Supplementary material of

Advancing Forest Degradation and Regeneration Assessment through Light Detection And Ranging and Hyperspectral Imaging Integration

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Table S1. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **RF classifier with LiDAR data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	447	83	33	10	573	0.78
	$SF_{16\text{-}32yr}$	77	234	32	9	352	0.66
	DF	59	107	2999	484	3649	0.82
	UF	0	27	423	1576	2026	0.78
	Total	583	451	3487	2079		
	Recall	0.77	0.52	0.86	0.76		

Table S2. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **RF classifier with HSI data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	300	41	41	10	392	0.77
	$SF_{16\text{-}32yr}$	32	179	0	0	211	0.85
	DF	217	152	3249	350	3968	0.82
	UF	34	79	197	1719	2029	0.85
	Total	583	451	3487	2079		
	Recall	0.51	0.40	0.93	0.83		

Table S3. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **RF classifier with both LiDAR and HSI data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	458	64	29	10	561	0.82
	$SF_{16\text{-}32yr}$	55	272	2	0	329	0.83
	DF	70	99	3285	248	3702	0.89
	UF	0	16	171	1821	2008	0.91
	Total	583	451	3487	2079		
	Recall	0.79	0.60	0.94	0.88		

Table S4. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **SGB classifier with LiDAR data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	450	71	22	9	552	0.82
	$SF_{16\text{-}32yr}$	74	266	23	13	376	0.71
	DF	58	94	2990	488	3630	0.82
	UF	1	20	452	1569	2042	0.77
	Total	583	451	3487	2079		
	Recall	0.77	0.59	0.86	0.75		

Table S5. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **SGB classifier with HSI data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	324	46	62	11	443	0.73
	$SF_{16\text{-}32yr}$	60	220	6	3	289	0.76
	DF	171	119	3230	314	3834	0.84
	UF	28	66	189	1751	2034	0.86
	Total	583	451	3487	2079		
	Recall	0.56	0.49	0.93	0.84		

Table S6. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **SGB classifier with both LiDAR and HSI data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	457	70	26	8	561	0.81
	$SF_{16\text{-}32yr}$	57	282	14	0	353	0.80
	DF	66	76	3267	256	3665	0.89
	UF	3	23	180	1815	2021	0.90
	Total	583	451	3487	2079		
	Recall	0.78	0.63	0.94	0.87		

Table S7. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **SVM classifier with LiDAR data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	420	73	21	3	517	0.81
	$SF_{16\text{-}32yr}$	68	234	14	6	322	0.73
	DF	95	119	3041	656	3911	0.78
	UF	0	25	411	1414	1850	0.76
	Total	583	451	3487	2079		
	Recall	0.72	0.52	0.87	0.68		

Table S8. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **SVM classifier with HSI data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	292	45	57	9	403	0.72
	$SF_{16\text{-}32yr}$	49	219	0	0	268	0.82
	DF	229	135	3244	293	3901	0.83
	UF	13	52	186	1777	2028	0.88
	Total	583	451	3487	2079		
	Recall	0.50	0.49	0.93	0.85		

Table S9. Cross-validated (11 folds, repeated 12 times) confusion matrix for the **SVM classifier with both LiDAR and HSI data** (entries are aggregated counts across resamples and repetitions).

		Reference					
		$SF_{1\text{-}15yr}$	$SF_{16\text{-}32yr}$	DF	UF	Total	Precision
Prediction	$SF_{1\text{-}15yr}$	428	55	18	11	512	0.84
	$SF_{16\text{-}32yr}$	54	299	4	0	357	0.84
	DF	101	81	3329	244	3755	0.89
	UF	0	16	136	1824	1976	0.92
	Total	583	451	3487	2079		
	Recall	0.73	0.66	0.95	0.88		