

APPENDIX E

Seed Identification

Paleoethnobotanical studies were carried out on a series of flotation samples from the Delaware Park Site. Samples from a total of 43 individual features were examined, and a list of the plant species identified¹ is presented in Table 1. In the table, plants are identified by family, genus, and species names, followed by common names in parentheses. Those species (and other taxa) marked by an asterisk (*) are represented by charred specimens. As the pH of the soil at the site was about 5.0 (acidic), it is unlikely that seeds which were uncharred could have survived from Archaic or Early Woodland times. Therefore, it is most likely that those seeds which are not charred represent modern botanical material.

ANALYSIS

In analysing the Delaware Park seed material, we sought to determine the economic uses to which the identified seed material might have been put. A survey of available ethnobotanical sources (Tantaquidgeon 1942; Smith 1928; Moeller 1975; Moerman 1977; Weiner 1972) suggested a wide variety of food and ethnomedical uses for many of the species identified in this study. A summary of these findings is included in Table 2. Economically, the plant species can be divided into three groups: (1) those which would have served primarily as food plants, (2) those species which may have been of medicinal importance, and (3) those plants which are of little economic importance.

Food plants

Among the charred specimens, Amaranthus and/or Chenopodium (goosefoot, pigweed, lambsquarters), Cruciferae Brassica sp. (mustard), Leguminosae Amphy-
carpa bracteata (hog nut), Liliceae Polygonatum biflorum (Solomon's seal), Phytolaccaceae Phytolacca americana (pokeweed), Rosaceae Rubus sp. (blackberry/
raspberry), vitaceae Vitis riparia (wild grape), Juglandaceae Carya sp. (hickory), and Fagaceae Quercus sp. (acorn) would have been important as food sources. Especially significant are Carya, Amaranthus and/or Chenopodium, and Rubus, as these plants all occur in charred condition in seven or more of the sampled features. Seeds of elderberry (Caprifoliaceae Sambucus sp.) and Honeysuckle (Caprifoliaceae Loncera sp.) are uncharred and almost certainly modern. However, these plants are known to have been used as food plants ethnohistorically, and the possibility of their use as food in Archaic or Woodland times might at least be suggested.

Medicinal plants

In addition to food resources, many of the plants identified in this study may have been used for medicinal purposes (see Table 2). Specifically, catchfly, sassafras, flowering spurge, skullcap, buttercup, wild thyme, Monarda, slender bush clover, bayberry, smartweed, and nightshade are known primarily as medicinal plants. In addition, several of the food plants, such

¹ Identifications of plant species were aided by Montgomery (1977), Martin and Barkley (1961), and Symonds (1958).

as mustard and Solomon's seal, also have known ethnomedical uses. With the exception of smartweed, the probable medicinal plants are infrequently represented among the seed samples from the Delaware Park site. The small numbers of these seeds could possibly have resulted from the use of bark, roots, leaves, stems, and flowers, rather than seeds, in medicinal preparations.

Plants of limited economic importance.

Several of the plants identified in this study probably represent modern weed plants of limited economic importance. In particular, carpetweed (Aizoaceae Mollugo verticillata) and copperleaf/three-seeded mercury (Euphorbiaceae Acalypha sp.) are rarely charred and probably represent modern crop weeds. They are of little recorded economic importance. Fernald and Kinsey (1958:188) note that carpetweed can be used as a potherb, but caution that "(i)t is too small for most people to gather, except when very hungry".¹

Plants of European Origin. The remains of several plants of European origin were also recovered from the Delaware Park seed samples. Uncharred seeds of dandelion and St. John's wort were identified, and both are apparently European introductions (Weiner 1972). Goosegrass (Graminae Eleusine indica) which is represented in our sample by charred and several uncharred seeds, is probably also an Old World plant. Ridley (1930: 657-8) suggests that Eleusine indica is of Indian origin and has spread throughout the world by human agency, while Fernald (1950) describes it as native to the warm areas of the Old World.

DISCUSSION

The carbonized seed remains from the Delaware Park site show a wide range of plant species which might have been exploited by the inhabitants. Although the features sampled cover a chronological span of more than two thousand years, no clear change in the range of species utilized throughout the period is apparent. This is similar to the continuity in plant resource use throughout the Archaic levels at the Koster site (Asch, Ford, and Asch 1972). Moreover, it is difficult to draw conclusions about seasonality of occupation from the Delaware Park seed remains. Unlike the pits examined by Moeller (1975), the Delaware Park pits do not have discernable stratigraphy. Thus any conclusions about seasonality would be tenuous at best. However, the data from Delaware Park are not incompatible with the autumn occupations suggested for Woodchuck Knoll (McBride 1978) and the Upper Delaware Valley sites studied by Moeller (1975).

The significance of the Delaware Park seed sample lies in the range of plant types recovered, and in the varying frequencies with which these seeds and

¹Chapman, Stewart, and Yarnell (1974) argue that the spread of Mollugo verticillata into eastern North America is related to the spread of Amerindian agriculture into this region. Thus the absence of evidence for cultivation at Delaware Park would further argue against the economic importance of carpetweed.

nuts are present in the features examined. The variety of plant species present is striking when compared to the range of material recovered from the Woodchuck Knoll Archaic site in Connecticut. At Woodchuck Knoll (McBride 1978) only four plant species (walnut, hickory, American lotus, and Chenopodium were identified from the flotation samples. The range of species recovered from Delaware Park is comparable to the variety of seeds identified from the Late Archaic Nebo Hill site along the Missouri (Root 1979) and from the Archaic horizons at the Koster site (Asch, Ford, and Asch 1972). At Delaware Park, as well as the Koster and Nebo Hill sites, the majority of the plant species identified were recovered in very low quantities. Of the fifty plant taxa recovered from the Delaware Park site, 28 are represented in the floated seed samples from only one or two features. Thus, the possibility that these seeds are present in the sample due to natural seed dispersion processes should be suggested. The presence of a very small number of carbonized seeds of goosegrass (a plant of Old World origin) would strengthen the case for natural contamination. However, the possibility that some of the poorly represented species may have been used by the aboriginal inhabitants of the site should not be discounted. Cultural practices, such as the use of leaves, bark, and roots, could also account for the low numbers of seeds of certain species.

In contrast to the poorly represented plants, Carya (hickory), and Chenopodium/Amaranthus (goosefoot, pickweed, lambsquarters) are present in the vast majority of the features and are almost always charred. This compares with the evidence from Woodchuck Knoll, and the ubiquitous presence of hickory nuts in the botanical remains from the Archaic levels at Koster is echoed at Delaware Park. Asch, Ford, and Asch (1972:27) have described hickory nuts as "a first-line wild plant food" in light of "their seasonal abundance, storability, caloric value, and complete and high protein content". Thus the concentration on hickory nuts at Delaware Park may be seen as an efficient use of the available wild plant foods.

CONCLUSIONS

The Delaware Park site produced a wide range of carbonized seed remains. Although many of the species are represented by small numbers of charred seeds, hickory and chenopod/amaranth are present in large numbers in charred form in a majority of the sampled features. The importance of Carya (hickory) as a food source at Delaware Park compares favorably with the Archaic features at Woodchuck Knoll and the Koster site. Similarly walnuts, and possibly chenopods, were important at the Late Archaic site of Nebo Hill. The absence of any evidence for cultivation would also link Delaware Park with other Archaic sites. Thus, although the Delaware Park site is relatively late in date, the paleoethnobotanical evidence from this site compares well with the evidence for plant utilization from other eastern Archaic sites.

REFERENCES CITED

Asch, Nancy B.; Ford, Richard E., Asch, David L.

- 1972 Paleoethnobotany of the Koster Site: The Archaic Horizons.
Illinois State Museum, Reports of Investigations, No. 24

Chapman, J.; Stewart, R.B.; Yarnell, R.A.

- 1974 "Archaeological Evidence for Precolumbian Introduction of
Portulaca oleracea and Mollugo verticillata into Eastern North
America". Economic Botany 28:411-412.

Fernald, M.L.

- 1950 Gray's Manual of Botany. New York: D. Van Nostrand.

Fernald, M.L; Kinsey, A.C.

- 1958 Edible Wild Plants of Eastern North America.
Revised Edition. New York: Harper and Row.

Martin, Alexander C.; Barkley, William D.

- 1961 Seed Identification Manual. Berkeley and Los Angeles:
University of California Press.

McBride, Kevin A.

- 1978 "Archaic Subsistence in the Lower Connecticut River Valley:
Evidence from Woodchuck Knoll." Man in the Northwest
Nos. 15/16:124-132.

Moeller, Roger W.

- 1975 Late Woodland Floral and Faunal Exploitive Patterns in the
Upper Delaware Valley. Paper presented at the Middle Atlantic
Conference, Lancaster, Pa. March 1075.

Moerman, Daniel E.

- 1977 American Medical Ethnobotany: A Reference Dictionary
New York: Garland Publ. Inc.

Ridley, Henry N.

- 1930 The Dispersal of Plants Throughout the World.
Ashford, Kent: L. Reeve and Co.

Root, Mathew J.

- 1979 "The Paleoethnobotany of the Nebo Hill Site."
Plains Anthropologist 24 (no. 85): 239-247.

Smith, Huron H.

- 1928 "Ethnobotany of the Meskwaki Indians." Bulletin of the
Public Museum of the City of Milwaukee 4 (no. 2): 175-326.

Symonds, George W.D.

- 1958 The Tree Identification Book.
New York: Barrows and Co.

Tantaquidgeon, Gladys

- 1942 A Study of Delaware Indian Medicine Practice and Folk Beliefs
Harrisburg: Pennsylvania Historical Commission.

Weiner, Michael A.

- 1972 Earth Medicine -- Earth Foods.
New York: Macmillan.

Table 1

Seed Identifications

The following species of seeds were identified from the Delaware Park Site. The seeds are listed by family, genus, and species, with common names in parantheses. Those species marked by an asterisk (*) were represented by charred specimens.

- Aizoaceae Mollugo verticillata (carpetweed)*
- Amaranthus sp. and/or Chenopodium sp. (goosefoot, pigweed, lambsquarters)*
- Caprifoliaceae Loncera sp. (honeysuckle)
- Caprifolaceae Sambucus sp. (elderberry)
- Capparidaceae Ponerisia sp. (clammyweed)*
- Caryphyllaceae Silene sp. and/or Cerastium sp. (catchfly/chickweed)*
- Compositae Taraxacum officinale (dandelion)
- Cruciferae (Mustard family)*
- Cruciferae Brassica sp. (Mustard seed)*
- Cruciferae cf. Carmelina microcarpa (small seeded false flax)*
- Cyperaceae Carex sp. (sedge)
- Cyperaceae Fimbristylis sp. (sedge)*
- Cyperaceae Scirpus sp. (bulrush)
- Euphorbiaceae (spurge family)*
- Euphorbiaceae Acaylpha sp. (copperleaf, three-seeded mercury)*
- Euphorbiaceae Euphorbia sp. (spurge)*
- Euphorbiaceae Euphorbia corrollata (flowering spurge)*
- Grminae (grass family)
- Graminae Eleusine indica (goosegrass)*
- Graminae Setaria glauca/lutescens (foxtail, bristlegrass)
- Hypericaceae Hypericum sp. (St. John's wort)
- Labiatae (mint family)*
- Labiatae Monards sp.*
- Labiatae Scutellaria sp. (skullcap)*
- Labiatae Teucrium sp. (wood sage)*
- Labiatae Tricosema dichotomum*
- Labiatae Thymus serpyllum (wild thyme)*
- Lauraceae Sassafras sp. (sassafras)*
- Leguminosae (bean family)*

Leguminosae Amphicarpa bracteata (hog nut)*
Leguminosae Lespedeza sp. (slender bush clover)*
Leguminosae Lotus sp. (deer vetch)*
Liliaceae Polygonatum biflorum (Solomon's seal)*
Myricaceae Myrica pennsylvanica (bayberry)*
Orobanchaceae Conopholis americana (squawroot)*
Oxalidaceae Oxalis stricta (oxalis)*
Phytolaccaceae Phytolacca sp. (?americana) (pokeweed)*
Polygonaceae Polygonum sp. (smartweed)*
Polygonaceae Polygonum lapathifolium (dock-leaved smartweed)*
Polygonaceae Rumex acetosella (sheep sorel)
Ranunculaceae Ranunculus sp. (buttercup)*
Rosaceae Potentilla arguta (tall cinquefoil)
Rosaceae Prunus sp. (plum/cherry)
Rosaceae Rubus sp. (blackberry/raspberry)*
Rubiaceae Galium sp. (bedstraw)*
Solanaceae Solanum sp. (nightshade)*
Vitaceae Vitis riparia (wild grape)*

Nuts:

Fagaceae Quercus sp. (acorn)*
Juglandaceae (hickory/walnut)*
Juglandaceae Carya sp. (hickory)*

Table 2

Ethnobotanical Information on Plants Identified from Delaware Park Seed Samples.

Botanical Name	Common Name	Season	Plant Part used and Function
Aizoaceae Mollugo verticillata	carpetweed		
Amaranthus sp.	pigweed	May-Sept. (3)	Leaves used with others as greens (1:74-75)
Chenopodium sp.	pigweed goosefoot lambsquarters	May-Nov. (3)	Leaves used as food. Young leaves eaten as greens or boiled with fat (5:165). Root of C.Album used in tea to allay urinary itch.
Caprifoliaceae Loncera sp.	honeysuckle	Jul-Aug. (3)	Fruit used as food (3) Root bark used to make internal medicine by Meskwaki (2:196) Root bark used as diuretic (2:199-206)
Caprifolaceae Sambucus sp.	elderberry	Aug-Oct. (3) fruit May-July flowers (5:39)	Edible fruit: Meskwaki eat fruit raw or cooked into conserve (2:256) Bark used in salve (1:76-77). Leaves and stems used to treat jaundice; flowers made into tea for infants colic (1:26); inner bark of young shoots used as diuretic and purgative (2:207). The plant is used by Delaware, Ojibwa, Menomini, Sauk-Fox (3).
Capparidaceae Polanisia sp.	clammyweed		
Caryophyllaceae Silene sp. or Cerastium sp.	catchfly chickweed		Root used to dry up puss-discharging swellings (2:208)
Compositae Taraxacum officinale	dandelion		Introduced from Europe (5:160)

Botanical Name	Common Name	Season	Plant Part used and Function
Cruciferae	Mustard fam.		
Cruciferae Brassica sp.	mustard seed		Young shoots picked and cooked as greens (1:50) Seeds of <u>B.nigra</u> were ground and used for snuff to cure head colds by Meswaki (2:219).
Cruciferae cf. Carmelina micro- carpa	small seeded false flax		
Cyperaceae Carex	sedge		
Cyperaceae Fimbristylis sp.	sedge		
Cyperaceae Scirpus sp.	bulrush		
Euphorbiaceae	spurge family		Spurge family is toxic (5:91-92)
Euphorbiaceae Acaylpha sp.	copperleaf or three-seeded mercury	Aug-Oct.(3)	
Euphorbiaceae Euphorbia sp.	spurge		
Euphorbiaceae Euphorbia corrollata	flowering spurge		Root is pounded and boiled in water and used as a laxative and in treating rheumatism; the root has also been used as a cathartic and as an emetic (2:220-221)
Graminae	grass fam.		

Botanical Name	Common Name	Season	Plant Part used and Function
Graminae Eleusine indica	goosegrass		<u>E. Indica</u> is of Old World origin.
Graminae Setaria glauca/lutescens	foxtail bristlegrass		
Hypericaceae Hypericum sp.	St. John's wort		European origin (5)
Labiatae	mint family		
Labiatae Monarda sp.		Jul-Aug/ Sept.	<u>Monarda Punctata</u> : plant made into tea for fever and to bathe the face of patient (1:29); leaves steeped and drunk to allay backache by Catawba (5:20); also used in inflammation and chills (5:21) <u>M.fistulosa</u> : plant used in combination for making a cold cure (2:225) Ojibwa inhale extracted oil to relieve bronchial complaints (5:27). <u>M.didyma</u> : leaves used as food and flavoring.
Labiatae Scutellaria sp.	skullcap		Plant top used as stomach stimulant and laxative (1:31) <u>S.Parvula</u> : used by Meskwaki for treatment of flux (2:227) used by Cherokee to promote retarded menstruation (5:89)
Labiatae Teucrium sp.	wood sage		
Labiatae Thymus serpyllum	wild thyme		Plant steeped with boneset and taken for chills and fever (1:55)
Labiatae Tricosema Dichotomum			

Botanical Name	Common Name	Season	Plant Part used and Function
Lauraceae Sassafras sp.	sassafras	flowers: Apr.-May fruit: Sept.(5:87)	Bark of root used as blood purifier (1:25) Nanticoke drink sassafras tea to ward off fever and ague (1:55)
Leguminsae	bean family		
Leguminsae Amphicarpa bracteata	hog peanut		Nut used as food by Meskwaki (2:259)
Leguminosae Lespedeza sp.	slender bush clover		<u>L.Cupitata</u> root is used as an antedote to poison (2:229)
Leguminosae Lotus sp.	deer vetch		
Liliaceae Polygonatum biflorum	Solomon's seal	Sept-Nov. (3)	Root:fumes are used to revive one who has lost consciousness; also used to augment flow of urine for dropsy; and to increase appetite and digestion (2:230). Food plant (3 : Root stocks used by Iroquois to make bread new shoots used as greens (5:174)
Myricaceae Myrica pennsylvanica	bayberry		Bark used as blood purifier and for kidney trouble (1:29); leaves and stems boiled for tea and used as fever remedy by Choctaw (5:57)
Orobanchaceae Conopholis americana	squawroot		
Oxalidaceae Oxalis stricta	oxalis		

Botanical Name	Common Name	Season	Plant Part used and Function
Phytolaccaceae Phytolacca sp.	pokeweed	Apr.-Sept. (3)	<u>P.americana</u> : used as food and medicine (roots and leaves)(3) used as emetic (5:113); berries used for tea to cure rheumatism (5:113). <u>P.decandra</u> : root combined with sarsparilla and mountain grape to remedy rheumatism; acts as a stimulant and blood purifier; also used as food and dye (3).
Polygonaceae Polygonum sp.	smartweed	Jun/Jul - Oct/Nov.(3)	<u>Polygonum</u> sp. and <u>P.hydropiper</u> : Tubers used as food (3) <u>P.persicaria</u> : Chippewa use decoction of root for stomach pain (4). <u>P.punctatum</u> : Chippewa use decoction of herb for stomach pain (4) <u>P.pennsylvanicum</u> : Fox used it topically (probably leaves) against bloody flux (4); Menominee use leaf decoction to stop bleeding from mouth (4); Ojibwa and Menominee smoke leaves (3).
Polygonaceae Polygonum lapathifolium	dock-leaved smartweed	July-Nov.	Seeds used by Potawatemi as febrifuge (3; 4)
Polygonaceae Rumex aceto- sella	sheep sorel		Mohegans felt that chewing leaves was good for the stomach (4:166); also edible.
Ranunculaceae Ranunculus sp.	buttercup	blooms late spring summer	<u>Ranunculus</u> sp.: root pulverized, soaked in warm water and used to wash wounds (6:12) <u>R. acris</u> : Fox used root as styptic for nosebleed (4) Montagnais crushed leaves and inhaled for head- aches (4). <u>R. flabellaris</u> : Fox used flower stigmas to induce sneezing (4).

Botanical Name	Common Name	Season	Plant Part used and Function
Rosaceae <i>Potentilla arguta</i>	tall cinquefoil		Chippewa pricked dried, powdered root into temples as analgesic; a decoction of the root is used as an anti-diarrheal; dried, powdered root is used as a poultice for cuts (4:147)
Rosaceae <i>Prunus</i> sp.	plum/cherry	late summer	Fruit used as food; root and bark have a variety of ethnomedical uses (consult references for the ethnomedical uses of individual species).
Rosaceae <i>Rubus</i> sp.	blackberry or raspberry	June-Sept. (3)	Berries, root, leaves and vine used as food and in medicines (3). Decoctions of root used as eyewash and analgesic (4).
Rubiaceae <i>Galium</i> sp.	bedstraw	June-Sept.	Plant, root, shoots, and seeds used by Ojibwa for medicine, food and dye. Whole plant brewed into tea for bladder and kidney infections (5). Tea also used to cure ague (2:244)
Solanaceae <i>Solanum</i> sp.	nightshade	May-Oct. for <i>S. Carolinense</i> (3)	Root of <i>S. dulcamera</i> used by Oklahoma, Delaware for fever and also in salve (1:81).
Vitaceae <i>Vitis riparia</i>	wild grape	Aug.-Oct.	Fruit, twigs, and sap used as food and in medicine by Ojibwa, Menomini, and Iroquois (3).
Fagaceae <i>Quercus</i> sp.	acorn		Edible nut
Juglandaceae	walnut/hickory family		
Juglandaceae <i>Carya</i>	hickory		Nuts used as food. Bark used by Fox in decoction as simple laxative and for simple sickness (2;4)

Note: References are noted in parentheses. Numbers refer to:

1. Tantaquidgeon (1942)	
2. Smith (1928)	Page numbers
3. Moeller (1975)	follow colons.
4. Moerman (1977)	
5. Weiner (1972)	

	Fea. 12	Fea. 36	Fea. 37	Fea. 39	Fea. 42	Fea. 43	Fea. 45	Fea. 46	Fea. 51	Fea. 52	Fea. 55	Fea. 56	Fea. 57	Fea. 58	Fea. 59	Fea. 60	Fea. 62	Fea. 63	Fea. 70	Fea. 72	Fea. 75	Fea. 82	Fea. 83	Fea. 87	Fea. 94	Fea. 98	Fea. 101	Fea. 108	Fea. 125	Fea. 130	Fea. 134	Fea. 138	Fea. 139	Fea. 140	Fea. 144	Fea. 149	Fea. 194					
Graminae <i>Setria glauca/lutescens</i> (foxtail, bristlegrass)	X	X	X	X	X	X		X	X		X	X			X				X	X					X	X		X	X									X				
Hypericaceae <i>Hypericum</i> sp. (St. John's wort)																								X																		
Labiatae (mint family)																									X			X	X													
Labiatae <i>Monarda</i> sp.			X																																							
Labiatae <i>Scutellaria</i> sp. (skull cap)					X											X	X												X													
Labiatae <i>Teucrium</i> sp. (wood sage)																																										
Labiatae <i>Tricostema dichotomum</i>		X																																								
Labiatae <i>Thymus serpyllum</i> (wild thyme)					X																																					
Lauraceae <i>Sassafras</i> sp. (sassafras)																											X															
Leguminosae (bean family)					X													X									X															
Leguminosae <i>Amphicarpa bracteata</i> (hognut)				X																																						
Leguminosae <i>Lespedeza</i> sp. (slender bush clover)					X																																					
Leguminosae <i>Lotus</i> sp. (deer vetch)			X						X																																	
Liliaceae <i>Polygonatum biflorum</i> (Solomon's seal)				X																																						
Myricaceae <i>Myrica pennsylvanica</i> (bayberry)									X																																	
Orobanchaceae <i>Conopholis americana</i> (squawroot)																												X														
Oxalidaceae <i>Oxalis stricta</i> (oxalis)			X				X	X	X			X				X									X		X		X		X											
Phytolaccaceae <i>Phytolacca</i> sp. (?americana) (pokeweed)					X		X	X							X	X									X		X					X			X							
Polygonaceae <i>Polygonum</i> sp. (smartweed)	X	X	X		X	X	X	X	X		X		X	X	X					X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

TABLE 3 SEED IDENTIFICATION BY FEATURE

	Fea. 12	Fea. 36	Fea. 37	Fea. 39	Fea. 42	Fea. 43	Fea. 45	Fea. 46	Fea. 51	Fea. 52	Fea. 55	Fea. 56	Fea. 57	Fea. 58	Fea. 59	Fea. 60	Fea. 62	Fea. 63	Fea. 70	Fea. 72	Fea. 75	Fea. 82	Fea. 83	Fea. 87	Fea. 94	Fea. 98	Fea. 101	Fea. 108	Fea. 125	Fea. 130	Fea. 135	Fea. 138	Fea. 139	Fea. 140	Fea. 144	Fea. 149	Fea. 196		
<u>Aizoaceae</u> <u>Mollugo verticillata</u> (carpetweed)	X	X	X	X	X	X	X	X	X		X	X	X		X		X	X	X		X		X	X	X	X	X	X	X		X	X				X	X		
<u>Amaranthus</u> sp. &/or <u>Chenopodium</u> sp. (goosefoot, pigweed &/or lambsquarters)	X	X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X			X	X	
<u>Caprifoliaceae</u> <u>Lonicera</u> sp. (Honeysuckle)																						X																	
<u>Caprifoliaceae</u> <u>Sambucus</u> sp. (elderberry)						X	X	X																	X														
<u>Capparidaceae</u> <u>Polanisia</u> sp. (clammyweed)					X																																		
<u>Caryophyllaceae</u> <u>Silene</u> sp. &/or <u>Cerastium</u> sp. (catchfly/chickweed)	X	X	X	X	X	X	X	X	X		X	X		X			X		X				X	X	X		X	X	X		X	X					X		
<u>Compositae</u> <u>Taraxacum officinale</u> (dandelion)		X							X								X																						
<u>Cruciferae</u> (Mustard family)																									X														
<u>Cruciferae</u> <u>Brassica</u> sp. (Mustard seed)			X		X				X					X	X	X									X														
<u>Cruciferae</u> cf. <u>Carmelina microcarpa</u> (small seeded false flax)					X																																		
<u>Cyperaceae</u> <u>Carex</u> sp. (sedge)																									X														
<u>Cyperaceae</u> <u>Fimbristylis</u> sp. (sedge)			X																																				
<u>Cyperaceae</u> <u>Scirpus</u> sp. (bulrush)														X																									
<u>Euphorbiaceae</u> (spurge family)					X	X																																	
<u>Euphorbiaceae</u> <u>Acaulpha</u> sp. (copperleaf, three-seeded mercury)	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
<u>Euphorbiaceae</u> <u>Euphorbia</u> sp. (spurge)			X				X						X				X	X						X				X	X										
<u>Euphorbiaceae</u> <u>Euphorbia corollata</u> (flowering spurge)					X																			X															
<u>Gramineae</u> (grass family)							X				X													X		X	X						X	X					
<u>Gramineae</u> <u>Eleusine indica</u> (goosegrass)																							X	X	X						X								

TABLE 3 SEED IDENTIFICATION BY FEATURE

	Fea. 12	Fea. 36	Fea. 37	Fea. 39	Fea. 42	Fea. 43	Fea. 45	Fea. 46	Fea. 51	Fea. 52	Fea. 55	Fea. 56	Fea. 57	Fea. 58	Fea. 59	Fea. 60	Fea. 62	Fea. 63	Fea. 70	Fea. 72	Fea. 75	Fea. 82	Fea. 83	Fea. 87	Fea. 94	Fea. 98	Fea. 101	Fea. 104	Fea. 125	Fea. 130	Fea. 134	Fea. 138	Fea. 119	Fea. 140	Fea. 144	Fea. 149	Fea. 194	
Polygonaceae <u>Polygonum lapathifolium</u> (dock-leaved smartweed)													X					X																				
Polygonaceae <u>Rumex acetosella</u> (sheep sorrel)	X																																					X
Ranunculaceae <u>Ranunculus</u> sp. (buttercup)						X																																
Rosaceae <u>Potentilla arguta</u> (tall cinquefoil)						X																																
Rosaceae <u>Prunus</u> sp. (plum/cherry)		X				X																																
Rosaceae <u>Rubus</u> sp. (blackberry/raspberry)	X	X	X		X	X		X		X				X				X						X	X		X									X		
Rubiaceae <u>Galium</u> sp. (bedstraw)			X																																			
Solanaceae <u>Solanum</u> sp. (nightshade)					X																																	
Vitaceae <u>Vitis riparia</u> (wild grape)		X				X		X						X																								
NUTS																																						
Fagaceae <u>Quercus</u> sp. (acorn)																																					X	
Juglandaceae (hickory/walnut)	X	X	X	X	X	X		X	X	X			X		X			X			X				X									X	X			
Juglandaceae <u>Carya</u> sp. (hickory)		X	X	X	X	X		X	X				X		X		X	X																X	X		X	

TABLE 3 SEED IDENTIFICATION BY FEATURE