Appendix 4. The final set of indicators developed for the mapping and assessment of ecosystem condition in the Hungarian MAES for the major ecosysytem types (ET), along with their SEEA-ECT condition type (Czúcz et al. 2021).

201 condition type (Canal et		•	Ecosyst	em typ	e			
Indicator	Urban	Agricultural	Grasslands	Forests	Wetlands	Water	SEEA-Ecosystem condition type	
		Biodiv	ersity ir	ndicato	rs			
Ratio of present bird species compared to the expected (%)*		(x)	Х	X	X	(x)	B1	Compositional state characteristics
WFD biological components						Х	B1	Compositional state characteristics
	ropoge	nic trar	ısforma	tion of	f the veg	etation	l	T
Departure of the current vegetation from the Potential Natural Vegetation			X		X			Natural resource management
		Soil o	charact	eristics	S			
Soil fertility	X	X	X	X	X			Pre-aggregated indicators
	L	andsca	pe-level	indica	itors			
Number of ecosytem types (1 km radius)	X	X	X	X	X	X	C1	Landscape characteristics
(Shannon) diversity of ecosytem types (1 km radius)	X	X	X	X	X	X	C1	Landscape characteristics
Land take (based on Corine Land Cover time series) 2000- 2018		X						Pressures
Loss of grasslands			X					Pressures
Forest area changes				X				Pressures
Proportion of Natura 2000 areas in the different ecosystem types	x	X	X	X	X	x		Protected areas
	Ecosy	ystem-ty	ype spec	cific in	dicators	}		
Proportion of seminatural areas		300 m radius			220 m radius		C1	Landscape characteristics
Average parcel size		X					CI	Landscape characteristics
Number of cultivated plants (no or no/ha)		x					B1	Compositional state characteristics

Ecosystem-type specific indicators Areal proportion of alfalfa and green fallow Proportion of fallow land X C1 Landscape characteristi Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to major roads Distance to surface water X A1 Physical star characteristi Frequency of water cover		Ecosystem type								
Areal proportion of alfalfa and green fallow Areal proportion of alfalfa and green fallow Areal proportion of alfalfa and green fallow Proportion of fallow land x C1 Landscape characteristic characteristic Proportion of fallow land x C1 Landscape characteristic C1 Landscape characteristic Proportion of maize x C1 Landscape characteristic Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to major roads Distance to surface water x A1 Physical star characteristic Proportion of water cover (Water and Wetness Probability Index) X X X A2 CI Landscape characteristic A1 Proportion of seminatural grasslands (300, 500, 1000 m x x x x x x x x x x x x x x x x x	Indicator	·	\triangleleft					SEEA-Ecosystem condition type		
and green fallow Areal proportion of alfalfa and green fallow Proportion of fallow land X CI Landscape characteristi Proportion of fallow land X CI Landscape characteristi Proportion of maize X CI Landscape characteristi Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to major roads Distance to surface water Trequency of water cover (Water and Wetness Probability Index) CI Landscape characteristi Protected are X X Proportion of seminatural grasslands (300, 500, 1000 m x Pressures A1 Physical star characteristi A1 Physical star characteristi A1 Physical star characteristi Probability Index)	A1	Ecosy	stem-ty	ype spe	cific ind	dicators	5	Cl	Landana	
Areal proportion of alfalfa and green fallow			X					CI	-	
and green fallow Proportion of fallow land X CI Landscape characteristi Proportion of maize X CI Landscape characteristi Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to surface water Tistance to surface water X CI Landscape characteristi Protected area X X Ecosystem extent Ecosystem extent A1 Pressures Distance to major roads X Pressures Distance to surface water X A1 Physical star characteristi Frequency of water cover (Water and Wetness Probability Index) X CI Landscape characteristi A2 Protected area X A3 Prossures A1 Physical star characteristi Characteristi A1 Physical star characteristi								C1		
Proportion of fallow land x C1 Landscape characteristi Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to surface water Distance to canals Trequency of water cover (Water and Wetness Proportion of fallow land x C1 Landscape characteristi Protected area x x x A1 Physical star characteristi A1 Physical star characteristi Frequency of water cover (Water and Wetness Probability Index)			X					CI	-	
Proportion of maize X C1 Landscape characteristi Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to surface water Distance to surface water X C1 Landscape characteristi Ecosystem extent Ecosystem extent A1 Pressures Distance to major roads X A1 Physical star characteristic Frequency of water cover (Water and Wetness Probability Index) X C1 Landscape characteristic A2 Protected are Ecosystem extent A2 A1 Physical star characteristic A1 Physical star characteristic Characteristic A1 Physical star characteristic Characteristic Characteristic Characteristic Characteristic Characteristic Characteristic Characteristic								C1		
Proportion of maize	r toportion of fanow fand		X					CI	_	
Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to surface water Distance to canals Trequency of water cover (Water and Wetness Probability Index) X X Characteristic X A1 Protected are Ecosystem Ecosyst	Proporton of maize							C1		
Proportion of protected areas (AES or HVNA) Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to major roads Distance to surface water The surface water are su	Troporton of maize		X							
CAES or HVNA Proportion of seminatural grasslands (300, 500, 1000 m radius) X	Proportion of protected greas									
Proportion of seminatural grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to major roads Distance to surface water Distance to canals X A1 Physical star characteristic frequency of water cover (Water and Wetness Probability Index) R Ecosystem Extent X Pressures A Pressures A Physical star characteristic frequency of water cover (Water and Wetness X X X X X X X X X X X X			X	X					1 Totected areas	
grasslands (300, 500, 1000 m radius) Distance to (any) roads Distance to major roads Distance to surface water Distance to canals Trequency of water cover (Water and Wetness Probability Index) x Distance to (any) roads x Pressures A1 Physical star characteristic A1 Physical star characteristic x x x A1 Physical star characteristic	,								Feogystem	
radius) Distance to (any) roads Distance to major roads X Distance to surface water Distance to surface water X Distance to canals X A1 Physical star characteristic characteris				v					-	
Distance to (any) roads Distance to major roads Distance to surface water Distance to surface water X A1 Physical star characteristic Frequency of water cover (Water and Wetness Probability Index) X Pressures A1 Physical star characteristic X X A1 Physical star characteristic	1			Λ					CALCILI	
Distance to major roads Distance to surface water X A1 Physical star characteristic Distance to canals X A1 Physical star characteristic Frequency of water cover (Water and Wetness Probability Index) X Pressures A1 Physical star characteristic X Characteristic				v					Pressures	
Distance to surface water x A1 Physical star characteristic Distance to canals x A1 Physical star characteristic A1 Physical star characteristic Frequency of water cover (Water and Wetness Probability Index) X A1 Physical star characteristic x x										
Distance to canals X Characteristic X A1 Physical star characteristic Frequency of water cover (Water and Wetness Probability Index) X A1 Physical star characteristic X X A2 Characteristic	5			Α				A 1		
Distance to canals x A1 Physical star characteristic characteristic (Water and Wetness Probability Index) A1 Physical star characteristic characteristic (Water and Wetness)	Bistance to surface water			X				711		
Frequency of water cover (Water and Wetness x x x characteristic Probability Index)	Distance to canals							A 1		
Frequency of water cover (Water and Wetness x x x Characteristic Probability Index)	Distance to canals			X				711	-	
(Water and Wetness x x Probability Index) x x	Frequency of water cover							A 1		
Probability Index)				x		x		111	characteristics	
	1 .			71		71				
									Ecosystem	
m radius) x extent	- `					X			-	
								A1	Physical state	
1 1 1 1 1 1 1 1 7						X			characteristics	
m radius)	1 - ,									
Presence of roads (within the Pressures	,								Pressures	
20 m cell) x						X				
Heterogeneity of wetland B1 Composition	Heterogeneity of wetland							<i>B1</i>	Compositional	
types x state						X			-	
									characteristics	
Number of native tree species B1 Composition	Number of native tree species							B1	Compositional	
x state					X				-	
characteristic									characteristics	
The proportion of native tree B1 Composition	The proportion of native tree							B1	Compositional	
species in the upper and lower x state	species in the upper and lower				X				state	
canopy layers (%) characteristic	canopy layers (%)		<u> </u>	<u> </u>					characteristics	
Ecosystem type				Ecosyst	em typ	e				

Indicator	Urban	Agricultural	Grasslands	Forests	Wetlands	Water	SEEA-Ecosystem condition type		
	Ecosy	stem-ty	ype spe	cific inc	dicators	5			
Number of native admixing tree species				x			B1	Compositional state characteristics	
Presence of the main tree species characteristic of the specific habitat type in the expected proportion				Х			B1	Compositional state characteristics	
The proportion of the native mixing tree species compared to that expected in the specific habitat type				X			B1	Compositional state characteristics	
The proportion of non-native tree species in the upper and lower canopy layers (%)				X			B1	Compositional state characteristics	
The proportion of invasive tree species in the upper and lower canopy layers (%)				Х			B1	Compositional state characteristics	
Number of age cohorts				X			B2	Structural state characteristics	
Difference between the lowest and highest cohort age (years)				Х			B2	Structural state characteristics	
Presence of old (>=100 years or 60 in the case of native softwood forests) trees				Х			B2	Structural state characteristics	
Number of (10-cm) dbh- classes				X			B2	Structural state characteristics	
(Shannon) diversity of (10- cm) dbh-classes – considered only if number of (10-cm) dbh classes >2				х			B2	Structural state characteristics	
Presence of large (dbh>50) trees				X			B2	Structural state characteristics	
Presence and type of the shrub layer				X			B2	Structural state characteristics	
Proportion of urban green areas (trees) within the settlement	X						C1	Landscape characteristics	
Proportion of urban green areas (non-tree) within the settlement	X						C1	Landscape characteristics	

]	Ecosyst	em typo	e				
Indicator	Urban	Agricultural	Grasslands	Forests	Wetlands	Water	SEEA-Ecosystem condition type		
Ecosystem-type specific indicators									
Proportion of urban green	v						C1	Landscape	
areas within the settlement	X							characteristics	

Czúcz, B., Keith, H., Driver, A., Jackson, B., Nicholson, E., Maes, J., 2021. A common typology for ecosystem characteristics and ecosystem condition variables. One Ecosystem 6, e58218. https://doi.org/10.3897/oneeco.6.e58218