# Supplementary Table 1: Samples used for pollen and spore analysis, *Lycopodium* batch numbers, age and accumulation rates from models plotted in Supplementary Figure 1.

\* indicates ‘value extrapolated for plotting purposes’

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Ruppert Lake | 2013 | 0 | Ruppert Lake\_0 | 12489 | Batch 212761 | Yes | Yes | -63 |  |
| Ruppert Lake | 2013 | 27 | Ruppert\_27 | 12489 | Batch 212761 | Yes | Yes | 584 | 0.04049 |
| Ruppert Lake | 2013 | 35 | Ruppert\_35 | 12489 | Batch 212761 | Yes | Yes | 787.3 | 0.04065 |
| Ruppert Lake | 2013 | 59 | Ruppert\_59 | 12489 | Batch 212761 | Yes | Yes | 1339.3 | 0.03968 |
| Ruppert Lake | 2013 | 67 | Ruppert\_67 | 12489 | Batch 212761 | No | Yes | 1509 | 0.04926 |
| Ruppert Lake | 2013 | 83 | Ruppert\_83 | 12489 | Batch 212761 | Yes | Yes | 1848.8 | 0.04237 |
| Ruppert Lake | 2013 | 91 | Ruppert\_91 | 12489 | Batch 212761 | Yes | Yes | 2026.7 | 0.05587 |
| Ruppert Lake | 2013 | 99 | Ruppert\_99 | 12489 | Batch 212761 | Yes | Yes | 2196 | 0.04464 |
| Ruppert Lake | 2013 | 123 | Ruppert\_123 | 12489 | Batch 212761 | Yes | Yes | 3182.6 | 0.02203 |
| Ruppert Lake | 2013 | 139 | Ruppert\_139 | 12489 | Batch 212761 | Yes | Yes | 4433.1 | 0.01003 |
| Ruppert Lake | 2013 | 155 | Ruppert\_155 | 12489 | Batch 212761 | Yes | Yes | 5949.8 | 0.02000 |
| Ruppert Lake | 2013 | 163 | Ruppert\_163 | 12489 | Batch 212761 | Yes | Yes | 6388.1 | 0.01828 |
| Ruppert Lake | 2013 | 171 | Ruppert\_171 | 12489 | Batch 212761 | Yes | Yes | 6872.2 | 0.02101 |
| Ruppert Lake | 2013 | 179 | Ruppert\_179 | 12489 | Batch 212761 | Yes | Yes | 7258.5 | 0.01757 |
| Ruppert Lake | 2013 | 187 | Ruppert\_187 | 12489 | Batch 212761 | Yes | Yes | 7522.1 | 0.02370 |
| Ruppert Lake | 2013 | 203 | Ruppert\_203 | 12489 | Batch 212761 | Yes | Yes | 8150.8 | 0.02353 |
| Ruppert Lake | 2013 | 230 | Ruppert\_230 | 12489 | Batch 212761 | Yes | Yes | 9318.9 | 0.02451 |
| Ruppert Lake | 2013 | 245 | Ruppert\_245 | 12489 | Batch 212761 | Yes | Yes | 9866.7 | 0.02421 |
| Ruppert Lake | 2013 | 247 | Ruppert\_247 | 12489 | Batch 212761 | Yes | Yes | 10025.4 | 0.01294 |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Ruppert Lake | 2013 | 251 | Ruppert\_251 | 12489 | Batch 212761 | Yes | Yes | 10302.7 | 0.01263 |
| Ruppert Lake | 2013 | 263 | Ruppert\_263 | 12489 | Batch 212761 | Yes | Yes | 11198.6 | 0.01277 |
| Ruppert Lake | 2013 | 280 | Ruppert\_280 | 12489 | Batch 212761 | Yes | Yes | 12371.1 | 0.01553 |
| Ruppert Lake | 2013 | 283 | Ruppert\_283 | 12489 | Batch 212761 | No | Yes | 12529.2 | 0.01969 |
| Ruppert Lake | 2013 | 299 | Ruppert\_299 | 12489 | Batch 212761 | No | Yes | 13226.2 | 0.02110 |
| Ruppert Lake | 2013 | 315 | Ruppert\_315 | 12489 | Batch 212761 | Yes | Yes | 13903.6 | 0.02257 |
| Ruppert Lake | 2013 | 331 | Ruppert\_331 | 12489 | Batch 212761 | Yes | Yes | 14595.1 | 0.02217 |
| Ruppert Lake | 2013 | 335 | Ruppert\_335 | 12489 | Batch 212761 | Yes | Yes | 14776 | 0.02315 |
| Ruppert Lake | 2013 | 347 | Ruppert\_347 | 12489 | Batch 212761 | Yes | Yes | 15298.2 | 0.02257 |
| Ruppert Lake | 2013 | 351 | Ruppert\_351 | 12489 | Batch 212761 | Yes | Yes | 15475 | 0.02288 |
| Ruppert Lake | 2013 | 365 | Ruppert\_365 | 12489 | Batch 212761 | No | Yes | 16084.6 | 0.02387 |
| Ruppert Lake | 2013 | 367 | Ruppert\_367 | 12489 | Batch 212761 | Yes | Yes | 16166.7 | 0.02488 |
| Ruppert Lake | 2013 | 371 | Ruppert\_371 | 12489 | Batch 212761 | No | Yes | 16325.9 | 0.02558 |
| Ruppert Lake | 2013 | 372 | Ruppert\_372 | 12489 | Batch 212761 | No | Yes | 16362.7 | 0.02717 |
| Ruppert Lake | 2013 | 373 | Ruppert\_373 | 12489 | Batch 212761 | No | Yes | 16398.1 | 0.02825 |
| Ruppert Lake | 2013 | 374 | Ruppert\_374 | 12489 | Batch 212761 | No | Yes | 16436.9 | 0.02577 |
| Ruppert Lake | 2013 | 375 | Ruppert\_375 | 12489 | Batch 212761 | No | Yes | 16471 | 0.02933 |
| Ruppert Lake | 2013 | 376 | Ruppert\_376 | 12489 | Batch 212761 | No | Yes | 16507.6 | 0.02732 |
| Ruppert Lake | 2013 | 377 | Ruppert\_377 | 12489 | Batch 212761 | No | Yes | 16544.1 | 0.02740 |
| Ruppert Lake | 2013 | 378 | Ruppert\_378 | 12489 | Batch 212761 | No | Yes | 16584.6 | 0.02469 |
| Ruppert Lake | 2013 | 379 | Ruppert\_379 | 12489 | Batch 212761 | No | Yes | 16621.6 | 0.02703 |
| Ruppert Lake | 2013 | 380 | Ruppert\_380 | 12489 | Batch 212761 | No | Yes | 16659.6 | 0.02632 |
| Ruppert Lake | 2013 | 381 | Ruppert\_381 | 12489 | Batch 212761 | No | Yes | 16690.9 | 0.03195 |
| Ruppert Lake | 2013 | 382 | Ruppert\_382 | 12489 | Batch 212761 | No | Yes | 16725.8 | 0.02865 |
| Ruppert Lake | 2013 | 383 | Ruppert\_383 | 12489 | Batch 212761 | No | Yes | 16759.5 | 0.02967 |
| Ruppert Lake | 2013 | 384 | Ruppert\_384 | 12489 | Batch 212761 | No | Yes | 16798.8 | 0.02545 |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Ruppert Lake | 2013 | 385 | Ruppert\_385 | 12489 | Batch 212761 | No | Yes | 16838.1 \* | 0.025445 \* |
| Ruppert Lake | 2013 | 386 | Ruppert\_386 | 12489 | Batch 212761 | No | Yes | 16877.4 \* | 0.025445 \* |
| Ruppert Lake | 2013 | 387 | Ruppert\_387 | 12489 | Batch 212761 | No | Yes | 16916.7 \* | 0.025445 \* |
| Woody Bottom Pond | 2013 | 0 | WBP\_0 | 12489 | Batch 212761 | Yes | Yes | -63 |  |
| Woody Bottom Pond | 2013 | 4 | WBP\_4 | 12489 | Batch 212761 | Yes | Yes | 110.2 | 0.02309 |
| Woody Bottom Pond | 2013 | 8 | WBP\_8 | 12489 | Batch 212761 | Yes | Yes | 289.1 | 0.01969 |
| Woody Bottom Pond | 2013 | 12 | WBP\_12 | 12489 | Batch 212761 | Yes | Yes | 480.2 | 0.02045 |
| Woody Bottom Pond | 2013 | 16 | WBP\_16 | 12489 | Batch 212761 | Yes | Yes | 706.1 | 0.01445 |
| Woody Bottom Pond | 2013 | 40 | WBP\_40 | 12489 | Batch 212761 | Yes | Yes | 2035.2 | 0.01761 |
| Woody Bottom Pond | 2013 | 44 | WBP\_44 | 12489 | Batch 212761 | Yes | Yes | 2275.8 | 0.01757 |
| Woody Bottom Pond | 2013 | 48 | WBP\_48 | 12489 | Batch 212761 | Yes | Yes | 2554.2 | 0.01183 |
| Woody Bottom Pond | 2013 | 52 | WBP\_52 | 12489 | Batch 212761 | Yes | Yes | 2813.4 | 0.02151 |
| Woody Bottom Pond | 2013 | 56 | WBP\_56 | 12489 | Batch 212761 | Yes | Yes | 3037.8 | 0.01488 |
| Woody Bottom Pond | 2013 | 60 | WBP\_60 | 12489 | Batch 212761 | Yes | Yes | 3300 | 0.01715 |
| Woody Bottom Pond | 2013 | 64 | WBP\_64 | 12489 | Batch 212761 | Yes | Yes | 3536.1 | 0.01718 |
| Woody Bottom Pond | 2013 | 68 | WBP\_68 | 12489 | Batch 212761 | Yes | Yes | 3666.5 | 0.04630 |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Woody Bottom Pond | 2013 | 72 | WBP\_72 | 12489 | Batch 212761 | Yes | Yes | 3771.4 | 0.03135 |
| Woody Bottom Pond | 2013 | 76 | WBP\_76 | 12489 | Batch 212761 | Yes | Yes | 3874.6 | 0.03846 |
| Woody Bottom Pond | 2013 | 80 | WBP\_80 | 12489 | Batch 212761 | Yes | Yes | 3977.3 | 0.04525 |
| Woody Bottom Pond | 2013 | 84 | WBP\_84 | 12489 | Batch 212761 | Yes | Yes | 4100 | 0.03165 |
| Woody Bottom Pond | 2013 | 88 | WBP\_88 | 12489 | Batch 212761 | Yes | Yes | 4209.6 | 0.03521 |
| Woody Bottom Pond | 2013 | 96 | WBP\_96 | 12489 | Batch 212761 | Yes | Yes | 4431.5 | 0.03663 |
| Woody Bottom Pond | 2013 | 100 | WBP\_100 | 12489 | Batch 212761 | Yes | Yes | 4544.1 | 0.03559 |
| Woody Bottom Pond | 2013 | 104 | WBP\_104 | 12489 | Batch 212761 | Yes | Yes | 4645.8 | 0.03378 |
| Woody Bottom Pond | 2013 | 108 | WBP\_108 | 12489 | Batch 212761 | Yes | Yes | 4755.8 | 0.03401 |
| Woody Bottom Pond | 2013 | 112 | WBP\_112 | 12489 | Batch 212761 | Yes | Yes | 4891.7 | 0.02364 |
| Woody Bottom Pond | 2013 | 116 | WBP\_116 | 12489 | Batch 212761 | Yes | Yes | 5036.5 | 0.02457 |
| Woody Bottom Pond | 2013 | 120 | WBP\_120 | 12489 | Batch 212761 | Yes | Yes | 5193.8 | 0.02874 |
| Woody Bottom Pond | 2013 | 124 | WBP\_124 | 12489 | Batch 212761 | Yes | Yes | 5347.2 | 0.02653 |
| Woody Bottom Pond | 2013 | 128 | WBP\_128 | 12489 | Batch 212761 | Yes | Yes | 5509.3 | 0.02242 |
| Woody Bottom Pond | 2013 | 132 | WBP\_132 | 12489 | Batch 212761 | Yes | Yes | 5654.6 | 0.03472 |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Woody Bottom Pond | 2013 | 136 | WBP\_136 | 12489 | Batch 212761 | Yes | Yes | 5784 | 0.03106 |
| Woody Bottom Pond | 2013 | 140 | WBP\_140 | 12489 | Batch 212761 | Yes | Yes | 5935.8 | 0.02237 |
| Woody Bottom Pond | 2013 | 144 | WBP\_144 | 12489 | Batch 212761 | Yes | Yes | 6131.9 | 0.02183 |
| Woody Bottom Pond | 2013 | 148 | WBP\_148 | 12489 | Batch 212761 | Yes | Yes | 6325.9 | 0.01988 |
| Woody Bottom Pond | 2013 | 152 | WBP\_152 | 12489 | Batch 212761 | Yes | Yes | 6527.3 | 0.01838 |
| Woody Bottom Pond | 2013 | 156 | WBP\_156 | 12489 | Batch 212761 | Yes | Yes | 6720.2 | 0.02101 |
| Woody Bottom Pond | 2013 | 160 | WBP\_160 | 12489 | Batch 212761 | Yes | Yes | 6905.6 | 0.02392 |
| Woody Bottom Pond | 2013 | 164 | WBP\_164 | 12489 | Batch 212761 | No | Yes | 7100.5 | 0.02016 |
| Woody Bottom Pond | 2013 | 168 | WBP\_168 | 12489 | Batch 212761 | Yes | Yes | 7303.7 | 0.01727 |
| Woody Bottom Pond | 2013 | 172 | WBP\_172 | 12489 | Batch 212761 | Yes | Yes | 7527.4 | 0.01859 |
| Woody Bottom Pond | 2013 | 176 | WBP\_176 | 12489 | Batch 212761 | Yes | Yes | 7799.9 | 0.01005 |
| Woody Bottom Pond | 2013 | 180 | WBP\_180 | 12489 | Batch 212761 | Yes | Yes | 8182.3 | 0.01074 |
| Woody Bottom Pond | 2013 | 184 | WBP\_184 | 12489 | Batch 212761 | Yes | Yes | 8596.2 | 0.00934 |
| Woody Bottom Pond | 2013 | 188 | WBP\_188 | 12489 | Batch 212761 | Yes | Yes | 8914.1 | 0.01242 |
| Woody Bottom Pond | 2013 | 192 | WBP\_192 | 12489 | Batch 212761 | Yes | Yes | 9176.3 | 0.01842 |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Woody Bottom Pond | 2013 | 196 | WBP\_196 | 12489 | Batch 212761 | No | Yes | 9386 | 0.01848 |
| Woody Bottom Pond | 2013 | 200 | WBP\_200 | 12489 | Batch 212761 | Yes | Yes | 9595.7 \* | 0.01848 \* |
| Jan Lake | 1994 | 151 | Jan\_151 | 13911 | Batch 710961 | Yes | Yes | 4649.1 | 0.03289 |
| Jan Lake | 1994 | 161 | Jan\_161 | 12077 | Unknown at the time of writing | Yes | Yes | 5119.2 | 0.01704 |
| Jan Lake | 1994 | 181 | Jan\_181 | 12077 | Unknown at the time of writing | Yes | Yes | 6195.5 | 0.02160 |
| Jan Lake | 1994 | 191 | Jan\_191 | 13911 | Batch 710961 | Yes | Yes | 6656 | 0.02141 |
| Jan Lake | 1994 | 201 | Jan\_201 | 12077 | Unknown at the time of writing | Yes | Yes | 7120.5 | 0.02564 |
| Jan Lake | 1994 | 213 | Jan\_213 | 13911 | Batch 710961 | Yes | Yes | 7874.5 | 0.01166 |
| Jan Lake | 1994 | 221 | Jan\_221 | 12077 | Unknown at the time of writing | Yes | Yes | 8704.6 | 0.00818 |
| Jan Lake | 1994 | 232 | Jan\_232 | 12077 | Unknown at the time of writing | Yes | Yes | 9958.6 | 0.03448 |
| Jan Lake | 1994 | 250 | Jan\_250 | 12077 | Unknown at the time of writing | Yes | Yes | 10485.4 | 0.03559 |
| Jan Lake | 1994 | 270 | Jan\_270 | 13911 | Batch 710961 | Yes | Yes | 11094.7 | 0.03448 |
| Jan Lake | 1994 | 280 | Jan\_280 | 13911 | Batch 710961 | Yes | Yes | 11398.5 | 0.04167 |
| Jan Lake | 1994 | 291 | Jan\_291 | 13911 | Batch 710961 | Yes | Yes | 11638.7 | 0.04444 |
| Jan Lake | 1994 | 296 | Jan\_296 | 13911 | Batch 710961 | Yes | Yes | 11757.9 | 0.04049 |
| Jan Lake | 1994 | 301 | Jan\_301 | 13911 | Batch 710961 | Yes | Yes | 11877.3 | 0.03891 |
| Jan Lake | 1994 | 307 | Jan\_307 | 13911 | Batch 710961 | Yes | Yes | 12071.4 | 0.02639 |
| Jan Lake | 1994 | 311 | Jan\_311 | 13911 | Batch 710961 | Yes | Yes | 12220.7 | 0.02008 |
| Jan Lake | 1994 | 321 | Jan\_321 | 13911 | Batch 710961 | Yes | Yes | 12720.1 | 0.01862 |
| Jan Lake | 1994 | 331 | Jan\_331 | 13911 | Batch 710961 | Yes | Yes | 13263.3 | 0.01946 |
| **Site** | **Date cored** | **Depth (cm)** | **sample** | **Lycopodium spores per tablet** | **Lycopodium batch number** | **Pollen** | **Spore** | **median sample age (ka)** | **sediment accumulation rate (cm/yr)** |
| Jan Lake | 1994 | 338 | Jan\_338 | 13911 | Batch 710961 | Yes | Yes | 13638.8 | 0.01883 |
| Jan Lake | 1994 | 348 | Jan\_348 | 13911 | Batch 710961 | Yes | Yes | 14150.4 | 0.02155 |
| Windmill Lake | 1994 | 730 | Windmill\_730 | 12542 | Batch 124961 | Yes | Yes | 9466 | 0.02128 |
| Windmill Lake | 1994 | 740 | Windmill\_740 | 11267 | Batch 201890 | Yes | Yes | 9940 | 0.02174 |
| Windmill Lake | 1994 | 755 | Windmill\_755 | 13911 | Batch 710961 | Yes | Yes | 10588 | 0.02273 |
| Windmill Lake | 1994 | 770 | Windmill\_770 | 13911 | Batch 710961 | Yes | Yes | 11217 | 0.02439 |
| Windmill Lake | 1994 | 795 | Windmill\_795 | 13911 | Batch 710961 | Yes | Yes | 12537 | 0.01471 |
| Windmill Lake | 1994 | 802 | Windmill\_802 | 12542 | Batch 124961 | Yes | Yes | 12999 | 0.01587 |
| Windmill Lake | 1994 | 815 | Windmill\_815 | 13911 | Batch 710961 | Yes | Yes | 13702 | 0.02381 |
| Windmill Lake | 1994 | 823 | Windmill\_823 | 13911 | Batch 710961 | Yes | Yes | 14010 | 0.02564 |
| Windmill Lake | 1994 | 830 | Windmill\_830 | 13911 | Batch 710961 | Yes | Yes | 14248 | 0.03226 |
| Windmill Lake | 1994 | 845 | Windmill\_845 | 13911 | Batch 710961 | Yes | Yes | 14548 | 0.05000 |
| Windmill Lake | 1994 | 855 | Windmill\_855 | 13911 | Batch 710961 | Yes | Yes | 14755 | 0.05000 |