
Appendix 2

ARCHAEOBOTANICAL REMAINS FROM THE FOXIE OTTER SITE

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Macrofossil Analysis

Sixty-nine soil samples from the Foxie Otter site were submitted by Christopher Hanks for plant macrofossil identification in April of 1981. Two samples were not analyzed: sample 15, which contained two lithic fragments, and sample 69, in which the bag had disintegrated.

The following is the archaeological context of the soil samples. Samples 13, 16, 17, 37 and 68 were hearth samples; samples 2, 3, 9, 38, 43, 44, 51, 52, and 53 were feature samples; samples 1, 4-7, 10, 11, 12, 14, 18-36, 38-42, 45-50, 54-57, 66, and 67 were quadrant and level or depth samples; samples 58 through 65 were soil comparative samples.

Method

Ten large soil samples (4, 17, 30, 31, 33, 34, 35, 36, 47, and 57) were floated using a SMAP machine (Watson 1976). Remaining soil samples (approximately one cubic liter each) were concentrated by dry sieving with a 9.5, 6.3 and 0.5 mm mesh.

Floated samples produced a light fraction that is included in this report. The dense material that sank was not analyzed.

Carbonized seeds were picked from float and soil residue under 10× magnification with a stereomicroscope. Uncarbonized seeds and other plant remains were identified but not picked, except for unknowns. Seeds were identified using seed identification manuals (Montgomery 1977; Martin and Barkley 1973) and by comparison with reference specimens.

Carbonized wood was prepared for examination by breaking the specimen to obtain a fresh transverse (cross) section and was identified using an illustrated wood charcoal identification key (McAndrews et al.) and by comparison with reference specimens. Identification was made under magnification of $7\times$ to $40\times$.

Seeds

The concentrate was mostly mineral soil particles. The organic material was carbonized and uncarbonized plant debris, such as wood, leaf fragments and roots.

A total of 11,178 ml of float and dry soil residue was examined. This yielded 157 seeds; 146 (8 taxa) were uncarbonized and 11 (4 taxa) were carbonized (Table 2.1).

Carbonized seeds or seed fragments of pin cherry, raspberry, elderberry, hazelnut and unknowns were present in samples 8, 13, 14, 19, 23, 28, 40, 47, 51, 57 and 66. Uncarbonized seeds of birch, hazelnut, knotweed, pin cherry, raspberry, cedar, *Viola* and unknowns were present in 39 of 69 samples.

The carbonized seeds were confined to the cultural soil samples. Only uncarbonized seeds were present in the comparative (control) samples.

Carbonized Wood

Some fragments were large enough to identify, but most were too small (less than 5 mm) for positive identification.

A total of 36.0 g of carbonized wood were examined from 38 samples (Table 2.2).

Carbonized wood from 38 samples was classified into seven categories: (1) maple, (2) birch, (3) poplar/willow, (4) indeterminable diffuse porous, (5) pine, (6) indeterminable conifer wood, and (7) indeterminable. Pine and indeterminable conifer were the most abundant. Poplar/willow, birch and maple were the less abundant hardwoods.

Pine wood makes up the largest portion of carbonized wood examined (52.5%). Small amounts of poplar/willow (13.8%), maple (1.1%) and birch (.6%) were also identified. Partially identified wood amounted to 26.1% and 5.8%. Small amounts of pine wood was identified in control samples 59 and 65. Pine wood was present in hearth samples 17 and 68 and maple wood was identified in hearth sample 68.

Discussion

The fossil seeds and carbonized wood are all derived from plants that are native to the site: no fossils of introduced plants were identified. Raspberry, elderberry, and knotweed are weedy and thrive on sites disturbed by humans. Birch, hazelnut and pin cherry flourish after forest fires. Thus some of the fossils could be the result of twentieth century disturbance. However, because the control samples lacked the carbonized seeds that were present in the cultural samples, except hearths, we infer that at least some of the carbonized seeds are contemporaneous with prehistoric occupation.

The uncarbonized fossils suggest intrusion of modern seeds into prehistoric soil levels and features.

Hazelnut, pin cherry, raspberry and elderberry are edible. If the prehistoric inhabitants had gathered these fruits this would indicate a summer-fall occupation. The sparseness of edible fruit remains suggests casual rather than intensive use.

The fossil flora is consistent with the vegetation of the past 7,000 years and no further chronological refinement can be made.

The presence of carbonized wood in the control samples suggests that some of the fossil carbonized wood could be intrusive. The lack of carbonized wood in the three "hearth" samples casts doubt that these features actually were hearths.

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TABLE 2.1
Uncarbonized and Carbonized Seed and Plant Remains
Identified from the Foxie Otter Site

R1	Hanks-A-1. Quadrant 1, Level 1. Concentration 112 cc, 24 g Uncarbonized seeds — <i>Polygonum</i> ¹ 1, <i>Prunus</i> ² 1, <i>Sambucus</i> 1 Needles — <i>Thuja</i>
R2	B-0-1, Fea. 1. Concentration 200 cc, 46 g Uncarbonized seeds —unknown 4
R3	B-0-1, Fea. 1. Concentrate 115 cc, 55 g Needles — <i>Thuja</i>
R4	B-0-3, Concentrate 700 cc, 123 g Uncarbonized seeds — <i>Polygonum</i> 1, <i>Prunus</i> fragment, <i>Rubus</i> 1 Fruit scale — <i>Betula</i> Needles — <i>Thuja</i>
R5	B-0-3, depth 18 cm. Concentrate 100 cc, 27 g
R6	B-0-3, Concentrate 95 cc, 67 g
R7	B-0-3, Concentrate 135 cc, 15 g Uncarbonized seeds — <i>Prunus</i> fragments Needles — <i>Thuja</i>
R8	B-0-3, Fea. 1. Concentrate 80 cc, 37 g Carbonized seed — <i>Corylus</i> fragment
R9	B-0-3, Fea. 1. Concentrate 100 cc, 37 g Uncarbonized seed — <i>Prunus</i> 1
R10	B-0-4, Depth 13 cm. Concentrate 145 cc, 17 g
R11	C-0-2, Concentrate 106 cc, 24 g Needles — <i>Thuja</i>
R12	E-0. Quadrant 4, Level 4. Concentrate 115 cc, 53 g Uncarbonized seed — <i>Prunus</i> 1
R13	E-0. Hearth, Level 2. Concentrate 200 cc, 35 g Uncarbonized seeds — <i>Betula</i> 1, <i>Rubus</i> 2, unknown 3 Carbonized seeds — <i>Rubus</i> 1
R14	E-0. Quadrant 2, Level 4. Concentrate 95 cc, 38 g Uncarbonized seeds — <i>Prunus</i> 1 Carbonized seeds — <i>Corylus</i> 1 (frag.) Needles —conifer fragments Artifact —chert flake

¹*P. cf. cilinode*

²*P. pennsylvanica*

SOIL SAMPLES AND BOTANICAL SPECIMENS ARE HOUSED IN THE BOTANY DEPARTMENT, CANADIANA BUILDING, ROYAL ONTARIO MUSEUM IN TORONTO.

Botanical Lexicon: *Betula* = birch, *Corylus* = hazelnut, *Polygonum* = knotweed, *Prunus* = pin cherry, *Rubus* = raspberry, *Sambucus* = elderberry, *Thuja* = cedar, *Viola* = violet, *Picea* = spruce.

- R15 Two lithic core fragments
- R16 E-0. Hearth, Quadrant 3, Level 1. Concentrate 100 cc, 33 g
Uncarbonized seeds—*Betula* 3, unknown 2
- R17 E-00. Feature 3, Hearth, Quadrant 1, Level 3. Concentrate 500 cc, 56 g
Uncarbonized seeds—*Prunus* 66
- R18 E-0. Quadrant 2, Level 2. Concentrate 165 cc, 66 g
Uncarbonized seeds—*Polygonum* 1
Needles—*Picea*
- R19 E-0. Quadrant ?, Level 3. Concentrate 90 cc, 29 g
Carbonized seed—unknown 1
- R20 E-0. Level 1. Concentrate 70 cc, 36 g
Fruit scale—*Betula*
- R21 38° 2N0W-2. Concentrate 70 cc, 36 g
Uncarbonized seeds—*Viola?* 1
Needles—*Thuja*
- R22 7N0E. Quadrant 2, Level 2. Concentrate 210 cc, 94 g
Uncarbonized seeds—*Betula* 1, *Prunus* 1, *Sambucus* 1
Artifacts—quartz flake.
- R23 E7N0E. Quadrant 3. Concentrate 120 cc, 45 g
Carbonized seeds—*Sambucus* 1
Needles—*Thuja*
- R24 E7N0E. Quadrant 3, Level 3. Concentrate 130 cc, 75 g
- R25 E8N0E. Quadrant 2, Level 2. Concentrate 84 cc, 42 g
Uncarbonized seeds—*Thuja* 1
Needles—*Thuja*
- R26 E8N0E. Quadrant 4, Level 1. Concentrate 101 cc, 32 g
Uncarbonized seeds—*Rubus* 1
Needles—*Thuja*
Artifacts—quartz flake
- R27 E9N0E. Quadrant 2, Level 2. Concentrate 155 cc, 72 g
Uncarbonized seeds—*Prunus* 1.
Fruit scale—*Betula*
Needles—*Picea*, *Thuja*
Cone scale—*Thuja*
Artifacts—chert flake
- R28 E9N0E. Quadrant 3, Level 2. Concentrate 150 cc, 76 g
Carbonized seeds—*Prunus* 1

- R29 E9N0E. Quadrant 2, Level 2. Concentrate 175 cc, 104 g
Uncarbonized seeds—*Thuja*
Needles—*Thuja* 9
- R30 9N2W. Quadrant 3, Level 2. Concentrate 175 cc, 20 g
Uncarbonized seeds—*Betula* 1, *Polygonum* 3, *Prunus* fragments, *Rubus* 7, *Viola*? 43,
 unknown 3
- R31 9N2W. Quadrant 3, Level 2. Concentrate 50 cc, 4 g
Uncarbonized seeds—*Prunus* 1, *Rubus* 1, *Viola* 5
- R32 38° 10N3W. Quadrant ?, Level 2. Concentrate 33 cc, 15 g
- R33 38° 10N3W. Quadrant 3, Level 2. Concentrate 33 cc, 15 g
- R34 38° 10N3W. Quadrant 3, Level 2. Concentrate 125 cc, 29 g
Uncarbonized seeds—*Prunus* fragments, *Rubus* 8, unknown 1
- R35 38° 10N4W. Quadrant 3, Level 2. Concentrate 50 cc, 6 g
- R36 38° 14N0W. Level 2. Concentrate 250 cc, 50 g
Uncarbonized seeds—*Betula* 2, *Prunus* 1, unknown 6
- R37 38° 14N0W-2. Hearth, Level 2. Concentrate 225 cc, 143 g
 Plant remains absent
- R38 38° 14N0W-2. Feature 6, Level 2. Concentrate 175 cc, 108 g
Uncarbonized seeds—*Prunus* fragments
Needles—conifer fragments
- R39 38° 14N0W-3. Concentrate 180 cc, 95 g
Uncarbonized seeds—*Prunus* fragments
Needles—*Picea*
- R40 38° 14N0W-3. Level 2. Concentrate 175 cc, 108 g
Carbonized seeds—*Sambucus* 1
- R41 38° 14N0W-3. Level 2. Concentrate 140 cc, 100 g
- R42 38° 14N0w-3. Concentrate 140 cc, 100 g
Carbonized seeds—*Prunus* fragments, unknown 1.
Fruit scale—*Betula*
Needles—*Picea*
- R43 38° 15N1W-1. Feature 8. Level 2. Concentrate 155 cc, 115 g
Needles—*Picea*
- R44 38° 15N1W-1. Feature 3. Concentrate 80 cc, 70 g
 Plant remains absent
- R45 E0NE0. Quadrant 2, (extension 1). Concentrate 83 cc, 51 g
Artifacts—quartz flake.

- R46 E0NE0. Quadrant 2, (extension 2), Level 3. Concentrate 83 cc, 51 g
Artifacts—chert flake, quartz flake
- R47 E0NE0. Level 2. Concentrate 700 cc, 134 g
Carbonized seeds—*Betula* 4, *Prunus* 1, *Rubus* 1, unknown 2
Needles—*Thuja*. Cone scale—*Thuja*
- R48 E0NE0. Quadrant 1, Level 2. Concentrate 285 cc, 47 g
- R49 E0NE0. Quadrant 2, Level 3. Concentrate 200 cc, 16 g
- R50 E0NE0. Quadrant 3, Level 3. Concentrate 100 cc, 77 g
Fruit scale—*Betula*
- R51 E0NE0. Feature 4. Quadrant 4, Level 2. Concentrate 190 cc, 47 g
Carbonized seeds—*Prunus* 1
- R52 O.S. 0NE0. Feature 7. Quadrant 2, Level 3. Concentrate 130 cc, 58 g
 Plant remains absent
Artifacts—chert flake.
- R53 O.S. 0NE0. Feature 7. Quadrant 2, Level 3. Concentrate 130 cc, 65 g
 Plant remains absent
- R54 E. 0SE0-1. Concentrate 82 cc, 46g
- R55 E. 0SE0-1. Concentrate 220 cc, 70 g
Fruit scale—*Betula*
Needles—*Picea*, *Thuja*
- R56 E. 0SE0-2. Concentrate 185 cc, 63 g
Uncarbonized seeds—*Betula* 1, *Prunus* 1
Needles—*Thuja*
- R57 E. 0SE0-2. Concentrate 400 cc, 51 g
Uncarbonized seeds—*Betula* 1, *Prunus* 1, unknown 1
Carbonized seeds—unknown 2
- R58 Soil sample, comparative. Concentrate 165 cc, 63 g
Uncarbonized seeds—*Betula* 1, *Prunus* fragments, *Rubus* 3
Needles—*Picea*, *Thuja*
- R59 Soil Sample, comparative. Concentrate 145 cc, 36 g
Uncarbonized seeds—*Betula* 1, *Prunus* 1
- R60 Soil sample, comparative. Concentrate 228 cc, 63 g
Uncarbonized seeds—*Corylus* fragments
- R61 Soil sample, comparative. Concentrate 238 cc, 81 g
Uncarbonized seeds—*Betula* 1, *Thuja* 1
Needles—*Picea*, *Thuja*
Cone scale—*Thuja*

- R62 Soil sample, comparative. Concentrate 40 cc, 26 g
Uncarbonized seeds—*Thuja* 1.
Fruit scale—*Betula*
Needles—*Picea*, *Thuja*
- R63 Soil sample, comparative. Concentrate 50 cc, 10 g
- R64 Soil sample, comparative. Concentrate 65 cc, 45 g
Uncarbonized seeds—*Prunus* fragments
- R65 Soil sample, comparative. Concentrate 70 cc, 46g
- R66 E. 1N0E-4. Concentrate 270 cc, 42 g
Uncarbonized seeds—*Prunus* fragments
Carbonized seeds—unknown 1
- R67 E. 1N0E-2. Concentrate 200 cc, 75 g
Fruit scale—*Betula*
Needles—*Picea*, *Thuja*?
Artifacts—chert flake, quartz flake
- R68 E. 1N0E-4. Hearth. Concentrate 105 cc, 42 g
Needles—*Thuja*
Artifacts—chert flake
- R69 No provenience on bag.

Botanical Lexicon: *Betula* = birch, *Corylus* = hazelnut, *Polygonum* = knotweed, *Prunus* = pin cherry, *Rubus* = raspberry, *Sambucus* = elderberry, *Thuja* = cedar, *Viola* = violet, *Picea* = spruce.

TABLE 2.2
Carbonized Wood (>5mm) in Grams from Foxie Otter Site

ROM # ^a	<i>Acer</i> ^b	<i>Betula</i> ^c	<i>Populus/Salix</i> ^d	I.D.P. ^e	If	<i>Pinus</i> ^g	I.C. ^h	Total
3	-	-	-	-	-	.1	.1	.2
4	-	-	-	-	-	-	.2	.2
5	-	-	-	-	-	.1	.3	.4
9	-	-	-	-	-	.3	-	.3
11	-	-	-	.1	-	-	-	.1
12	-	-	-	-	-	.1	.2	.3
17	-	-	-	-	.9	2.8	.8	4.5
18	-	-	-	-	-	1.4	.9	2.3
20	-	-	-	-	-	-	1.3	1.3
22	.3	-	-	.1	-	.2	.1	.7
23	-	-	-	-	.1	.9	.1	1.1
24	-	-	-	-	-	-	.1	.1
25	-	-	-	-	-	.2	.1	.3
27	-	-	-	-	-	.2	.1	.3
28	.1	-	-	-	-	.1	.1	.3
30	-	-	-	-	.1	.1	.1	.3
31	-	-	-	-	.1	-	.1	.2
33	-	.1	-	-	.1	-	.1	.3
34	-	-	-	-	-	.1	.2	.3
35	-	-	-	-	-	.2	.1	.3
36	-	-	-	-	-	.1	.2	.3
40	-	-	-	-	-	-	.1	.1
41	-	-	-	-	-	.1	.1	.2
43	-	-	-	-	-	1.0	-	1.0
46	-	-	-	.3	-	-	-	.3
47	-	-	.9	.1	-	.2	.3	1.5
48	-	-	1.8	.2	.3	.5	.2	3.0
51	-	-	.7	.1	-	.2	.1	1.1
53	-	-	.1	-	-	.1	.1	.3
54	-	-	-	-	.2	-	.3	.5
55	-	-	.1	.2	.1	-	.1	.5
56	-	-	.4	.1	.1	.1	.1	.8
57	-	-	1.0	.1	.1	.1	.2	1.5
59	-	-	-	-	-	.1	.1	.2
65	-	-	-	-	-	.1	.1	.2
66	-	-	-	-	-	1.7	.3	2.0
67	-	-	-	-	-	7.2	.3	7.5
68	-	.1	-	.2	-	.6	.3	1.2
Total	.4	.2	5.0	1.5	2.1	18.9	7.9	36.0
%	1.1	.6	13.8	4.2	5.8	52.5	21.9	99.9

^aRoyal Ontario Museum catalog number

^bMaple

^cBirch

^dPoplar/Willow

^eIndeterminable diffuse porous

^fIndeterminable

^gPine

^hIndeterminable conifer