Modeling A Primate Technological Niche: Supplementary Tables and Figures

Table 1: Runs where no tool use events occurred. Note that the majority of runs that did not faciliate tool use are runs with only 100 Trees

Number of Sources	Number of Trees	Trees Die	Number of Runs
10	100	0	11
10	100	1	14

Table 2: A summary of number of Pounding Tool uses by raw material quality

Number of Sources	Number of Trees	Material Quality	min N uses	Mean N Uses	Max N Uses	Max Distance to Source
100	10	0	1	22.35648	412	11.704700
100	10	25	1	22.85039	250	8.544004
100	10	50	1	26.27872	171	10.816654
100	10	75	1	18.75368	172	8.000000
100	100	0	1	21.99876	531	15.652476
100	100	25	1	19.93934	379	13.601470
100	100	50	1	22.05582	247	15.811388
100	100	75	1	17.06763	171	12.806249
100	500	0	1	18.39440	543	15.297059
100	500	25	1	17.14202	392	13.601470
100	500	50	1	15.73572	251	13.892444
100	500	75	1	15.29275	177	15.264337
500	10	0	1	31.41484	585	19.209373
500	10	25	1	33.45985	323	20.518285
500	10	50	1	23.87386	272	17.204650
500	10	75	1	25.15970	184	18.110770
500	100	0	1	30.15344	653	30.083218
500	100	25	1	26.05296	357	25.942244
500	100	50	1	24.66192	299	23.769729
500	100	75	1	22.61916	219	17.029386
500	500	0	1	23.96524	766	27.018512
500	500	25	1	22.34021	394	26.172505
500	500	50	1	20.18316	326	24.186773
500	500	75	1	18.39001	251	24.413111
1000	10	0	1	46.39870	729	30.016662
1000	10	25	1	38.46537	374	25.059928
1000	10	50	1	33.47645	250	23.345235
1000	10	75	1	25.61091	199	27.294688
1000	100	0	1	45.44604	775	37.947332
1000	100	25	1	36.09471	430	30.886890

Number of Sources	Number of Trees	Material Quality	min N uses	Mean N Uses	Max N Uses	Max Distance to Source
1000	100	50	1	30.44730	315	30.000000
1000	100	75	1	26.91404	225	29.000000
1000	500	0	1	31.02060	843	34.176015
1000	500	25	1	26.84863	454	32.310989
1000	500	50	1	23.62872	289	27.166155
1000	500	75	1	21.82335	216	27.586228
2000	10	0	1	79.22782	770	52.392748
2000	10	25	1	55.00552	501	44.011362
2000	10	50	1	43.50328	295	38.013156
2000	10	75	1	36.11156	186	35.846897
2000	100	0	1	67.89652	802	51.400389
2000	100	25	1	50.82848	495	49.040799
2000	100	50	1	40.48315	342	36.878178
2000	100	75	1	34.36357	227	36.715120
2000	500	0	1	41.97819	833	51.078371
2000	500	25	1	33.46640	484	40.024992
2000	500	50	1	28.84229	309	37.215588
2000	500	75	1	25.52693	258	35.777088

Table 3: Runs where the repeated transport of tools did not result in an increase in the number of Tool-use opportunities

Number of Sources	Number of Trees	Trees Die	Number of Runs
10	100	0	28
10	100	1	18
10	500	0	11
10	500	1	2
10	1000	0	1
100	100	0	19
100	100	1	6
500	100	0	6
500	100	1	1

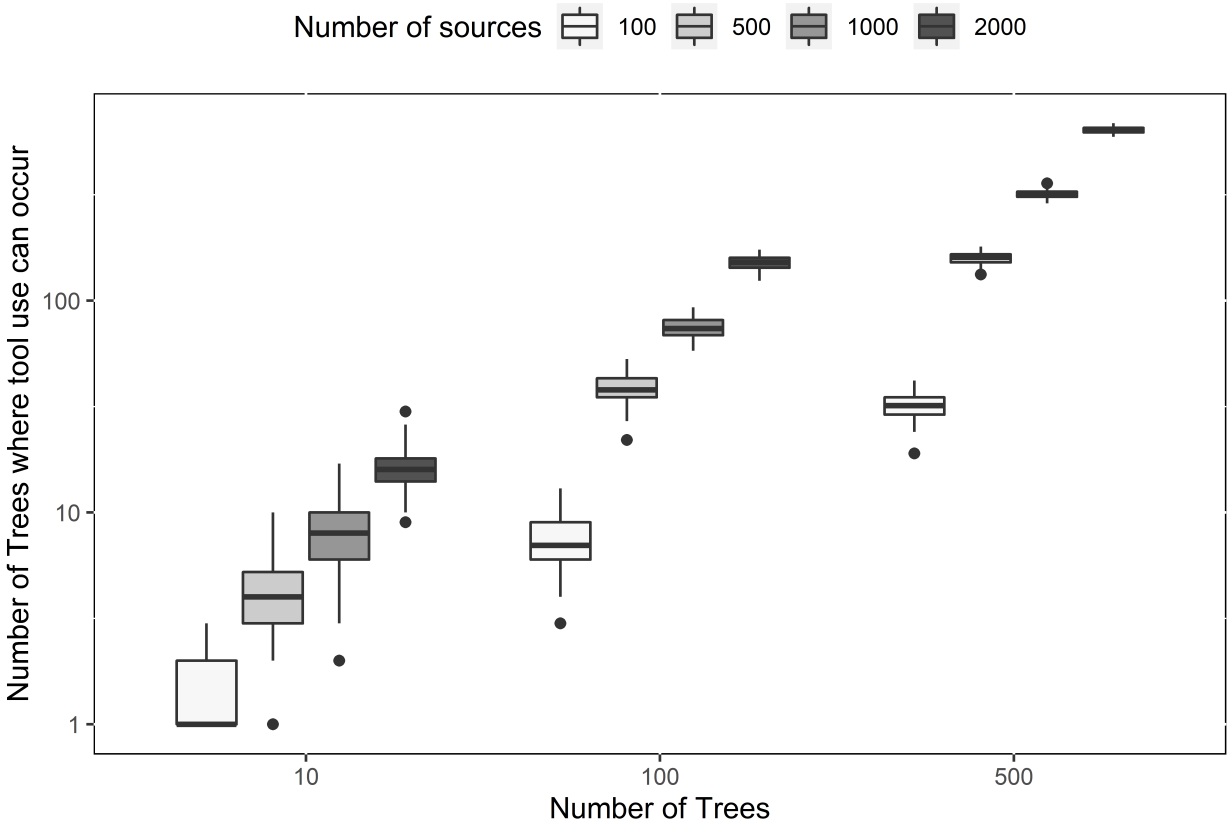

Figure 1: The relationship between the number of places where it is possible for a tool-use event to occur and the number of trees and sources at the beginning of each model run. Increasing both the number of Trees and Sources included in the model has a positive effect on the number of places where tool-use can occur. Note that the Y axis is in log 10 scale

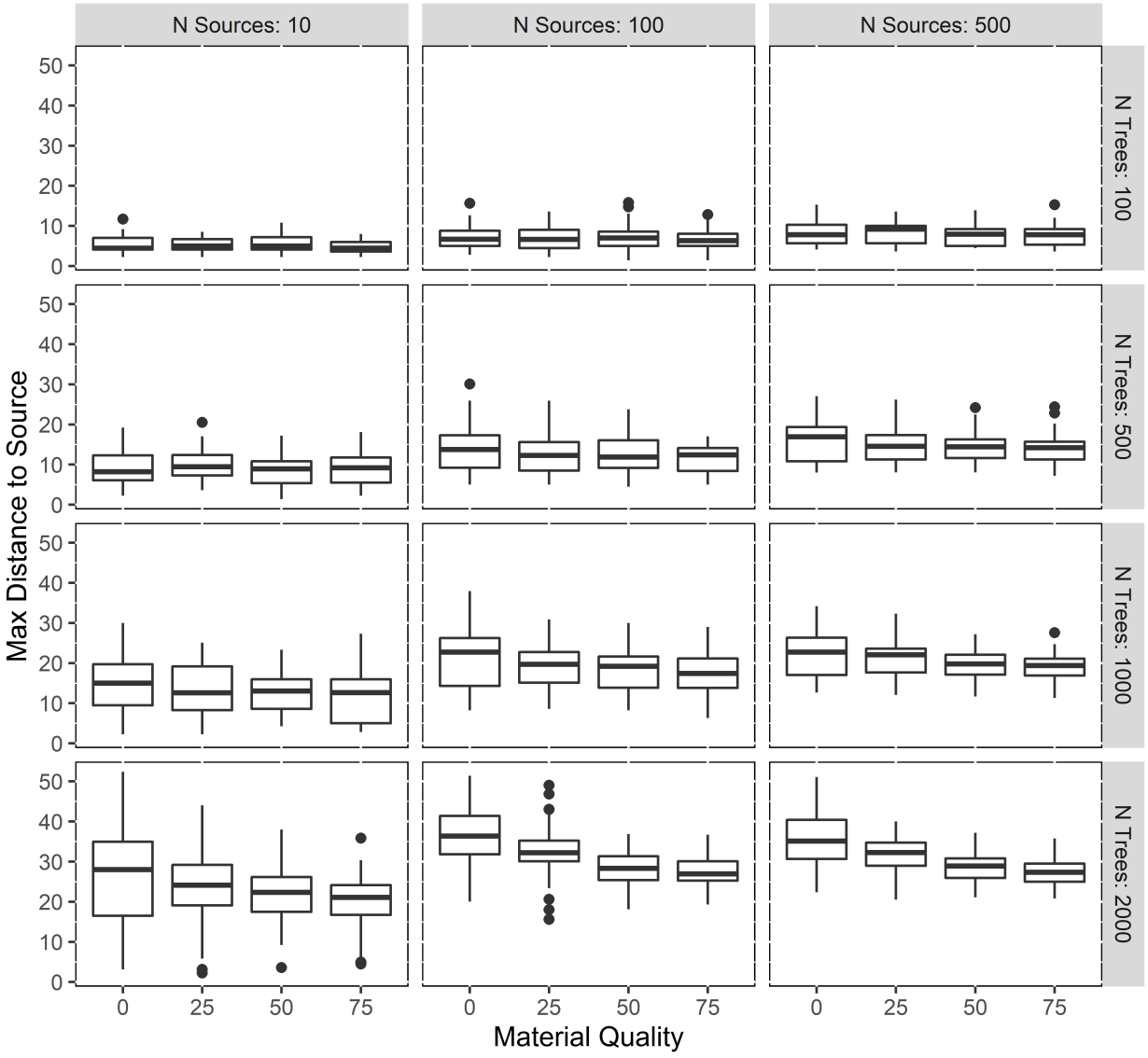

Figure 2: Both plots showing the maximum distance *Pounding Tools* were moved according to their material quality. When the number of Trees is low, material quality has little influence on the maximum distance a *Pounding Tools* travel, this is due to the fact that there is little opportunity for tools to move substantial distances from their sources. However, as the number of *Trees* increases, so does the distance *Pounding Tools* can move from their *Source*. In cases where the number of *Trees* is great, the maximum distance tools can move is influenced by its raw material quality. Note that a raw material quality of 0 reflects 25% chance of breaking whereas a raw material quality of 75 represents a 100% change of breaking.

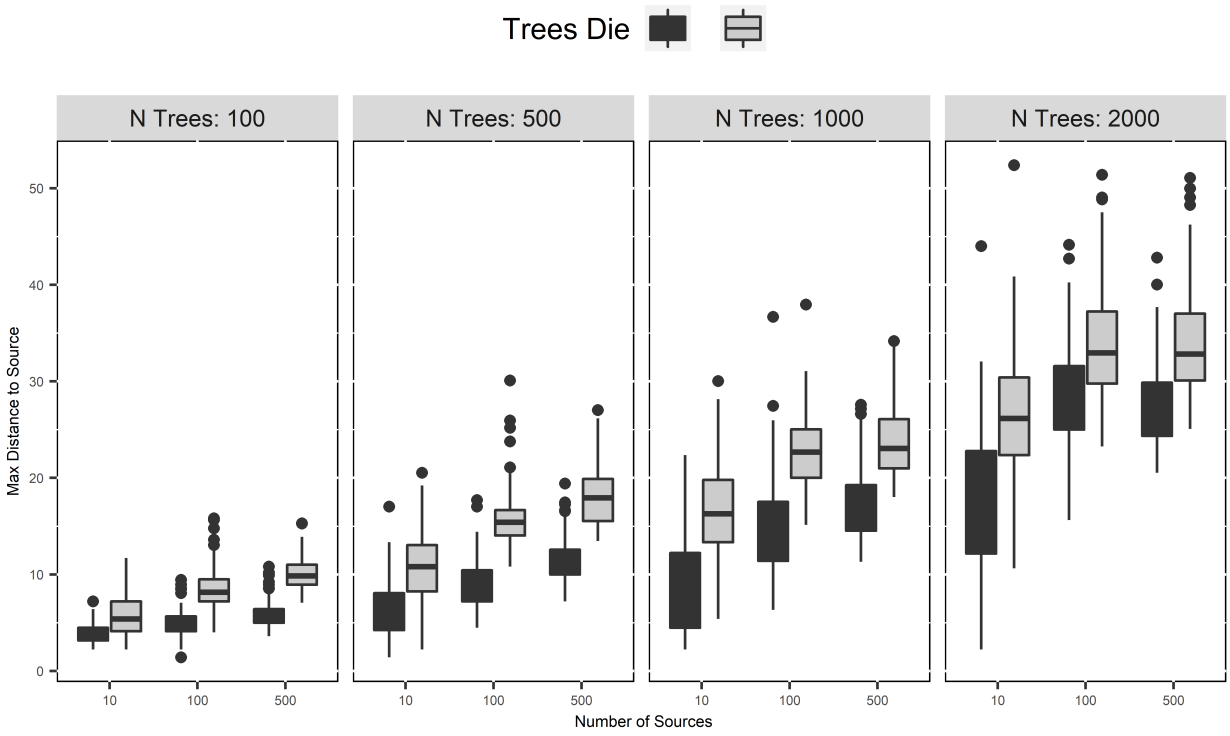

Figure 3: The effect tree death and growth on the maximum distance tools can move from the source. When holding the number of *Trees* and *Sources* constant *Pounding Tools* the maximum distance a pounding tool can move is greater when *Trees* are able to change their location due to death and regrowth. Black: Static Trees, Grey: Dynamic Trees.

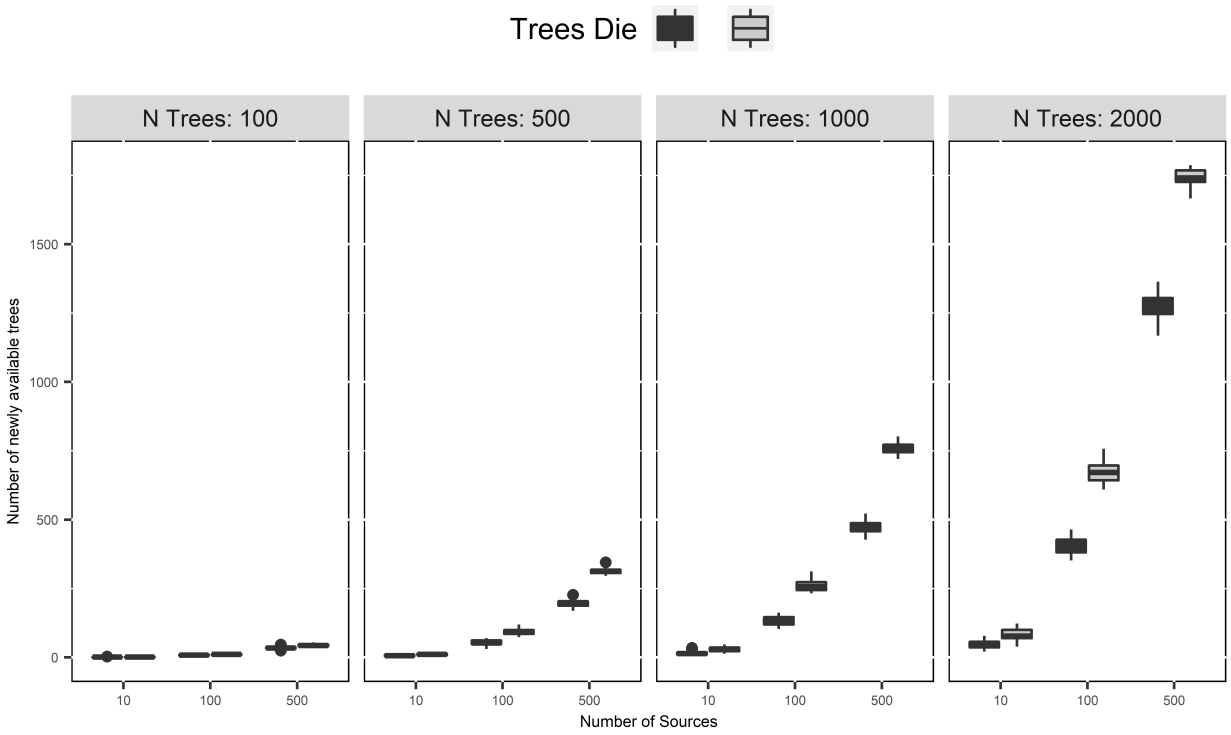

Figure 4: The effect tree life cycles on the number of trees that become accessible due to the transport of tools. Black: Static Trees, Grey: Dynamic Trees.

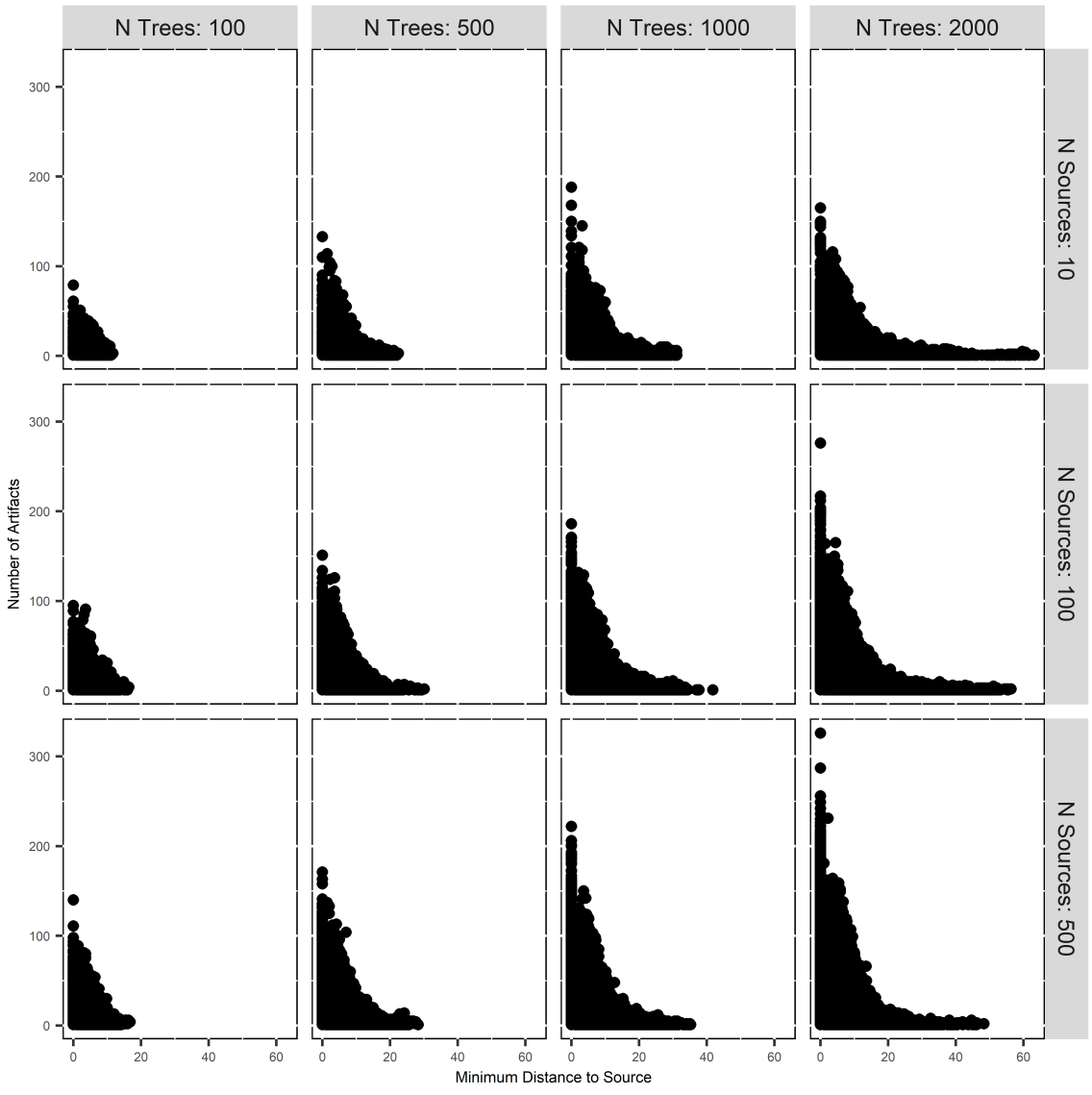

Figure 5: The relationship between the number of artifacts found in a grid cell and its distance to the nearest source. Note how the number of *Trees* attenuates the scale of the distance-decay relationship

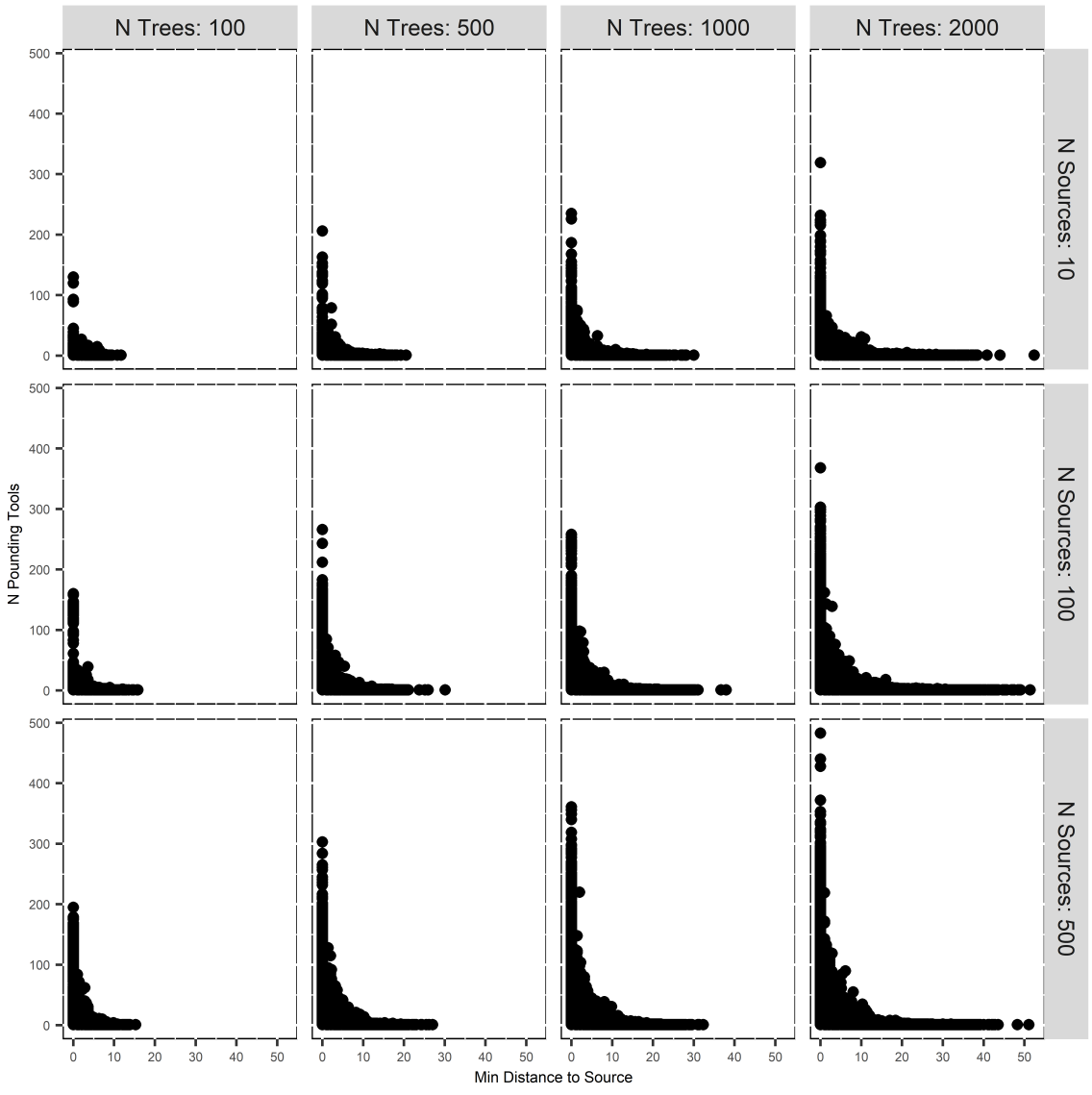

Figure 6: The relationship between the number of Pounding Tools found in a grid cell and its distance to the nearest source. Note how the number of *Trees* attenuates the scale and strength of this relationship

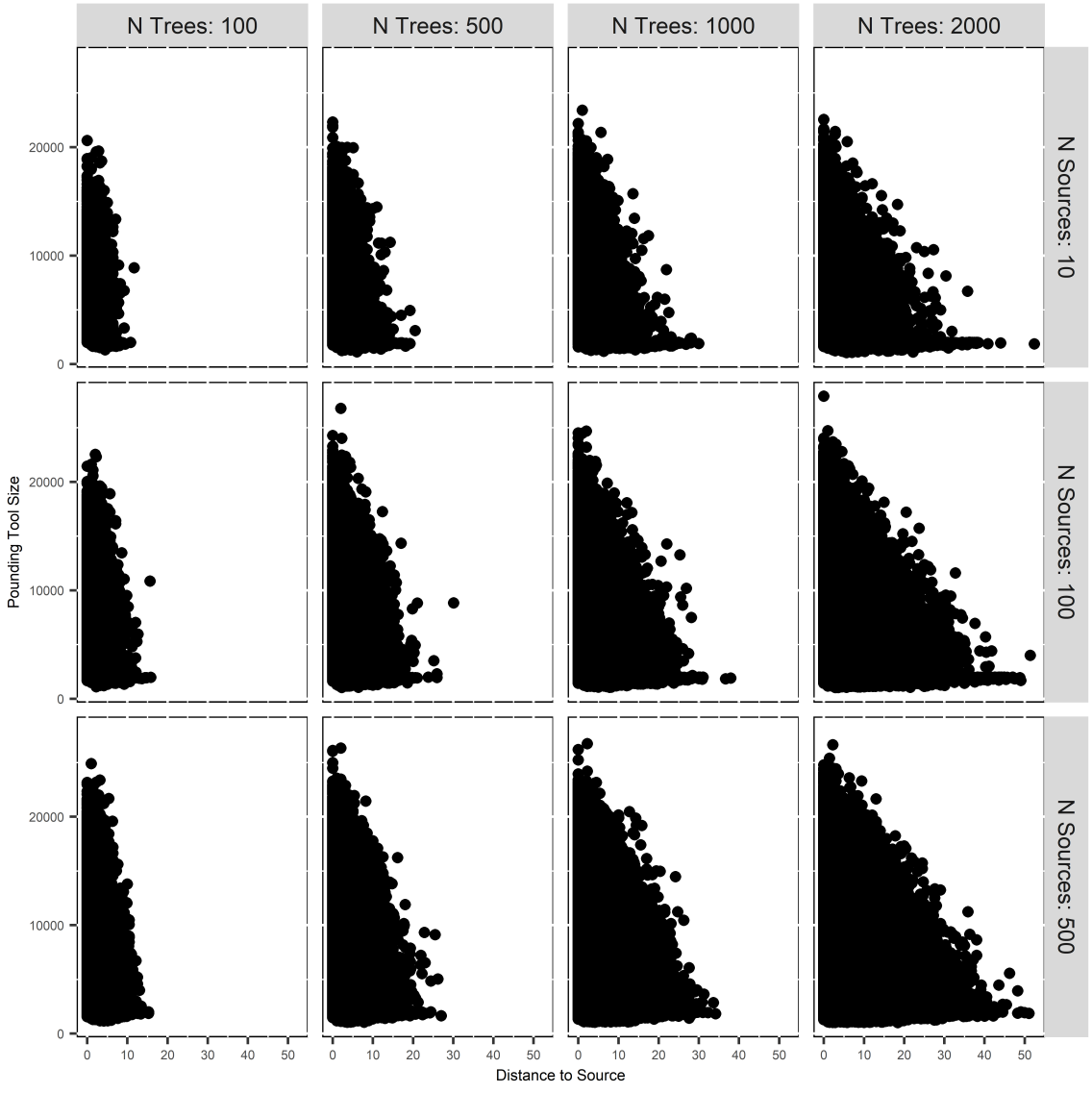

Figure 7: The relationship between the size of Pounding Tools and distance to their sources. Note how the number of *Trees* attenuates the scale and strength of this relationship

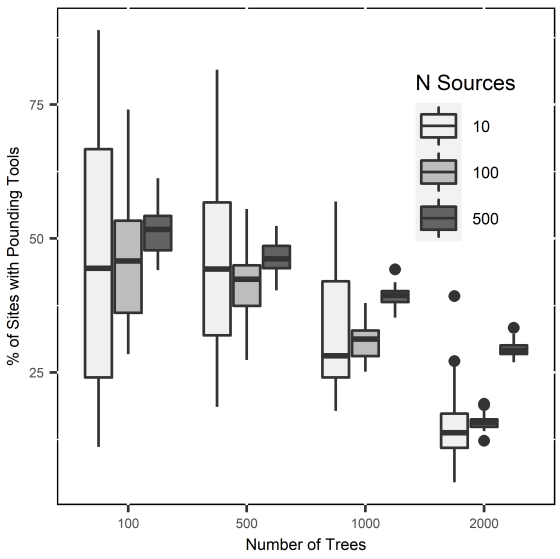

Figure 8: The effect of the environment on the representation of Pounding tools in the simulated material record in runs where Tree locations are static. Increasing the number of sources increases the percentage of assemblages that contain Pounding Tools. In comparison with figure 4 (right) in the main text, individual assemblages contain greater proportions of Pounding Tools