

A Floristic Inventory of Hemlock Bluff Nature Preserve
Jackson County, Indiana

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Introduction

A floristic inventory was undertaken during the years 1977-79 by the authors in the Hemlock Bluffs Nature Preserve. The area is located in Jackson County in Section 23, Township 5 North, Range 2 East of the Tunnelton Quadrangle. In 1977, forty acres were dedicated as a state nature preserve and have been insured protection under the Indiana Nature Preserve Act. This unique area includes many natural communities, and Eastern hemlocks are represented here in all sizes from vigorous seedlings to record mature trees. The tract is located in the "Knobs" area of the Crawford Upland. A steep siltstone bluff, 170 feet tall, overlooks Guthrie Creek which flows through lower sections of the preserve. A hiking trail traverses the upper slopes of the nature preserve.

Methods

The authors visited the nature preserve fourteen times during three growing seasons. The information collected for each plant included flowering time, fruiting time and relative abundance, as well as the natural communities in which it was located.

Discussion

Many natural communities were identified in the preserve ranging from dry-mesic upland slopes to the wet lower floodplains.

Dry-mesic upland forest. This community is on upper slopes where there is an intermediate soil moisture gradient. Dominant plants include: *Quercus alba*, *Quercus velutina*, *Liriodendron tulipifera*, *Sassafras albidum*, and *Carya ovata*. Unerstory species included: *Cornus florida*, *Lindera benzoin*, *Hamamelis virginiana*, *Ulmus rubra* and *Cercis canadensis*. Herbaceous plants were represented by the orchids *Liparis liliifolia* and *Aplectrum hyemale*, *Eupatorium rugosom*, *Solidago caesia*, and many spring wildflowers. A disturbed portion of the forest (an old logging road) contains an abundance of *Aralia spinosa* and *Boehmeria cylindrica*.

Mesic-Bluff and Ravine Forest. This community may be found on north and east facing slopes, in ravines, and on level slopes where the soil moisture content is high. Dominant trees include: *Acer saccharum*, *Fagus grandifolia*, *Quercus borealis maxima*, *Tsuga canadensis*, and *Acer rubrum*. Unerstory woody plants include: *Asimina triloba*, *Morus rubra*, *Viburnum acerifolium*, *Vaccinium vacillans*, *Gaylussacia bacata* and *Rubus odoratus*. Ferns such as *Dryopteris marginalis*, and

Polystichum acrostichoides abundant on these wetter slopes. Herbaceous plants include: *Monotropa hypopithys*, *Mitchella repens*, *Cunila organoides*, *Carex picta*, and many spring wildflowers.

Wet-Mesic Floodplain Forest. This community occurs at the edge of the floodplain. The plants found here are not inundated during the flood stage but they are water-tolerant plants. Trees include: *Celtis occidentalis*, *Ulmus americana*, *Fraxinus pennsylvanica subintegerrima*, *Aesculus glabra*, *Carpinus caroliniana*, and *Acer negundo*. Shrubs species include: *Rubus odoratus*, *R. occidentalis*, *Hydrangea arborescens*, *Euonymus atropurpureus*, and *Rhus radicans*. Herbaceous plants often occurred in large colonies, and included *Pilea pumila*, *Campanula americana*, *Impatiens spp.*, *Aruncus dioicus*, and *Hydrophyllum appendiculatum*.

Wet Floodplain Forest. This community floods frequently, and has a lower tree species diversity. It exhibits a very open overstory, and the understory is often choked with nettles and vines in midsummer. Representative tree species include: *Populus deltoides*, *Betula nigra*, *Platanus occidentalis*, *Salix interior*, *Salix nigra*, and *Juglans cinerea*. Vines such as *Polygonum scandens* and *Lonicera japonica* are abundant. *Pilea pumila* forms dense carpets in the area.

Disturbed Areas. Two parking lots are provided for visitors to the nature preserve. The vicinity of these two areas and portions of an old field near the edge of the preserve are areas that have been heavily disturbed by man. Predominant species are herbaceous plants, many of which are aliens (non-native). Important plants include: *Conyza canadensis*, *Verbesina alternifolia*, *Eupatorium spp.*, *Aster spp.*, and *Solidago spp.* Tree species include: *Rhus glabra*, *Juniperus virginiana*, *Sassafras albidum*, *Diospyros virginiana*, and *Liriodendron tulipifera*.

Summary

Three hundred species, representing two hundred twenty genera, were identified in the forty acre preserve. A species list for the preserve is presented in Table 1. Complete listings of flowering time, and relative abundance are on file with the Division of Nature Preserves, Indianapolis, Indiana 46204.

TABLE 1. *Species list for Hemlock Bluff Nature Preserve, Jackson County.*¹

* = county record; # = alien species

- *1. *Acer negundo* L.
2. *Acer rubrum* L.
3. *Acer saccharum* Marsh.
4. *Achillea millefolium* L.
5. *Actaea alba* L. (*A. pachypoda* D.)
6. *Adiantum pedatum* L.
7. *Aesculus glabra* Willd.
- *8. *Agrimonia rostellata* Wallr.
9. *Agrostis hyemalis* (Walt) BSP
- *10. *Allium tricoccum* Ait.
- #*11. *Allium vineale* L.
- *12. *Ambrosia artemisiifolia* L.

¹ Nomenclature according to Gleason and Cronquist.

² Synonymy with Deam established.

TABLE 1—Continued

13. *A. trifida* L.
14. *Amelanchier laevis* Wieg.
15. *Amphicarpa bracteata* var. *comosa* Fern (L.)
16. *Anemonella thalictroides* (L.) Spach
17. *Aplectrum hyemale* (Muhl.) Torr
18. *Apocynum cannabinum* L.
19. *Arabis laevigata* (Muhl.) Poir.
20. *Aralia racemosa* L.
21. *Aralia spinosa* L.
- #*22. *Arctium minus* Schk.
23. *Arisacma dracontium* (L.) Schott
24. *Arisaema triphyllum* (L.) Schott
25. *Aruncus dioicus* (Walt.) Fern
- *26. *Asarum canadense* L.
27. *Asimina triloba* (L.) Dunal
28. *Aster lateriflorus* (L.) Britt.
29. *Aster pilosus* Willd.
- *30. *Aster sagittifolius* Willd.
31. *Athyrium pycnocarpon* (Spreng.) Tidestr.
- #32. *Barbarea vulgaris* R. Br.
33. *Betula nigra* L.
34. *Bidens coronata* (L.) Britt.
- *35. *Bidens frondosa* L.
36. *Blephilia hirsuta* (pursh) Benth.
37. *Boehmeria cylindrica* (L.) Sw.
38. *Botrychium virginianum* (L.) Sw.
- #*39. *Brassica nigra* (L.) Koch.
40. *Campanula americana* L.
41. *Campsis radicans* (L.) Seem.
42. *Capsella bursa-pastoris* (L.) Medic.
- *43. *Cardamine douglassii* (Torr.) Britt.
44. *Cardamine pennsylvanica* Muhl.
45. *Carex frankii* Kunth.
46. *Carex picta* Steud.
- *47. *Carex plantaginea* Lam.
48. *Carex platyphylla* Carey.
49. *Carex prasina* Wahl.
- *50. *Carex virescens* Muhl.
51. *Carex vulpinoidea* Michx.
52. *Carpinus caroliniana* Walt.
53. *Carya cordiformis* (Wang.) K. Koch.
54. *Carya ovalis* (Wang.) Sarg.
55. *Carya ovata* (Mill.) K. Koch.
56. *Castanea dentata* (Marsh.) Borkh.
57. *Celastrus scandens* L.
- *58. *Celtis occidentalis* L.
- #59. *Cerastium vulgatum* L.
60. *Cercis canadensis* L.
- #61. *Chrysanthemum leucanthemum* L.
62. *Cinna arundinacea* L.
63. *Circaea quadrisulcata* (Maxim.) Franch & Sav. (*C. latifolia* D.)
- *64. *Cirsium altissimum* (L.) Spreng.
- #*65. *Cirsium vulgare* (Savi.) Tenore.
66. *Claytonia virginica* L.
67. *Collinsonia canadensis* L.
68. *Commelina virginica* L.
- *69. *Conopholis americana* (L.) Wallr.
- #*70. *Convolvulus arvensis* L.
- *71. *Conyza canadensis* (L.) Cronq. (*Erigeron canadensis* D.)
72. *Cornus florida* L.
- *73. *Corydalis flavula* (Raf.) DC.

TABLE 1—Continued

74. *Cryptotaenia canadensis* (L.) DC.
 *75. *Cubelium concolor* (Forst.) Raf. (*Hybanthus concolor* D.)
 76. *Cunila origanoides* (L.) Britt.
 *77. *Cuphea petiolata* (L.) Koehne.
 78. *Cuscuta gronovii* Willd.
 79. *Cynoglossum virginianum* L.
 80. *Cyperus strigosus* L.
 81. *Cystopteris fragilis* (L.) Bernh.
 *82. *Daucus carota* L.
 83. *Dentaria heterophylla* Nutt.
 84. *Dentaria laciniata* Muhl.
 *85. *Desmodium cuspidatum* (Muhl.) Loud. (*D. bracteosum* D.)
 86. *Desmodium nudiflorum* (L.) DC.
 #87. *Diathus armeria* L.
 *88. *Dicentra canadensis* (Goldie.) Walp.
 89. *Dicentra cucullaria* (L.) Bernh.
 90. *Dioscorea villosa* L.
 91. *Dioscorea quaternata* (Walt.) Gmel.
 *92. *Diospyros virginiana* L.
 93. *Dryopteris marginalis* (L.) Gray.
 94. *Elymus riparius* Wieg.
 *95. *Epifagus virginiana* (L.) Bart.
 96. *Epilobium coloratum* Biehler.
 *97. *Equisetum arvense* L.
 98. *Erechtites hieracifolia* (L.) Raf.
 99. *Erigenia bulbosa* (Michx.) Nutt.
 100. *Erigeron annuus* (L.) Pers.
 *101. *Erigeron philadelphicus* L.
 102. *Erigeron strigosus* Muhl. (*E. ramosus* D.)
 103. *Erythronium americanum* Ker.
 104. *Euonymus atropurpureus* Jacq.
 105. *Eupatorium coelestinum* L.
 106. *Eupatorium fistulosum* Barratt.
 *107. *Eupatorium perfoliatum* L.
 108. *Eupatorium rugosum* Houtt.
 *109. *Eupatorium scssilifolium* L.
 110. *Eupatorium serotinum* Michx.
 *111. *Euphorbia commutata* Engelm.
 *112. *Euphorbia dentata* Michx.
 *113. *Euphorbia maculata* (E. Supina D.)
 114. *Fagus grandifolia* Ehrh.
 #*115. *Festuca elatior* L.
 *116. *Fraxinus americana* L.
 117. *Fraxinus pennsylvanica* Marsh. (*F. lanceolata* D.)
 118. *Galium aparine* L.
 119. *Galium circaezens* Michx.
 120. *Galium concinnum* T. & G.
 121. *Galium triflorum* Michx.
 122. *Gaylussacia baccata* (Wang.) K. Koch.
 123. *Geranium maculatum* L.
 124. *Geum canadense* Jacq.
 #*125. *Glechoma hederacea* L.
 126. *Hamamelis virginiana* L.
 *127. *Helianthus decapetalus* L.
 *128. *Helianthus grosseserratus* Martens
 *129. *Helianthus hirsutus* Raf.
 130. *Helianthus tuberosus* L.
 131. *Heliopsis helianthoides* (L.) Sweet
 132. *Hepatica acutiloba* DC.
 133. *Heuchera americana* var. *brvripetala* R. B. & L.
 134. *Hieracium paniculatum* L.

TABLE 1—Continued

135. *Houstonia purpurea* L.
 136. *Hydrangea arborescens* L.
 137. *Hydrophyllum appendiculatum* Michx.
 138. *Hydrophyllum macrophyllum* Mutt.
 *139. *Hydrophyllum virginianum* L.
 140. *Hypericum mutilum* L.
 *141. *Hypericum perforatum* L.
 142. *Hypericum punctatum* Lam.
 143. *Hystrix patula* Moench.
 144. *Impatiens biflora* Walt.
 145. *Impatiens pallida* Nutt.
 146. *Iodanthus pinnatifidus* (Michx.) Steud.
 147. *Ipomoea pandurata* (L.) G. F. W. Meyer
 148. *Jeffersonia diphylla* (L.) Pers.
 *149. *Juglans cinerea* L.
 *150. *Juglans nigra* L.
 *151. *Juncus marginatus* Rostk.
 *152. *Juniperus virginiana* var. *creba* Fern.
 *153. *Justicia americana* (L.) Vahl. (*Dianthera americana* D.)
 154. *Krigia biflora* (Walt.) Blake
 *155. *Lactuca floridana* (L.) Gaertn.
 #*156. *Lamium purpureum* L.
 *157. *Laportea canadensis* (L.) Wedd.
 158. *Lecrsia virginica* Willd.
 #*159. *Lespedeza euneata* (Dumont) G. Don.
 160. *Lindera benzoin* (L.) Blume. (*Benzoin aestivale* D.)
 *161. *Liparis liliifolia* (L.) Rich.
 162. *Liriodendron tulipifera* L.
 163. *Lobelia inflata* L.
 164. *Lobelia siphilitica* L.
 #*165. *Lonicera japonica* Thunb.
 166. *Luzula campestris* var. *echinata* (Small) Fern. & Wieg.
 (*Luzula echinata* D.)
 167. *Lycopus virginicus* L.
 *168. *Lysimachia nummularia* L.
 *169. *Medeola virginiana* L.
 #*170. *Medicago lupulina* L.
 #*171. *Melilotus alba* Desr.
 #*172. *Melilotus officinalis* (L.) Desr.
 173. *Menispermum canadense* L.
 174. *Mimulus alatus* Ait.
 175. *Mitchella repens* L.
 176. *Mitella diphylla* L.
 177. *Monarda clinopodia* L.
 178. *Monarda fistulosa* var. *mollis* (L.) Benth.
 179. *Monotropa hypopithys* L.
 180. *Monotropa uniflora* L.
 *181. *Morus rubra* L.
 182. *Nyssa sylvatica* Marsh.
 183. *Obolaria virginica* L.
 184. *Oenothera biennis* L. (*O. pycnocarpa* D.)
 *185. *Onoclea sensibilis* L.
 #*186. *Ornithogalum umbellatum* L.
 *187. *Osmorhiza longistylis* (Torr.) DC.
 188. *Ostrya virginiana* (Mill.) K. Koch.
 189. *Oxalis grandis* Small.
 190. *Oxalis strieta* L.
 191. *Parthenocissus quinquefolia* (L.) Planch.
 #*192. *Pastinaca sativa* L.
 193. *Penstemon digitalis* Nutt.
 #*194. *Perilla frutescens* (L.) Britt.

TABLE 1—Continued

- #*195. *Phleum pratense* L.
 196. *Phlox divaricata* L.
 197. *Phryma leptostachya* L.
 198. *Phytolacca americana* L.
 199. *Pilea pumila* (L.) Gray.
 #200. *Plantago lanceolata* L.
 201. *Plantago rugellii* Decne.
 *202. *Platanus occidentalis* L.
 203. *Podophyllum peltatum* L.
 204. *Polemonium reptans* L.
 205. *Polygonatum biflorum* (Walt.) Ell.
 *206. *Polygonum erectum* L.
 207. *Polygonum pennsylvanicum* L.
 208. *Polygonum persicaria* L.
 209. *Polygonum scandens* L.
 *210. *Polygonum virginianum* L.
 211. *Polystichum acrostichoides* (Michx.) Schott.
 *212. *Populus deltoides* Marsh.
 213. *Populus grandidentata* Michx.
 #*214. *Portulaca oleracea* L.
 #*215. *Potentilla recta* L.
 216. *Potentilla simplex* Michx.
 *217. *Prenanthes altissima* L.
 218. *Prunella vulgaris* var. *lanceolata* (Bart.) Fern.
 219. *Prunus serotina* Ehrh.
 220. *Pycnanthemum virginianum* (L.) Durand & Jackson
 221. *Quercus alba* L.
 222. *Quercus coccinea* Muenchh.
 223. *Quercus borealis* Michx. var. *maxima* (Marsh.) Ashe.
 224. *Quercus velutina* Lam.
 225. *Ranunculus abortivus* L.
 226. *Rhus glabra* L.
 227. *Rhus radicans* L.
 228. *Ribes cynosbati* L. (*Grossularia cynosbati* D.)
 *229. *Rosa multiflora* Thunb.
 230. *Rubus allegheniensis* Porter
 *231. *Rubus occidentalis* L.
 232. *Rubus odoratus* L.
 233. *Rudbeckia hirta* L.
 *234. *Rumex crispus* L.
 235. *Sabatia angularis* (L.) Pursh.
 236. *Salix interior* Rowlee
 237. *Salix nigra* L.
 238. *Sambucus canadensis* L.
 239. *Sanguinaria canadensis* L.
 240. *Sanicula canadensis* L.
 *241. *Sanicula trifoliata*
 #*242. *Saponaria officinalis* L.
 243. *Sassafras albidum* (Nutt.) Nees.
 244. *Scirpus atrovirens* Willd.
 245. *Scirpus lineatus* Michx.
 246. *Scrophularia marilandica* L.
 247. *Sedum ternatum* Michx.
 248. *Senecio aureus* L.
 249. *Senecio glabellus* Poir.
 #*250. *Setaria faberii* Herm.
 *251. *Sida spinosa* L.
 *252. *Silene virginica* L.
 253. *Sisyrinchium graminoides* Bickn.
 254. *Smilacina racemosa* (L.) Desf.
 *255. *Smilax hispida* Muhl.

TABLE 1—Continued

256. *Smilax rotundifolia* L.
 257. *Solanum carolinense* L.
 258. *Solidago caesia* L.
 *259. *Solidago canadensis* L.
 260. *Solidago canadensis* var. *scabra* (Muhl.) T. & G.
 (*Solidago altissima* D.)
 *261. *Solidago flexicaulis* L. (*Solidago latifolia* D.)
 262. *Solidago graminifolia* (L.) Salisb.
 263. *Solidago juncea* Ait.
 264. *Stachys tenuifolia* Willd.
 265. *Stellaria pubera* Michx.
 266. *Strophostyles helveola* (L.) Ell.
 267. *Stylophorum diphyllum* (Michx.) Nutt.
 *268. *Symphoricarpos orbiculatus* Moench.
 #*269. *Taraxacum officinale* Weber
 #270. *Thlaspi arvense* L.
 *271. *Tilia americana* L.
 272. *Tradescantia subaspera* Ker.
 #*273. *Trifolium pratense* L.
 #*274. *Trifolium repens* L.
 275. *Trillium gleasoni* Fern.
 *276. *Trillium recurvatum* Beck.
 277. *Triodanis perfoliata* (L.) Nieuwl.
 (*Specularia perfoliata* D.)
 278. *Triodia flava* (L.) Smyth.
 *279. *Triosteum perfoliatum* var. *aurantiacum* (Bickn.) Wieg.,
 (*Triosteum aurantiacum* D.)
 280. *Tsuga canadensis* (L.) Carr.
 *281. *Ulmus americana* L.
 *282. *Ulmus rubra* Muhl.
 *283. *Urtica dioica* var. *procera* (Muhl.) Wedd.
 (*Urtica procera* D.)
 *284. *Uvularia grandiflora* Sm.
 285. *Vaccinium vacillans* Torr.
 286. *Valeriana pauciflora* Michx.
 #*287. *Verbascum thapsus* L.
 *288. *Verbena urticifolia* L.
 *289. *Verbesina alternifolia* (L.) Britt. (*Actinomeris alternifolia* D.)
 290. *Vernonia altissima* Nutt.
 #*291. *Veronica arvensis* L.
 292. *Viburnum acerifolium* L.
 293. *Viola eriocarpa* Sch.
 294. *Viola papilionacea* Pursh.
 295. *Viola striata* Ait.
 296. *Viola triloba* Sch.
 297. *Vitis aestivalis* Michx.
 *298. *Vitis riparia* Michx.
 *299. *Woodsia obtusa* (Spreng.) Torr.
 300. *Zanthoxylum americanum* Mill.

Of the 300 species, 96 are new county records. Vouchers for each will be deposited in an Indiana herbarium at a future date. Many of these species are relatively common, (e.g. *Trillium recurvatum* and *Ulmus rubra*), since Jackson County was not actively botanized by Charles Deam. Twenty-seven of these county records are non-native species which may have moved into the area in recent years.

Several taxa considered rare in the state were identified in the preserve, including *Rubus odoratus*, *Juglans cinerea*, *Monotropa hypopithys*, *Tsuga canadensis*, and *Liparis liliifolia*.

The species list will be periodically updated and any additions to it would be welcomed by the authors. Inventories of such state nature preserves will lead to increased knowledge of plant distributions, and aid in the preserve's proper management.

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