

Fish Passage in the Bad River Watershed in Northern Wisconsin

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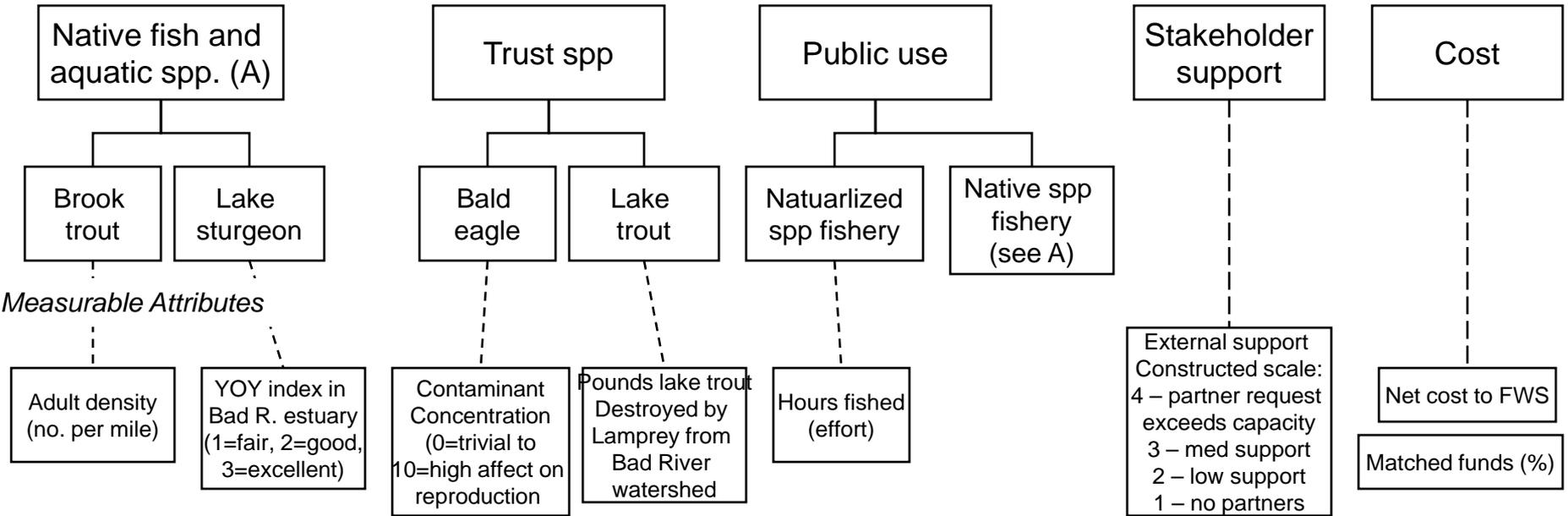
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Problem (Decision Statement)

- Decision
 - How do we best manage barriers for fish passage in the Bad River Watershed.
 - Removal and/or replacement
 - Add - barriers to prevent sea lamprey
 - Modify – allow selective fish passage

1st Prototype Objectives Hierarchy



Actions:

Strategy table: options for each type of management action

	1 st barriers			
Replace culverts above 1st barrier¹	White River Hydro dam	Low-head dams	Replace culverts below 1st barrier	Build barrier including fish passage
none	none	none	none	none
Target high quality habitat	Remove	Remove both	Target high quality habitat	Target high quality habitat
Target longer stream reaches	Build fish passage	Build fish passage	Target longer stream reaches	Target hard to treat reaches
Downstream up			Downstream up	Partner request
Upstream down			Upstream down	

Actions Continued...

- Portfolio based on strategy table
 - Status Quo
 - Bad River Tribe Alt.
 - Recreational Fishing Alt.
 - Native Species Alt.
 - Physical Structure and Function Alt.

Actions: Status Quo Alt.

Strategy table: options for each type of management action

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Consequences (Models)

CONSEQUENCES TABLE		RAW SCORES		Alternatives (Portfolio of Actions)			
Objectives	Sub-objective	Goal	Status quo	Bad River Tribe	Rec fishing	Native spp	Physical structure and function
Native fish and aquatic spp	Brook trout	Max	50	45	25	200	25
Native fish and aquatic spp	Lake sturgeon	Max	3	2	2	3	2
Trust spp	Bald eagle	Min	3	3	10	2	10
Trust spp	Lake trout	Min	4,800	4,000	25,000	4,800	96000
Public use	Naturalized spp fishery	Max	13,500	13,500	27,000	10,000	30000
Public use	Native spp fishery	Max	1,500	1,500	1,500	10,000	1500
Stakeholder support	Level of support	Max	3	2	4	3	2
Cost	Net cost to FWS	Min	\$200,000	\$355,000	\$390,000	\$365,000	\$425,000

Trade-offs

- Preliminary Weighting

CONSEQUENCES TABLE		WEIGHTED SCORES			Treatment (Portfolio of Alternatives)				
Objectives	Sub-objective	Goal	Weight	Status quo	Bad River Tribe	Rec fishing	Native spp	Physical structure and function	
Native fish and aquatic spp	Brook trout	Max	10	1.429	1.143	0.000	10.000	0.000	
Native fish and aquatic spp	Lake sturgeon	Max	10	10.000	0.000	0.000	10.000	0.000	
Trust spp	Bald eagle	Min	8	7.000	7.000	0.000	8.000	0.000	
Trust spp	Lake trout	Min	9	8.922	9.000	6.946	8.922	0.000	
Public use	Naturalized spp fishery	Max	1	0.175	0.175	0.850	0.000	1.000	
Public use	Native spp fishery	Max	3	0.000	0.000	0.000	3.000	0.000	
Stakeholder support	Level of support	Max	4	2.000	0.000	4.000	2.000	0.000	
Cost	Net cost to FWS	Min	1	1.000	0.311	0.156	0.267	0.000	
Sum of Weights (for all objectives)			46						
Sum of weighted scores (for each alternative)				30.53	17.63	11.95	42.19	1.00	
Final Score (sum of weighted scores/sum of weights)				0.66	0.38	0.26	0.92	0.02	

Next Steps

- Refining Alternatives
- Predictive Model – Plug in more realistic numbers
- Clarify Assumptions
 - 1st barrier
- Identify data gaps/needs
- Document lessons learned