

Rec'd evl. Aug. 12

(9)

**A Study of Terrestrial Vertebrates Activity
on the Beach of
South Fishtail Bay, Douglas Lake
July, 1970**

B-

Presented to: Dr. F.H. Test
By: John R. Straw
August 12, 1970

Table of Contents

	Page
I. Objectives and Methods of Study.	1
II. Location and Dates of Study.	2
III. Data	
A. Description of beach study. (Also refer to map of beach study on page 34.)	4
B. Abbreviations used in data from track study beach walks.	6
C. Field notes - Data from track study beach walks.	7 to 24
D. Data from direct observations of Terrestrial Vertebrates along South Fishtail Bay.	25
E. Explanation of color slide photographs of beach area studied and Terrestrial Vertebrate evidence on the beach.	26
F. Plaster of paris deer track molds.	27
G. Map of beach study.	34
H. Track data synthesis - maps of deer and raccoon tracks	35 to 47
IV. Summary and Conclusions - Interpretation of Data and Track Maps.	29 to 33

A Study of Terrestrial Vertebrates Activity on the Beach of South Fishtail Bay, Douglas Lake July, 1970

I. Objectives and Methods of Study

The purpose of this project was to study the Terrestrial Vertebrate activity along the shores of South Fishtail Bay, Douglas Lake. The two main methods used to study them were: (1) direct observation in early morning and evening and (2) studying their tracks by walking from the boat well to Pine Point on several occasions. It was hoped to collect data that would answer the following questions and possibly others:

1. What Terrestrial Vertebrates come down to the shore of South Fishtail Bay, Douglas Lake?
2. When do they come down on the beach?
3. Where along the shore does each species come? Out of what type of vegetation? by UMBS cabins? near logs? out of open or thick woods? down steep rise?
4. Which species is the most frequent visitor?

date, time, person(s) observing,

Friday July 10, 7-9 P.M. - John
 (only camp area observed)
 Saturday July 11, 3:15-6 P.M. - John
 Sunday July 12, 8 A.M. - John
 (only camp area observed)
 Sunday July 12, 5-6 P.M. - John
 Monday July 13, 10-12 A.M. - Ruth
 Tuesday July 14, 6-7:30 A.M. - John, Ruth
 Monday July 20, 8-10 A.M. - Ruth
 Tuesday July 21, 7:30-9 P.M. - John
 Wednesday July 22, 8-10 A.M. - John
 Thursday July 23, 8-10 A.M. - Ruth
 Thursday July 23, 7:20-8 P.M. - John, Ruth
 Friday July 24, 10-12 A.M. - John, Dr. Test

5. How many of each species frequent the shore?
6. How frequent are visits by the same species to the same spots?
7. What possible interpretations of their behavior and purpose can be made? Why did they come down to the beach? What did they do there? How many tracks were there? what kind? in what direction? how far apart?

II. Location and Dates of Study

The area of South Fishtail Bay, Douglas lake that was studied can be seen on the map of Douglas Lake (map of beach study) - UMBS Lakeside Lab boat well to and beyond Pine Point. The western shore of South Fishtail Bay out to Grapevine Point was not studied as it contains very little beach, but numerous overhanging trees and a gravel-rock shore. The dates and times of study and person(s) who made the data collecting beach walk is listed in the following table:

A. Description of Beach Studied:

(also refer to Map pg 35)

Zone I Camp Area (Boat well to last Faculty lock)

Section	Beach width (ft)	grass (g) or shrub (l) width (ft)	Height of Rise (ft)	Number of steps and Comments (D-dock)
1	1-3	3g	1	Boat well 57 D 20 D 17 sand and gravel sail boats
2	1	3g	1	19 D 24 D 14 Married cabins open beach
3	1	3g	1	Boat Ramp 18 by net dryer
4	15-20	none	1	58 WALK 33 Beach with station boats
5	0	approx 10 grass	1	32
6	3-15	located grass	1	52 UMBS swimming beach volleyball court across road
7	1-4	2-5g	1	36 D 52 guest cabins
8	0-1	4g	1	D 30
9	1-4	4g	1-3	D 40 D 17 D 42 D 55 D 47 D 50 D 18 Faculty area
10	0	3g	2	12 " "
11	1-5	4g	2	9 D 26 D 36 D 34 D 9 Faculty area
12	0-1	4g	2	23 Faculty area open forest
13	2-5	0-3g	2	11 D 12 Faculty area " "
14	0-1	4g	2	37 bird houses " "
15	3	5g	2	26 old cabin, 1st X marker " "

Zone II Camp Area to Gull Point

16	2-7	1-7g	3	178 open forest - site of old
17	0-1	1-3g	2-4	160 stumps - ^{vis. camp} closed forest
18	1-3	1-3g	3	25 " "
19	0	3-6g	3	68 stumps " "
20	1	4-5g	3-4	25 " "
21	0	2-6g	4-5	41 last bird house to Pt. " "

Zone III Gull Point to Pine Point

Section	Beach width (ft)	grass (g) or shrub (l) width (ft)	Height of Rise (ft)	Number of steps and Comments
22	ave 12 max 20	4-8g	4-6	57 Gull Point open forest
23	0	2-3g	5	28 2nd X marker closed forest
24	1	2-3g	5	18 narrow beach " "
25	2-3	2-5g	5	17 " "
26	5	3-5g	4-5	21 open forest
27	5-7	8-10g	5-8	133 " "
28	8-12	4-10g	5-7	208 Beach where Andy's Family swims " "
29	10-12	3-6g	5	78 trees thicken, closed forest
30	12	2g	5 gradual	18 " "
31	12	3 willow	5 gradual	8 overhanging Red Pine " "
32	8-10	3-5g	4-6	28 " "
33	12	1g	5-7	14 overhanging Red Pine " "
34	8	4g	5-7	58 3rd X marker " "
35	15	1-2g	4 gradual	32 " "
36	3-4	8g	5-6	24 " "
37	6-8	8g	5-6	37 " "
38	10	0	10	8 2 overhanging Red Pines " "
39	10-12	1 L	10-12	20 " "
40	10	0	10	9 2 overhanging Red Pines " "
41	8-9	2 L	7-9	50 wide beach " "
42	2-3	6-8 L	8	32 before 1st log, 2 logs " "
43	5-8	3-6g L	8-12	63 1st log (BIG) 2'dia " "
44	6-9	0-1g L	10	38 eroded vertical cliff with burrows " "
45	4	0	9	7 white pine and white cedar " "
46	4-7	2 L	8	21 overhanging " "

Zone IV Pine Point Area

Section	Beach width (ft)	grass (g) shrub (s) width (ft)	Height of Rise (ft)	Number of steps and Comments
47	4-6	4-10g		Point #1 Trees, Rise back in closed forest
48	2-4	8-20g		120 Log gravel beach Trees, Rise back on "
49	5-8	20-50g	10-12 Trees 12 R	56 } POINT gravel and sand "
50	2-4	50-70g	10-12 Trees 12 R	90 } beach "
51	1	50g	10-12 Trees 12 R	34 } "
52	0-3	-	-	320 (still Pine Point) "

yond area study actually

section 37 to 52 - roads in water

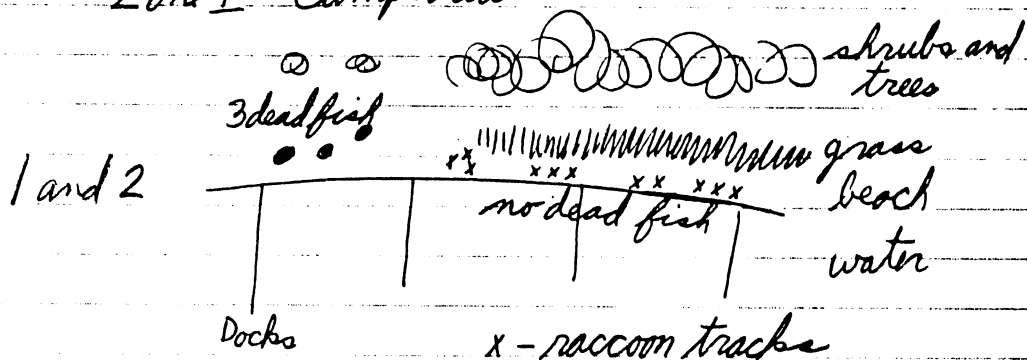
B. Abbreviations * conclusion material

1. rt - Raccoon track (s)
2. dt - Deer track (s)
3. down - tracks in direction down toward water
4. up - tracks in direction up beach away from water
5. var. dir. - tracks in variable directions
6. 16+27 (or any other numbers) - a group of 16 tracks, then another group of 27 tracks.
7. ← tracks along beach in direction of Pine Point.
→ tracks along beach in direction of Boat well.
8. D - dock
9. B - beach
10. g - grass
11. s - shrubs
12. T - trees
13. R - rise or hill behind B.

C. Field Notes - Data from Track Study beach with

Fri July 10 7⁰⁰ - 9⁰⁰ pm

Zone I Camp Area



* Thus, raccoon tracks along beach where grass and shrubs and trees were. None in area of open beach. Suggests raccoons may select areas of beach with vegetation for its cover and protection.

* There were also 3 dead fish on beach where no raccoon tracks were visible, but no dead fish on section of beach where the raccoon tracks were. This suggests the possibility that the raccoon(s) involved ate any fish on beach where it wandered.

Sat. 5⁰⁰ pm July 11

* Stopped in section 28 to talk with Mrs. Andrejewski she reported 10 raccoons frequently around their garden and penned up pheasants. Have tried to catch in traps - smart - can't catch.

Sun 5³⁰ pm July 12

Mr. Andrejewski verified report of about 10 raccoons trying to get in pheasant pen and grubbing in garden - usually in fall. See them around camp and along beach more about 1 week after station closes.



Sunday July 12, 1970

11

8 am

garbage can in front of Blissville #14 tipped over during night.

5-6 pm

- 3 5 rt → by net dryer
- 9 7 rt →
- 11 8 rt ←  in a cove beach area
- 16 23 rt ←  " " " " "
- 16 1 rt
- 16 1 rt
- 22 4 dt, straight down
- 22 22 rt near dt ← →
- 23 2 rt
- 24 6 rt
- 24 17 rt
- * 27 384 rt ←
- 28 564 rt ←
- 29 247 rt ←

} 2 or 3 raccoons all going north toward Pine Point as many tracks seemed to be overlapping

Monday, July 13 10-12 am

* no raccoon tracks that day - maybe rain that night had erased them? deer tracks all had rain drops in them. It was an early morning rain.

9 Mrs. Stoermer reports a raccoon into her garbage can the night before.

15 6 dt
41 dt ←

16 1 dt from grass

22 14 dt on point - down and up.
35, 10, 25 dt north of Gull pt.

* 33 on way back saw 15 rt - light - all hard to see - almost washed out by rain.

Tue. July 14 6-7³⁰ am

7 10 rt
9 3 rt
9 3 rt
45 3 dt by Cedar tree
47 80 rt ← (one individual going north toward Pine Point)
48 74 rt ←
48 60 rt ←

Mon. July 20 8-10 am

after Big storm
camp not observed cuz
waves from north - would
have washed out all tracks
and few tracks in camp area
on other days anyway.

* some dt w̄ rain drops -
made at night or on
Sun. evening.

* some dt w/o rain drops -
indication they were made
in early morning

22 Gull Point
3, 3, 3, 3 dt - 3 after rain
1 before rain
possibly 3 or 4 diff. deer

27 3 dt
3 dt

28 10 st
9 st grass to water

* 29 6 dt w̄ rain drops
25 dt fresh - ran or played cuz

37 3 dt

43 3 dt

44 4 dt rain

47 4 dt

48 46 dt ← rain

Tue. July 21 10-12 am

9 4 rt
6 rt } between Fac. docks
2 rt } ←
11 4 rt

16 1 rt

17 3 dt

23 7 rt grass to beach

24 1 rt others washed

25 away except for
several around a
dead, partially eaten
bird.

27 3 rt

41 56 rt under pine ←

43 28 rt ←

44 3 rt forest to water

46 7 rt ←

47 12 rt ←

48 42 rt ←

15 rt ←

49 55 rt ←

50 30 rt ←

51 35 rt ←

40 rt ←

24 rt ←

52 187 rt ←

53 4 dt to water and back

6 dt 3 down, 3 back

all raccoon listed today
were close to water on
wet beach

Tue July 21 7:30-9 pm

9 4 dt ←
2 rt ←

11 30 rt → → 9

13 45 rt ←

14 32 rt

16 21 rt

21 32 rt ? poss. 2 raccoons
* cuz of spacing,
but tracks all same
size

32 6 rt

41 3 dt

42 9 rt water

6 rt

44 2 dt

Wednesday, July 22 8-10 am

16 2 dt to shore

22 6 dt accross pt. to water

34 14 dt 12 yds N. of X sign

tall grass

37 20 dt 15 ft along beach ←

42 14 dt down hill from brush

42 22 dt ←

43 48 dt appear to be continuation
from 22 dt above. some appear
to be washed out by waves
or possibly deer walked in
water

44 35 dt down + 47

47 7 dt

from 44 to 47 probably in water

48 21 dt down and up into
vegetation

48 2 dt down, 2 dt up

50 12 dt $\frac{1}{2}$ down, $\frac{1}{2}$ back

27 dt ← →

51 3 dt stump to water

150 rt ← intermingled w dt
(at least 2, poss. 3 raccoons)

27 dt out of water,
along beach up to grass

52 12 dt along shore
 * 77 rt (3 raccoons cuz tracks very near and of slightly different size)

23 dt $\frac{2}{3}$ way onto beach
 → to grass - probably cuz of jump from water - scared by something?

53 25 rt (prob. 2 cuz of closeness)

27 rt (2?)

3 dt up into vegetation

32 rt (1 raccoon cuz of spacing regular)

○ → ○ → ○

↑

* 8 inches apart
 continue to rocky shore where tracks probably made in gravel.

all raccoon tracks section
 51 to 53 went North ←
 water receding - more beach area

Thurs. July 23 8-10 am

44 7 dt ←

45 10 dt from Cedar to water

47 8 dt down to water

27 dt ←, then into water

20 rt north, then up into

50 65 ^{grass} - 70 dt out of water north onto 2' beach bank
 tried to go up? walked closely to 2' rise for 15 tracks.

2 deer or 1 deer taking short irregular steps surveying how to get up beach

51 2 dt wet sand

45 dt ← again up to hill as if to climb cuz steps were short - steps continued on beach at step # 66, left water about 8 ft N. then deer tracks lost in loose dry sand.

52 6 dt to water
6' N. 6 dt out of water
15' N. 9 dt out of water
4 dt down, 4 dt up - 10' N
9 dt ← 11 dt ← along side
of the 9 dt Thus, 2 deer

53 6 dt down

23 dt ←

54 18 dt ← and then up into
grass

23

Thurs July 23 7²⁰ - 8⁰⁰ pm

32 22 dt ← by OH. Pines
46 bid and dog tracks

* Tamias striatus seen
scurried along hurriedly
on middle beach at edge
of rise in area of
overhanging Pines - aware
of my existence

42 65 dt $\frac{1}{2}$ ← $\frac{1}{2}$ →

Fri July 24 10 - 12 am

rained that night and morning

went out w Dr. Test found little, but I walked beach back to camp anyway -

wanted to see effect of rain

* 1-40 nothing - all probably wiped out by rain

* Dr. Test reported deer swimming off G.V.P. - dead fawn floating in water - also report of dogs on GVP

so possibly dogs chased deer from beach into water and fawn drowned

48 7dt down

1st Pine Pt. 5dt back up about 10 ft away from 7dt
2dt small
2dt one on top of other

D. Data from direct observations of Terrestrial Vertebrates along South Fishtail Bay.

1. Most commonly observed terrestrial vertebrate was Homo sapiens.
2. One Canis familiaris was seen on two occasions (Marilyn Williamson's dog).
3. No deer, Odocoileus virginianus, or raccoon, Procyon lotor, were seen by the two observers; however, there were a few reports of deer and raccoon: Mrs. Andrewjewski reported about 10 raccoons frequent their garden and penned up pheasants and have also been observed along beach especially after the station closes each fall. There were also two second-hand reports of deer swimming off of Grapevine Point and one dead fawn seen floating off of Grapevine Point. This was possibly the work of a dog.
4. ^{ing?} Two Natrix sipedon were seen, one in the water off of section 17, one in grass in section 21.
5. One Tamias striatus was seen in section 32 on outer part of beach near trees and rise on Thursday July 23, 7:45 P.M. He was scurrying along hurriedly and nervously as if he were nervous and out of his home range.
6. Many gull tracks were seen, especially on Gull Point.

E. Explanation of color slide photographs of beach area studied and Terrestrial Vertebrate evidence on the beach.

Slide number 16 - section 27 showing beach, grassy area, rise and open forest behind with mainly white pine, aspen and white birch.

Slide number 15 - taken from section 31 looking south toward camp with a good view of beach at section 30 and beach and grass in section 29 and 28.

Slide number 14 - the two overhanging red pines and beach of section 38.

Slide number 30 - eroded, vertical cliff with old burrows in section 44. Cliff is about 10 feet high, burrows about 7 to 8 feet up.

Slide number 11 - shows logs and beach of section 43 and north to Pine Point. This picture also shows Ruth Straw making a plaster of paris deer foot print.

Slide number 10 - overlapping foot print of a deer.

Slide number 29 - gravel beach and grass of section 48 looking south.

Slide number 28 - gravel and sand beach of section 49 with narrow beach and grass of sections 50 and 51 in the background.

F. Plaster of paris deer track molds.

On each of the molds, the more elevated and pointed end is the front of the hoof. This is similar to the human foot print where the toes make the deeper impression in the sand. Both deer prints 1 and 2 show how one deer step is placed almost directly on top of the last step. Number 1 hoof print almost covered the previous print while number 2 shows the outline of the first print much clearer. From the deer tracks observed, it can be concluded that they walk in an almost straight line with steps approximately

IV. Summary and Conclusions - Interpretation of Data and Track Maps.

The summary and conclusions are numbered 1 through 7 in answer to the questions stated as objectives of the study.

- 1. The terrestrial vertebrates which come down to the beach of South Fishtail Bay are Homo sapiens, Canis familiaris, Procyon lotor, Odocoileus virginianus, Natrix sipedon, Tamias striatus, plus bird tracks of gulls and other species.
- 2. Procyon lotor and Odocoileus virginianus frequent the beach most at night or in the early morning hours as many tracks were seen when the beach was surveyed in the morning; but very few racoon and deer tracks were seen when the beach was surveyed in the afternoon or evening of the same day. When or if other terrestrial vertebrates came down on the beach other than those listed in number 1 above could not be determined as they nor their tracks were ever seen.
- 3. Procyon lotor tracks were found mostly in Zone III along the sandy beach, and occasionally along the beach in Zone I and Zone IV. In Zone III, the tracks indicated that the racoons generally came out onto the beach in sections 27 and 28 from the woods between the beach and the Andrewjewski home. From there they (1 to 3 racoons)

coming to the beach. There was approximately a one foot drop from the grassy areas to the beach. The deer would appear to stumble in walking down this one foot drop: their prints would be deeper, many steps close together, but not overlapping as usual. When the deer climbed back up the one foot drop, they apparently had little trouble.

G. Map of beach study (pg.34)

H. Track data synthesis - maps of deer and racoon tracks (pgs.35 to47)

would travel north along the beach towards Pine Point. At the beginning of the area of raccoon tracks, the tracks were non-directional as if the raccoons came down to the beach and hesitated awhile as to which direction to go. The raccoons were probably adults as all of the tracks were about the same size; there was never any evidence from small raccoon tracks to suggest the young of this year. The tracks also indicated that from one to three raccoons would walk along the beach in Zone III each night. The tracks were uniformly spaced (approximately 8 inches apart) and in a straight line. There were several 4 to 12 foot gaps with no tracks leading away from the water into the loose sand or up the rise. This suggests that the raccoons would walk in the water for a short ways. The tracks in Zone IV seem to be a continuation of the phenomena in Zone III. In Zone I, however, the raccoon tracks were in small groups which was sometimes eastward along the beach, but more often with no definite direction. Here the tracks were most often along a section of beach with grass, shrubs and trees behind it. This suggests that in the camp area, the raccoons are more selective of areas of beach with vegetation which could be used for cover and protection. In all of the zones where raccoon tracks were found, there were seldom any fresh dead fish, but fresh dead fish could often be found where there were no raccoon tracks.

Ammonites
of data?

Odocoileus virginianus were most often found away from camp in the Pine Point area. Deer tracks were most numerous in Zone IV and section 52, and in the northern half of Zone III near the overhanging pines. Many tracks were also seen in section 22, Gull Point, and a few in Zone II off of the open forest. No deer tracks were ever seen in the camp area, Zone I. The deer tracks were found in sections along the beach where the forest was partially open. The forest was composed mainly of white pines, red pines, big toothed aspen, white birch, with some red maple and red oak. There seemed to be no correlation between where the deer tracks were found and the height or steepness of the rise to the forest behind. This would indicate that the deer would come out to the beach regardless of the rise behind the beach.

4. The most frequent visitor along the beach was undoubtedly Homo sapiens, Procyon lotor second and Odocoileus virginianus third.
5. The Procyon lotor tracks indicated one to three raccoons would come down to the beach at a time. Most of the Odocoileus virginianus tracks indicated a single deer coming down to the beach and shortly returning, however on several occasions the deer tracks were clustered as to suggest two to six deer.

in most cases, the tracks indicated that they came down to the beach and back up a short distance away. They probably came to the beach for water. Although they appeared to come down the steep, 8 to 12 foot hill from the forest to the beach, there was also evidence that they stumbled down the one foot drop from the grass to the beach. The tracks were normally 20-22 inches apart and varied in number, from a few on some mornings to over two hundred on two occasions, July 22 and 23.

why this variation?

6. Procyon lotor seemed to visit Zone III almost every night throughout the study period, Zone I only in first study period, July 10-14, and occasionally a considerable number of tracks were found in Zone IV and section 52 (July 14, 21, and 22).

Odocoileus virginianus visited Gull Point three out of four days in the first study week but only two of the five days of the second study week. The storm on Sunday July 19 changed the shape of Gull Point and made it a mushy sand saturated with water. In the first study week, July 11-14, very few deer tracks were found north of Gull Point to Pine Point, but in the second study week, July 20-24, many (and indeed most) of the deer tracks were found between Gull Point and Pine Point especially in the northern half of Zone III and in Zone IV and section 52.

7. Procyon lotor came to the beach to walk along scavenging for freshly dead fish and possibly for water. Usually many raccoon tracks occurred in a group (several to 564 in one case). Most groups of tracks were in a northern direction towards Pine point along the eastern shore of Douglas Lake. The tracks were approximately eight inches apart, between the pairs of tracks.

Odocoileus virginianus came down to the beach at more restricted spots of Zone IV, section 52, northern half of Zone III near the overhanging pines, and on Gull Point. Although the deer appeared to walk along the beach in a northerly direction, for a short ways on a few occasions;