Original: Fish Division

ce: Mr. Ruhl

cc: Mr. Vern Dockham

UNIVERSITY OF MICHIGAN ANN ARBOR. MICHIGAN

May 14, 1936

REPORT NO. 356

ANALYSES OF 37 COLLECTIONS OF OTTER SCATS COLLECTED DURING THE WINTER OF 1935-1936, IN THE LOWER MICHIGAN PENINSULA

bу

Milton B. Trautman

The following comments are based upon the analysis of recognizable remains of animals and plants that were found in 37 collections of otter scats collected by members of the Game Division and the Division of Field Administration.

- (1) It is obvious that otters from the various localities where the scats were collected had fed upon different types of food; probably on food which was most easily procurable at that time and place. Those scats collected along Perry and Big creeks and the Au Sable River, were composed primarily of trout and unidentifiable remains of other fishes, while those from the upper South Branch of the Thunder Bay River were composed chiefly of crayfish and sunfish (or bass) remains, together with other unidentifiable fish (not trout) scales and bones.
- (2) Only a fragmentary portion of a fish's total skelton was present in the scats and it was therefore impossible to estimate how many individual fish of one species had been eaten by any particular otter.
- (3) The individual bones of the smaller fish were usually more entire than were the bones of larger fish, resulting in more positive identification of these smaller individuals. It is logical that this should be so inasmuch as bones of smaller fish could be swallowed more readily (perhaps accidentally) by the otter, whereas in stripping the flesh from larger fish the bones could be avoided.

- (4) The amount of an individual fish's remains in a scat did not correspond to the size of the fish. In fact, it appeared that more bones, per fish, from the smaller fishes were swallowed. Apparently the small rib bones and smaller vertebrae of small fishes could not be separated by the otter as readily as could the larger bones of the larger fishes.
- (5) Some evidence was obtained indicating that a larger proportion of the chitinous skeleton of a crayfish was eaten, than was the bony skeleton of a fish.
- (6) As there was no relationship between the size of the fish and the amount of the remains of that fish in the scat and no relationship between the size and number of fish and crayfish, no quantitative analysis can be made. That is, we were unable to estimate, by an examination of the scats, how many individual fish or crayfishes were eaten and how much of each captured fish or crayfish was consumed.
- (7) Nothing could be learned from the remains as to condition of the animals eaten; whether, for instance, the captured fish were active and healthy or whether they had been weakened before capture by spawning, disease or effects of winter.
- (8) It is not known whether the remains of Dytiscid beetles (diving beetles), found in two of the scat collections, were eaten accidentally or intentionally. They may have been eaten originally by trout.
- (9) In a few scat collections there were found the remains of some (berry?) seeds and what appeared to be berry pulp and skins.
- (10) The bits of grass eaten appeared to have been taken accidentally by the otter.
- (11) The collections of scats examined were entirely too few in number and from too few localities to enable us to draw definite conclusions as to the food of the otter in winter.

INSTITUTE FOR FISHERIES RESEARCH

By: Milton B. Transtman

ANALYSIS OF OTTER SCATS COLLECTED BY VERNE DOCKHAM

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			T F	i s h		T===	Crayf	ish	Unrecognizable	Debr	is		
	1	1		- 4		<u> </u>	/ - J	,	or Other Mate			Tot al	
	i	1		Vol		T	Vol.	1		Vol.		Vol.	
Coll	1	1	'	in	7		in	1 , '		in	1	in	
No. 564	Locality	Date	1 8 tuest '	cc	7/2		00	%	7	CC	% 00	33	
	T27N,R4E, Flat Lake		A few trout scales (5 to 8" trout) and ribs of small fish					83.3	grass				
565	Perry Creek, Sec. 9,T26N, R3E	1/8/36	One vertebra and a few scales from and to 11" pike, also remnants of bones, probably from the same fish.	9	95.7	Slight trace	•4	4.3		0	00	9•4	
566	Perry Creek, Sec. 9, T26N, R3E	12/12/35		4	27.6		4	27.6	Fragments of Dytiscid beetles and other un- recognizable remains	6.5	44. 8	14.5	
567	Flat Lake, T27N,R4E	12/10/35		0	00		24	92.3	Seeds (berries?) and other debris	2	7.7	26	
568	Big Creek, Sec. 12, T26N,R1E	1/8/36	Fragments of jaw and scales of trout, very small, unrecognizable bones	29	93.5		0	00	,	2	6•5	31	
569	Flat Lake T27N,R4E	12/22/35		0	00		26	100		0	00	26	
570	Flat Lake, T27N,R4E	12/22/35	Small portion of a trout jaw; the fish was possibly 10" long; a few unidentifiable rib bones	•5	15.6		24	75.0	Seeds and remnants of berries? from some plant	3	9•4	27•5	

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		Fis	sh		C	ayfi	sh	Unrecognizable			
			177	,		7707	 -	or Other Mate			Total Vol.
											in
Locality	Date		1	9			9		L	7	CC
Perry Creek,	12/12/35				_				_		20.5
		ribs of a small fish									
Mio District			0	00		17	94.4		1	5.6	18
Big Cfeek, Sec.13,T26N, R12	·	a 5 to 7" trout, frag- mentary small fish	10	33.3+		10	33.3∔	Debris	10	33 . 3+	30
Big Creek, Sec.24, T26N, R1E		5 to 7" trout, ribs of small fish, probably the	20	70.1		8	28.1	l Gammarus	•5	1.8	28.5
Big Creek, Sec.13,T26N, R1E		5 to 9" trout, and many small ribs and other un- recognizable fish bones									26
Big Creek, Sec.12,T26N, R1E		indicating a fish or fishes 7 to 11" in length; also unrecognizable fish ribs.		62.5		10	31.2	l piece of grass and some unrecognizable debris	2	6.3	32
Big Creek, Sec.12,T26N, R1E		bones of a 4 to 6" trout, also unidentifiable re-	16	66.7		7	29.2		1	4.1	24
Ausable River, Sec. 12, T26N, R3E		A few scales and ver- tebra of a 5 to 9" trout; other fish re- mains, possibly of same	14	58.3		7	29.5	Debris	3	12.5	24
Big Creek, Sec.13,T26N, R1E	2/21/36		40	85•1		4	8.5	Debris	3	6•4	47
	Sec. 9,T26N, R3E Mio District Big Cfeek, Sec.13,T26N, R1E Big Creek, Sec.24, T26N, R1E Big Creek, Sec.13,T26N, R1E Big Creek, Sec.12,T26N, R1E Ausable River,Sec. 12,T26N, R3E Big Creek, Sec.12,T26N, R1E	Perry Creek, 12/12/35 Sec. 9,T26N, R3E Mio District Big Cfeek, 2/22/36 Sec.13,T26N, R1E Big Creek, 3/21/36 Sec.13,T26N, R1E Big Creek, 3/21/36 Sec.13,T26N, R1E Big Creek, 2/21/36 Sec.12,T26N, R1E Ausable 2/28/36 River,Sec.12,T26N, R3E Big Creek, 2/21/36 Sec.13,T26N, R3E	Locality Date Perry Creek, 12/12/35 A few unrecognizable ribs of a small fish ribs of a small fish ribs. Big Cfeek, 2/22/36 Portion of a jaw of a 5 to 7" trout, fragmentary small fish remains Big Creek, 2/22/36 Portion of a jaw of a 5 to 7" trout, ribs of small fish, probably the trout Big Creek, 3/21/36 Jaw bones of at least 2 5 to 9" trout, and many small ribs and other unrecognizable fish bones of at least 2 7 to 11" in length also unrecognizable fish ribs. Big Creek, 2/21/36 A few scales and jaw bones of a 4 to 6" trout, also unidentifiable remains of a fish or fish of a fish and other unrecognizable fish ribs. Big Creek, 2/21/36 A few scales and jaw bones of a 4 to 6" trout, also unidentifiable remains of a fish or fish rout; other fish remains, possibly of same trout; other fish remains, possibly of same trout 5 to 7" in length. Small fragmentary fish	Locality Date correct, 12/12/35 A few unrecognizable ribs of a small fish ribs of a small fish remains by the trout small fish remains by the trout small fish recognizable ribs of a factor of a jaw of a 5 to 7" trout, fragmentary small fish remains by the trout recognizable fish probably the trout small ribs and other unrecognizable fish bones factor of a fish or fishes 7 to 11" in length; also unrecognizable fish ribs. Big Creek, 2/21/36 A few scales and jaw bones of a 4 to 6" trout, also unidentifiable remains of a fish rout; other fish remains of a fish rout; other fish remains of a 5 to 9" trout, and many small ribs and other unrecognizable fish probably the trout scales and vertebra 20 indicating a fish or fishes 7 to 11" in length; also unrecognizable fish ribs. Big Creek, 2/21/36 A few scales and jaw bones of a 4 to 6" trout, also unidentifiable remains of a fish rout; other fish remains of a fish rout; other fish remains, possibly of same brout 5 to 7" in length. Sec.13,T26N, RIE big Creek, 2/21/36 Partial jaw remains of one trout, possibly two. Frout 5 to 7" in length. Small fragmentary fish	Locality Date complete complet	Locality Date Vol in cc % Perry Creek, Sec. 9,726N, R3E Mio District 2/22/36 Portion of a jaw of a 5 to 7" trout, fregmentary small fish remains Eig Creek, Sec.24, T26N, R1E 2/22/36 Portion of a jaw of a 5 to 7" trout, ribs of small fish remains Eig Creek, Sec.24, T26N, R1E Sec.24, T26N, R26 Sec.24, T26N, R26 Sec.25, T26N, R26 Sec.	Locality Date Vol. in in cc Perry Creek, 12/12/35 A few unrecognizable .5 20.0 18 ribs of a small fish R3E Mio District 0 00 17 Big Cfeek, 2/22/36 Portion of a jaw of a 5 to 7" trout, fragmentary small fish remains Eig Creek, Sec. 22/26 Portion of a jaw of a 5 to 7" trout, ribs of Sec. 24, T26N, Eig Creek, Sec. 24, T26N, Sec. 213, T26N, R1E Sec. 213, T26N, R1E Sec. 212, T26N, R26 Sec. 213, T26N, Sec. 213, T26N, R26 Sec. 213, T26N,	Locality Date	Locality Date Perry Greek, 12/12/35 A few unrecognizable .5 20.0 18 72.0 A few remains of Dytissics .5 20.0 .5 .5 .5 .5 .5 .5 .5	Locality Date Dat	Locality Date

			Fis		Cr	ayf:	ish	Unrecognizable or Other Mat	s	Total		
Coll.	Locality	Date		Vol in cc	%	1	Vol. in cc	%		Vol.	%	Vol. in
580	Ausable River, r26N,RlE	11/35	Many scales of a sun- fish(possibly bass), Material when received not in scat form)	40	23.5		70	41.2	Virtually all extran- eous debris, not in- cluded in total	60	35 • 3	170
	AuSable River, T26N,R3E		A considerable number of scales from a sunfish or sunfishes (or bass); a few fragmentary unrecognizable fish bones	2	2.2			97.8		0	00	92
582	Big Creek, T26N, RlE	11/1/35	A few unrecognizable frag- ments of fish bones (Material when received not in scat form)	4	6.3		55	85.9	Some extraneous debris	5	7.8	64
583	Perry Creek, T26N,R3E	11/2/35	A few unrecognizable fish bone fragments	1	•1	At least 1 of the many cray fish was Cambarus virilis		99.9		0	00	211
584	Mio Pond, T26N,R2E	10/28/35	Many scales of a large sunfish (possibly bass) or sunfishes (Material when received not in scat form)	15	30		35	70	Extraneous debris not included in total	(50)	00	50

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ANALYSIS OF OTTER SCATS COLLECTED BY F. C. GILLETT

]	ish		Cray	fis	sh	Unrecognizable Debris or Other Material		Total	
~				Vol	•	Vo	•			Vol	†	Vol.
Coll.	4	20-4-		in	~1	in		_		in	1 _	in
No.	Locality	Date		cc	1%	CC		%		CC	1 %	co
585	Ford River, Sec. 34, T43N,R28W	1/31/35	Fragmentary remains of at least 2 fish, very probably a small trout and small sunfish	8	100	0	0)O		0	00	8
586	Black River, west of Hub- bard Lake, Sec.8,T27N, R7E, Alcona County	12/31/35	A few unrecognizable fish bone fragments (Material when received not in scat form)	•3	•1	235	9	9.9		0	00	235•3

ANALYSIS OF OTTER SCATS COLLECTED BY A. M. STEBLER

587	Upper south branch of the Thunder Bay	3/4/36	Scales of a sunfish or sunfishes (or bass); unidentified bone of a	8	23.5		26	76.5	:	0	00	34
	River, Sec. 11 & 14,T29N, R4E		large fish (not a trout)			•						
88	Same as for No. 587	3/4/36		0	00		60	100	grass blade	0	00	60
589	Same as for No. 587	3/4/36		0	00			100		0	00	65
590	Same as for No. 587	3/4/36		0	00			100			00	34
591	Same as for No. 587	3/4/36	·	0	00			100		1	00	65
592	Same as for No. 587	3/4/36		0	00			100		0	00	46
593	Same as for No. 587	3/4/36	Single vertebra of a very small fish, probably a minnow	•3	•5		60	99.5		0	00	60.€3
94	Same as for No. 587	3/4/36	Committee of a recommittee of the control of the co	0	00			100			00	85
595	Same as for No. 587	3/4/36		0	00		58	100		0	00	58

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			Fish			Crayf		Unrecognizable Debris or Other Material			Total
Coll.	1	Data.		Vol		Vol in			Vol.		Vol. in
No. 596	Same as for	Date 3/4/36	Scales and vertebra of a pike probably between 15 and 22" in length	14	% 99 . 3	•1	.7		0	00	14.1
597	Same as for No. 587	3/4/36	Fragmentary bones of a small fish most prob- ably under 6" in length	•5	2.1	24	97.9		0	00	24.5
598	Same as for No. 587	3/4/36	Scales of a sunfish, probably less than 6" in length. Scales of a pike, probably between 15 and 22" in length; fragmentary bones	33	73.3	12	26.7		0	00	45
599	Same as for No. 587	3/4/36	Trace of small bones of a fish, probably less than 6" long.	1	2	48	98	ੈ grass blade	0	00	49
600	Same as for No. 587	3/4/36	Many scales and a few recognizable bones of a pike, probably from 15 to 25" long. (A large number of broken s	12 cats	2.8	430	97.2		0	00	442