot

Other

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT case No. 1722-17,499 Reference # ubmitter's name and address Bill Bair Collected: 1/8/80 Received: 1/9/80 Examined: 1/9/80 Wild/captive Tel. No. pecies: SexFEMALL Age: Adult WEE Canada goose reserved by: P.M. State Specimen Found dead/euthanized Body Cond Chilling Carcass Good Emaciate! listology Virology Bacteriology Toxicology Liver Pb

History summary: Picked up at Swan Lake NWR

#### lecropsy:

Parasitology

Impaction of esophagus Pectoral muscles reduced (+3) Little subcutaneous fat; only left neur knew Coronary fat reduced; undergoing respiration Proventriculus impacted Gizzard lining awaimed dull yellow-green I well worn lead shot four. No lesions suppestive of cholera or DVL

Photos



Other

Provisional diagnosis: Leas Poisoning

final diagnosis to follow

Diagnostician/technician

	NATIONAL WILDLIFE	HEALTH LAB - NECROPSY REPO	ORT	7-5e No. 1722 17 496						
	me and address	Tel. No.	Reference # Collected: 1/8/80 Received: 1/9/80 Examined: 1/9/80 Wild/capsive							
pecies: Car	nada goose (Giant)		Age:	Innature	Sex: Mala		Wt.			
Preserved by: Chilling	Specimen	Found dead/suthanized		P.M. St	-	Body				
Histology		Bacteriology		Toxicol	odà	Virol	ogy			
arasitology		Photos		Other		<b>V</b>				

History summary: Collected at Swan Lake NWR

## Necropsy:

Good deposits of subcutaneous fat, abdominal fat
Pectoral muscles well developed
A few petechiae on heart
Widespread focal necrosis of liver
Intestines slightly enaarged
Serogelatinous exudate in lamen



Provisional diagnosis: Avian cholera

Final diagnosis to follow

Diagnostician/technician

Contributing/secondary

y London N	ATIONAL WILDLIFE		Case No. 1722-17,497						
	e and address		Referen Collect Receive Examine			ted: 1/8/80 ed: 1/9/80			
		Tel. No.		Wild/g	epsaver				
ecies: Can	ada goose		Age: A	dult	Sex: Male		WE 33		
eserved by: Chilling	Specimen	Found dead/euthanized		P.M. St	ate		Condi		
stology		Bacteriology		Toxicol	odà	Virol	ogy		
rasitology		Photos		Other		200			

story summary: Picked up at Swan Lake NWR 1/8/80

cropsy:

Moderate amount subcutaneous fat

l lead BB embedded in subcutaneous fat over left pectoral; l lead BB embedded in left pectoral muscle

Focal necrosis in liver

Some petechiae in heart

Lungs hyperemic

immorrhage and necrosis in spleen and adrenals



ovisional diagnosis: Avian cholera

LNL

nal diagnosis to follow

Diagnostician/technician

	NATIONAL WILDLIF	PORT	Case N	0. 1722	-17,496		
	me and address			Refere Collec Receiv Examin	nce # ted: ed:	1/8/80 1/9/80 1/9/80	
		Tel. No.		Wild/c	apoi/yer		
Species: Car	nada goose		Age:	Adult	Sex: Fe	male	WE.
Preserved by: Chilling	Specimen Carcass	Found dead/euthanized	K	P.M. St		Body Fad	
Histology		Bacteriology		Toxicol	odà /	Viro	logy
Parasitology		Photos		Other			

History summary: Picked up at Swan Lake NWR 1/8/80

Necropsy:

No subcutaneous or abdominal fat; slight amount coronary fat

Large fibrous hollow granulominous lesion directly dorsal to liver lobes, approximately 1-1/2 inche dismeter; the internal surface is covered with a blue-gray fungal growth

The right posterior thoracic air sac is markedly thickened with some caseinted material attached



LNZ

Provisional diagnosis: Possible Aspendillosis

Final diagnosis to follow

ause of death

Diagnostician/technician

	NATIONAL WILDLIFE	HEALTH LAB - NECROPSY REPO	ORT	1	No. 1722-17	цоя	
	ame and address	Reference W Collected: 1/8/80 Received: 1/9/80 Examined: 1/9/80 Wild/captive					
pecies: Car	ada goose		Age:	Adult:	le	Wt.	
reserved by: Chilling	The state of the s	Found dead/euchanized		P.M. St		Body	Cond
listology		Bacteriology Air sac fungal mate	rial	Toxicol	ogy	Virol	оду
arasitology		Photos		Other			
listory summa	ry: Picked up at S	wan Laine NWR 1/8/80					

## Necropsy:

Moderate amount coronary fat

Lungs are dark red henorrhagic

Fosterior thoracic air sac is covered with fluffy dark blue-gray fungal growth

Liver color changed to autolysis

Proventriculus impacted with food material

Intestines seem normal with slight amount of early P.M. change

Kidneys paler in color



Provisional diagnosis: Air saculitis; fungal origin

Final diagnosis to follow

PJD Diagnostician/technician

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT ubmitter's name and address Collected: 1/./80 Bill Bair Received: Examined: Wild/captive Tel. No. Sex: Nale pecies: Age: WE. Canada goose reserved by: Specimen Found dead/euthanized P.M. State Body Cond Fair Chilled Carcass Fairly re listology Bacteriology Toxicology Virology Liver Pb arasitology Other Photos istory summary: Picked up at Swan Lake MWR 1/8/60 ecropsy: Moderate amount subcutaneous fat Pectoral muscles well developed Lungs Hyperemic Kidneys paler than normal; lobines prominent, lobular veins prominent Liver cark purple, no areas of focal necrosis

Duodenam enlarged 2-3 times dark red to black-red, lumen filled with relating to

Gizzard filled with mad, tissue debris 1 lead shot in gizzaro

Bill- Love to swort lead analysis on this ore. County the receptive disdenstre not clear to me at this time of SFISH AND THE ZAMP.

rovisional diagnosis: decrotic dutdentis

inal diagnosis to follow

Diagnostician/technician

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT case No. 1722-17,493 abmitter's name and address Reference # Collected: 1/8/80 Bill Bair Received: 1/9/80 Examined: 1/9/80 Tel. No. WildXcaptive pecies: Canada goose Age: Sex: Wt. Immature Female reserved by: Specimen Found dead euthanized P.M. State Body Condi Good Chilling Carcass Fairly goo istology Bacteriology Toxicology Virology Liver Pb Photos Other arasitology istory summary: Picked up at Swan Lake NWR 1/8/80 ecropsy: Subcutaneous fat reduced; fat reduced to deposits near knees Pectoral musices slightly reduced (+1)

Moderate amount abuominal fat

Good coronary fat

Lungs hyperemic

Gizzard lining stained dark green, 5 lead shot found

Adrenals pale

Heart showed constriction around middle of ventricle

Liver normal color

No lesions suggestive of avian cholera or INL

Gall bladder enlarged



rovisional diagnosis: Lead poisoning

nal diagnosis to follow

Diagnostician/technician

use of death

NATIONAL FISH AN	ND WILDLIFE HE	ALTH	LABORATORY - NECROPSY R	ŒP(	ORT	Case No	75	6-64	18		
Swan Lake N	Swan Lake N. W. R. P.O. Box 68 Sumner, MO 64681 Tel. No.						Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78				
Sumner, MO	Sumner, MO 64681 Tel. No.						ptive				
Species: Canada Goose A					ge:	Immature Sex: Female Wt. 2					2010
Preserved by:	Specimen		Found dead/enthanized			P.M. Sta	ite		Body	Condi	tion
All frozen naturally	Carcass					Good			Ema	ciate	d
Histology			Bacteriology			Toxicolo	-		Virol	ogy	
Parasitology			Photos			Other					
History summary	· (Picked up	at t	ransite on Silver Lake (	Swa	n Lal	ro N W	D 1	Annr	ovimat	0117 5	<u> </u>

istory summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)

Necropsy: No external lesions.

No subcutaneous fat.

Pectoral atrophy.

Proventriculus packed with food.

l very large lead shot.

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

L. S. / R. B. Diagnostician/technician

Contributing/secondary

NATIONAL FISH	AND WILDLIFE HEA	ALTH	LABORATORY - NECROPSY R	EPORT	Case No	o. 756 <b>-</b> 6	419		
	ame and address N. W. R.				Referer Collect Receive Examine	ted: 12/ ed: 1/	30/77 3/78 3/78		
			Tel. No.		Wildxx	XXXXX			
Species: Can	ada Goose			Age: I	mmature	Sex: Ma	le.	Wt.	
Preserved by:	Specimen		Found dead/xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx		P.M. Sta	ate	Body	Condit	ion
All frozen naturally	Carcass				Fair		Go	od	
Histology			Bacteriology		Toxicolo	odà	Virol	.ogy	
Parasitology			Photos		Other				
History summa			rapsite on Silver Lake (Scasses on the site. Susp				roximat	ely 50	
Necropsy:			base of skull (gunshot).		y guiisiio	c.,			
	3 mm subcutaneous	s fa	t.						
	1 puncture wound	in	thorax.						
	Blood clot in tr	ache	a.						

Provisional diagnosis: Trauma - gunshot

Final diagnosis to follow

L. S. / R. B. Diagnostician/technician

Contributing/secondary

Submitter's name Swan Lake N.				Referer Collect Receive Examine	ed:	1/3	0/77 /78		
Swan Lake W.	W. K.	Tel. No.		Wild/xx			/78 		
Species: Canada	a Goose		Age: A	dult	Sex:	Fema	le	Wt.	2100
Preserved by:	Specimen	Found dead/www.xxxx		P.M. Sta	ate		Body	Condi	tion
All frozen naturally	Carcass			Good	ļ		Pc	or	
Histology		Bacteriology		Toxicolo Liver		i	Virol	ogy	
Parasitology		Photos		Other					
History summary	,	crapsite on Silver Lake (scasses on the site. Sus				Appr	oximat	ely 5	50

No body fat.

Necropsy:

Marked pectoral atrophy.

1 well worn lead shot in gizzard.

Fibrous impaction of gizzard and proventriculus.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning.

Final diagnosis to follow

S. K. / R. B.

Case No. 756-6420

Diagnostician/technician

Contributing/secondary

Swan Lake N.	W. R.			Receive	ed: 1/3/	78		
		Tel. No.		Wild/xx	apatxixxex			
Species: Canada	Goose		Age: I	mmature	mmature Sex: Wt. 2			
Preserved by:	Specimen	Found dead/wuxnunixed		P.M. Sta	ate	Body	Condi	tion
All frozen naturally	Carcass			Fair		Go	od	
Histology		Bacteriology		Toxicolo Liver	ogy - lead	Virol	odà	
Parasitology		Photos		Other				_
History summary Necropsy: No e	,	capsite on Silver Lake (Scasses on the site. Susp				ximate	ly 50	)

No subcutaneous fat - congestion.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Submitter's name and address

Moderate pectoral atrophy.

No external lesions.

Proventriculus packed with food.

Gizzard contents stained green.

1 lead shot in gizzard.

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

Cause of death

L. S. / R. B.

Diagnostician/technician

756-6421

Reference # Band #598-32782

Case No.

Submitter's name and address  Swan Lake N. W. R.					Reference # Band 678-22192 Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78 Wild/EXEXTEX					
Tel. No.										
Species: Canada Goose			Age: In	mmature	Sex:	Male Wt. 189		90		
Preserved by: All frozen naturally	Specimen Carcass	Found dead *********************************		P.M. St.	ate		<del>-</del>	Conditi	on.	
Histology		Bacteriology		Toxicology Liver - lead		Virol	Virology			
Parasitology		Photos		Other						

Case No.

756-6422

History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot).

Necropsy: Marked pectoral atrophy.

Old hemorrhages with inspissated blood 2 cm  $\rm X$  5 cm along thoracic walls.

One shot entered abdomen through right anterior liver lobe & pericardium.

Fibrino pericarditis.

Necrotic hepatitis (25 mm diameter lesion).

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Gunshot, peritonitis, pericarditis

Final diagnosis to follow

S. K./ S. K.
Diagnostician/technician

Contributing/secondary

Reference # Submitter's name and address Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78 Swan Lake N. W. R. Tel. No. Sex: Male Wt. 2350 Age: Adult Species: Canada Goose Body Condition P.M. State Specimen Preserved by: All frozen Fair Poor Carcass naturally Virology Bacteriology Toxicology Histology Liver - lead Other Photos Parasitology History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many qunshot.) Necropsy: No external signs of trauma. No subcutaneous fat. Marked pectoral atrophy. Liver shrunken. No internal fat. Puncture wound in pericardium. Pericardial sac thickened. Lead shot in pericardium - probably old body shot. Impaction of esophagus with roots and grasses. 1 well-worn lead shot in gizzard. Gizzard pads well worn - stained green.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

C. J. B. / R. B.

Diagnostician/technician

Case No. 756-6423

Contributing/secondary

Submitter's name	e and address			Referer Collect Receive	ed: 12/3	30/77 3/78		
Swan Lake N	N. W. R.			Examine	_, \	3/78		
		Tel. No.		Wild/XXX	XXXXXX			
Species: Canada	a Goose		Age: A	dult	Sex: Male	9	Wt.	
Preserved by:	Specimen	Found dead XXXXXXXXXXX		P.M. Sta	ate	Body	Conditi	on
All frozen naturally	Carcass			Fair		Fā	air	
Histology		Bacteriology		Toxicolo		Virol	ogy	
Parasitology		Photos		Other				
History summary Necropsy: No 6		crapsite on Silver Lake (ccasses on the site. Sus				coximat	tely 50	

No subcutaneous fat.

Pectoral atrophy.

1 well worn lead shot.

Proventriculus packed with food.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

Cause of death

Diagnostician/technician

Case No. 756-6424

Reference #

Case No. 756-6425 NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT Reference # Submitter's name and address Collected: 12/30/77 Received: 1/3/78 Swan Lake N. W. R. Examined: 1/3/78 Tel. No. Wild/gaptive Immature | Sex: Wt. 2500 Age: Female Species: Canada Goose P.M. State Body Condition Specimen Preserved by: All frozen Fair Fair naturally Carcass Toxicology Virology Bacteriology Histology Fibrin - fungus; clot - RC Spleen Liver - RC; lung - fungus Liver - lead Liver Other Photos Parasitology Picked up at trap site on Silver Lake (Swan Lake N. W. R.) Approximately History summary: 50 plus other carcasses on the site. Suspect many qunshot.

1 mm subcutaneous fat.

Marked pectoral atrophy.

Gelatinous clot in pericardium.

Neck broken antemortem - massive hemorrhage.

Large fibrinous sheet adhering pericardium to sternum.

Fibrin extends into interclavicle air sac & adheres to esophagus.

Heart pale and flabby.

Liver pale and waxy on cut surface.

Several 2 mm white "crusty" spots on liver and gall bladder.

Spleen greatly enlarged.

Bile dark green.

No shot in gizzard.

Several 1 - 3 mm white plaques in both lungs.

Provisional diagnosis: Cervical trauma

Air saculitis/pneumonia (aspergillosis?)

Final diagnosis to follow

C. J. B. Diagnostician/technician

Diagnosererally edelining

Contributing/secondary

Cause of death

Necropsy:

ATIONAL FISH AND WILDLIFE HEALTH	LABORATORY - NECROPSY R	EPORT	Case No	. 756-642	26		
ubmitter's name and address  Swan Lake N. W. R.			Referen Collect Receive Examine	ted: 12/3	30/77 3/78 3/78		
	Tel. No.		Wild/xx	iptive			
Species: Canada Goose		Age: In	mmature	Sex: Fen	nale	Wt. 36:	25
Preserved by: Specimen All frozen	Found dead *********************************		P.M. Sta	ate	Body	Conditi	.on
naturally Carcass Histology	Bacteriology		Toxicolo		Virol		
Parasitology	Photos		Other				
	ment, fat.	culus.	land				

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

S. K. / R. B.
Diagnostician/technician

Contributing/secondary

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT   Case No. 756-6427  Submitter's name and address   Reference #							
Collected: 12/20/77	Reference # Collected: 12/30/77						
Swan Lake N. W. R. Examined: 1/3/78  Examined: 1/3/78							
Tel. No. Wild/xxxxixx							
Species: Canada Goose Age: Adult Sex: Female Wt. 2150	)						
Preserved by: Specimen Found dead **ANNIXANIXAN P.M. State Body Condition	n						
All frozen naturally Carcass Good Poor							
Histology   Bacteriology   Toxicology   Virology	\						
Liver - lead	_						
Parasitology Photos Other							
History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)  Necropsy: No body fat.  Marked pectoral atrophy.  Fibrous impaction of proventriculus.  Bile staining on gizzard pads & leathery.  1 well worn lead shot in gizzard.							

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

S. K./R. B.
Diagnostician/technician

Contributing/secondary

Swan Lake N.	W. R.			Examine	ed:	1/3	/78		
		Tel. No.		Wild/xx	<b>XXXXXXX</b>				
Species: Canada	a Goose		Age: A	dult	Sex: M	ale		Wt.	
Preserved by:	Specimen	Found dead XXXXXXXXXXXXXX		P.M. Sta	ate		Body	Condit	ion
All frozen naturally	Carcass			Fair			Gc	od	
Histology		Bacteriology		Toxicolo	ogy \ - lead		Virol	ogy	
Parasitology		Photos		Other					

History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)

Case No.

Reference # Collected:

Received:

756-6428

12/30/77

1/3/78

3 mm subcutaneous fat.

Submitter's name and address

Necropsy:

Abdominal cavity contains 40 - 50 cc black foul smelling liquid, exudate.

Left heel pad congested and adjoining joint contains red exudate.

Partially healed puncture wound in abdomen.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Gunshot - peritonitis Arthritis

Final diagnosis to follow

L. S. / R. B. Diagnostician/technician

	ubmitter's name and address  Swan Lake N. W. R.  Tel. No.				Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78					
		Tel. No.		Wild/xx	aptxixxex					
Species: Canada	Goose		Age: I	mmature	Sex:		Wt.1900gm			
Preserved by:	Specimen	Found dead XXXXXXXXXXX		P.M. Sta	ate	Body	Condition			
All frozen naturally	Carcass			Poor		Pc	or			
Histology		Bacteriology		Toxicolo		Virol	ogy			
Parasitology		Photos		Other						
History summary Necropsy: No s		rapsite on Silver Lake (Secasses on the site. Sus				oximat	ely 50			

Pectoral atrophy.

No lead shot in gizzard.

Fibrous impaction of proventriculus and gizzard.

Gizzard atrophy, bile stained grinding pads.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

Cause of death

s. K. / R. B.

Case No. 756-6429

Diagnostician/technician

NATIONAL FISH AN	ATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT   Case No. 756-6430										
	nbmitter's name and address  Swan Lake N. W. R.  Tel. No.					Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78					
			Tel. No.		Wildxxx	ayatxixxex					
Species: Canada	Age:	Immature	Wt. 1930								
Preserved by: All frozen	Specimen		Found dead /xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx		P.M. Sta	ate	Body	Condition			
naturally	Carcass				Poor		Po	or			
Histology			Bacteriology		Toxicolo		Virol	ogy			
Parasitology			Photos		Other						
History summary	: (Picked	up at t	rapsite on Silver Lake (	Swan Lal	ke N. W.	R.). App	roximat	ely 50			

istory summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)

Necropsy: Fibrinous impaction of gizzard proventriculus.

Enlarged gall bladder.

1 well worn lead shot in gizzard.

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

S. K.// R. B.

Diagnostician/technician

Contributing/secondary

Submitter's name and address  Swan Lake N. W. R.					Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78					
			Tel. No.		Wildxx	<b>I</b> XXXX				
Species: Canada	a Goose			Age: A	dult	Sex:	Male	<del></del>	Wt.	
Preserved by:	Specimen		Found dead (************************************		P.M. Sta	ate		Body	Condition	
All frozen naturally	Carcass				Poor		_	Po	oor	
Histology			Bacteriology		Toxicol	ogy		Virol	ogy \	
					Liver -	- lead				
Parasitology			Photos		Other					
						· · · · · · · · · · · · · · · · · · ·				

History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)

Necropsy: No subcutaneous fat.

Gizzard contents stained green.

Proventriculus packed with grass.

Numerous worn lead shots in gizzard.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

Cause of death

L. S./R. B.

Diagnostician/technician

756-6431

Case No.

NATIONAL FISH A	ATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT				756	-6432	2		
	ubmitter's name and address  Swan Lake N. W. R.  Tel. No.					Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78			
		Tel. No.		Wild/xx	XXXXXXXX				
Species: Canada	a Goose		Age: I	mmature	Sex:	Femal	Le	Wt. 227	75
Preserved by:	Specimen	Found deadXXXXXXXXXXX		P.M. Sta	ate		Body	Conditi	.on
All frozen naturally	Carcass			Poor Po			or	····	
Histology		Bacteriology		Toxicolo Liver	3.		Virol	ogy `	
Parasitology		Photos		Other					
		trapsite on Silver Lake (rcasses on the site. Sus				Appro	oximat	ely 50	

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

Cause of death

S. K./R. B.

Diagnostician/technician

	Submitter's name and address  Swan Lake N. W. R.  Tel. No.			Referer Collect Receive Examine	ed:	1/3	30/77 3/78 3/78		
		Tel. No.		Wildxx	XXXXXX				
Species: Canad	a Goose		Age: Ir	mmature	Sex:	Male	9	Wt. 29	00
Preserved by:	Specimen	Found dead/exixxivanixxedx		P.M. Sta	ate		Body	Conditi	.on
All frozen naturally	Carcass			Good			Ро	or	
Histology		Bacteriology		Toxicolo	-		Virol	ogy	
Parasitology		Photos		Other					
History summary Necropsy: Imp	plus other car	rapsite on Silver Lake (S casses on the site. Susp iculus, gizzard, duodenum	ect many			Appro	oximat	ely 50	

Case No.

756-6433

Fibrino necrotic enteritis of large intestine.

2 well worn lead shots in gizzard.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

Diagnostician/technician

Contributing/secondary

Swan Lake	N. W. R.				Receive	ed: 1	2/30/77 <sub>-</sub> /3/78 <sub>-</sub> /3/78	
			Tel. No.		Wild	rxxxxx		
Species: Ca	nada Goose			Age: I	mmature	Sex: N	Male	Wt.
Preserved by	: Specimen		Found dead/exxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx		P.M. Sta	ate	Body	Condition
All frozen naturally	Carcass	·			Poor		Em	aciation
Histology			Bacteriology		Toxicol	odă /	Virol	ogy
Parasitology			Photos		Other			
History summ			rapsite on Silver Lake (S				proximat	ely 50
Necropsy:	plus othe No external lesi		casses on the site. Susp	ect man	y gunsho	t.)		
	No subcutaneous	fat.						
	Marked pectoral	atrop	hy.					
	Proventriculus p	acked	with ingesta.					
	No shot in gizza	rd.						
	Gizzard worms.							
	Lungs wet & frot	hy.						

Case No.

Reference #

756-6434

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Submitter's name and address

Provisional diagnosis: Emaciation

Possible terminal drowning.

Final diagnosis to follow

L. S. / R. B. Diagnostician/technician

Contributing/secondary

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT Case No. 756-6435 Reference # Band 63865346 Submitter's name and address 12/30/77 Collected: Received: 1/3/78 Examined: 1/3/78 Swan Lake N. W. R. Tel. No. Wildxxxxxxxx Sex: Male Wt. 2810 Age: Adult Species: Canada Goose Body Condition Found dead / MANY NAME X ROOM P.M. State Specimen Preserved by: All frozen Slightly poor Good Carcass naturally Toxicology Virology Histology Bacteriology D.V.E. & Avian Intestine, liver, lung, Intestine - Salmonella Liver - lead Liver - Routine Culture .IntestinInflu. gizzard, kidney Other Photos Parasitology History summary: Picked up at trapsite on Silver Lake (Swan Lake N. W. R.) Approximately 50 plus other carcasses on the site. Suspect many gunshot.

Necropsy: Green staining of oral cavity & gizzard grinding pads.

No lead shot in gizzard.

Gizzard slight atrophy and muscle containing numerous irregular 1 mm diameter whitish areas.

Liver swollen - postmortem autolysis.

Gall bladder enlarged 48 mm X 16 mm.

Large intestine from cecal junction posterior contained hemorrhagic fibrino-necrotic material adhered to mucosa.

Same (plug) in a 3 cm area of small intestine (infarct?).

1 #4 lead shot in right pectoral.

1 #4 lead shot free in abdominal cavity.

Heart contained 2 - 1 cm areas whitish in color (infarct?)

Provisional diagnosis: Suspect gunshot Fibrino necrotic necrosis en Tenitis

S. K. / R. B.

Final diagnosis to follow

Diagnostician/technician

Submitter's name and address  Swan Lake N. W. R.				Referen Collect Receive Examine	ted: 12/3 ed: 1/3	/77	
		Tel. No.		Wild/xx	HOTXXXXXX		
Species: Canada	Goose		Age: I	mmature	Sex: Male		Wt.3350
Preserved by:	Specimen	Found dead/KNXNXXXXXX		P.M. Sta	ate	Body	Condition
All frozen naturally	Carcass			Poor		Go	od
Histology		Bacteriology - Salmo Large intestine- Routin		Toxicol	ogy - lead		ogy u & DVE testine
Parasitology			lture	Other			
History summary Necropsy: Gri	<b>-</b>	rapsite on Silver Lake (Sy casses on the site. Suspe d green - no lead.				imatel	y 50

Posterior large intestine from cecal bifurcation - with plug of fibrino-hemorrhage & necrosis - attached to mucosa - suspect infarct.

Liver enlarged, swollen.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

No evidence of gunshot.

Provisional diagnosis: Suspect lead

Hemorrhagic fibrino-necrotic enteritis

Final diagnosis to follow

S. K. / R. B.

Case No. 756-6436

Diagnostician/technician

Contributing/secondary

	Submitter's name and address  Swan Lake N. W. R.  Tel. No.				nce # ced: 12/30 ed: 1/3, ed: 1/3,	78	
		Tel. No.		Wild/xx	*********		
Species: Canada	a Goose		Age: In	mature	Sex: Fema	ale	Wt. 3100
Preserved by:	Specimen	Found dead XXXXXXXXXXXX		P.M. Sta	ate	Body	Condition
All frozen naturally	Carcass			Poor		Pod	or
Histology		Bacteriology		Toxicolo		Virol	ogy
Parasitology		Photos		Other			
History summary Necropsy: Gizz	·	crapsite on Silver Lake ( ccasses on the site. Sus green.				coximat	tely 50

Liver swollen dark red.

Intestine pale.

Heart has petechiae hemorrhage on coronary fat.

2 - 1 mm diameter well-worn lead shots.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

Provisional diagnosis: Lead poisoning

Final diagnosis to follow

S. K. / R. B.

756-6437

Case No.

Diagnostician/technician

Contributing/secondary

Reference # Submitter's name and address Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78 Swan Lake N. W. R. Tel. No. Wild/kxxxxxxxx Sex: Female Wt. Age: Immature Species: Canada Goose P.M. State Body Condition Found dead XXXXXXXXXXXX Preserved by: Specimen All frozen Emaciated Carcass naturally Virology Bacteriology Toxicology Histology Liver - lead Photos Other Parasitology

History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)

Necropsy: No external lesions.

No subcutaneous fat.

Pectoral atrophy.

Liver atrophy.

Proventirculus filled with food.

NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT

l eroded lead shot in gizzard.

Provisional diagnosis: Lead poisoning.

Final diagnosis to follow

\$8

L. S. / R. B.

Diagnostician/technician

Case No. 756-6438

Contributing/secondary

NATIONAL FISH A	ND WILDLIFE HE	ALTH	LABORATORY - NECROPSY RI	EPORT	Case No	75	6-643	39			
ubmitter's name and address  Swan Lake N. W. R.						Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78					
			Tel. No.		Wild/xx	prive	X				
Species: Canada Goose					Adult	Sex:	Fema	ıle	Wt. 3120	)	
Preserved by:	Specimen		Found dead ANXIVAXXXXXXX		P.M. Sta	ate	i	Body	Conditio	n	
All frozen naturally	Carcass							Exc	cellent		
Histology			Bacteriology		Toxicolo	ogy		Virol	ogy	\	
Parasitology			Photos		Other					\	
Wictory cummary	· (Picked un		transite on Silver Lake /	Crran Inl	- N 5-7	D \	~		7 50		

History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.). Approximately 50 plus other carcasses on the site. Suspect many gunshot.)

Necropsy: No external lesions noted.

5 - 6 mm. subcutaneous fat.

Puncture wound associated with massive abdominal hemorrhage.

Postmortem entire visceral encased in massive blood clot.

Hemorrhagic mucoid exudate free on tracheal mucosa.

Posterial 1/3 of lung filled with blood.

Hemorrhagic tract through gizzard muscle.

Provisional diagnosis: Gunshot, trauma

Final diagnosis to follow

L. S. / R. B.

Diagnostician/technician

Contributing/secondary

Case No. 756-6440 NATIONAL FISH AND WILDLIFE HEALTH LABORATORY - NECROPSY REPORT Reference # Band # 668-54071 Submitter's name and address Collected: 12/30/77 Received: 1/3/78 Examined: Swan Lake N. W. R. 1/3/78 Wild/xxxxxxixxex Tel. No. Wt. Age: Sex: Adult Species: Canada Goose Body Condition P.M. State Found dead XXXXXXXXXXX Preserved by: Specimen All frozen Good Good naturally Carcass Virology Toxicology Bacteriology Histology Liver - lead Liver Intestine - Routine Culture Other Photos Parasitology History summary: (Picked up at trapsite on Silver Lake (Swan Lake N. W. R.) Approximately 50 plus other carcasses on the site. Suspect many gunshot.) Necropsy: Petechiae hemorrhage on epicardium. Fat on epicardium. Liver pale and swollen.

Postmortem autolysis of liver & intestine.

Gall bladder enlarged.

l well worn lead shot in gizzard.

Fibrino hemorrhagic necrosis of large intestine (infarct?).

Provisional diagnosis: Lead poisoning Fibrino hemorrhagic mecresis Chitchills Final diagnosis to follow

S. K. / R. B.

Diagnostician/technician

Contributing/secondary

Case No. 756-6441				
Reference # Collected: 12/30/77 Received: 1/3/78 Examined: 1/3/78				
Wild <b>xxxxxx</b> xxxx				
Immature Sex: Male Wt.				
P.M. State Body Condition				
Good Excellent				
Toxicology Virology				
Liver - lead				
Other				
ge N. W. R.). Approximately 50 y gunshot.)				

Provisional diagnosis: Trauma - gunshot

Final diagnosis to follow

L. S. / R. B.
Diagnostician/technician

Contributing/secondary

Submitter's nam	me and addres	S						
			Tel. No.		Wild/c	aptive		
Species:	lanada goose			Age:	Adult	Sex: Fema	le	Wt 2890
Preserved by: Chilling	Specimen Carcass		Found dead/euthanized		P.M. St	ate	Body	Conditio
Histology		1	Bacteriology Liver - RC		Toxicol	odà	Virol	ogy
Parasitology		1	Photos		Other			

#### History summary:

# Necropsy:

- 1. Pectorals slightly reduced +1
- 2. Abundant body fat
- 3. Liver has multiple pinpoint white foci
- 4. Heart has a few scattered paintbrush hemorrhages

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

- 5. Trachea and esophagus normal
- 6. Spleen is enlarged and hemorrhagic
- 7. Gizzard lining is heyserkerototic, no shot present with a slight amount
- 8. Intestines have a severe mucoid enteritis with mucosal hemorrhages

Routime culture of the liver resulted in a heavy growth of Pasteurella multocida confirming the diagnosis of avian cholera.



Case No. 2232-24,605

Provisional diagnosis: Suspect fowl cholera

Final diagnosis to follow

Diagnostician/technician

1	Case No	Case No. 2232-24,601					
P.O. B	ake NWR	Tel. No.		Reference Collect Receive	nce # ted: ed: 1/6/8 ed: 1/6/8	1	
Species: Canad	a goose		Age:	2	Sex:		WE 4530
Preserved by:	Specimen Carcass	Found dead/euthanize		P.M. Sta		Body	Conditio
Histology		Bacteriology		Toxicolo		Virol	ogy
Parasitology		Photos		Other			
2. Ab 3. Pe	fractures oundant body fa ectorals slight ormal - heart						

- 5. Splean is enlarged and hemorrhagic
- 6. Liver is inflammed. No evidence of fowl cholera
- 7. Gizzard full of food. No pb shot
- 8. Peritonitis and pneumonia present
- 9. Postmortem state is very poor, bird by dead 5 6 days before collected

10. Penetrating gunshot wound to abdomen

JAN 19 1981 Swan Lake N.W.R.

Crippling loss Provisional diagnosis:

Final diagnosis to follow

Diagnostician/technician

Contributing/secondary

Summer	, MO 64681				Examine		6/81			
			Tel. No.		Wild/ca	ptive				
Species: Canada	90088			Age:	dult:	Sex:	Male		Wt. 340	10
Preserved by:	Specimen		Found dead/euthanized		P.M. Sta	te			Conditi	
Chilling	Carcasa				Poor			Fai	r	
Histology			Bacteriology Liver - RC		Toxicolo	YPY	/	Virol	ogy	1
Parasitology		1	Photos		Other					1

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

### History summary:

Submitter's name and address

Swan Lake NWR

P.O. Box 68

# Necropsy:

- 1. Pectorals slightly reduced +2
- 2. Abundant body fat
- 3. Liver multiple white foci present
- 4. Heart has paint brush hemorrhages
- 5. Normal: oral cavity, trachea, esophagus, gizzard, intestine, kidney, and testes
- 6. Spleen is enlarged and hemorrhagic
- 7. Gizzard no shot present

Routine culture of the liver resulted in a heavy growth of Pasteurella multocida, confirming the diagnosis of avian cholera.



Provisional diagnosis: Suspect fowl cholera

Final diagnosis to follow

Diagnostician/technician

REL/SJR

Contributing/secondary

★ U.S. GOVERNMENT PRINTING OFFICE: 1979-666-592

Case No.

Reference Collected:

Received: 1/6/81

Submitter's nam Swan La P.O. Bo Sumner,	ike NWR		Refere Collect Recent Examin		1			
			Tel. No.		Wild/d	captive		
pecies: Canada	goose			Age:	Adult	Sex: Mal	3	WE 3460
Preserved by: Chilling	Specimen Carcass		Found dead/euthanized		P.M. St	tate	1	Conditio
Histology		1	Bacteriology Liver - RC		Toxicol	logy	Virol	ogy
Paracitalogu		1	Photos		Other			1

### History summary:

### Necropsy:

- 1. No fractures evident
- 2. Pectorals reduced +2
- 3. Abundant body fat
- 4. Heart has numerous paintbrush hemorrhages
- 5. Normal esophagus, trachea, oral cavity, gizzard, and lungs.

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

- 6. Liver is enlarged and hemorrhagic with multiple white foci
- 7. Spleen is enlarged and hemorrhagic
- 8. Gizzard no shot present, slight amount of food present
- 9. Severe mucoid enteritis with hemorrhages on mucosal surface.

Routine culture of the liver resulted in a heavy growth of Pasteurella multocida confirming the diagnosis of avian cholera



Case No. 2232-24,603

Provisional diagnosis:

Final diagnosis to follow

Diagnostician/technician

Swan L	ake NWR	Tel. No.		Receive Examine Wild/e	ed: 1/6,			
Species: Canada	goose	 Ter. No.	Age:	WIII W	Sex:		Wt.	-
Preserved by:	Specimen Carcass	Found dead/euthanized	Α	P.M. Sta	ate	Body	Condit	10
Histology		Bacteriology		Toxicol	odà /	Viro		1
Parasitology		Photos		Other				7
History summary	v :							

### nistory summa

Necropsy:

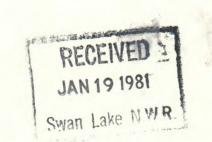
1. Pharnyx, mouth, heart, and lungs - normal

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

2. No fractures

Submitter's name and address

- 3. Pectorals reduced +2
- 4. Peritonitis present with mucoid enteritis
- 5. Liver is inflammed, has multiple white foci
- 6. Spleen is enlarged
- 7. Gizzard no shot present



Case No. 2232-24,604

Reference # Collected:

Provisional diagnosis: Trauma and suspect fowl cholera

Final diagnosis to follow

REL/SJP Diagnostician/technician

Contributing/secondary

Cause of death

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979-666-592

, , ,	ATIONAL WILDLIFE H	Case No. 2232-24,606					
Submitter's nam	ne and address	Tel. No.		Reference # Collected: Received: Examined: Wild/captive			
Species: Ca	ınada goose		Age:	Sex:		Wt.3320	
Preserved by: Chilling	Specimen Carcass	Found dead/euthanized		P.M. State	Body	Conditio	
Histology		Bacteriology		Toxicology	Viro	logy	
Parasitology		Photos		Other			
History summary	<b>':</b>	X					
Necropsy:							
Ca	arcass discarded						

RECEIVED
JAN 19 1981
Lake N.W.R.

Provisional diagnosis:

Final diagnosis to follow

Diagnostician/technician

Submitter's nam	ne and addres	S	Tel. No.		Refere Collec Receiv Examin	ted: ed: 1/6/8	31	
Species: Ca	mada goose			Age:		Sex:		Wt .2825
Preserved by:	Specimen Carcass		Found dead/euthanized		P.M. St	ate	Body	Conditio
Histology		1	Bacteriology		Toxicol	оду	Viro	logy
Parasitology			Photos		Other			

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT

History summary:

Necropsy:

Carcass discarded



Case No. 2232-24,607

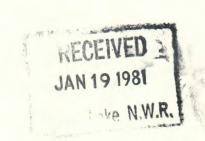
Provisional diagnosis:

Cause of death

Final diagnosis to follow

Diagnostician/technician

N.	ATIONAL WILDLIFE H	EALTH LAB - NECROPSY REPO	ORT	Case No. 2232	-24,608
Submitter's nam	an Lake NWR			Reference # Collected: Received: 1/6 Examined:	/81
		Tel. No.		Wild/captive	
Species: Ca	nada goose		Age:	Sex:	Wt -2340
Preserved by:	Specimen Carcass	Found dead/euthanized		P.M. State	Body Conditio
Histology		Bacteriology		Toxicology	Virology
Parasitology		Photos		Other	
History summary	:				
Necropsy:					



Provisional diagnosis:

Final diagnosis to follow

Diagnostician/technician

~ ^	NATIONAL WILDL	IFE HEALTH LAB - NECROPS	Y REPORT	Case No. 22	32-24,60	9
Submitter's na	me and address			Reference * Collected: Received:		
		Tel. No.		Wild/captiv	e	
Species: Malla	rd		Age:	Sex:	Mela	Wt.
Preserved by:	Specimen	Found dead/euthar	nized	P.M. State	W. 1000/W. 2012 - 2017	ody Conditio
Chilling	Carmass			Poor		Excellent
Histology		Bacteriology Liver - RC		Toxicology	Vi	rology
Parasitology		Photos	C	Other		

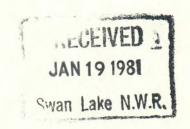
### History summary:

# Necropsy:

- 1. Heart many multiple paintbrush hemorrhages
- 2. Liver has a few small, white foci
- 3. Abundant body fat
- 4. Pectorals normal
- 5. Normal Spleen, lungs, trachea, esophagus, lungs and kidneys
- 6. Gizzard bile stained, pads are eroded. No shot present

Intestines show mucoid enteritis

Routine culture of the liver resulted in a heavy growth of Easteurella multocida



Provisional diagnosis: Suspect fowl cholers

Final diagnosis to follow

Diagnostician/technician

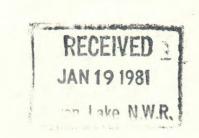
Contributing/secondary

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979-666-592

NATIONAL WILDLIFE HEALTH LAB - NECROPSY REPORT						Case No. 2232-24,610						
Submitter's na	me and address	5	Tel. No.		Refere Collec Receiv Examin Wild/c	ted: ed: 1/6 ed:	/81					
Species: M	allard			Age:		Sex: Fe	male	Wt. 900				
Preserved by: Chilling	Specimen Carcass		Found dead/euthanized		P.M. St	ate	Body	Conditio				
Histology		1	Bacteriology		Toxicol	ogy	Viro	logy				
Parasitology			Photos		Other							
History summar	y:											

Necropsy:

Carcass discarded



Provisional diagnosis:

Final diagnosis to follow

Diagnostician/technician

Contributing/secondary

memorandum

DATE:

January 8, 1985

REPLY TO

Training Officer, RHT, National Wildlife Health Laboratory, Madison, WI

SUBJECT:

Final Report on Laboratory Findings in "Impacted" Canada Geese. (NWHL: 5072-001 thru 007).

TO:

Terry Root, Assistant Refuge Manager, Swan Lake NWR, Summer, MO

We have completed our examination of the Canada geese submitted on 12/10/84. As you can see from the enclosed copies of the necropsy reports, four of the geese had necrotic esophagitis caused by ingested soybeans, and two had high levels of lead in their livers (11.0 and 16.0) and were probably suffering from the toxic effects of lead prior to death.

Goose 002 had a penetrating wound in the esophagus, apparently caused by a shotgun pellet. This wound had become infected and the surrounding esophageal tissue had become necrotic (died). No impaction was present in this bird. The high level of lead in the liver, 11.0 ppm, wet weight, and the presence of a single, well-worn lead shot in the gizzard suggest that this goose probably was also suffering from the toxic effects of the lead prior to being shot by a hunter.

Goose-004. This is a straight-forward case of lead poisoning. There is marked emaciation and loss of fat deposits; there is an impaction of the esophagus and a single, well-worn lead shot was recovered from the gizzard. Liver lead level was 16.0 ppm, wet weight, well above the diagnostic level of 8.0 ppm or higher routinely used in this laboratory.

Thus, soybean impactions accounted for four of the seven cases submitted, lead poisoning played a role in two and one was a crippling injury with secondary bacterial infection.

Louis N. Locke

LNL/bs Encl.

Copy Sent to Dale Hemberg

1-25-85 Jan

1-25-85 Jan

2-6-85

OPTIONAL FORM NO. 10 (REV. 1-80) GSA FPMR (41 CFR) 101-11.6 5010-114

NATIO	NAL WILDLIFE HEALTH LABO	ORATORY—NECROP	SY REPORT	CASE NO.	5072-001	
SUBMITTER'S	S NAME & ADDRESS			· ·		
Vana	Terry Root			COLLECTED:	10/02/84	~
	Assistant Refuge Manager			RECEIVED:	12/10/84	
	Swan Lake NWR			EXAMINED:	12/10/84	-
	Box 68 Summer, MO 64681 TE	LEPHONE NO.		FINALIZED: PROSECTOR:	RKS KK	
SPECIES:		SPECIMEN:	WEIGHT:	PRES	ERVED BY:	
-	Canada Goose (Ref. #33570-	1) Carcass	N/A (GRA	(MS) carcas	s plucked &	feet removed.
HISTORY SUP	MMARY: WILD/CAPTIVE	FOUND DEAD/EUTH	IANIZED			The second secon
	Owner of hunter-killed goo esophagi. Refuge biologis	se processing plan ets did not report	t reported man any lead shot	y geese ha found.	ve impacted	
NECROPSY:						
	Internal Examination					
	Musculoskeletal system: F fat except for small remna				caneous or me	esentery

Cardiovascular system: Heart - no significant findings (NSF).

Respiratory system: Some areas of blood presumably due to shot.

Digestive system: Esophagus lining is necrotic and impacted with dry, leafy vegetation (half rotted), corn and what appears to be sovbeans. There is a distinct, fairly old, lesion present in the mid-neck area which appears as a shot puncture wound. The gizzard lining is hyperkeratotic and moderately bile stained. There were no lead shot present in the contents of the gizzard. The gizzard itself does not appear significantly impacted even though the esophagus is very impacted. Gizzard musculature-NSF. The liver is somewhat small. No foci noted. The coloration is darker than normal. Gall bladder is very large and filled with thick, green bile. The small intestine is not appreciably atrophied although it is filled with a greenish, fowl smelling bile stained feces.

Urogenital system: Kidneys are shrunken. No fat over the body cavity area.

Lymphoid/Endocrine system: Spleen - NSF

PRELIMINARY DX: Gunshot/Emaciation (open)

TOXICOLOGY: Liver lead - .81 ppm wet wt., 3.2 ppm dry wt.

BACTERIOLOGY: Intestine R.C. - Mixed including Escherichia coli and Enterococci sp. S.C. - Negative

•					
AGE: Immatu SEX: Male	BODY CONDITION:	Fair Poor	PHOTOS:		
BACTERIOLOGY Sma. R.C. and Salmone	all intestine for VIROL ella culture.		CICOLOGY Liver - Pb	HISTOLOGY	
PARASITOLOGY	OTHER		CARCASS DISPOS	SAL: INCINERATED	

FINAL DIAGNOSIS: Necrotic Esophagitis orginating from soybean impaction GPO 832 - 317 NOTE: Cause of death is quishot

NATIONAL WILDLIFE HEALTH LABORATORY—NECROPSY REPORT CASE NO. 5072-002 SUBMITTER'S NAME & ADDRESS Terry Root COLLECTED: Assistant Refuge Manager 12/2/84 RECEIVED: Swan Lake NWR 12/10/84 **EXAMINED**: Box 68 12/10/84 FINALIZED: Summer, MO 64681 TELEPHONE NO. PROSECTOR: RKS SPECIES: SPECIMEN: WEIGHT: PRESERVED BY: Canada Goose (Ref. #33570-2) Carcass (GRAMS)

HISTORY SUMMARY:

WILD/CAPTIVE

FOUND DEAD/EUTHANIZED

Goose shot by a hunter. Owner of hunter-killed goose processing plant reported many geese have impacted esophagi. Refuge biologists did not report any lead shot found.

**NECROPSY:** 

## Internal Examination

Musculoskeletal system: There is moderate breast muscle atrophy. No subcutaneous fat is noted. Along the neck there is an area approximately two-thirds of the anteriad with what appears to be a penetrating wound. There is evidence of bleeding and some resolution of a clot. On the mucosal surface of the esophagus, there is a lesion approximately 3 cm long x 2 cm wide. This lesion may be described as a diphtheric type membrane overlying denuded, eroded and/or infected esophageal tissue. There is no significant accumulation of food or other debris within the esophagus. The gizzard likewise is not impacted, however, the gizzard lining is slightly hyperkeratotic but only mildly bile stained. A single, moderately well worn shot is present in the contents of the gizzard. The liver is somewhat pale. Gall bladder is fairly large but there is no bile retention. Small intestine has been punctured probably by shot and has contaminated the entire abdominal cavity with material from the intestine. The intestine is approximately normal size and contains normal appearing feces. Kidneys -

PRELIMINARY DX: Emaciation/Esophagitis/Gunshot

TOXICOLOGY: Liver lead - 11 ppm wet wt., 43 ppm dry wt.

AGE: P.M. STATE: Fair Immature BODY CONDITION: SEX: PHOTOS: Female Poor BACTERIOLOGY VIROLOGY TOXICOLOGY HISTOLOGY Esophageal lesion Liver -Pb PARASITOLOGY OTHER CARCASS DISPOSAL: INCINERATED HELD

FINAL DIAGNOSIS: Emaciation - contributing factors include lead poisoning and necrotices 832-317 esophagitis resulting from pellet wound into esophaguo. MATE . CAUSE OF DEATH is quishot

NATIO	NAL WILDLIFE HEALTH LABORATORY—NECROPSY REPORT	CASE NO. 5072-003
SUBMITTER'S	NAME & ADDRESS	
	Terry Root Assistant Refuge Manager Swan Lake NWR Box 68 Summer, MO 64681 TELEPHONE NO.	COLLECTED: 12/6/84 RECEIVED: 12/10/84 EXAMINED: 12/10/84 FINALIZED: PROSECTOR: TRKS
SPECIES:	SPECIMEN: WEIGHT:	PRESERVED BY:
	Canada Goose (Ref. #33570-3) 3690 (GRA	MS)
HISTORY SUM	MARY: WILD/CAPTIVE FOUND DEAD/EUTHANIZED Neck Wi	rung (feet cut off)
NECROPSY:	Owner of hunter-killed goose processing plant reported mar esophagi. Refuge biologists did not report any lead shot	ny geese have impacted found.
	External Examination	
	There appears to be a penetrating wound in the right wing underlying and surrounding the area of puncture wound is the morrhage and evidence of spread of infection and/or gand	rather necrotic. Some
	Internal Examination	
	Musculoskeletal system: There is normal amounts of subcut and other areas of the body. This fat appears to be in fa undergoing appreciable atrophy. Breast muscle appears rea	airly normal shape and not
	Cardiovascular system: Heart - The coronary fat is start: This is indicated by its reddened, more fluid consistency within the pericardial sac. This is kind of straw colored or fibrin. Heart itself appears fairly normal. No infact Blood clot is of normal consistency.	. There is excess fluid d material but shows no pus
	Respiratory system: The lungs and air sacs are both NSF.	Trachea is also NSF.
	Digestive system: No indication of impaction of the esople items are noted in the gizzard. The gizzard lining is a to bile. There is no lead shot present only some normal gizzard lining is slightly hyperkeratotic. The liver is a There is an occasional, small, white foci noted. Small is in color and feces present in the lumen is normal. Gall by	light green coloration due grit is observed. The normal size and coloration. ntestine is pretty normal

contains a moderately thick green bile. Spleen-approximately twice normal size. Spleen had prominent lymphoid follicles.

Urogenital system: Kidneys - NSF. PRELIMINARY DX: Euthanasia/Cripple

BACTERIOLOGY: Liver RC - No bacterial growth.

TOXICOLOGY: Liver lead - 4.7 ppm wet wt., 18 ppm dry wt.

AGE: SEX:	Adult Male	P.M. STATE: BODY CONDITIO	N: Good	PH	OTOS:	
BACTERIOLOGY	Liver - R	.c.	VIROLOGY	TOXICOLO	OGY Liver-Pbv	HISTOLOGY
PARASITOLOGY		OTHER			CARCASS DISPOSAL	: INCINERATED

FINAL DIAGNOSIS: Cause of Death-GUNSHOT - Door condition related to previous 832-317 Gunshot wound and sublethal lead toxicosis

NATIO	NAL WILDLIFE HEALTH LABORATORY—NECROPSY REPORT	CASE NO. 5072-004
SUBMITTER'S	NAME & ADDRESS	
	Terry Root Assistant Refuge Manager Swan Lake NWR Box 68 Sumner, MO 64681 TELEPHONE NO.	COLLECTED: 12/6/84 RECEIVED: 12/10/84 EXAMINED: 12/10/84 FINALIZED: PROSECTOR: RKS
SPECIES:		PRESERVED BY: inus feet which had been removed RAMS)
HISTORY SUN	MMARY: WILD/CAPTIVE FOUND DEAD/EUTHANIZED  History indicates that this bird was hit on the head. Or processing plant reported many goese have impacted esophic	

**NECROPSY:** 

### Internal Examination

not report any lead shot found.

Musculoskeletal system: There is severe breast muscle atrophy. There is almost complete lack of any trace of subcutaneous fatty tissue. There are no fat deposits in the body cavity. The heart is very flaccid and all coronary fat has undergone serous atrophy. All internal organs and muscle appear to be somewhat pale or anemic. The blood does not clot normally. It is a reddish coloration perhaps indicating anemia.

Respiratory system: Lungs, trachea, and air sacs - NSF.

Digestive system: The posterior portion of the esophagus is impacted with rotting leafy vegetation and a few corn kernels. There is necrosis of the epithelial surface of the esophagus. The gizzard lining is bile stained and hyperkeratotic. There is a single, well worn lead shot present in the gizzard. The small intestine is moderately dilated with a fowl smelling, dirty, muddy granular content. The small intestine is reasonably atrophied. The liver shows no signs of any foci, very atrophied being approximately a third normal size. Gall bladder is fairly large and contains reasonably thick bile.

Urogenital system: Kidneys - NSF. There is no fat covering the kidneys.

PRELIMINARY DX: Emaciation (suspect lead poisoning)

TOXICOLOGY: Liver lead - 16 ppm wet wt., 69 ppm dry wt.

AGE: SEX:	P.M. STATE: BODY CONDITION	ON:	РНОТО:	S:		
BACTERIOLOGY		VIROLOGY	TOXICOLOGY Liver -	<sub>Pb</sub> √	HISTOLOGY	
PARASITOLOGY	OTHER		CA	RCASS DISP	POSAL: INCINERATED	

	ONAL WILDLIFE HEALTH LABOR	ATORY—NECROPSY	REPORT	CASE NO. 50	072-005	
SUBMITTER"	S NAME & ADDRESS	10	7			
	Terry Root Assistant Refuge Manager Swan Lake NWR			COLLECTED: RECEIVED: EXAMINED: FINALIZED:	12/5/84 12/10/84 12/11/84	
	Box 68 Summer, MO 64681 TELEF	PHONE NO.		PROSECTOR:	RKS	
SPECIES:		SPECIMEN:	WEIGHT:	PRESE	RVED BY:	
	Canada Goose (Ref #33570-5)	Carcass	(GR	AMS) Not take	en because fe	eathers &
HISTORY SU	MMARY: WILD/CAPTIVE	FOUND DEAD/EUTHAN	NIZED	feet are	e missing.	
	Owner of hunter-killed goose	_	-	at many gees	se have impac	cted

**NECROPSY:** 

### Internal Examination

Musculoskeletal system: There is moderate breast muscle atrophy. No subcutaneous fat. There is obvious severe impaction of the esophagus. The lining of the esophagus is necrotic. There is subcutaneous hemorrhage in the upper one-third of the neck. The esophagus itself is impacted. Starting from the thoracic inlet, a non-descriptive necrotic debris mixed with grit and what appears to be soybeans is noted. Following the soybeans is a layer of corn and following the corn is a layer of grass. Following the grass is a layer of small unidentified seeds. A small amount of freshly ingested grass is the top of the column. On removal of the contents, there is severe fibrinoid necrotic membrane over the entire surface of the esophagus. This extends down into the thoracic inlet. The esophageal necrosis is confined to that portion of the esophagus anterior to the thoracic inlet. The portion of the esophagus extending into the body cavity appears somewhat normal, and does not have the characteristic necrotic surface. The gizzard lining is very roughened and hyperkeratotic. There are areas of sloughing gizzard mucosa and it is bile stained. Lesions of gizzard worms are present, fairly extensive, around one of the pads. No lead shot is present in the gizzard. Liver was shrunken and gall bladder was fairly large. Small intestine undergoing autolysis. Respiratory system: No significant findings (NSF).

Cardiovascular system: Severe serous atrophy of all the coronary fat. Myocardium and blood clot are normal.

PRELIMINARY DX: Impaction (suspect soybeans)

TOXICOLOGY: Liver lead - 1.4 ppm wet wt., 5.9 ppm dry wt.

BACTERIOLOGY: Esophagus - R.C.: Mixed coliform growth

F.C.: Mucar sp., Aspergillus niger

AGE: SEX:	Male		STATE: CONDITION	Fair Poor	PI	HOTOS:		
BACTERIOLOGY	Esophagus culture	R.C.	& fungu	VIROLOGY	TOXICOI Live		HISTOLOGY Esophagus	
PARASITOLOGY			OTHER	32		CARCASS DISPOSAL	: INCINERATED	

Emaciated condition due to severe necrotic esophagitis orginating from Sousbean impartion

NATIONAL WILDLIFE HEALTH LABORATORY—NECROPSY REPORT 5072-006 CASE NO. SUBMITTER'S NAME & ADDRESS Terry Root 12/2/84 COLLECTED: Assistant Refuge Manager RECEIVED: 12/10/84 Swan Lake NWR EXAMINED: 12/11/84 Box 68 FINALIZED: Summer, MO 64681 TELEPHONE NO. PROSECTOR: RKS SPECIES: SPECIMEN: WEIGHT: PRESERVED BY: Canada Goose (Ref #33570-6) Carcass (GRAMS) HISTORY SUMMARY: WILD/CAPTIVE FOUND DEAD/EUTHANIZED Owner of hunter-killed goose processing plant reported that many geese have impacted esophagi. Refuge biologist report no shot found. **NECROPSY:** Internal Examination Musculoskeletal system: There is a prominent keel indicative of breast muscle atrophy of moderate proportions. The subcutaneous fat has undergone atrophy and there are only remnants of yellowish fat present at the knees. The mesentery fat is gone except for small, yellowish deposits. The esophagus shows necrosis of the surface. This is characterized by severe, large areas of necrosis with fibrinous adhesions throughout. There is a small amount of corn and some vegetation present in the esophagus. The major damage to the esophagus is in that portion of the esophagus extending from the thoracic inlet distally and does not include that portion of the esophagus going from the thoracic inlet to the gizzard. The gizzard pads are somewhat hyperkeratotic but are yellow stained and not typically green. There are no lead shot present. The liver is normal size. The gall bladder is fairly large and filled with bile. Kidneys are of no significant findings (NSF). Intestinal tract - NSF. PRELIMINARY DX: Suspect esophageal soybean impaction. TOXICOLOGY: Liver lead - 1.3 ppm wet wt., 5.7 ppm dry wt.

BACTERIOLOGY: Liver R.C. - Mixed coliform growth

F.C. - Heavy growth Aspergillus niger

AGE: P.M. STATE: SEX: **BODY CONDITION:** PHOTOS: BACTERIOLOGY VIROLOGY TOXICOLOGY HISTOLOGY liver lead -PARASITOLOGY OTHER CARCASS DISPOSAL: INCINERATED HELD \_ FINAL DIAGNOSIS: Cause of death - gunshot (hunterkilled) cause of emaciated condition due to severe necrotic esophagitis/impaction originating from Soybean impaction

IVALIC	WAL WILDLIL HEALH	31 KLI UKI	LASE NU. 5072-007			
SUBMITTER'S	NAME & ADDRESS	-				
* . , .	Terry Root Assistant Refuge Man Swan Lake NWR Box 68	ager TELEPHONE NO.		COLLECTED: RECEIVED: EXAMINED: FINALIZED: PROSECTOR:	12/5/84 12/10/84 12/11/84 " RKS	2
SPECIES:	Summer, MO 64681	SPECIMEN:	WEIGHT:	PRESE	RVED BY:	
	Canada Goose (Ref #3	3570-7) Carcass-No v	veight taken (GR	AMS)		
HISTORY SUN	MMARY: WILD/CAPTIVE Hunter-killed bird.	FOUND DEAD/EUT It is partially picked		red.		***
NECROPSY:						
	Internal Examination					

There are multiple pellet wounds in the body. There is severe breast muscle atrophy. There is a very large mass, approximately 10 cm long x 6 to 8 cm wide. This mass is dilated esophagus which is impacted with a mass of rotting vegetation and corn. There are occasional, what appears to be, remains of soybeans present within this mass. The mass has a rather characteristic silage odor. The surface of the esophagus is blackened and has a thick, fibrinous adhering necrotic membrane over the surface. The portion of the esophagus that is affected is the portion extending from the thoracic inlet, approximately one-third the lower portion of the neck. Inside the thoracic inlet, the esophagus is more normal. The gizzard lining is normal. There is no lead shot present. Small intestine has feces which are pasty in consistency. The gall bladder is very large. The liver is normal size. There are some areas of slight reddish foci present on the liver. Kidneys are of no significant findings (NSF).

PRELIMINARY DX: Severe esophageal impaction/necrotic esophagitis

TOXICOLOGY: Liver lead - .69 ppm wet wt., 2.9 ppm dry wt.

BACTERIOLOGY: Esophagus R.C. - Mixed bacterial growth, Coliforms & Enterococci sp. F.C. - Heavy growth Aspergillus niger

AGE: P.M. STATE: Immature Fair **BODY CONDITION:** PHOTOS: Taken SEX: Poor BACTERIOLOGY VIROLOGY TOXICOLOGY HISTOLOGY Esophagus - R.C. Liver - Pb & F.C. Esophagus PARASITOLOGY OTHER CARCASS DISPOSAL: INCINERATED HELD -

FINAL DIAGNOSIS: cause of death-sunshot (nunter kitted).

Eucceated condition due to necrotic esophagitis resulting from soybear impaction.