

File S1 Selected photographs of pre and after burning plant material from Siberia in a muffle oven at 250, 300, 350, 400 and 450 °C. Note that some of plant material turned to ash at lower temperature than others.

Pinus sylvestris needles



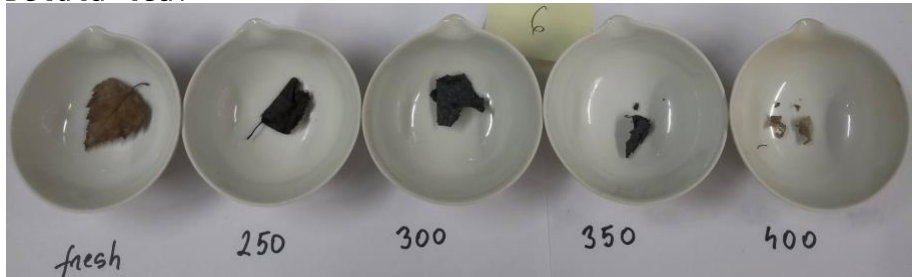
Pinus sylvestris twig



Pinus wood



Betula leaf



Sphagnum



Polypodiaceae



Equisetum



Oxycoccus



Carex



Vaccinium



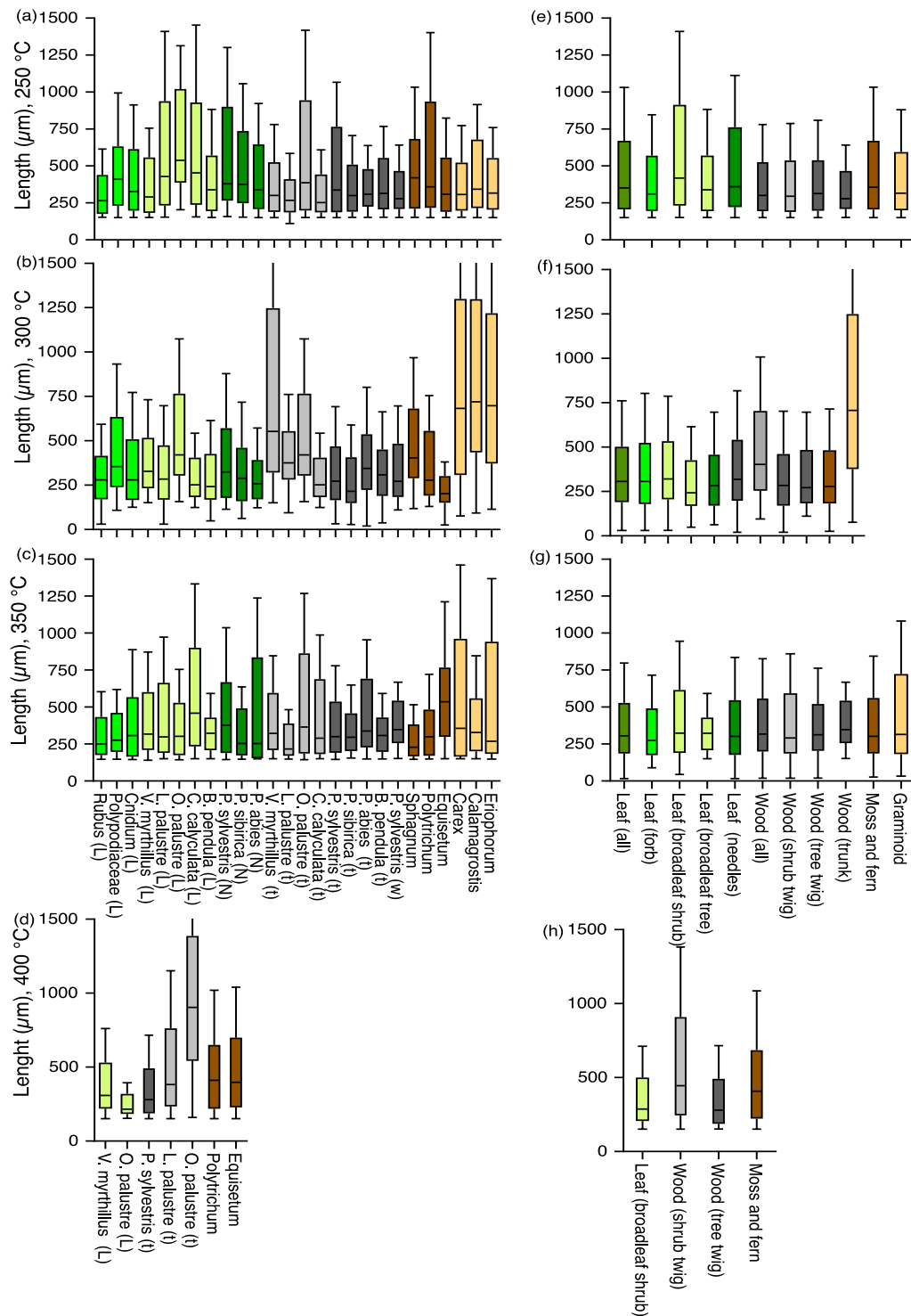
Polytrichum



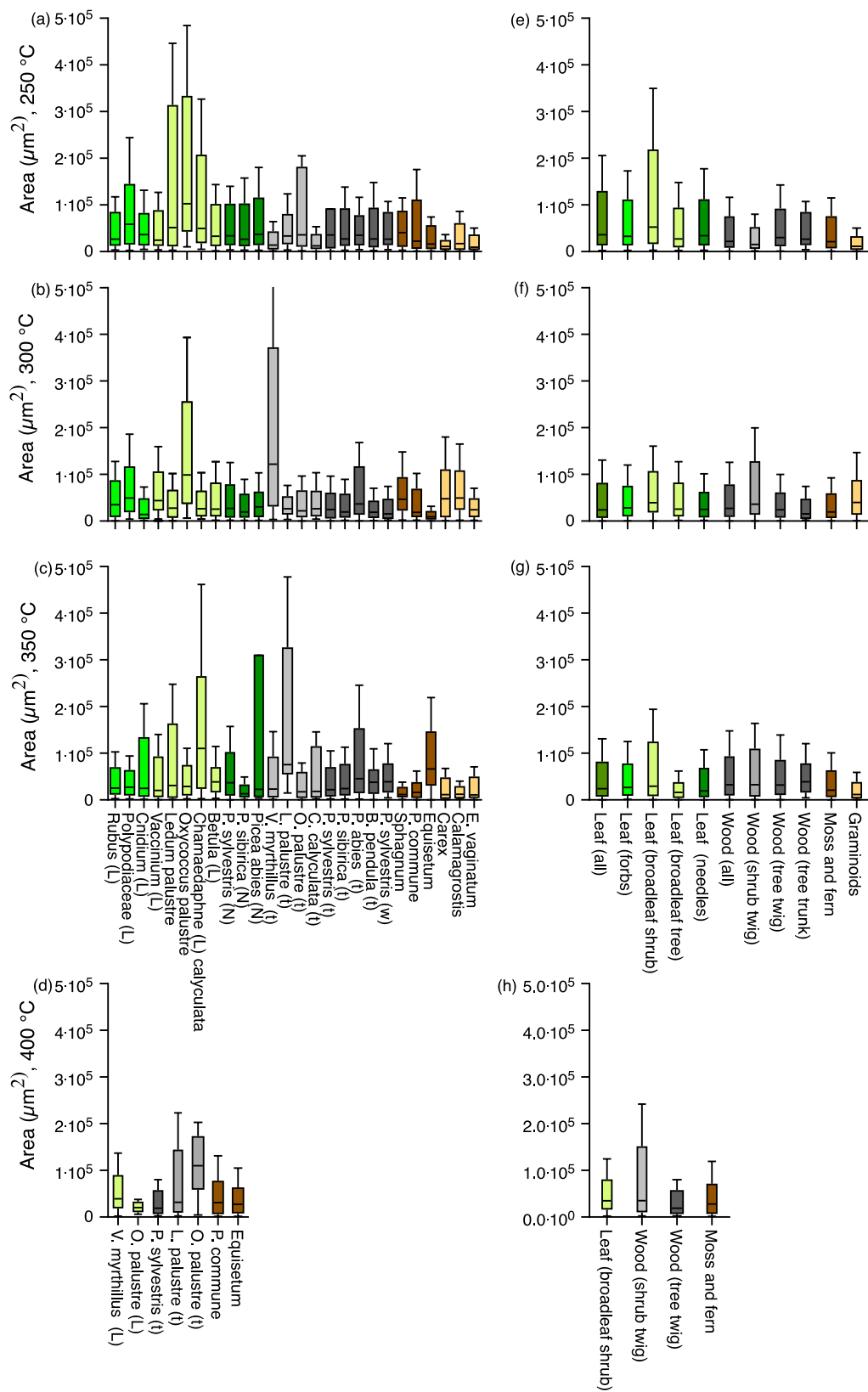
File S2 Mann-Whitney test for equal medians between fuel types. Significance of p-values (<0.0001***, 0.001**, 0.01* 0.05).

	Graminoids	Wood	Leaves	Moss and ferns
Aspect ratio (L:W)				
250°C				
Graminoid	-	0.0001	0.0001	0.0001
Wood	0.0001	-	0.0001	0.0001
Leaves	0.0001	0.0001	-	0.0001
300 °C				
Graminoid	-	0.0001	0.0001	0.0001
Wood	0.0001	-	0.0001	0.771
Leaves	0.0001	0.0001	-	0.0001
350°C				
Graminoid	-	0.0001	0.0001	0.0001
Wood	0.0001	-	0.0002	0.0001
Leaves	0.0001	0.0002	-	0.0001
Length (L)				
250°C				
Graminoid	-	0.182	0.037	0.0678
Wood	0.182	-	0.0001	0.0006
Leaves	0.037	0.0001	-	0.8376
300 °C				
Graminoid	-	0.0001	0.0001	0.0001
Wood	0.0001	-	0.0332	0.0131
Leaves	0.0001	0.0332	-	0.220
350°C				
Graminoid	-	0.909	0.210	0.209
Wood	0.909	-	0.085	0.213
Leaves	0.0001	0.210	-	0.874
Surface area (A)				
250°C				
Graminoid	-	0.0001	0.0001	0.0001
Wood	0.0001	-	0.0001	0.7642
Leaves	0.0001	0.0001	-	0.0001
300 °C				
Graminoid	-	0.004	0.128	0.0001
Wood	0.004	-	0.018	0.0009
Leaves	0.128	0.018	-	0.0001
350°C				
Graminoid	-	0.0001	0.0001	0.0028
Wood	0.0001	-	0.0021	0.0001
Leaves	0.0001	0.0021	-	0.0003

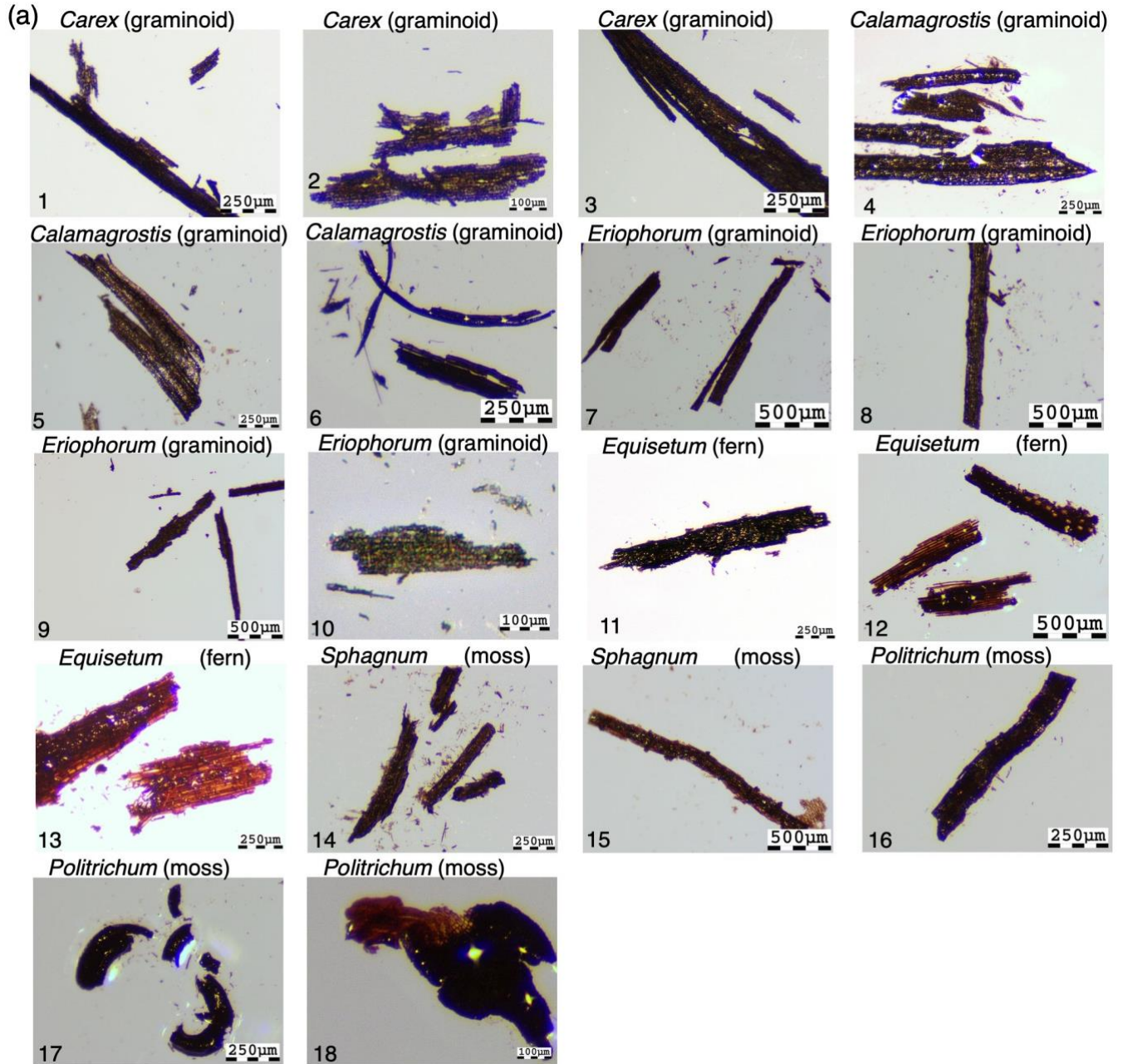
File S3 The median lengths (μm) of charred particles produced from (a–d) individual measurements and (e–g) fuel types by burning at temperatures of 250, 300, 350, and 400 °C, respectively. Box plots represent the distribution of data as follows: the horizontal line in each box denotes the median, the upper quartile is the median value of the upper half of the data points, the lower quartile is the median value of the lower half of the data points, whereas whiskers represent the minimum and the maximum values. Abbreviations of plant material burned are given in Figure 1.



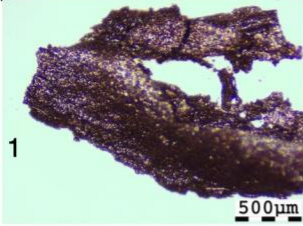
File S4 The median surface areas (μm^2) of charred particles produced from (a–d) individual taxa and (e–g) fuel types by burning at temperatures of 250, 300, 350, and 400 °C, respectively. Box plots as in Fig. S2. Abbreviations of plant material burned are given in Figure 1.



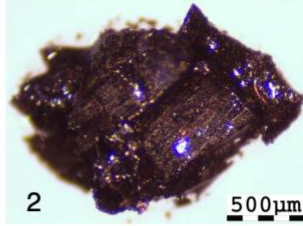
File S5. Photomicrographs of characteristic charcoal morphotypes under stereomicroscope (4 ×). (a) Graminoids (1–10), ferns (11–13), and moss (14–18). (b) Wood from tree twigs (1–9), shrub twigs (10–15), and trunks (16–20). (c) Conifer needles (1–6), deciduous tree leaves (7–9), shrub leaves (10–15), fern leaves (16–18), and moss leaves (19–20).



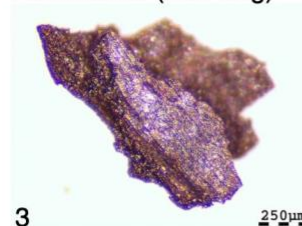
(b) *Picea abies* (tree twig)



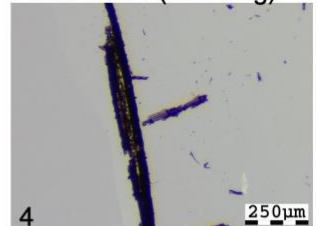
Picea abies (tree twig)



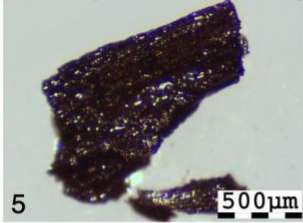
Picea abies (tree twig)



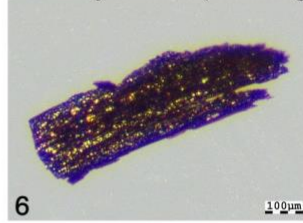
Picea abies (tree twig)



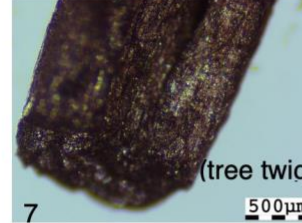
Pinus sylvestris (tree twig)



Pinus sylvestris (tree twig)



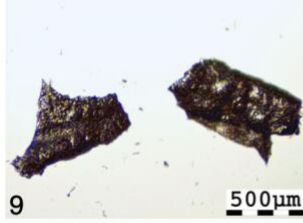
Pinus sylvestris



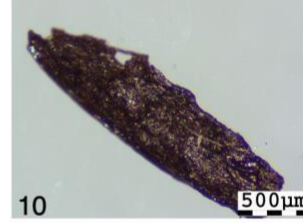
Betula (tree twig)



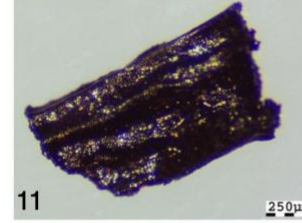
Betula (tree twig)



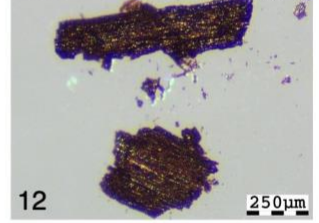
Vaccinium (shrub twig)



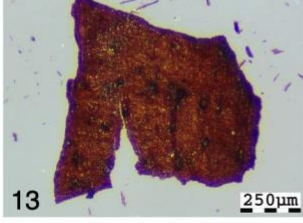
Vaccinium (shrub twig)



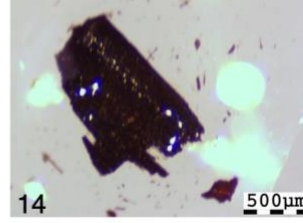
Vaccinium (shrub twig)



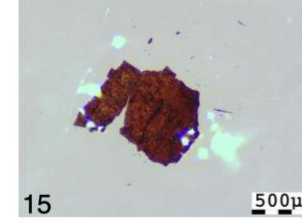
Ledum (shrub twig)



Ledum (shrub twig)



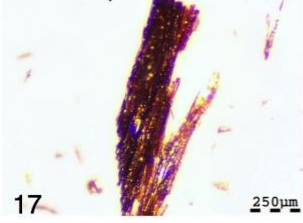
Ledum (shrub twig)



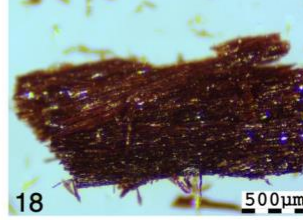
Pinus (trunk)



Pinus (trunk)



Pinus (trunk)

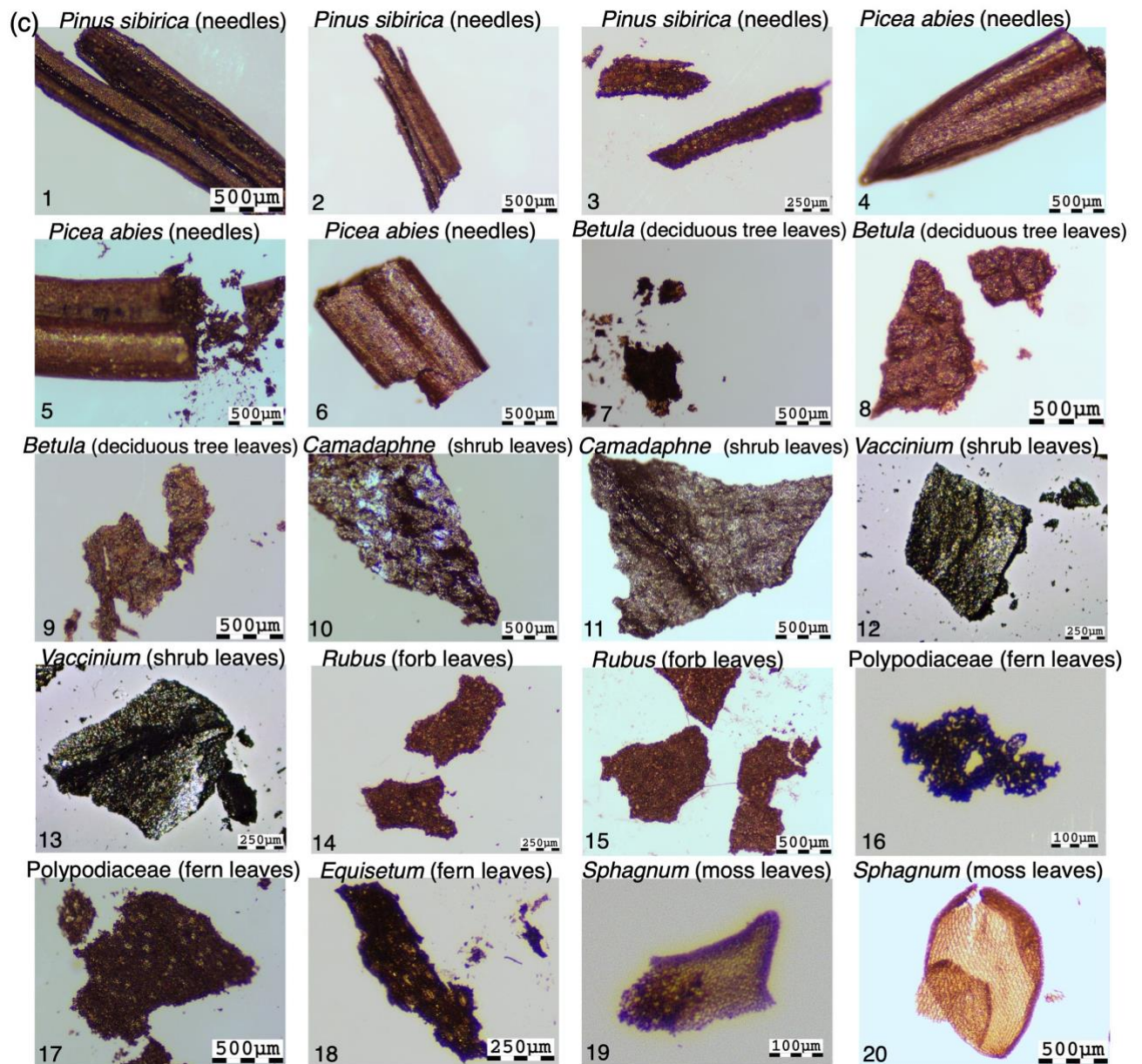


Pinus (trunk)

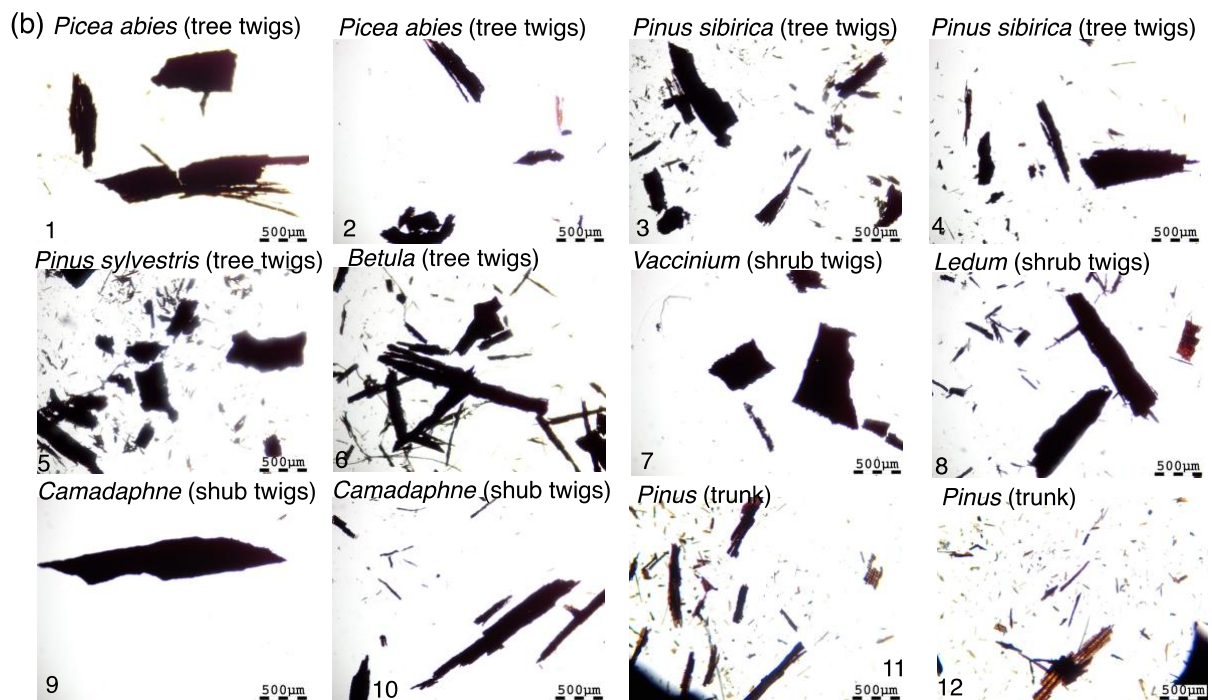


Pinus (trunk)

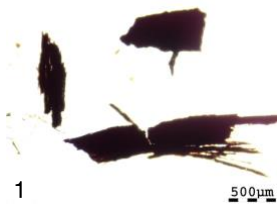




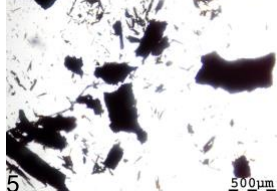
File S6. Photomicrographs of characteristic charcoal morphotypes under microscope (4×). (a) Conifer needles (1–6), deciduous tree leaves (7–8), deciduous shrub leaves (9–11), graminoids (13–15), ferns (16–17), and moss leaves and stems (18–20). (b) Wood from tree twigs (1–6), shrub twigs (7–10), and trunks (11–12).



(b) *Picea abies* (tree twigs)



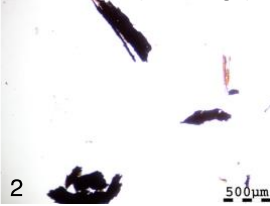
Pinus sylvestris (tree twigs)



Camadaphne (shub twigs)



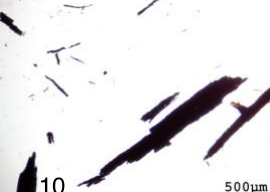
Picea abies (tree twigs)



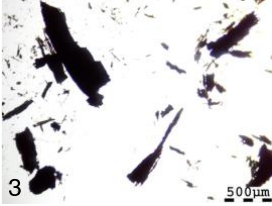
Betula (tree twigs)



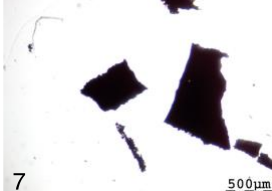
Camadaphne (shub twigs)



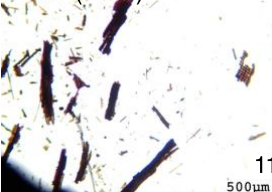
Pinus sibirica (tree twigs)



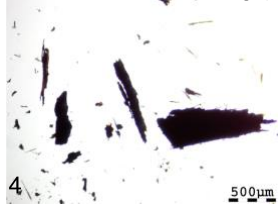
Vaccinium (shrub twigs)



Pinus (trunk)



Pinus sibirica (tree twigs)



Ledum (shrub twigs)



Pinus (trunk)

