

**STRESSOR CHECKLIST for Human Stressor Index (HSI)**

**Stressors:** *direct threats*; “the proximate (human) activities or processes that have caused, are causing, or may cause the destruction, degradation, and/or impairment of biodiversity and natural processes” or altered disturbance regime (e.g. flooding, fire, or browse).

**Some Important Points about Stressors Checklists:**

1. The Stressors Checklist must be completed for the AA (Veg, Soils, Hydro) and the Buffer (0-100m)
2. Assess Buffer stressors and their effects within the Buffer 0-100m (*NOT how buffer stressors may impact the AA*)
3. Stressors for Vegetation, Soils, and Hydrology are assessed across the full assessment area (AA)
4. Some stressors may overlap. E.g. Passive recreation may overlap with Trampling. Choose only 1 and note the overlap.

SCOPE of Threat (% of AA or Buffer affected by direct threat)	
1 = Small	Affects a small (1-10%) proportion of the AA or Buffer
2 = Restricted	Affects some (11-30%)
3 = Large	Affects much (31-70%)
4 = Pervasive	Affects all or most (71-100%)
SEVERITY of Threat within the defined Scope (degree of degradation to AA or Buffer)	
1 = Slight	Likely to only slightly degrade/reduce
2 = Moderate	Likely to moderately degrade/reduce
3 = Serious	Likely to seriously degrade/reduce
4 = Extreme	Likely to extremely degrade/destroy or eliminate

	STRESSORS CHECKLIST	BUFFER (100 m)			ASSESSMENT AREA (0.5 ha)									Comments (circle stressor #)
		Scope	Severity	IMPACT	Vegetation MEF			Soil / Subs MEF			Hydrology MEF			
					Scope	Severity	IMPACT	Scope	Severity	IMPACT	Scope	Severity	IMPACT	
D	1. Residential, recreational buildings, associated pavement		4											
	2. Industrial, commercial, military buildings, associated pavement		4											
E	3. Utility/powerline corridor		1,2,3			1,2,3								
V	4. Sports field, golf course, urban parkland, expansive lawns		2											
E	5. Row-crop agriculture, orchard, nursery		3											
L	6. Hay field		2,3											
O	7. Livestock grazing (low=2, mod=3, high=4), excessive herbivory (deer =3)		2,3,4			2,3,4								
P	8. Roads (gravel = 1, paved=3, highway=4), Railroad=3		2,3,4											
	9. Other [specify]:													
R	10. Low impact recreation (hunting, fishing, camping, hiking, bird-watching, canoe/kayak)		1			1								
E	11. High impact recreation (ATV, mountain biking, motor boats)		3			3								
C	12. Other [specify]:													
V	13. Tree resource extraction (e.g., clearcut = 3 or =4 ; selective cut = 2 or 3)		2,3,4			2,3,4								
	14. Shrub / Herb resource extraction (e.g. medicine, horticulture)		2,3			2,3								
V	15. Vegetation management: cutting, mowing		2			2								
E	16. Excessive animal herbivory (grazing) or insect pest damage		1,2,3			1,2,3								
G	17. Invasive plant species (SEE LIST)		3,4			3,4								
G	18. Direct application of agricultural chemicals, herbicide spraying		2,3			2,3								
	19. Other [specify]:													
Nat	20. Altered natural disturb regime [specify expected regime]		1,2,3			1,2,3								
Dis	22. Other [specify]:													

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		Scope	Severity	IMPACT	Vegetation MEF			Soil / Subs MEF			Hydrology MEF				
					Scope	Severity	IMPACT	Scope	Severity	IMPACT	Scope	Severity	IMPACT		
S O I L	22. Excessive sediment or organic debris (recently logged sites), gullyling, excessive erosion, excessive loss of organic matter		3							3					
	23. Trash or refuse dumping														
	24. Filling or dumping of sediment (spoils from excavation)														
	25. Substrate remove (excavation)														
	26. Indirect soil disturbance (compaction or trampling by livestock, human use, vehicles)		2,3,4							2,3,4					
	27. Direct soil disturbance (grading, compaction, plowing, discing, deeply dug fire lines)		4							4					
	28. Physical resource extraction (rock, sand, gravel, minerals, etc.)		3							3					
	29. Obvious excess salinity (dead or stressed plants, salt crusts)														
30. Other [specify]:															
H Y D R O L O G Y *	31. PS discharge (waste water treatment water, non-storm discharge, septic)		3									3			
	32. NPS discharge (urban/storm water runoff, agricultural drainage or excess manure, mine runoff, oil/gas discharge )		3									3			
	33. NPS discharge (urban / storm water runoff)		3,4									3,4			
	34. NPS discharge (agricultural runoff, excess irrigation, feedlots, excess manure)		2,3,4									2,3,4			
	35. NPS discharge (mine runoff, discharge from oil and gas)														
	36. Large dams, reservoirs														
	37. Impoundments, berms, dikes, levees that hold water in or out		4									4			
	38. Diversions, ditches, pumps that move water in or out														
	39. Excavation for water retention (gravel ponds, pitted playas)														
	40. Engineered channel (riprap, armored channel bank, bed)		4									4			
	41. Groundwater extraction (few small wells=2, extensive extraction cause a lowered water table=4)		3									3			
	42. Flow obstructions (culverts, paved stream crossings)		3									3			
	43. Engineered channel (riprap, armored channel bank, bed)														
	44. Control of flow and energy (weir/drop structure, dredging, tide gates)														
	45. Other [specify]:														
Stressors Very Minimal or Not Evident (check box, if true)		<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>				
SUM OF Stressor IMPACTS -- Score & Rating by MEF (Buffer, Veg, Soils, Hydro)		Sum Score:	Rating Point:		Sum Score:	Rating Point:		Sum Score:	Rating Point:		Sum Score:	Rating Point:		HSII Total SITE RATING:	
TOTAL (Site) HSII: Multiply each MEF Impact Rating by the following weights then sum them to calculate the HSII Rating. See Table for HSII Site Rating		_____ x 0.3 =			_____ x 0.3 =			_____ x 0.1 =			_____ x 0.3 =			HSI Total Score:	
ONSITE (AA) HSII (Vegetation, Soil, Hydrology)		_____ x 0.4 =			_____ x 0.4 =			_____ x 0.2 =			_____ x 0.4 =			HSI Onsite Score:	
ABIOTIC HSII (Buffer, Soil, Hydrology)		_____ x 0.4 =			_____ x 0.4 =			_____ x 0.2 =			_____ x 0.4 =			HSI Abiotic Score:	

\*Hydrology stressors will often cross between buffer and AA. E.g., ditches in the buffer may directly impact hydrology of the AA.  
 Minimize listing in both columns unless you are sure of the impacts. If ditches occur in both the buffer and the AA, then both should be listed.

HSI Site Score	HSI Site Rating
3.5-4.0	Very High
2.5-3.4	High
1.5-2.4	Medium
0.5-1.4	Low
0.0-0.4	Absent

Stressor IMPACT Calculator		Stressor SCOPE			
		Pervasive = 4	Large = 3	Restricted = 2	Small = 1
Stressor SEVERITY	Extreme = 4	VERY HIGH = 10	High = 7	Medium = 4	Low = 1
	Serious = 3	High = 7	High = 7	Medium = 4	Low = 1
	Moderate = 2	Medium = 4	Medium = 4	Low = 1	Low = 1
	Slight = 1	Low = 1	Low = 1	Low = 1	Low = 1

STRESSOR RATING Summary for Major Ecological Factor (MEF)	Sum of Impact Scores	Stressor RATING	Pts
1 or more Very High, OR 2 or more High, OR 1 High + 1 or more Medium OR 3 or more Medium	10+	Very High	4
1 High, OR 2 Medium OR 1 Medium + 3 or more Low	7 – 9.9	High	3
1 Medium + 1-2 Low OR 4-6 Low	4 – 6.9	Medium	2
1 to 3 Low	1 – 3.9	Low	1
0 stressors	0 – 0.9	Absent	0