International Journal of Wildland Fire 24(8), 1143–1153
doi: 10.1071/WF14182_AC

Supplementary material

The role of leaf traits in determining litter flammability of southeastern Amazon tree species

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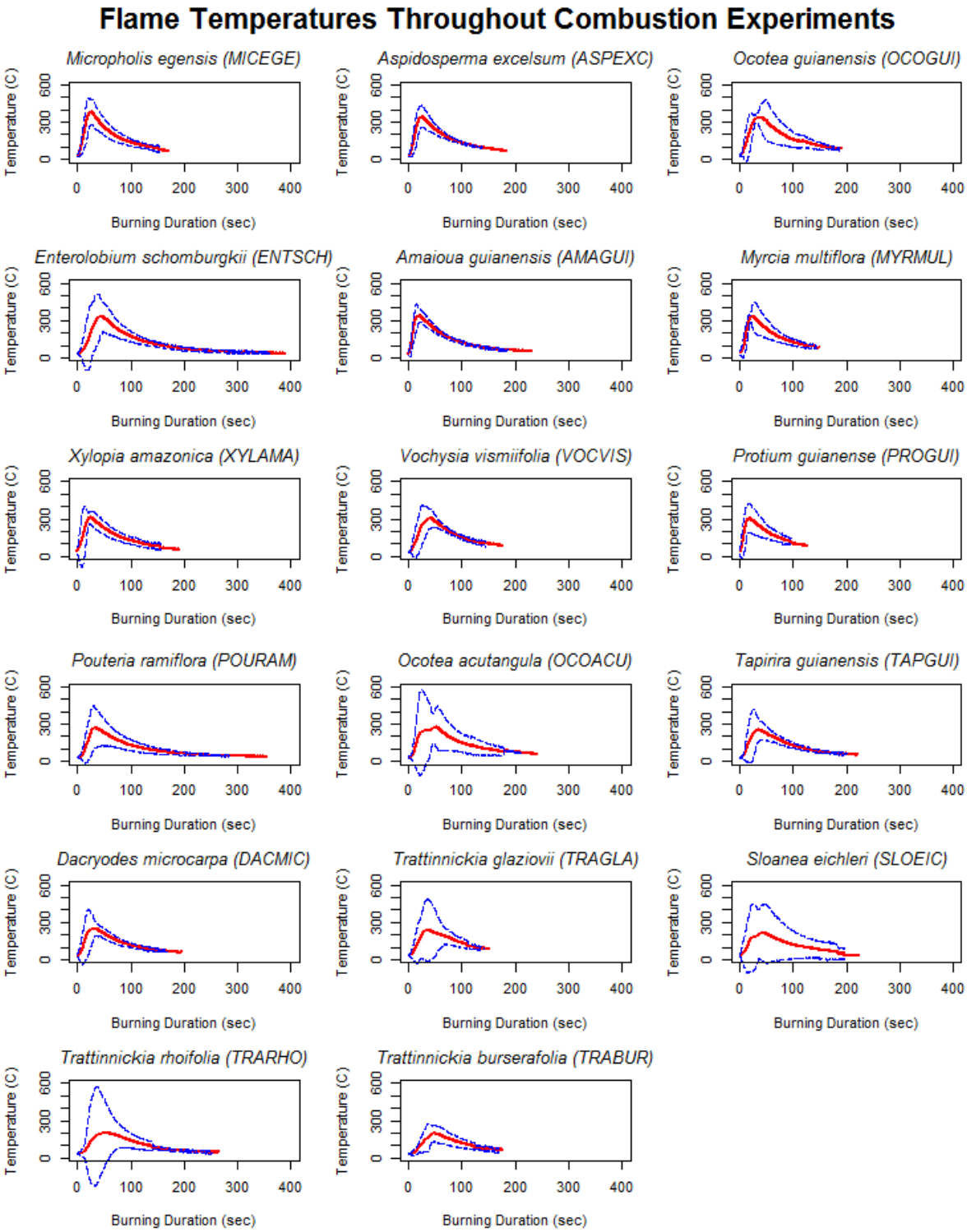

Fig. S1. Flame temperatures throughout combustion experiments. Measured flame temperatures (°C) throughout entire burning durations of the 17 focus species. All five combustion experiments were averaged for each species. Lines represent mean temperature (red) and two standard errors above and below the mean (blue).

Table S1. Raw data collected for leaf trait measurements, flammability metrics and flame temperatures

Data has been made publicly available online, via DOI#, through the Knowledge Network for Biocomplexity (KNB)

1. Testing Amazon transitional forest leaf flammability: leaf traits

doi:10.5063/F1P848VF

Data set including scientific and common species names, sampling assignments, and the ten traits that were originally measured. In depth sampling and processing methods are also included.

2. Testing Amazon transitional forest leaf flammability: combustion experiment flammability metrics

doi:10.5063/F1T151K5

Data set including scientific and common species names, sampling assignments, ambient environment measurements, and the nine flammability metrics that were originally measured. In depth sampling and processing methods are also included.

3. Testing Amazon transitional forest leaf flammability: combustion experiment temperature readings

doi:10.5063/F1N877Q2

Data set including species codes, sampling assignments, and the temperature readings measured throughout each combustion experiment at the three thermocouple heights. In depth sampling and processing methods are also included.

Table S2. Laboratory burning characteristics of the 17 species examined in the flammability assessment
Mean ± standard error (s.e.) and rank (in parenthesis) within each variable are reported by species (*N* = 5). Membership in the four flammability clusters is shown (A – Highly Flammable; B – Moderately Flammable; C – Less Flammable; D – Least Flammable). See Table 1 for species code explanations

Species	Maximum flame height (cm)	Time to ignition (s)	Flaming duration (s)	Smoldering duration (s)	Mass loss (%)	Maximum flame temperature (°C)	Cluster
AMAGUI	90 ± 8 (5)	3.1 ± 0.8 (16)	27.5 ± 6.0 (15)	133.5 ± 45.5 (6)	95.49 ± 1.23 (4)	383.63 ± 19.25 (9)	A
MYRMUL	91 ± 19 (4)	2.8 ± 1.2 (17)	29.7 ± 3.3 (14)	112.7 ± 8.1 (10)	96.54 ± 0.71 (1)	397.29 ± 60.82 (6)	A
ASPEXC	100 ± 7 (3)	3.4 ± 1.0 (15)	35.7 ± 5.3 (12)	107.6 ± 21.3 (12)	95.75 ± 1.05 (3)	461.61 ± 62.54 (2)	A
MICEGE	82 ± 24 (7)	4.4 ± 1.4 (11)	36.6 ± 13.6 (11)	110.4 ± 22.2 (11)	96.48 ± 0.72 (2)	432.87 ± 59.96 (3)	A
XYLAMA	108 ± 7 (1)	5.7 ± 1.9 (8)	25.4 ± 2.9 (16)	118.8 ± 35.0 (8)	95.02 ± 0.34 (6)	362.81 ± 22.59 (13)	A
PROGUI	106 ± 2 (2)	3.7 ± 0.9 (14)	20.8 ± 2.6 (17)	72.4 ± 21.7 (17)	87.24 ± 3.19 (9)	324.80 ± 48.17 (16)	A
TRABUR	52 ± 12 (17)	6.1 ± 3.2 (6)	52.6 ± 6.6 (4)	94.0 ± 25.6 (14)	84.91 ± 2.40 (13)	308.03 ± 51.11 (17)	B
TRARHO	55 ± 6 (16)	7.2 ± 2.0 (5)	71.1 ± 15.5 (1)	134.0 ± 47.1 (5)	84.50 ± 3.24 (15)	349.05 ± 123.75 (15)	B
TRAGLA	59 ± 8 (15)	5.6 ± 4.0 (9)	57.3 ± 18.1 (3)	79.3 ± 18.2 (15)	85.35 ± 1.94 (12)	405.84 ± 90.93 (5)	B
VOCVIS	65 ± 10 (11)	3.9 ± 1.7 (13)	61.7 ± 13.0 (2)	79.1 ± 21.4 (16)	81.73 ± 4.32 (17)	408.74 ± 51.48 (4)	B
OCOGUI	71 ± 4 (9)	5.2 ± 2.0 (10)	50.1 ± 6.9 (5)	105.3 ± 32.9 (13)	85.93 ± 1.70 (11)	468.38 ± 90.66 (1)	B
POURAM	73 ± 7 (8)	7.3 ± 6.8 (4)	42.4 ± 9.3 (9)	224.5 ± 68.3 (2)	95.38 ± 0.78 (5)	372.80 ± 83.58 (12)	C
TAPGUI	62 ± 8 (13)	4.3 ± 1.7 (12)	48.1 ± 9.8 (6)	143.6 ± 25.8 (3)	92.98 ± 0.55 (7)	394.68 ± 62.90 (7)	C
DACMIC	70 ± 10 (10)	5.8 ± 4.4 (7)	30.5 ± 4.1 (13)	117.7 ± 36.4 (9)	84.50 ± 3.15 (16)	361.08 ± 25.84 (14)	C
OCOACU	84 ± 11 (6)	9.3 ± 7.2 (3)	42.9 ± 8.0 (8)	124.5 ± 47.11 (7)	87.56 ± 2.22 (8)	388.66 ± 59.85 (8)	C
SLOEIC	65 ± 12 (12)	10.0 ± 5.4 (2)	38.8 ± 13.6 (10)	139.9 ± 20.9 (4)	86.07 ± 4.73 (10)	374.10 ± 90.80 (11)	C
ENTSCH	62 ± 18 (14)	10.6 ± 5.8 (1)	45.7 ± 14.4 (7)	248.0 ± 94.0 (1)	84.91 ± 4.19 (14)	377.89 ± 78.72 (10)	D

Table S3. Measured foliar traits of the 17 species examined in the flammability assessment

Mean ± standard error (s.e.) and rank (in parenthesis) within each variable are reported by species (*N* = 5). Membership in the four flammability clusters is shown (A – Highly Flammable; B – Moderately Flammable; C – Less Flammable; D – Least Flammable). See Table 1 for species code explanations

Species	Curl height (mm)	Thickness (mm)	Perimeter (mm)	Surface area (cm^2)	Volume (cm^3)	Dry mass (g)	Surface area to volume ratio ($cm^2 \cdot cm^3$)	Specific leaf area ($mm^2 \cdot mg$)	Fuel sample depth (mm)	Cluster
AMAGUI	27 ± 8 (3)	0.22 ± 0.07 (13)	36.16 ± 5.11 (3)	61.95 ± 19.11 (3)	1.41 ± 0.83 (4)	0.61 ± 0.26 (5)	97.87 ± 21.30 (6)	108.75 ± 26.10 (5)	95 ± 6 (3)	A
MYRMUL	19 ± 7 (9)	0.13 ± 0.03 (16)	16.72 ± 2.64 (15)	11.49 ± 4.18 (16)	0.15 ± 0.06 (16)	0.11 ± 0.05 (16)	162.52 ± 32.27 (2)	119.74 ± 40.97 (3)	70 ± 10 (12)	A
ASPEXC	23 ± 7 (6)	0.26 ± 0.08 (8)	22.59 ± 4.31 (10)	25.77 ± 9.90 (10)	0.70 ± 0.46 (9)	0.37 ± 0.17 (11)	81.17 ± 16.05 (11)	72.82 ± 14.19 (9)	77 ± 11 (6)	A
MICEGE	23 ± 6 (5)	0.22 ± 0.09 (12)	17.97 ± 3.74 (14)	14.95 ± 6.34 (14)	0.33 ± 0.20 (14)	0.14 ± 0.05 (14)	105.54 ± 39.75 (5)	106.77 ± 31.04 (6)	64 ± 8 (14)	A
XYLAMA	17 ± 6 (13)	0.12 ± 0.02 (17)	14.22 ± 5.37 (17)	6.63 ± 1.85 (17)	0.08 ± 0.02 (17)	0.07 ± 0.02 (17)	172.64 ± 35.32 (1)	115.85 ± 49.14 (4)	71 ± 10 (10)	A
PROGUI	17 ± 6 (14)	0.14 ± 0.02 (15)	20.41 ± 3.73 (13)	19.43 ± 6.32 (13)	0.29 ± 0.10 (15)	0.14 ± 0.05 (15)	144.48 ± 24.72 (3)	153.00 ± 44.67 (1)	115 ± 20 (2)	A
TRABUR	16 ± 7 (15)	0.29 ± 0.12 (4)	21.48 ± 3.75 (12)	23.02 ± 8.18 (12)	0.70 ± 0.46 (10)	0.36 ± 0.16 (12)	78.73 ± 21.17 (13)	67.52 ± 13.69 (13)	64 ± 5 (13)	B
TRARHO	21 ± 8 (7)	0.46 ± 0.20 (1)	22.56 ± 4.09 (11)	27.28 ± 9.68 (9)	1.34 ± 0.96 (5)	0.51 ± 0.21 (7)	52.78 ± 21.72 (17)	55.87 ± 11.01 (16)	59 ± 5 (16)	B
TRAGLA	12 ± 3 (17)	0.26 ± 0.09 (9)	16.39 ± 2.62 (16)	13.16 ± 3.57 (15)	0.34 ± 0.14 (13)	0.20 ± 0.18 (13)	84.34 ± 24.74 (10)	71.62 ± 13.91 (10)	56 ± 13 (17)	B
VOCVIS	29 ± 9 (2)	0.33 ± 0.06 (2)	31.06 ± 5.52 (5)	46.28 ± 17.63 (4)	1.51 ± 0.61 (3)	0.80 ± 0.25 (2)	62.82 ± 9.60 (16)	58.28 ± 9.27 (15)	83 ± 16 (5)	B
OCOGUI	14 ± 5 (16)	0.27 ± 0.08 (6)	25.83 ± 3.72 (7)	24.98 ± 6.38 (11)	0.69 ± 0.33 (11)	0.40 ± 0.11 (10)	79.19 ± 18.09 (12)	62.70 ± 7.69 (14)	61 ± 9 (15)	B
POURAM	19 ± 6 (8)	0.27 ± 0.11 (7)	28.21 ± 3.49 (6)	37.90 ± 10.26 (5)	1.05 ±0.96 (6)	0.55 ± 0.19 (6)	87.33 ± 34.82 (9)	70.74 ± 10.99 (11)	74 ± 18 (9)	C
TAPGUI	23 ± 8 (4)	0.24 ± 0.08 (11)	24.18 ± 4.01 (9)	31.01 ± 9.67 (7)	0.76 ± 0.37 (7)	0.47 ± 0.17 (8)	90.11 ± 22.92 (7)	67.76 ± 11.39 (12)	71 ± 6 (11)	C
DACMIC	18 ± 6 (12)	0.18 ± 0.05 (14)	25.45 ± 4.82 (8)	36.39 ± 14.12 (6)	0.67 ± 0.37 (12)	0.41 ± 0.15 (9)	120.24 ± 27.39 (4)	89.77 ± 15.92 (8)	74 ± 15 (8)	C
OCOACU	19 ± 10 (10)	0.30 ± 0.08 (3)	34.08 ± 6.40 (4)	63.81 ± 25.70 (2)	1.89 ± 0.74 (2)	0.69 ± 0.31 (4)	0.69 ± 0.31 (15)	105.68 ± 31.01 (7)	86 ± 17 (4)	C
SLOEIC	31 ± 9 (1)	0.28 ± 0.05 (5)	60.91 ± 8.96 (2)	198.10 ± 56.71 (1)	5.62 ± 1.93 (1)	1.59 ± 0.42 (1)	72.69 ± 13.00 (14)	129.69 ± 47.47 (2)	125 ± 13 (1)	C
ENTSCH	19 ± 8 (11)	0.25 ± 0.08 (10)	240.35 ± 81.32 (1)	28.95 ± 9.94 (8)	0.73 ± 0.36 (8)	0.78 ± 0.29 (3)	89.26 ± 31.19 (8)	38.28 ± 7.35 (17)	75 ± 19 (7)	D