Performance Standards and Monitoring Protocols for Ohio Compensatory Mitigation Wetlands

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A Condition Based Approach to Assessing Functional Replacement

Uses a reference based wetland data set:

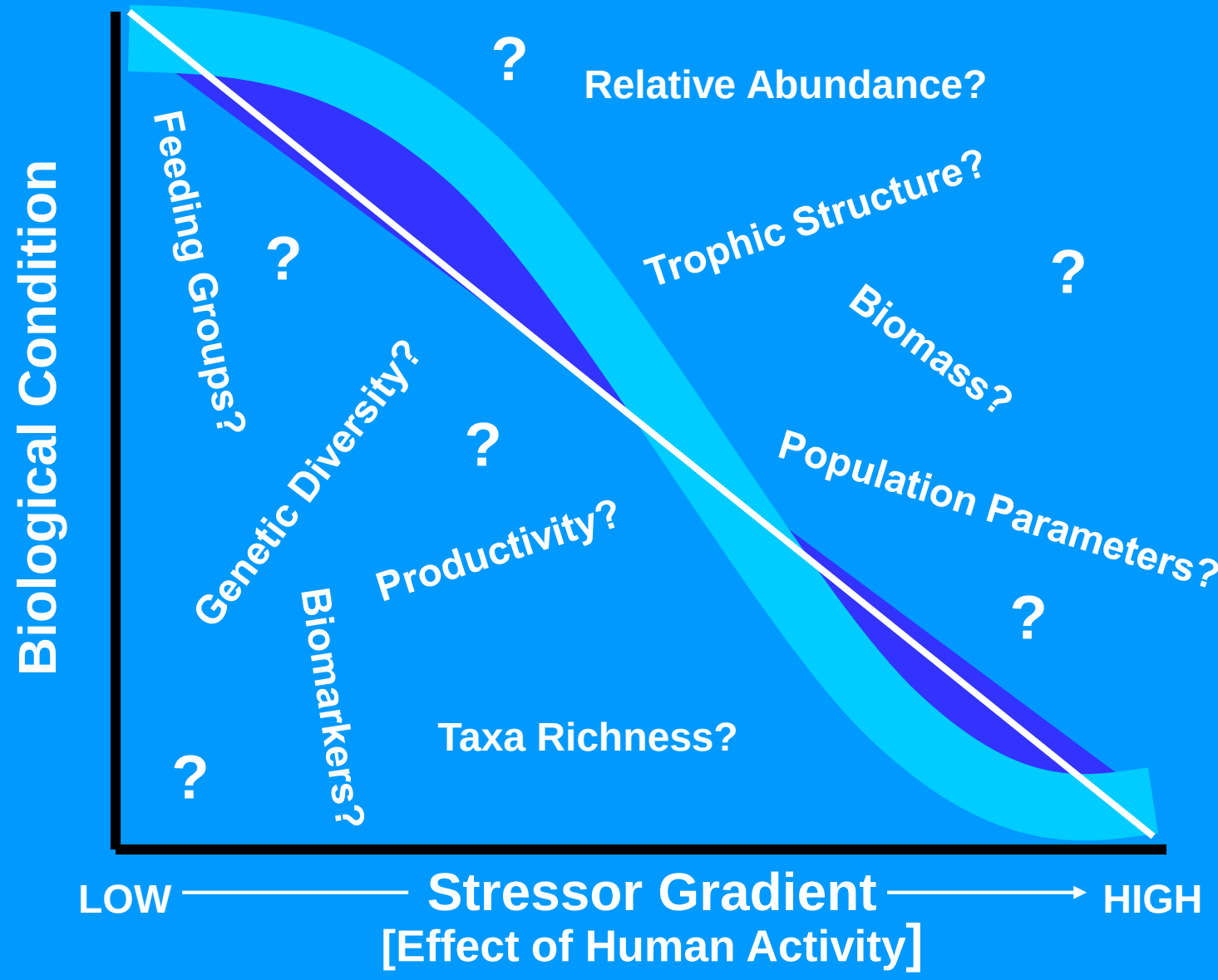
- Over 400 natural Ohio wetlands monitored (645 today) and over 200 compensatory mitigation wetlands (US EPA Wetland Program Development Grants)
- Includes all major wetland types
- Span the gradient of human disturbance – highly degraded to highly intact and every condition in between for each wetland type

Wetland Program Tools Developed

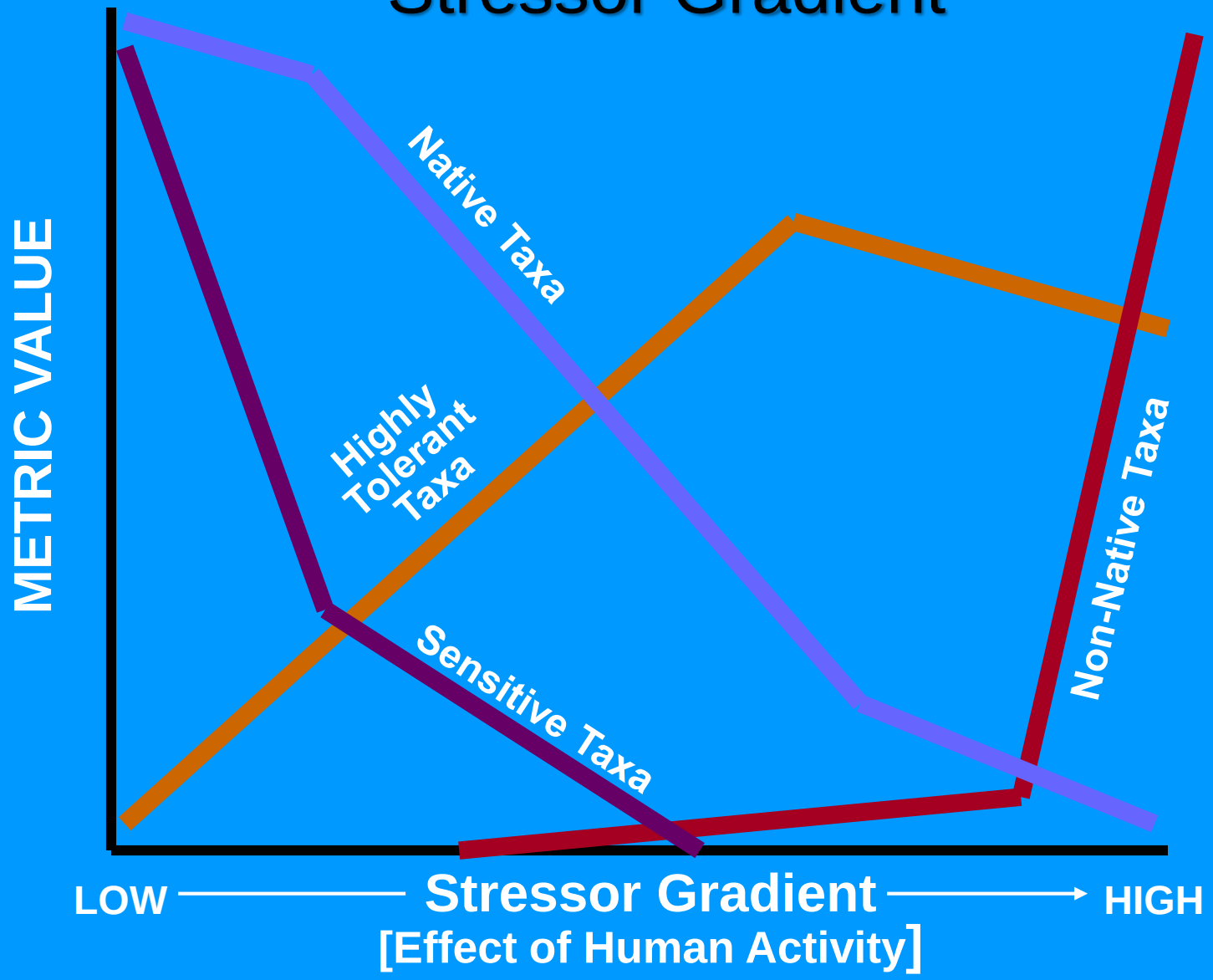
Using the data set the following wetland tools were developed:

- A wetland classification scheme based on landscape position and dominant vegetation class that accounts for variability in ecosystem processes (functions) and ecological services (values) of different types of wetlands
- Multimetric biological indices (IBIs), and hydrological and biogeochemical indicators
- A rapid (condition based) wetland assessment (Ohio Rapid Assessment for Wetlands (ORAM))

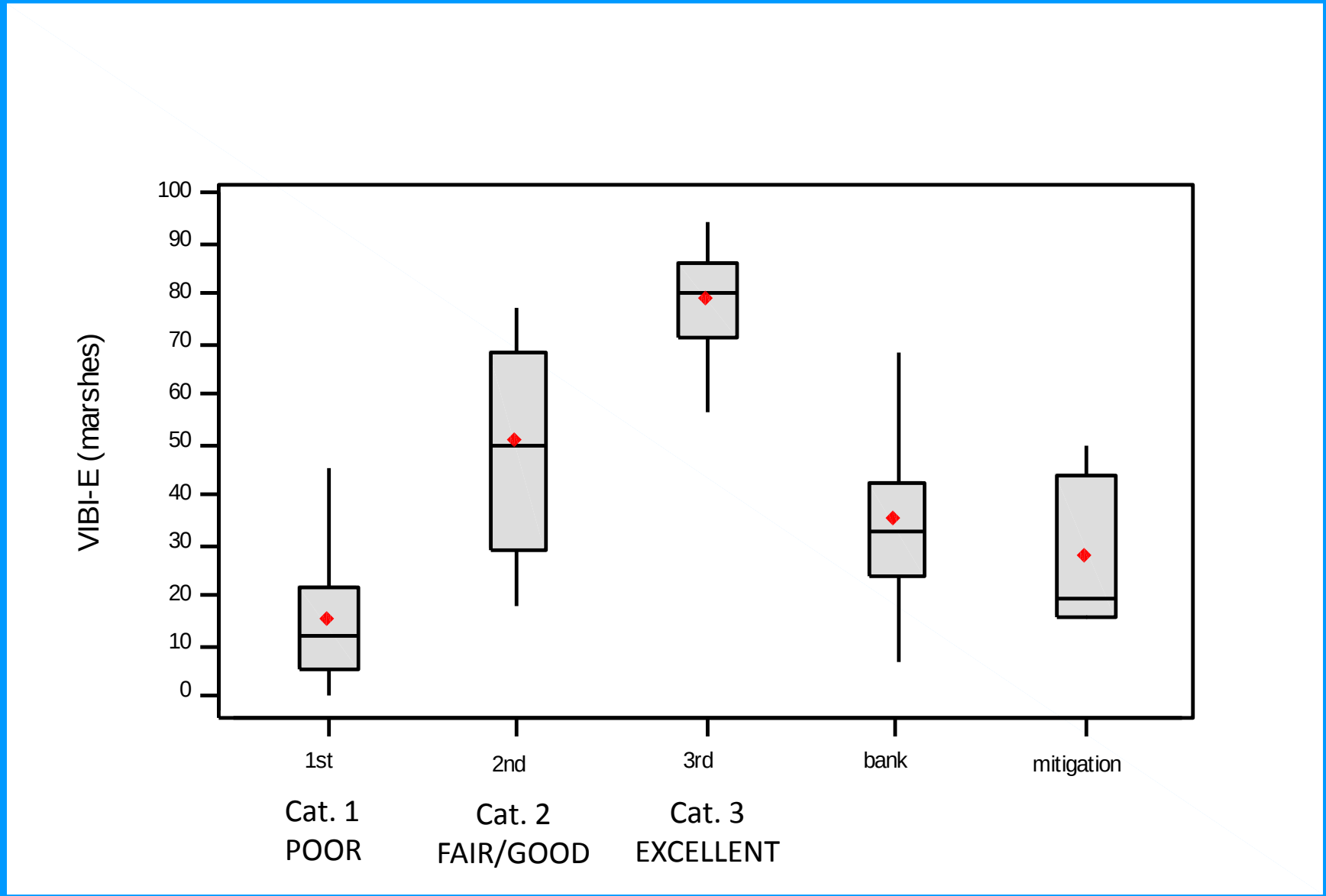
What to Measure? How to Decide?



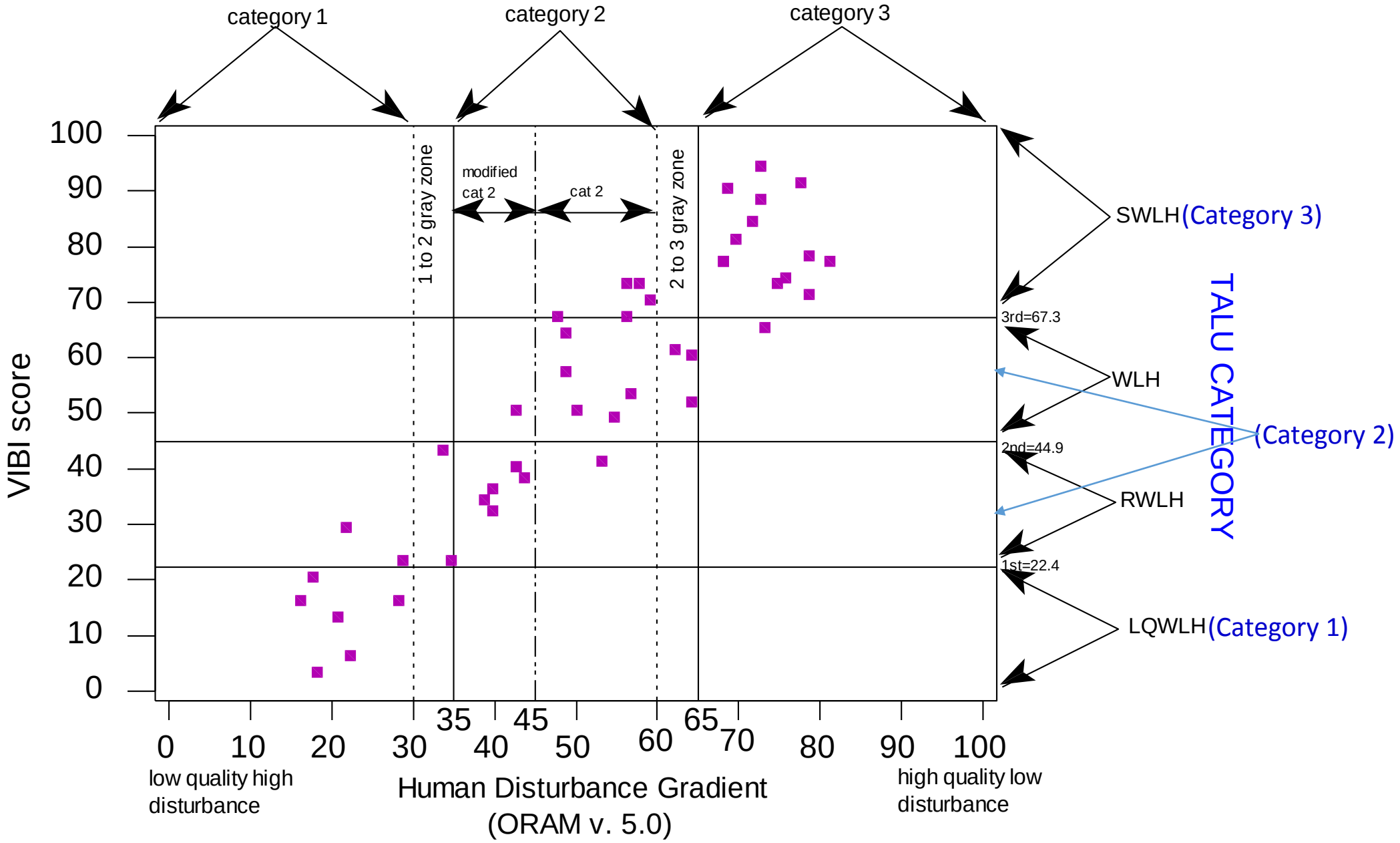
Metric Behavior Along the Stressor Gradient



Vegetation Index of Biotic Integrity



ANTIDEGRADATION CATEGORY USING ORAM SCORE (OAC 3745-1-54)



Ensures Functional Replacement Occurs in a Multiple Step Process

1. As part of a permit application, the HGM class and dominant plant community of the impacted wetland is determined (this determination accounts for the functions and values of different types of wetland without developing an comprehensive list for each wetland)
2. The condition of the impacted wetland is assessed rapidly (ORAM) or intensely with a wetland IBI assessment providing a measure of “functional capacity” and the wetland is placed in an antidegradation category: 1 (poor), 2 (fair to good), or 3 (excellent)
3. Any residual moderate to high functions or values the impacted wetland may still be providing, despite moderate to severe degradation, are evaluated using a checklist with a narrative description (may change category assessment)
4. The size of the wetland to be impacted is determined and the appropriate mitigation ratio is applied
5. Requirements, including performance standards, for compensatory mitigation are then specified in the permit conditions

Wetland Compensatory Mitigation Ratios

Category of wetland impacted	Wetland type	Minimum mitigation ratio	Wetland replacement category
1	Non-forested	1.5: 1	2 or 3
	Forested	1.5: 1	
2	Non-forested	2.0: 1	2 or 3
	Forested	2.5: 1	
3	Non-forested	2.5: 1	3
	Forested	3.0: 1	

From Ohio Administrative Code 3745-1-54 (Wetland Antidegradation Rule)

VIBI Scores

- used as performance standards for all Ohio compensatory wetlands
– vary by HGM class, dominant plant community, and ecoregion

Table 7. Wetland Tiered Aquatic Life Uses (WTALUs) for specific plant communities and landscape positions. tbd = to be developed. LQWLH = limited quality wetland habitat, RWLH = restorable wetland habitat, WLH = wetland habitat, SWLH = superior wetland habitat. Equivalent antidegradation categories as specified in Ohio Administrative Code Rule 3745-1-54 are indicated in parentheses below the TALU category.

HGM class	HGM subclass	plant community	ecoregions	LQWLH (Category 1)	RWLH (modified Category 2)	WLH (Category 2)	SWLH (Category 3)
Depression	all	Swamp forest, Marsh, Shrub swamp	EOLP	0 - 30	31 - 60	61 - 75	76 - 100
			all other regions	0 - 24	25 - 50	51 - 62	63 - 100
	all	Wet Meadow (incl. prairies and sedge/grass dominated communities that are not slopes)	all regions	0 - 29	30 - 59	60 - 75	76 - 100
Impoundment	all	Swamp forest, Marsh, Shrub Swamp	EOLP	0 - 26	27 - 52	53 - 66	67 - 100
			all other regions	0 - 24	25 - 47	48 - 63	64 - 100
		Wet Meadow (incl. prairies and sedge/grass dominated communities that are not slopes)	all regions	0 - 29	30 - 59	60 - 75	76 - 100
Riverine	Headwater	Swamp forest, Marsh, Shrub swamp	EOLP	0 - 27	28 - 56	57 - 69	70 - 100
			all other regions	0 - 23	24 - 47	48 - 59	60 - 100
	Mainstem	Swamp forest, Marsh, Shrub swamp	EOLP	0 - 29	30 - 56	57 - 73	74 - 100
			all other regions	0 - 20	21 - 41	42 - 52	53 - 100
	Headwater or Mainstem	Wet Meadow (incl. prairies and sedge/grass dominated communities that are not slopes)	all regions	0 - 29	30 - 59	60 - 75	76 - 100
Slope	all	Wet meadow (fen), tall shrub fen, forest seep	all regions	0 - 29	30 - 59	60 - 75	76 - 100
Fringing[1]	Natural Lakes (excluding lacustrine fens) and reservoirs	tbd	tbd	tbd	tbd	tbd	tbd
Coastal[2]	closed embayment, barrier-protected, river mouth	Swamp forest, Marsh, Shrub swamp	all regions	0 - 24	25 - 49	50 - 61	62 - 100
	open embayment, diked (managed unmanaged failed)	tbd	tbd	tbd	tbd	tbd	tbd
Bog	weakly ombrotrophic	Tamarack-hardwood bog, Tall shrub bog	all regions	0 - 32	33 - 65	66 - 82	83 - 100
	moderately to strongly ombrotrophic	Tamarack forest, Leatherleaf bog Sphagnum bog	all regions	0 - 23	24 - 47	48 - 59	60 - 100
VIBI-FQ[3]							
All HGM classes	all	all	all regions	0.0 – 19.9	20.0 – 39.9	40.0 – 59.9	60.0 - 100

AmphIBI Scores, TALUs, Ecological Condition and Category Assignments

AmphIBI Score	0-9	10-19	20-29	30-50
Tiered Aquatic Life Use	Limited Wetland Habitat	Restorable Wetland Habitat	Wetland Habitat	Superior Wetland Habitat
Ecological Condition	Poor	Fair	Good	Excellent
Wetland Category	1	2	2	3

Ensuring Adequate Replacement Occurs

Ohio Requirements:

1. Replacement by size (mitigation ratios)
2. Replacement by type (same wetland type)
3. Replacement of quality (of equal or higher ecological condition)

There is strong assurance functional replacement is being achieved when the wetland mitigation performance standards above are set and monitoring is conducted, using quantitative, condition based wetland assessment tools to confirm that “no net loss is occurring”

Ohio Wetland Mitigation Bank Performance Standards

Wetland Area –Area acreage available for credit release must meet wetland criteria (1987 Manual and Supplements). Deep water habitats and unvegetated areas do not meet wetland criteria and will not be included in area measurements

Ecological Condition - Achieve Target IBI Score (VIBI, VIBI-FQ or AmphIBI)

Plant Establishment -Wetland acreage available for credit release will have a composition of at least 75% relative cover of native perennial hydrophytes (FAC, FACW, and OBL)

Invasive Plant Species - Wetland acreage available for credit release will have less than 5% relative cover of all non-Typha invasive plant species listed or less than 10% relative cover including all Typha species

Upland areas proposed for buffer credits will also have less than 5% relative cover of non-native invasive plant species listed

Ohio Wetland Mitigation Bank Performance Standards for Forested Wetlands

In order to provide the forested habitat with an adequate diversity of species, the following planting guidelines must be followed:

1. A minimum of 200 native, free standing, live and healthy (disease and pest free) trees per acre;
2. A minimum of 8 native tree species are planted within the forested areas, and each of these 8 species represents at least 5% of the overall tree count;
3. A minimum of 25% of all live trees planted consist of at least 4 species having coefficient of conservatism values from 5 to 10.
4. A minimum of 200 native, free standing, live and healthy (disease and pest free) shrubs/sub-canopy tree species per acre;
5. A minimum of 8 native shrub/sub-canopy species are planted within the forested areas, and each of these 8 species represents at least 5% of the overall shrub/subcanopy tree count; and
6. A minimum of 25% of all live shrubs/sub-canopy trees planted consist of at least 4 species having coefficient of conservatism values from 5 to 10

<u>For Forested Wetland Credit Releases</u>

A minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species) must be present at the end of the monitoring period.

Rehabilitation Performance Standards

- Must meet VIBI scores equivalent to or higher than the threshold for Wetland Habitat (mid-level of Category 2) or increase VIBI score 10 points from baseline score, whichever is higher.

- Other goals that must be met for all rehabilitation: < 5% relative cover of invasive species - However, if Typha species account for more than 5% relative cover, then the total of invasive species plus Typha species must be less than 10% relative cover; and

- > 75% relative cover of native perennial hydrophytes

Summary

Quantitative wetland performance standards that must be met to satisfy permit conditions or trigger credit releases provide a number of beneficial outcomes:

- Performance standards are based on the conditions of Ohio wetlands, including the wetlands impacted
- It is clear, and measurable from the beginning, what the expectations are for the compensatory mitigation project
- No debate, based on the goals and monitoring results, whether a performance standard has been met or not met
- Conditions and credit releases based on meeting performance standards put appropriate weight on the permittee or sponsor to develop high quality wetlands that can compensate for wetland losses
- High performing bank projects can receive advanced credit releases and reach closure sooner than the 10 year standard time frame

Acknowledgements

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Thank You!

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