Article

Transformation of Agricultural Landscapes and Its Consequences for Natural Forests in Southern Myanmar within the Last 40 Years

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Supplements

Figure S1: Erosion of coastlines (**B**), (**C**), and (**D**) by the strong waves (**A**) and (**C**) from high engine-power marine transportation vehicles in Kyunsu township of Southern Myanmar in 2021.
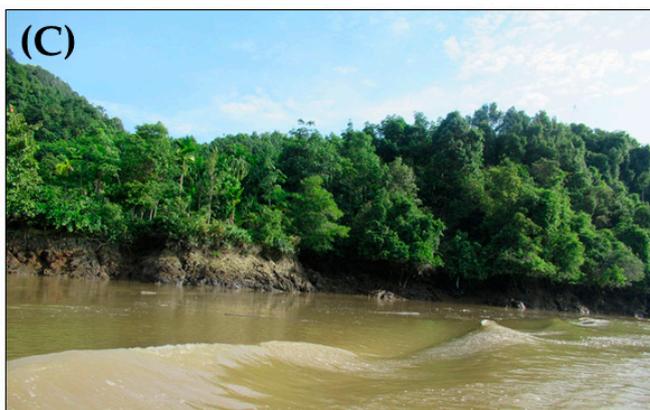
Figure S2. Transformation of LULC classes: Water Bodies (C1), Paddy Fields (C2), Open Forests (C3), Closed Forests (C4), Mangrove Forests (C5), Plantations (C6), Settlement Areas (C7), Aquaculture Areas (C8), and Others (C9) of Kyunsu township in Southern Myanmar across 40 years: (**A**) between 1978–1989 including Water Bodies, (**B**) between 1978-1989 excluding Water Bodies, (**C**) between 1989–2000 including Water Bodies, (**D**) between 1989–2000 excluding Water Bodies, (**E**) between 2000–2011 including Water Bodies, (**F**) between 2000–2011 excluding Water Bodies, (**G**) between 2011–2020 including Water Bodies, (**H**) between 2011–2020 excluding Water Bodies, (**I**) between 1978–2020 including Water Bodies, (**J**) between 1978–2020 excluding Water Bodies. Ticks indicate the area of LULC in 100,000 ha.
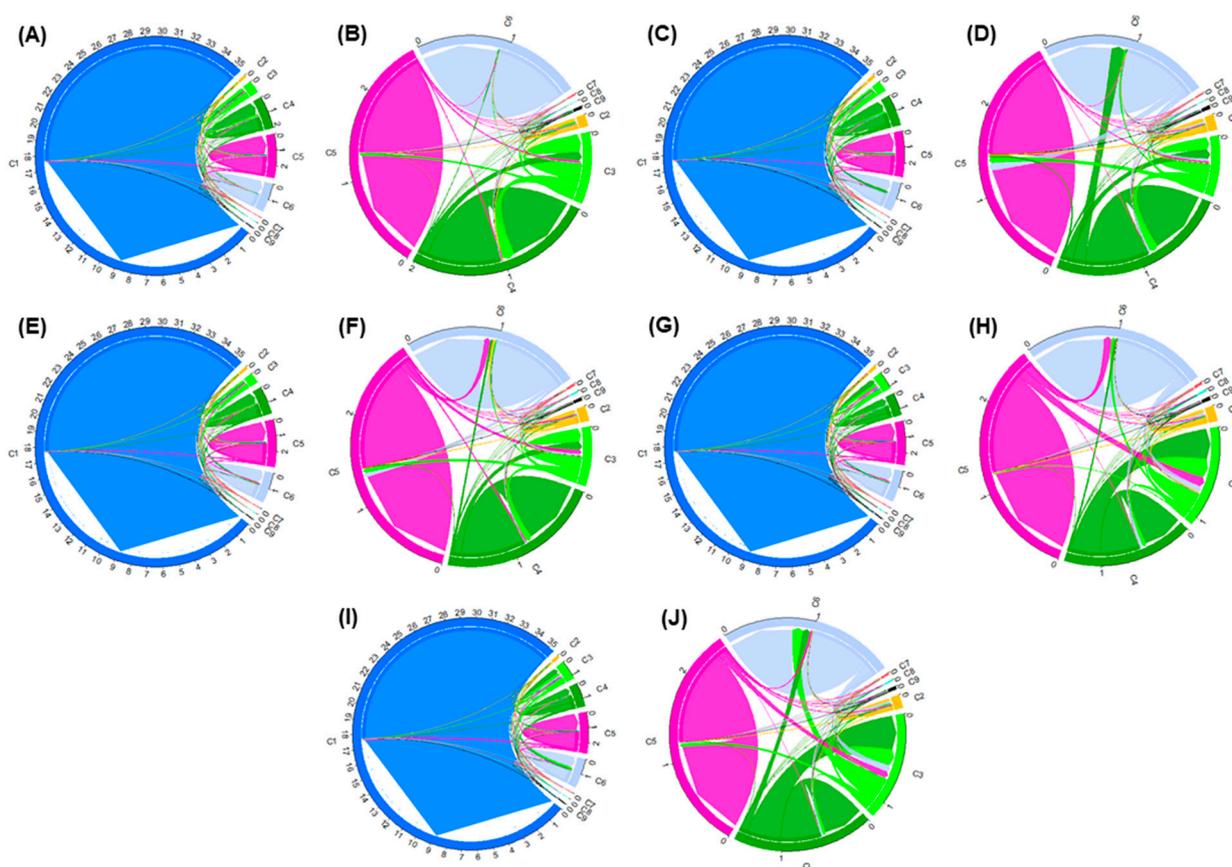

Table S1: Reference training samples used for supervised random forest (RF) classifier to classify Closed Forests and Non-Closed Forests of Kyunsu township in Southern Myanmar across 40 years.

Year	Land Cover Classe	No. of Reference Training Samples	
		Point	**Polygon**
1978	Closed Forests	115	42
	Non-Closed Forests	-	33
1989	Closed Forests	-	64
	Non-Closed Forests	-	87
2000	Closed Forests	-	64
	Non-Closed Forests	-	87
2011	Closed Forests	-	64
	Non-Closed Forests	-	87
2020	Closed Forests	-	64
	Non-Closed Forests	-	86

Table S2: Reference training samples used for supervised RF classifier to classify Mangrove Forests and Non-Mangrove Forests of Kyunsu township in Southern Myanmar across 40 years.

Year	Land Cover Classe	No. of Reference Training Samples	
		Point	Polygon
1978	Mangrove Forests	29	48
	Non-Mangrove Forests	29	17
1989	Mangrove Forests	-	143
	Non-Mangrove Forests	-	67
2000	Mangrove Forests	-	143
	Non-Mangrove Forests	-	67
2011	Mangrove Forests	-	143
	Non-Mangrove Forests	-	67
2020	Mangrove Forests	-	143
	Non-Mangrove Forests	-	67

Table S3: Transformation matrix of LULC classes: Water Bodies (C1), Paddy Fields (C2), Open Forests (C3), Closed Forests (C4), Mangrove Forests (C5), Plantations (C6), Settlement Areas (C7), Aquaculture Areas (C8), and Others (C9) (in ha) of Kyunsu township in Southern Myanmar between 1978 and 1989.

From	To								
	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1,759,701	696	1647	1145	3675	121	12	0	571
C2	127	3996	113	834	197	1	8	0	3
C3	803	2995	21,005	14,460	3131	459	26	40	525
C4	245	184	10,176	86,920	44	627	0	0	23
C5	7233	517	2017	799	127,944	83	15	20	111
C6	5	5	295	676	117	88,620	0	0	195
C7	23	24	6	26	7	0	536	0	9
C8	0	1	0	0	2	0	0	67	0
C9	197	7	65	100	18	23	1	0	804

Table S4: Transformation matrix of LULC classes: Water Bodies (C1), Paddy Fields (C2), Open Forests (C3), Closed Forests (C4), Mangrove Forests (C5), Plantations (C6), Settlement Areas (C7), Aquaculture Areas (C8), and Others (C9) (in ha) of Kyunsu township in Southern Myanmar between 1989 and 2000.

From	To								
	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1,764,924	137	208	49	2693	31	10	1	288
C2	568	4961	1133	113	1435	151	13	2	47
C3	1208	342	14,507	10,363	6471	2332	7	1	93
C4	261	753	10,599	75,852	2321	14,988	14	0	170
C5	3994	552	1345	98	128,500	296	47	280	25
C6	124	2083	2982	1952	8936	73,584	91	0	180
C7	5	6	2	0	5	2	578	0	1
C8	0	0	2	0	19	0	0	107	0
C9	439	16	304	11	248	184	4	0	1033

Table S5: Transformation matrix of LULC classes: Water Bodies (C1), Paddy Fields (C2), Open Forests (C3), Closed Forests (C4), Mangrove Forests (C5), Plantations (C6), Settlement Areas (C7), Aquaculture Areas (C8), and Others (C9) (in ha) of Kyunsu township in Southern Myanmar between 2000 and 2011.

From	To								
	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1,766,766	96	452	109	3856	97	83	25	27
C2	236	4612	536	13	719	2547	146	26	15
C3	506	1217	15,754	7398	4591	1320	55	42	195
C4	159	299	9339	75,251	578	2806	5	0	10
C5	4528	1092	4789	1753	130,847	6873	152	429	168
C6	54	92	1508	383	4945	84,247	89	2	249
C7	8	11	4	0	5	17	711	0	5
C8	6	1	4	0	30	1	1	349	1
C9	396	70	278	34	24	213	57	1	765

Table S6: Transformation matrix of LULC classes: Water Bodies (C1), Paddy Fields (C2), Open Forests (C3), Closed Forests (C4), Mangrove Forests (C5), Plantations (C6), Settlement Areas (C7), Aquaculture Areas (C8), and Others (C9) (in ha) of Kyunsu township in Southern Myanmar between 2011 and 2020.

From	To								
	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1,763,367	669	1933	127	4737	171	35	25	1596
C2	67	4558	1460	46	708	597	34	4	17
C3	775	650	21,929	4674	777	3392	23	33	411
C4	332	311	35,342	46,303	174	2418	3	0	56
C5	5162	1000	10,734	201	119,254	8654	33	390	169
C6	63	2720	6834	3207	654	84,137	60	15	433
C7	12	41	19	0	14	33	1144	1	34
C8	3	7	12	0	105	3	1	741	4
C9	38	59	198	1	24	316	25	0	774

Table S7: Transformation matrix of LULC classes: Water Bodies (C1), Paddy Fields (C2), Open Forests (C3), Closed Forests (C4), Mangrove Forests (C5), Plantations (C6), Settlement Areas (C7), Aquaculture Areas (C8), and Others (C9) (in ha) of Kyunsu township in Southern Myanmar between 1978 and 2020.

From	To								
	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1,757,674	548	2907	470	4014	493	97	17	1349
C2	84	3508	334	6	558	676	94	1	16
C3	1205	1857	19,231	4126	4036	12,135	164	90	601
C4	647	407	40,523	47,950	157	8474	6	0	54
C5	9938	1146	7412	21	116,290	2317	160	1039	416
C6	98	2453	7930	1972	1349	75,413	258	13	428
C7	10	29	6	0	5	13	548	0	19
C8	0	0	1	0	22	0	0	48	0
C9	162	66	133	1	15	194	30	0	615