## APPENDIX 4

**Application of the PPC and SEG models to the assemblages of the *heteromorphus* zone (based on Orłowska-Zwolińska, 1977, 1984, 1988; Fijałkowska, 1990, 1995; Fijałkowska-Mader, 2011, 2013)**

| Region of Poland | Borehole/ outcrop | Depth [m] | Hygrophytic elements | | | | | | | Intermediate elements | | | | | Xerophytic elements | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | E | F | sum | G | H | I | J | sum | K | L | M | N | O | P | R | S | sum | U.S. | L.S.+R.S. | C.S. | n.a. | c/l | w/d | m/t |
| NW Poland | Czaplinek IG 2 | 850.5 | 0 | 1 | 2 | 1.5 | 15 | 0 | 19.5 | 0.5 | 2 | 7 | 0 | 9.5 | 0 | 0 | 8 | 15 | 26 | 22.5 | 0 | 0 | 71.5 | 78.5 | 21.5 | 0.5 | 0 | 0.023 | 2.3 | 0 |
| NE Poland | Marianka IG 1 | 1100 | 0 | 3.2 | 6.1 | 1.6 | 3.6 | 0 | 14.5 | 1.1 | 1.6 | 7.9 | 2 | 12.6 | 0 | 0 | 18 | 11 | 22.8 | 19.8 | 1 | 0 | 72.6 | 80.5 | 16.1 | 1.1 | 2 | 0.068 | 6.6 | 0 |
| | | 1127.4 | 0 | 2.5 | 5.8 | 0.8 | 4.2 | 0 | 13.3 | 0.7 | 2 | 8.2 | 2.7 | 13.6 | 0 | 0 | 21 | 4 | 23.2 | 24 | 0.5 | 0 | 72.7 | 80.9 | 15.3 | 0.7 | 2.7 | 0.045 | 4.6 | 0 |
| | | 1138 | 0 | 3.7 | 6.2 | 2 | 4.8 | 0 | 16.7 | 0.4 | 1.8 | 7.5 | 1.4 | 11.1 | 0 | 0 | 22.9 | 2 | 22.7 | 23.6 | 1 | 0 | 72.2 | 79.7 | 18.5 | 0.4 | 1.4 | 0.021 | 6.3 | 0 |
| | Morski Las IG 2 | 800 | 0 | 3.7 | 6.4 | 1.4 | 4.2 | 0 | 15.7 | 0.7 | 1.5 | 1.5 | 1.3 | 5 | 0 | 0 | 20.3 | 10.5 | 22.9 | 18.7 | 0.5 | 0 | 72.9 | 74.4 | 17.2 | 0.7 | 1.3 | 0.040 | 7.5 | 0 |
| | | 800.5 | 0 | 3.5 | 7.5 | 0.9 | 5.1 | 0 | 17 | 1.1 | 2.1 | 2.1 | 2 | 7.3 | 0 | 0 | 20.4 | 10.4 | 19.7 | 18.8 | 1 | 0 | 70.3 | 72.4 | 19.1 | 1.1 | 2 | 0.057 | 5.7 | 0 |
| | | 801.5 | 0 | 4.2 | 6.3 | 1.4 | 3.8 | 0 | 15.7 | 0.5 | 1 | 1 | 0.8 | 3.3 | 0 | 0 | 18.6 | 12.3 | 22.7 | 22.8 | 0.2 | 0 | 76.6 | 77.6 | 16.7 | 0.5 | 0.8 | 0.029 | 11.9 | 0 |
| W Poland | Środa IG 2 | 2226 | 0 | 5.8 | 7.2 | 0.8 | 4.6 | 0 | 18.4 | 0.4 | 2.2 | 6.6 | 0 | 9.2 | 0 | 0 | 21.5 | 9.8 | 19.4 | 19.4 | 1 | 0 | 71.1 | 77.7 | 20.6 | 0.4 | 0 | 0.019 | 6.3 | 0 |
| | | 2304 | 0 | 2.9 | 3.8 | 2.4 | 3.8 | 0 | 12.9 | 0 | 1.1 | 10 | 5.6 | 16.7 | 0 | 0 | 25.6 | 10.1 | 20.8 | 20.8 | 5 | 0 | 82.3 | 92.3 | 14 | 0 | 5.6 | 0 | 6.4 | 0 |
| Nida Basin | Biała Wielka IG 1 | 1196 | 0 | 0 | 2.8 | 1.7 | 0 | 0 | 4.5 | 0 | 1.1 | 1 | 5.6 | 7.7 | 0 | 0 | 8.3 | 14.2 | 9.3 | 27.9 | 5.1 | 0 | 64.8 | 65.8 | 5.6 | 0 | 5.6 | 0 | 9.2 | 0 |
| | Gomunice 13 | 2001–2009 | 0 | 6 | 9 | 7 | 2 | 0 | 24 | 5 | 2 | 1 | 2 | 10 | 0 | 0 | 30 | 5 | 7 | 18.5 | 4.5 | 0 | 65 | 66 | 26 | 5 | 2 | 0.192 | 10 | 0 |
| | Jedrzejów IG 1 | 2323 | 0 | 2.5 | 0.3 | 0.2 | 3.4 | 0 | 6.4 | 0 | 3 | 4.5 | 0 | 7.5 | | 0 | 11.3 | 17 | 11.3 | 31.2 | 2 | 0 | 72.8 | 77.3 | 9.4 | 0 | 0 | 0 | 3 | 0 |
| | | 2335 | 0 | 4 | 1 | 0.5 | 3.2 | 0 | 8.7 | 1 | 1.7 | 5 | 0 | 7.7 | | 0 | 13.5 | 15 | 13.5 | 28.3 | 2.5 | 0 | 72.8 | 77.8 | 10.4 | 1 | 0 | 0.096 | 1.7 | 0 |
| | | 2354 | 0 | 4.3 | 0.5 | 1 | 0.5 | 0 | 6.3 | 0 | 2 | 6 | 0 | 8 | | 0 | 17.3 | 18 | 29.2 | 21.6 | 0 | 0 | 86.1 | 92.1 | 8.3 | 0 | 0 | 0 | 2.9 | 0.2 |
| | | 2363 | 0 | 6.5 | 1 | 0.5 | 3 | 0 | 11 | 0 | 1 | 7 | 0 | 8 | | 0 | 19.6 | 13 | 29.5 | 19.3 | 0 | 0 | 81.4 | 88.4 | 12 | 0 | 0 | 0 | 8 | 0.5 |
| | Milianów IG 1 | 1519 | 0 | 2.7 | 0 | 2.3 | 0 | 0 | 5 | 3.2 | 1.4 | 7 | 8.2 | 19.8 | 0 | 0 | 16.7 | 8.2 | 21.2 | 28.4 | 1.5 | 0 | 76 | 83 | 6.4 | 3.2 | 8.2 | 0.5 | 3.6 | 0 |
| | | 1552 | 0 | 2.8 | 0 | 0.8 | 0 | 0 | 3.6 | 4 | 2 | 5 | 9 | 20 | 0 | 0 | 13.7 | 10 | 23.4 | 29.2 | 0.8 | 0 | 77.1 | 82.1 | 5.6 | 4 | 9 | 0.714 | 1.8 | 0.2 |
| | Pągów IG 1 | 2163 | 0 | 0 | 4.2 | 0 | 0 | 0 | 4.2 | 0 | 4.5 | 0 | 0 | 4.5 | 0 | 0 | 22.7 | 14.5 | 29.7 | 27.2 | 4.8 | 0 | 98.9 | 98.9 | 8.7 | 0 | 0 | 0 | 0.9 | 0 |
| | | 2192 | 0 | 7 | 6 | 0 | 0 | 0 | 13 | 2.1 | 1 | 0 | 0 | 3.1 | 0 | 0 | 15.3 | 18.9 | 28.4 | 18.2 | 2.8 | 0 | 83.6 | 83.6 | 14 | 2.1 | 0 | 0.15 | 13 | 0.1 |
| | Potok Mały IG 1 | 1762.3 | 0 | 0 | 13 | 3 | 2 | 0 | 18 | 0 | 1 | 8.5 | 0 | 9.5 | 0 | 0 | 14.6 | 17 | 22 | 18 | 0 | 0 | 71.6 | 80.1 | 19 | 0 | 0 | 0 | 13 | 0.1 |
| | | 1788.5 | 0 | 0 | 3 | 0 | 2 | 0 | 5 | 0 | 4 | 10.1 | 0 | 14.1 | 0 | 0 | 24 | 23 | 16 | 18 | 0 | 0 | 81 | 91.1 | 9 | 0 | 0 | 0 | 0.8 | 0 |
| | Secemin IG 1 | 1884.5–1889 | 0 | 2.6 | 2.2 | 0.8 | 0 | 0 | 5.6 | 0 | 2 | 10.2 | 4 | 16.2 | 0 | 0 | 23.2 | 11 | 28.4 | 14.2 | 0.5 | 0 | 77.3 | 87.5 | 7.6 | 0 | 4 | 0 | 2.8 | 0 |
| | | 1926.5–1933 | 0 | 3.7 | 2.4 | 2.1 | 0 | 0 | 8.2 | 0 | 1.7 | 8.1 | 0 | 9.8 | 0 | 0 | 24.7 | 12 | 23.1 | 19 | 1.1 | 0 | 79.9 | 88 | 9.9 | 0 | 0 | 0 | 4.2 | 0.1 |
| | | 1956.7–1963 | 0 | 3.3 | 2 | 0.9 | 0 | 0 | 6.2 | 0.5 | 2 | 6.5 | 0 | 9 | 0 | 0 | 26.8 | 8 | 25.6 | 22 | 0.4 | 0 | 82.8 | 89.3 | 8.2 | 0.5 | 0 | 0.060 | 3 | 0 |
| | | 19841987 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.7 | 0 | 5.7 | 0 | 0 | 27.5 | 14 | 32.3 | 21.4 | 0 | 0 | 95.2 | 99.9 | 1 | 0 | 0 | 0 | 0 | 0 |
| | Węgleszyn IG 1 | 2432 | 0 | 5 | 3.7 | 1.5 | 1.8 | 0 | 12 | 0 | 2 | 8.6 | 3.5 | 14.1 | 0 | 0 | 19.7 | 11.5 | 25 | 18.5 | 0.5 | 0 | 75.2 | 83.8 | 14 | 0 | 3.5 | 0 | 4.9 | 0.2 |
| | Włoszczowa IG 1 | 2281 | 0 | 2.2 | 3.6 | 6.6 | 1.3 | 0 | 13.7 | 0 | 1 | 3.4 | 11.4 | 15.8 | 0 | 0 | 14.3 | 15 | 26.3 | 16.6 | 1.7 | 0 | 73.9 | 77.3 | 14.7 | 0.5 | 11.4 | 0.034 | 6.9 | 0 |
| | | 2310–2315 | 0 | 7.5 | 0 | 0 | 1 | 0 | 8.5 | 0 | 3.5 | 0 | 0 | 3.5 | 0 | 0 | 18.4 | 14.5 | 29.7 | 26.2 | 3 | 0 | 91.8 | 91.8 | 12 | 0 | 0 | 0 | 2.1 | 0 |
| Holy Cross Mts. | Nieświń PIG 1 | 1250.3 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 6.5 | 0 | 0 | 6.5 | 0 | 0 | 16.7 | 18 | 18.8 | 33 | 2.5 | 0 | 89 | 89 | 11.5 | 0 | 0 | 0 | 0.8 | 0 |
| | Oblegor IG 1 | 114.3 | 0 | 0 | 0.5 | 3 | 6 | 0 | 9.5 | 0 | 7 | 5.6 | 0 | 12.6 | 0 | 0 | 18.5 | 12 | 22.5 | 20.4 | 4.5 | 0 | 77.9 | 83.5 | 16.5 | 0 | 0 | 0 | 0.4 | 0.03 |
| | Ostałów PIG 2 | 1654.6 | | 1 | 2.5 | 2.5 | 5 | | 11 | 0 | 4 | 3.5 | 6 | 13.5 | 0 | 0 | 15 | 20 | 9.1 | 30.5 | 1.3 | 0 | 75.9 | 79.4 | 15 | 0 | 6 | 0 | 1.1 | 0 |
| | | 1797.5 | | 10.5 | 0.8 | 1.2 | 0 | | 12.5 | 0 | 19 | 1 | 2.8 | 22.8 | 0 | 0 | 27 | 8.1 | 8.5 | 20.1 | 1.2 | 0 | 64.9 | 65.9 | 31.5 | 0 | 2.8 | 0 | 0.7 | 0 |
| | | 1832 | | 16.4 | 0 | 5 | 0 | | 21.4 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 13 | 2 | 24.4 | 8 | 0 | 0 | 47.4 | 47.4 | 52.4 | 0 | 0 | 0 | 0.7 | 0 |
| | | 1834 | | 11.9 | 2.8 | 3 | 0 | | 17.7 | 0 | 28 | 2 | 0 | 30 | 0 | 0 | 16.2 | 1.3 | 24.5 | 9.8 | 0.5 | 0 | 52.3 | 54.3 | 45.7 | 0 | 0 | 0 | 0.6 | 0 |
| S Poland | Św. Anna outcrop | sample 17 | 0 | 2.2 | 0.7 | 0 | 0 | 0 | 2.9 | 0 | 1.5 | 6.8 | 0 | 8.3 | 0 | 0 | 21.8 | 12 | 33.7 | 19.3 | 1.7 | 0 | 88.5 | 95.3 | 4.4 | 0 | 0 | 0 | 1.9 | 0 |
| | | sample 21 | 0 | 0.7 | 0 | 0.8 | 0.5 | 0 | 2 | 0 | 2 | 5.5 | 0 | 7.5 | 0 | 0 | 20.4 | 10 | 28.8 | 31 | 0 | 0 | 90.2 | 95.7 | 4 | 0 | 0 | 0 | 0.8 | 0 |
| | | sample 25 | 0 | 1 | 1.2 | 1.3 | 0 | 0 | 3.5 | 0.4 | 1.6 | 4.7 | 0 | 6.7 | 0 | 0 | 21 | 12 | 29 | 25.8 | 1.9 | 0 | 89.7 | 94.4 | 5.1 | 0.4 | 0 | 0.078 | 2 | 0 |

U.S. – Upland SEG; L.S.+R.S. – Lowland and River SEG; C.S. – Coastal SEG; n.a. – not attributed; c/l – Coastal SEG *versus* Lowland and River SEG; w/d – "wetter" *versus* "drier" lowland sporomorphs; m/t – marine versus terrestrial sporomorphs