FINAL REPORT
IOWA PLEISTOCENE SNAIL PROJECT
1987

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INTRODUCTION

Research in the Paleozoic Plateau in certain counties in northeastern Iowa, southeastern Minnesota, southwestern Wisconsin, and northwestern Illinois has resulted in the discovery of a number of sites for glacial relict flora and fauna. Some dozen plant and animal taxa are either federally Endangered or Threatened or are current or potential candidates for such status. Two major habitat types, algalic talus slopes and moderate cliffs, have been defined in previous reports (Frest, 1982-1986).

Systematic searches using a set of rather narrowly defined geologic and botanical criteria have added a sizeable number of sites in each of the preceding five years. Field methods have been discussed at length previously. The same methodology was used for a final sweep of the full area for six weeks in June and July, 1987. This sweep was expected to visit all remaining areas with any high probability for additional sites. Counties targeted were Winneshiek, Mitchell, Howard, Allamakee, Fayette, Delaware, Clayton, Jackson, Dubuque, and Jones in Iowa, Fillmore in Minnesota, Grant in Wisconsin, and Jo Daviess in Illinois.

RESULTS

Essentially all first, second, and third-ranked sites have now been visited at least once. Coverage of the Blanding, Hopkinton, and Dunleith-Wise Lake potential areas in all states is for all practical purposes complete. Coverage of the Prairie du Chien is less complete, but all high probability areas were visited. It is probably not cost efficient to cover all Prairie du Chien sites, and it is unlikely that doing so would yield more than a few significant additional sites. The total number of algalic sites now stands at 300; a listing by number (geared to my previous reports), size, stratigraphy,
location, and degree of disturbance is included as Appendix 1. Some fifteen new algific sites were added in this field season, as well as seven moderate cliffs, bringing the latter total to 28 (Appendix 1).

New localities are described in Appendix 2; floral and faunal lists for significant elements constitute Appendix 3. Site maps are included as Appendix 4.

No new sites for *Discus macclintocki* were discovered. Two new sites for *Aconitum noveboracense* were located, as well as two additional for *Chrysosplenium loense* (Table 1). St. Bridget 2 (343) is nearly the largest known site, roughly tied in population size with Blue Spring West (198). Because of the candidate status of *C. loense*, it was thought useful to include a summary of the known Paleozoic Plateau sites (47) by population size (Table 3). While I did not take a precise census, the ranking may be of value as I am the only person thus far to have visited all, generally at roughly the same time in the growing season. As regards land snails, major increases in the number of of sites for probable candidates *Catinella gelida* (Baker) and *Succinea* n. sp. morphs 1 and 2 resulted from 1987 fieldwork (Table 2). All new sites were in Iowa and Minnesota. The most spectacular sites in terms of overall diversity are 343 and 336.

The algific portion of St. Budget 2 (343) is quite large and pristine, and a small moderate cliff with *Succinea* n. sp. is present also. Aside from the huge *C. loense* population the site has the largest known Plateau populations of *Viola canadensis* and *Hybanthus concolor*, as well as large populations of a number of other uncommon plants. The moderate portion of Pine Creek 3 has significant populations of both *Succinea* morphs. Blue Springs East 3 (337) is also a spectacular and diverse algific plant site with, among many others, the largest Iowa population of *Linnaea borealis*. Occurring as it does above
a major moderate cliff with large succineid populations (85-264), it offers a unique combination of elements in a comparatively small tract. A couple of other non-algicic sites were also noted. In particular, the sand hill prairies located east of Hesper, IA (325) and near Newhouse, MN (327) had note-worthy floras (see Appendix 3).

With this report the field phase of research on algicic talus slopes and moderate cliffs is regarded as complete. It is to be hoped that this and previous reports stimulate both serious study of the unique glacial relict biota of the Plateau and successful efforts to preserve and protect it.
Table 1. Significant plant records, 1987 survey

<table>
<thead>
<tr>
<th>Site</th>
<th>Taxon</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>(338) Little Paint Creek 3</td>
<td>Aconitum noveboracense</td>
<td>300</td>
</tr>
<tr>
<td>(321) Lytle Creek 16</td>
<td>Aconitum noveboracense</td>
<td>750</td>
</tr>
<tr>
<td>(343) St. Bridget 2</td>
<td>Chrysosplenium tioense</td>
<td>very large</td>
</tr>
<tr>
<td>(335) Kendalville North</td>
<td>Chrysosplenium tioense</td>
<td>very small</td>
</tr>
</tbody>
</table>

Table 2. Significant snail records, 1987 survey

<table>
<thead>
<tr>
<th>Site</th>
<th>Taxon</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>(338) Little Paint Creek 3</td>
<td>Vertigo hubrichti</td>
<td>small</td>
</tr>
<tr>
<td>(322) Kingdom Hall 1</td>
<td>Catinella gelida</td>
<td>small</td>
</tr>
<tr>
<td></td>
<td>Vertigo hubrichti</td>
<td>small</td>
</tr>
<tr>
<td>(323) Kingdom Hall 2</td>
<td>Vallonia cyclophorella</td>
<td>very small</td>
</tr>
<tr>
<td>(329) Silver Creek 1</td>
<td>Vertigo hubrichti</td>
<td>large</td>
</tr>
<tr>
<td></td>
<td>V. n. sp.</td>
<td>very small</td>
</tr>
<tr>
<td>(330) Silver Creek 2</td>
<td>Catinella gelida</td>
<td>small</td>
</tr>
<tr>
<td></td>
<td>Vallonia cyclophorella</td>
<td>small</td>
</tr>
<tr>
<td>(331) Silver Creek 3</td>
<td>Vertigo hubrichti</td>
<td>very small</td>
</tr>
<tr>
<td>(336) Pine Creek 3</td>
<td>Succinea n. sp. morph 1</td>
<td>large</td>
</tr>
<tr>
<td></td>
<td>Succinea n. sp. morph 2</td>
<td>small</td>
</tr>
<tr>
<td>(335) Kendalville North 2</td>
<td>Vallonia cyclophorella</td>
<td>large</td>
</tr>
<tr>
<td>(343) St. Bridget 2</td>
<td>Vertigo hubrichti</td>
<td>very small</td>
</tr>
<tr>
<td>(324) Pine Creek 1</td>
<td>Catinella gelida</td>
<td>small</td>
</tr>
<tr>
<td></td>
<td>Vallonia cyclophorella</td>
<td>large</td>
</tr>
<tr>
<td></td>
<td>Vertigo hubrichti</td>
<td>medium</td>
</tr>
</tbody>
</table>
Table 3. Known Paleozoic Plateau sites for *C. lioense*, in approximate rank by population size.

<table>
<thead>
<tr>
<th>A. Very Large (8)</th>
<th>E. Very Small (9)</th>
</tr>
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<tbody>
<tr>
<td>(198) Blue Spring West</td>
<td>(MN4) Spring Valley Creek 4</td>
</tr>
<tr>
<td>(341) St. Bridget 2</td>
<td>(239) 37 North</td>
</tr>
<tr>
<td>(180) Kendalville North</td>
<td>(277) Bear Creek 1</td>
</tr>
<tr>
<td>(135) Buck Creek - main creek 2</td>
<td>(202) West Bluffton 2</td>
</tr>
<tr>
<td>(MN28) Root River 4</td>
<td>(278) Bear Creek 2</td>
</tr>
<tr>
<td>(169) Kline Hunt Hollow 4</td>
<td>(280) Bear Creek 4</td>
</tr>
<tr>
<td>(240) Steele's Branch 2</td>
<td>(36) Canoe Creek</td>
</tr>
<tr>
<td>(185) St. Bridget</td>
<td>(335) Kendalville North 2</td>
</tr>
<tr>
<td></td>
<td>Brainard Ice Cave</td>
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<table>
<thead>
<tr>
<th>B. Large (9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(178) Bluffton Airport 1</td>
<td></td>
</tr>
<tr>
<td>(181) Larkin Bridge 1</td>
<td></td>
</tr>
<tr>
<td>(269) Suttle Creek</td>
<td></td>
</tr>
<tr>
<td>(170) Klein Hunt Hollow 3</td>
<td></td>
</tr>
<tr>
<td>(190) Ten-Mile Creek 5</td>
<td></td>
</tr>
<tr>
<td>(206) Bankston East</td>
<td></td>
</tr>
<tr>
<td>(82) WF 56</td>
<td></td>
</tr>
<tr>
<td>(182) Larkin Bridge 2</td>
<td></td>
</tr>
<tr>
<td>(207) Bankston West</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>C. Medium (11)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(33) WF 2</td>
<td></td>
</tr>
<tr>
<td>(38) Kendalville</td>
<td></td>
</tr>
<tr>
<td>(62) Bixby West</td>
<td></td>
</tr>
<tr>
<td>(6) Old Stone House</td>
<td></td>
</tr>
<tr>
<td>(MN3) Spring Valley Creek 3</td>
<td></td>
</tr>
<tr>
<td>(85) WF 58</td>
<td></td>
</tr>
<tr>
<td>(83) WF 55</td>
<td></td>
</tr>
<tr>
<td>(197) Blue Spring East</td>
<td></td>
</tr>
<tr>
<td>(279) Bear Creek 3</td>
<td></td>
</tr>
<tr>
<td>(238) WPH NW 4</td>
<td></td>
</tr>
<tr>
<td>(242) Steele's Branch 4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Small (10)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(291) Brush Creek East</td>
<td></td>
</tr>
<tr>
<td>(298) Lytle Creek 7</td>
<td></td>
</tr>
<tr>
<td>(184) Kendalville East</td>
<td></td>
</tr>
<tr>
<td>(MN17) Root River 2</td>
<td></td>
</tr>
<tr>
<td>(MN2) Spring Valley Creek 2</td>
<td></td>
</tr>
<tr>
<td>(MN18) Root River 3</td>
<td></td>
</tr>
<tr>
<td>(237) WPH NW 7</td>
<td></td>
</tr>
<tr>
<td>(250) Bluebell Hollow 2</td>
<td></td>
</tr>
<tr>
<td>(61) Bixby East 1</td>
<td></td>
</tr>
<tr>
<td>(161) Kline Hunt Hollow 1</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 1.
KNOWN ALCIFIC AND MADERATE SITES

A. SUMMARY OF KNOWN ALCIFIC SITES


PRAIRIE DU CHIEN GRP-23

A. LARGE

1. Undisturbed
   Minnesota:
   MN27 Whitewater R.

   Wisconsin:
   WI22 Essofea
   WI26 Big Green R.
   WI28 Walnut Eddy

B. MEDIUM

1. Undisturbed
   Iowa:
   254 Village Creek IA
   338 Little Paint Creek 3 YRF

   Minnesota:
   MN25 Whitewater R.S.

   Wisconsin:
   WI23 Steuben
   WI24 Boydtown
   WI30 Mill Creek

C. SMALL

1. Undisturbed
   Iowa:
   77 Little Paint Creek 1 YRF
   78 Little Paint Creek 2 YRF

2. Disturbed
   Iowa:
   257 Waterloo Creek 2
   256 Waterloo Creek 1

   Wisconsin:
   WI19 Pine Knob

2. Disturbed
   Iowa:
   33 Waterville
   255 Trout Run

   Minnesota:
   MN20 Beaver Creek Valley
   MN22 Sheldon West
DUNLEITH/WISE LAKE - 182

A. LARGE

1. Undisturbed
   Iowa:
   6  Old Stone House 1
   130 Buck Creek 5
   134 Buck Creek - Main Creek 1
   138 Dry Mill NE (Thein)
   144 Buck Creek - Trib. 3
   169 Kline Hunt Hollow 4
   179 Decorah N.
   181 Larkin Bridge 1
   185 St. Bridget
   190 Ten-Mile Creek 5
   198 Blue Spring W.
   343 St. Bridget 2

   Minnesota:
   MN2 Spring Valley 2
   MN3 Spring Valley 3
   MN9 Forestville 4
   MN10 Canfield Creek 1
   MN12 Canfield Creek 3
   MN16 Root River 1
   MN28 Root River 4
   MN37 Table Rock South
   MN39 Mahood's Creek

   Wisconsin:
   WI5 Chase Creek 2

   Illinois:
   IL5 Grant Hill Cemetery

2. Disturbed
   Iowa:
   35 Buck Creek - Main 2
   131 A34
   147 Coldwater Creek S.
   207 Williams Creek 2
   182 Lakrin Bridge 2
   178 Bluffton E.
   184 Kendallville R.
   260 Elkader NW 6

   Minnesota:
   MN18 Root River 3

   Wisconsin:
   WI3 Glenhaven 3
   WI14 Muddy Creek 5

B. MEDIUM

1. Undisturbed
   Iowa:
   64 Old Stone House 3
   25 Andy Hollow 1
   60 Andy Hollow 2
   29 Dry Mill Creek N
   38 Kendallville
   35 Bluffton
   37 Bluffton NW 1
   45 Malanaphy Springs 1
   75 Dry Mill North 2
   76 Dry Mill North 3
   98 Buck Creek 1

   99 Buck Creek 2
   100 Louse Hollow 1
   103 Buck Creek 3
   119 Buck Creek 7
   121 Buck Creek 6
   123 Miners Creek 1
   132 Miners Creek 2
   136 Buck Creek 8
   164 Hickory Creek 2
   165 Hickory Creek 3
   160 Miners Creek 5
DUNLEITH/WISE LAKE (Continued)

B. Medium

1. Undisturbed
   Iowa:
   170 Kline Hunt Hollow 3
   166 Elkader S2
   174 Andy Hollow 5
   180 Kendallville N
   195 Decorah Drive-In
   197 Blue Spring E.
   201 W. Bluffton 1
   202 W. Bluffton 2
   246 Howard Creek 2
   249 Lousa Hollow 5
   259 Elkader NW 5
   239 37 N.
   309 Williams Creek 3
   311 Williams Creek 5
   322 Kingdom Hall 1
   324 Pine Creek 1
   326 Pine Creek 2
   329 Silver Creek 1
   337 Blue Spring East 3

   Minnesota:
   MN 1 Spring Valley 1
   MN 6 Forestville 1
   MN14 Canfield Creek 5
   MN15 Canfield Creek 6
   MN30 Forestville West
   MN31 Etna East

   Wisconsin:
   WI 4 Chase Creek 1
   WI27 Wyalusing

   Illinois:
   IL 6 Sinsinnewa RI

2. Disturbed
   Iowa:
   67 Malanaphy Springs 2
   71 Elkader NW 1
   72 Elkader NW 2
   90 Osterdock E.
   137 Dry Mill East (Olson Farm)
   145 Buck Creek - Main Creek 3
   127 Decorah S.
   205 Hickory Creek 5
   208 Williams Creek 1
   161 Kline Hunt Hollow 1
   171 Eldader S. 3
   173 Andy Hollow 4
   183 Larkin Bridge 3
   155 Phelps Park
   188 Ten-Mile Creek 3
   189 Ten-Mile Creek 4

   Minnesota:
   MN29 Larkin Bridge 3
   333 Jordan Creek East

   Wisconsin:
   WI17 McCartney Branch
   WI18 Burton
   WI21 British Hollow

   Illinois:
G. SMALL

1. Undisturbed
   Iowa:
   30 Dry Mill Crest S.
   39 Blue Spring
   91 Peck Creek
   93 Pine Creek 2
   104 Buck Creek 4
   122 Joles Creek
   124 Buck Creek Trib. 1
   128 Twin Springs 1
   129 Twin Springs 2
   147 Coldwater Creek N.
   148 Bluffton Hill Prairie
   152 Postville N. 1
   153 Postville N. 2
   163 Hickory Creek 1
   245 Dry Mill W
   290 Andy Hollow 5
   310 Williams Creek 4
   323 Kingdom Hall 2
   330 Silver Creek 2
   335 Kendallville North 2
   336 Pine Creek 3
   344 St. Bridget 3
   345 St. Bridget 4

   Minnesota:
   MN 4 Spring Valley 4
   MN 7 Forestville 2
   MN 8 Forestville 3
   MN 32 Deer Creek 2
   MN 36 Deer Creek 3

   Illinois:
   IL 7 Apple River Canyon 1
   IL 9 Apple River Canyon 3

   Wisconsin:
   WI 1 Glenhaven 1
   WI 2 Glenhaven 2
   WI 7 Chase Creek 4
   WI 8 Chase Creek 5

2. Disturbed
   Iowa:
   28 Elkader S.
   59 S. Cedar Creek
   44 Bluffton West
   73 Elkader N.
   74 Roberts Creek
   101 Louise Hollow 2
   102 Louise Hollow 3
   125 Buck Creek Trib. 2
   133 Louise Hollow 4
   139 Motor
   140 Dry Hills S. 2
   162 Kline Hunt Hollow 2
   168 Hickory Creek 4
   172 Elkader S. 4
   176 Twin Springs N.
   177 Bluffton W.
   186 Ten-Mile Creek 1
   187 Ten-Mile Creek 2

   194 Ten-Mile Creek 9
   217 Postville N. 3
   261 Elkader NW4
   270 Buck Creek 9
   271 Freeport E.
   272 Merlin Moe W.
   273 Merlin Moe E.

   Minnesota:
   MN 5 Spring Valley 5
   MN11 Canfield Creek 2
   MN19 Deer Creek
   334 Jordan Creek West

   Wisconsin:
   WI 6 Chase Creek 3
   WI20 Chase Creek 6
   WI30 Benton
BLANDING - 68

A. LARGE

1. Undisturbed
   Iowa:
   82 WPH 56 - IA
   95 Pine Creek 4
   240 Steeles Branch 2
   250 Bluebell Hollow 2
   241 Steeles Branch 3

2. Disturbed
   Iowa:
   142 Kleinlein Hollow 2
   143 Hewett Hollow 1
   234 Little Turkey R. 1

B. MEDIUM

1. Undisturbed
   Iowa:
   33 WPH2
   51 Brush Creek Canyon 1
   62 Bixby West
   83 WPH 55
   167 Hewett Creek 1.
   206 Bankston E.
   207 Bankston W.
   210 WPH 48
   229 Cow Branch W
   268 Steeles Branch 6
   226 Elk Creek E
   242 Steeles Branch 4
   238 WPH NW4
   279 Bear Creek 3
   281 Bear Creek 5
   291 Bear Creek E

2. Undisturbed
   Iowa:
   32 Steeles Branch 1
   61 Bixby East
   228 Cow Branch E
   225 Elk Creek W
   251 Little Turkey R3

   Illinois:
   ILL1 Yonkers Bluff 1
   ILL2 Yonkers Bluff 2
   ILL3 Yonkers Bluff 3

   Illinois:
   IL4 Chestnut Ridge
BLANDING (Continued)

C. SMALL

1. Undisturbed
   Iowa:
   27 Bixby Preserve 3
   31 Mossy Glen
   56 Bixby Preserve 1
   57 Bixby Preserve 2
   53 Brush Creek Canyon 3
   54 Brush Creek Canyon 4
   96 Pine Creek 5
   97 Bluebell Hollow 1
   114 Bixby Preserve 4
   115 Bixby E. 2
   211 WPH 46
   212 WPH 27
   227 WPH NW3
   235 WPH NW6
   236 WPH NE7
   253 Brush Creek Canyon 4
   280 Bear Creek 4
   332 Fayette E

2. Disturbed
   Iowa:
   43 Glover Creek
   47 Backbone 2
   48 Backbone 3
   85 WPH 58
   88 Camp Klaus
   116 Fountain Springs 1
   117 Fountain Springs 2
   118 Fountain Springs 3
   150 Miners Creek 3
   151 Miners Creek 4
   156 Buck Creek - Main 4
   243 Steeles Branch 5
   252 Little Turkey R4
   277 Bear Creek 1
   278 Bear Creek 2
HOPKINTON-27

A. LARGE

1. Undisturbed
   Iowa:
   307 Lytle Creek 12
   312 Lytle Creek 13
   295 Lytle Creek 4
   297 Lytle Creek 6
   304 North Maquoketa 1
   316 North Maquoketa 2

2. Disturbed
   Iowa:
   301 Lytle Creek 10
   306 Lytle Creek 11

B. MEDIUM

1. Undisturbed
   Iowa:
   232 Pine Creek 2
   302 Elk River 1
   296 Lytle Creek 5
   299 Lytle Creek 8
   292 Lytle Creek 1

2. Disturbed
   Iowa:
   233 Pine Creek 1
   313 Lytle Creek 14
   314 Lytle Creek 15
   294 Lytle Creek 3

C. SMALL

1. Undisturbed
   Iowa:
   300 Lytle Creek 9
   298 Lytle Creek 7
   321 Lytle Creek 16

2. Disturbed
   Iowa:
   113 Green Island S.
   111 Maquoketa Caves State Park
2. Summary breakdown.

A. PRAIRIE DU CHIEN GRF-23

<table>
<thead>
<tr>
<th></th>
<th>Iowa</th>
<th>Minnesota</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-12</td>
<td>-4</td>
<td>-7</td>
</tr>
</tbody>
</table>

1. SMALL
   a) UNDISTURBED - 2
      Iowa - 2
   b) DISTURBED - 6
      Iowa - 4, Wisconsin - 2

2. MEDIUM
   a) UNDISTURBED - 6
      Iowa - 2, Minnesota - 1, Wisconsin - 3
   b) DISTURBED - 3
      Iowa - 2, Wisconsin - 1

3. LARGE
   a) UNDISTURBED - 4
      Minnesota - 1, Wisconsin - 3
   b) DISTURBED - 2
      Iowa - 2

B. DUNLEITH/WISE LAKE - 182

<table>
<thead>
<tr>
<th></th>
<th>Iowa</th>
<th>Minnesota</th>
<th>Wisconsin</th>
<th>Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>136</td>
<td>27</td>
<td>15</td>
<td>4</td>
</tr>
</tbody>
</table>

1. SMALL
   a) UNDISTURBED - 33
      Iowa - 22, Minnesota - 5, Wisconsin - 4, Illinois - 2
   b) DISTURBED - 34
      Iowa - 27, Minnesota - 4, Wisconsin - 3, Illinois - 1

2. MEDIUM
   a) UNDISTURBED - 50
      Iowa - 41, Minnesota - 6, Wisconsin - 3
   b) DISTURBED - 31
      Iowa - 25, Minnesota - 2, Wisconsin - 3

3. LARGE
   a) UNDISTURBED - 23
      Iowa - 12, Minnesota - 9, Wisconsin - 1, Illinois - 1
   b) DISTURBED - 11
      Iowa - 8, Minnesota - 1, Wisconsin - 2
C. BLANDING - 68

Iowa          - 64
Illinois      - 4

1. SMALL      a) UNDISTURBED - 18
               Iowa - 18
       b) DISTURBED - 17
               Iowa - 17

2. MEDIUM     a) UNDISTURBED - 19
               Iowa - 16, Illinois - 3
       b) DISTURBED - 6
               Iowa - 5, Illinois - 1

3. LARGE      a) UNDISTURBED - 5
               Iowa - 5
       b) DISTURBED - 3
               Iowa - 3

D. HOPKINTON - 27

Iowa         - 27

1. SMALL      a) UNDISTURBED - 3
       b) DISTURBED - 2

2. MEDIUM     a) UNDISTURBED - 10
       b) DISTURBED - 4

3. LARGE      a) UNDISTURBED - 6
       b) DISTURBED - 2

TOTAL CONFIRMED SITES - 300

IOWA         - 240 (80%)
MINNESOTA     - 30 (10%)
WISCONSIN     - 22 (7%)
ILLINOIS      - 8 (3%)
B. SUMMARY OF KNOWN MADERATE SITES


DUNLEITH/WISE LAKE

A. LARGE

1. Undisturbed
   Iowa:
   219 Bluffton Fir Stand
   326 Pine Creek 2
   336 Pine Creek 3

   Minnesota:
   MN41 Root River 4
   MN33 Simpson
   MN40 Canfield Creek 10
   MN38 Bear Creek

B. MEDIUM

1. Undisturbed
   Iowa:
   220 Bluffton Airport
   264 Blue Springs 4
   324 Pine Creek 1

   Minnesota
   MN19 Deer Creek 1
   MN36 Deer Creek 3
   MN32 Deer Creek 2
   MN35 Maple Valley Golf Course

C. SMALL

1. Undisturbed
   Iowa:
   222 Malanaphy Springs 2
   223 A34-2
   248 Bluffton North
   258 Osage Springs Park
   263 Chattahoochie Park 2
   329 Silver Creek 1
   330 Silver Creek 2
   331 Silver Creek 3
   343 St. Bridget 2

   Minnesota:
   MN34 Simpson East

2. Disturbed
   Iowa:
   221 Plymouth Rock South
   265 Phelps Park 2
2. Summary breakdown.

A. Dunleith/Wise Lake - 28
   Iowa 19
   Minnesota 9

1. SMALL  
   a) UNDISTURBED - 10
       Iowa - 9, Minnesota - 1
   b) DISTURBED - 2
       Iowa - 2

2. MEDIUM  
   a) UNDISTURBED - 7
       Iowa - 3, Minnesota - 4
   b) DISTURBED - 2
       Iowa - 2

3. LARGE  
   a) UNDISTURBED - 7
       Iowa - 3, Minnesota - 4
   b) DISTURBED - none

TOTAL CONFIRMED SITES - 28

IOWA - 19 (68%)
MINNESOTA - 9 (32%)
APPENDIX 2. LOCALITIES

Asterisks denote algicic slopes, crosses moderate cliffs

ALLAMAKEE COUNTY, IA

*(338) Little Paint Creek 3. Medium undisturbed perched Prairie du Chien algicic slope, 18' x 650', above Little Paint Creek, NW facing, SW 1/4 NE 1/4 SW 1/4 sec. 19, T 97 N R 3 W, Taylor Twp., Harpers Ferry 7 1/2' quadrangle. Originally found by Mark Leoschke. Within Yellow River State Forest.

FAYETTE COUNTY, IA

*(332) Fayette E. Long, complex N facing Blanding site, mostly not algicic, consisting of 80' x 1500' talus: on W end, 60' x 200' prairie; just to E of this and high on site 12' x 20' algicic talus. NE 1/4 SE 1/4 SE 1/4 sec. 22 and N 1/2 SW 1/4 SW 1/4 sec. 23, T 93N R 8 W, Westfield Twp., Fayette 7 1/2' quadrangle.

FILLMORE COUNTY, MN

*(333) Jordan Creek E. NE facing Sinsinewa talus, extensive and weak, ca. 60' x 700', badly pastured except at W end. NW 1/4 SE 1/4 SE 1/4 sec. 28, T 104 N R 12 W, Jordan Twp., Washington 7 1/2' quadrangle.

HOUSTON COUNTY, MN


JACKSON COUNTY, IA

*(321) Lytle Creek 16. Small undisturbed Farmers Creek algific site, ca. 20-25' x 150', NE 1/4 SW 1/4 NW 1/4 sec. 17, T 86 N R 2 E, Otter Creek twp., Bernard 7 1/2' quadrangle. Rather low, N-facing, single level, one patch.
WINNEBEC COUNTY, IA

*(322)* Kingdom Hall 1. Medium high single-level Sinsinewa site in two patches in small drainage to Upper Iowa River, NE 1/4 SE 1/4 SE 1/4 sec. 13, T. 99 N. R 9 W, Bluffton Twp., Burr Oak 7 1/2' quadrangle. W patch 13' x 75', N to NE facing, weak; E patch 80' x 100', relatively intense, N-facing. Both undisturbed.

*(323)* Kingdom Hall 2. Intensely cold high perched NW facing Sinsinewa site. Undisturbed, small, dimensions, ca. 20' x 100', on small drainage into Upper Iowa River to E of spring. SW 1/4 NE 1/4 SE 1/4 sec. 13, T 99 N R 9 W, Bluffton Twp., Burr Oak 7 1/2' quadrangle.

+,*(324)* Pine Creek 1. Medium, somewhat weak N-facing single-level Sinsinewa site on Pine Creek, NW 1/4 SW 1/4 SE 1/4 sec. 4, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle. Rather cluffy moderate site to 100' high, 400' long, algific portion on E end ca. 100' long.

(325) Hesper E. Not algific. NW-facing channel ss. (?Cretaceous) in Dunleith on low ridge near Minnesota border, ca. 40' x 1,200', S 1/2 NE 1/4 and N 1/2 SE 1/4 NW 1/4 sec. 8, T 100 N R 7 W, Hesper Twp., Highlandville 7 1/2' quadrangle. Mostly pastured; best plants on low projecting ss. outcrops.


(328) Bluffton airport N. Small NE-facing Wise Lake cliff in small drainage to Upper Iowa River. Not an algific site. SW 1/4 SW 1/4 NW 1/4 sec. 11, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle.

+,*(329)* Silver Creek 1. Medium cluffy, Dunleith-Wise Lake site with extensive talus, weakly algific, N-facing, undisturbed, single leveled but with some nearly separate Sinsinewa patches near top. S 1/2 NE 1/4 SE 1/4 sec. 3, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle. Parts poorly distinguished moderate cliff.

+,*(330)* Silver Creek 2. NW-facing high site, small (80' 120' x 300'), partly algific (weak single-level talus) but with short moderate cliff above. Dunleith-Wise Lake site, undisturbed. SW 1/4 NW 1/4 SW 1/4 sec. 2, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle.

Kendallville North 1. Short, clifffy (ca. 50'), NE-facing site with small algific talus (20' x 100') on W end. Site is in Dunleith-Wise Lake, on Upper Iowa River, ca. 1.2 mi. N of Kendallville, SE 1/4 SE 1/4 SE 1/4 sec. 21, T 100 N R 10 W, Fremont Twp., Winneshiek Co., Cresco NE quadrangle.

Pine Creek. 3. Extensive undisturbed N-facing Dunleith-Wise Lake moderate cliff with minor algific sections, especially near center, perched single level, high on cliff. Small basal talus (non-algific) throughout. N 1/2 SW 1/4 NE 1/4 sec. 4, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle.

Blue Springs East 3. Extensive very steep and dry NW-facing perched Sinsinawa algific site above moderate cliff (85-264). Undisturbed site ca. 39' x 800', NW 1/4 SE 1/4 NW 1/4 sec. 8, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle. Small portions in center (ca. 300' length) also moderate cliff.

St. Bridget 2. Large (100' x 1,000'), pristine Dunleith-Wise Lake complex clifffy bi-level-trilevel site, NE-facing, on Upper Iowa River. Center NE 1/4 NW 1/4 sec. 23, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle. Small portions in center (ca. 300' length) also moderate cliff.


St. Bridget 4. Small, nearly E-facing single level Dunleith site in two patches, ca. 20' x 400', above Upper Iowa River, SE 1/4 SW 1/4 SW 1/4 sec. 14, T 99 N R 9 W, Bluffton Twp., Bluffton 7 1/2' quadrangle. Undisturbed but weak except for SE end.
APPENDIX 3. FAUNAL AND FLORAL LISTS
Asterisks indicate algific sites, crosses moderate cliffs

ALLAMAKEE COUNTY, IA
*(338) Little Paint Creek 3.
Aconitum noveboracense
Gymnocarpium robertianum
Maianthemum canadense
Betula lutea
Salix bebbiana
Saxifraga forbesii

Hendersonia occulta
Triodopsis allenii
Mesodon thyroidus
Anquispira alternata
Nesovitrea electrina
Cochlicopa lubrica
Columella simplex
Euconulus polygynatus
Strobilops labyrinthica
Stenotrema barbatum
Vertigo gouldi
V. hubrichti
V. tridentata
Hawaii minuscula
Carychium exile canadense
Punctum vitreum

FAYETTE COUNTY, IA
*(332) Fayette E.
(hill prairie)
Taxus canadensis
Lycopodium dendroides

(algific slope)
Taxus canadensis
Sanbucus pubens
Rosa acicularis

Hendersonia occulta

FILLMORE COUNTY, MN
*(333) Jordan Creek E.
Adoxa moschatellina
Circea intermedia

*(334) Betula papyrifera
Sanbucus pubens
Maianthemum canadense
HOUSTON COUNTY, MN

(327) Newhouse W.
Juniperus communis
Prunus pumilus
Anelanceria humilis
Anemone patens
Selaginella rupestris

JACKSON COUNTY, IA

*(321) Lytle Creek 16.
Aconitum noveboracense
Equisetum pratense
Streptopus roseus
Taxus canadensis
Cerastium arvense
Saxifraga forbesii
Maianthemum canadense
Schizachne purpureascens
WINNESHIEK CO., IA

*(322) Kingdom Hall 1.
Pinus strobus
Betula papyrifera
Salix bebbiana
Sambucus pubens
Rubus pubescens
Herteaia paniculata
Rosa acicularis
Gymnocarpium robertianum
Cystopteris laurentiana
Poa wolfii (?)
Solidago sciapheila
Saxifraga forbesii
Catinella gelida
Hendersonia occulta
Allogona profunda
Triodopsis alleni
Stenotrema fraternum fraternum
Anguispira alternata
Vallonia perspectiva
V. cyclophorella
Punctum vitreum
Vertigo gouldii
V. hubuchi
Columella simplex
Nesovitrea electrina
Strobilops labyrinthica
Deroceras laeve
Euconulus polygratus
Carychium exile canadense
Gastrocopta armifera
G. contracta
G. pentodon
C. corticaria
G. holzingeri

*(323) Kingdom Hall 2.
Pinus strobus
Gymnocarpium robertianum
Betula papyrifera
Taxus canadensis
Viburnum opulus americanum
Rosa acicularis
Cornus stolonifera
Malanthemum canadensis
Cystopteris laurentiana
Solidago sciapheila
Equisetum pratense
Saxifraga forbesii
Hendersonia occulta
Triodopsis alleni
Allogona profunda
Mesodon clausus
Punctum vitreum
Carychium exile canadense
Gastrocopta contracta
Vertigo gouldii
V. hubrichii
V. n. sp.

*(324) Pine Creek 1.
Pinus strobus
Viburnum opulus americanum
Betula papyrifera
Salix bebbiana
Taxus canadense
Herteaia paniculata
Circaea alpina
Rhamnus alnifolia
Sambucus pubens
Solidago sciapheila
Equisetum pratense
Hendersonia occulta
Anguispira alternata
Mesodon clausus clausus
Triodopsis alleni
Allogona profunda
Deroceras laeve
Catinella gelida
Euconulus polygratus
Strobilops labyrinthica
Hawaii minuscula
Carychium exile canadense
Punctum vitreum
Vallonia perspectiva
V. cyclophorella
Columella simplex
Striatura nilium
Nesovitrea electrina
Vertigo gouldi
V. hubrichti
V. tridentata
Gastrocopta contracta
G. holzingeri
G. pentodon

(325) Hesper E.
Potentilla tridentata
Anemone patens
Viola pedata
Agrimonia trifolium
Muehlenbergia asperifolia
Amelanchier humilis
Juniperus communis

+, *(326) Pine Creek 2.
Betula papyrifera
Viburnum opulus americanum
Salix bebbiana
Rhamnus alnifolia
Cypripedium reginae
Rosa acicularis
Sambucus pubens
Saxifraga forbesii
Adoxa moschatellina
Cerastium arvense
Circaea alpina
Hendersonia occulta
Allogona profunda
Anguispira alternata
Triodopsis multilineata
Mesodon clausus clausus
Stenotrema barbatum
Hawaiiia minuscula
Columella simplex
Carychiium exile canadense
Euconulus polygyratus
Vertigo gouldi
Gastrocopta contracta
G. holzingeri
Strobilops labyrinthisca
Nesovitrea electrina
Punctum vitreum

(328) Bluffton Airport N.

Discus catskillensis
Hendersonia occulta
Allogona profunda
Triodopsis allenii
Anguispira alternata
Stenotrema fraternum fraternum
Glyphyalinina indentata
Euconulus polygyratus
Carychiium exile canadense

+, *(329) Silver Creek 1.
Pinus strobus
Betula papyrifera
Rhamnus alnifolia
Sambucus pubens
Hendersonia occulta
Vallonia cyclophorella
V. perspectiva
Catinella gelida
Taxus canadensis
Solidago sciiaphila
Maianthemum canadense
Rubus pubescens
Circaea alpina
Cypripedium calceolus

Anguisspa alternata
Discus catskillensis
Stenotreme fraternum fraternum
Allogona profunda
Helicodiscus parallelus
Zonitoides arboreus
Nesovitrea electrina
Glyphyalinia indentata
Euconulus polygyratus
Gastrocopta armifera
G. contracta
G. holzheimeri
Hawaii minuscula

+(330) Silver Creek 2.
Betula papyrifera
Sambucus pubens
Rosa acicularis
Cerastium arvense
Maianthemum canadense
Adoxa moschatellina
Solidago sciiaphila

Hendersonia occulta
Vallonia cyclophorella
Catinella gelida
Allogona profunda
Anguisspa alternata
Mesodon clausus clausus
Stenotremum fraternum fraternum
Helicodiscus parallelus
Carychium exile canadense
Hawaii minuscula
Nesovitrea electrina
Zonitoides arboreus
Glyphyalinia indentata
Punctum vitreum
Gastrocopta armifera
G. contracta
G. holzheimeri

+(331) Silver Creek 3.
Betula papyrifera

Catinella gelida
Hendersonia occulta
Anguisspa alternata
Allogona profunda
Helicodiscus parallelus
Zonitoides arboreus
Strobilops labyrinthica
Euconulus polygyratus
Gastrocopta contracta
Carychium exile canadense
Punctum vitreum
Hawaii minuscula
Vertigo gouldi
Cerastium arvense
Cypripedium calceolus
Saxifraga forbesii
Abies balsamea
Chrysosplenium iioense
Rhamnus alnifolia
Rosa acicularis
Circaea alpina

Hendersonia occulta
Allogona profunda
Succinea n. sp. morph 2
Gastrocopta contracta
G. holzingeri
V. gouldi
V. hubrichti
Punctum vitreum
Discus catskillensis
Vallonia perspectiva
Euconulus polygyratus

+(336) Pine Creek 3.
(aligific)
Pinus strobus
Betula papyrifera
Cerastium arvense
Streptopus roseus
Rhamnus alnifolia
Maianthemum canadense
Sambucus pubens

Allogona profunda
Anguispira alternata
Discus catskillensis
Zonitoides arboreus
Glyphyalinia indentata
Nesovitrean electrina
Guppya sterkii
Euconulus polygyratus
Punctum vitreum
Hawaii minuscula
Cochlicopa lubrica
Derocea laeve
Succinea n. sp. morph 1
Succinea n. sp. morph 2
Vallonia cyclophorella
V. perspectiva
Hendersonia occulta
Gastrocopta armifera
G. corticaria
G. holzingeri
G. pentodon
Stenotrema fraternal fraternal
S. barbatum
Vertigo gouldi
V. hubrichti
Carychium exile canadense

337. Blue Springs East 3.
Pinus strobus
Abies balsamea
Taxus canadensis
Rhamnus alnifolia
Betula papyrifera
Gymnocarpium robertianum
Linnaea borealis
Pyrola secunda
Viburnum opulus americana
Cordylus cornuta
Sambucus pubens
Cerastium arvense
Maianthemum canadense
Solidago sciaphila
Saxifraga forbesii
Allium cernuum
Juniperus communis
Rubus pubescens
Latrium auriculata

*(343) St. Bridget 2

Taxus canadensis
Abies balsamea
Pinus strobus
Cypripedium calceolus
C. reginae
Maianthemum canadense
Adoxa moschatellina
Chrysosplenium iioense
Hybanthus concolor
Rubus pubescens
Cymnocarpium robertianum
Viola canadensis
Salix bebbiana
Viburnum opulus americana
Sambucus pubens
Rhamnus alnifolia
Betula papyrifera
Circaea alpina
Schizacne purpureascens
Cerastium arvense
Solidago sciaphila
Cornus cornuta
Saxifraga forbesii
Equisetum pratense

Hendersonia occulta
Allogona profunda
Gastrocopta contracta
G. pentodon
G. corticaria
G. holzingeri
Vertigo gouldi
V. hubrichti
Punctum vitreum
Discus catskillensis
Vallonia perspectiva
Euconulus polygyratus
Succinea n. sp. morph 1
Succinea n. sp. morph 2
Triodopsis allenii
Anguispira alternata
Stenotrema fraternum fraternum
Helicodiscus parallelus
Hawaiiia minuscula
Strobiliscus labyrinthica
Columella simplex
Zonitoides arboreus
Nesovitrea Electrina
Carychium exile canadense

*(344) St. Bridget 3.
Cerastium arvense

*(345) St. Bridget 4.
Sambucus pubens
Hertesia paniculata
Saxifraga forbesii
Rhamnus alnifolia
Circaea alpina
APPENDIX 4. SITE MAPS

All maps use U.S.G.S. 7.5' topographic quadrangles as bases: names as indicated.