

<<Supplementary Tables>>

Supplementary Table 1. Details of the patch level and class level spatial metrics used in the study.

Metric	Unit	Range	Description
Patch area (AREA)	ha	> 0	The metric of spatial extent of a specific patch or lowest landscape unit
Patch perimeter (PERIM)	m	> 0	A measure of landscape patterns quantifying the length of patch edge
Shape index (SHAPE)	None	≥ 1	SHAPE = 1 when patch shape is compact and ideal square shaped and a higher irregularity in patch shape denotes greater metrics value
Total class area (CA)	ha	$CA > 0$	Aggregate of all patch areas under a specific land use and land cover (LULC) type
Percentage of landscape (PLAND)	Percentage	0 – 100	Percentage of the landscape belonging to class, PLAND = 0 when the proportional class area is decreasing, PLAND = 100 when only one patch is present
Number of patches (NP)	None	≥ 1	NP = 1 means the LULC type contains only one patch
Mean patch area (AREA_MN)	ha	> 0	AREA_MN = 0 if all patches are small. Increases, without limit, as the patch areas increase
Largest patch index (LPI)	Percentage	0 – 100	LPI approaches 0 when areal coverage of the largest patch of a specific LULC type is extremely small. LPI is 100% when entire landscape consists of a single LULC patch
Mean perimeter-area ratio (PARA_MN)	None	> 0	The ratio between patch perimeter and patch area measuring shape complexity. That is, the sum of individual PARA value of all patches under a specific LULC type, divided by total number of patches in corresponding LULC type
Mean fractal dimension index (FRAC_MN)	None	> 0	FRAC_MN = 1 if all patches are squared and FRAC_MN = 2 if all patches are irregular
Patch density (PD)		> 0	Number of patches in a specific LULC type per hectare area
Landscape shape index (LSI)	None	≥ 1	LSI is 1 when the LULC type has a compact square shaped patch. Here, higher LSI value

			indicates more amorphous shaped and fragmented patches of LULC type
Percentage of similar adjacency (PLADJ)	Percentage	0 – 100	PLADJ = 0 if class i is maximal disaggregated, i.e., every cell is a different patch. Equals PLADJ = 100 when only one patch is present.

Supplementary Table 2. Derived Z scores and p values of hot spot analysis (* $p<0.05$).		
Year	Z score	p value
1991	11.20	0.00*
2001	17.17	0.00*
2011	23.44	0.00*
2021	27.97	0.00*
2023	20.20	0.00*