

Example of Use of Habitat Analysis Tools in EEMS 12.1

RiverHabitat Demonstration Model



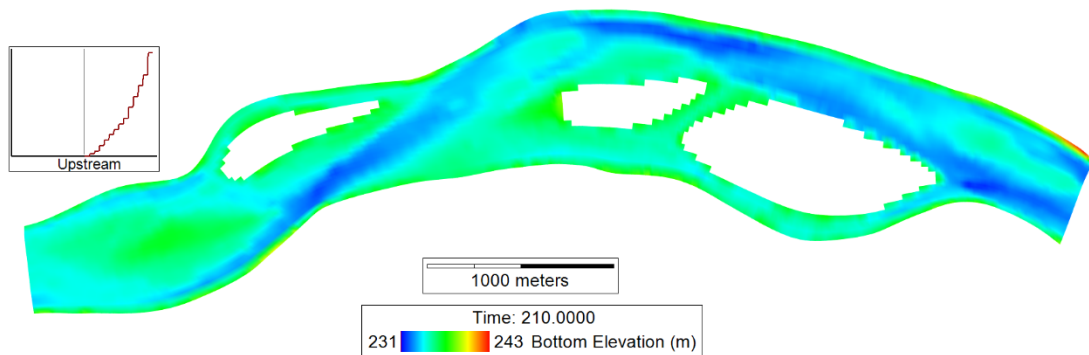
Content

- Demonstration of new habitat analysis tools in EEMS 12.1
 - Habitat Suitability Criteria
 - Critical Limits
- Velocity and depth were selected to analyze habitat for the new tools.
- Two species of fish selected:
 - Burbot for with adult stage of lifecycle
 - Muskellunge with fry, juvenile and adult stages of lifecycle.

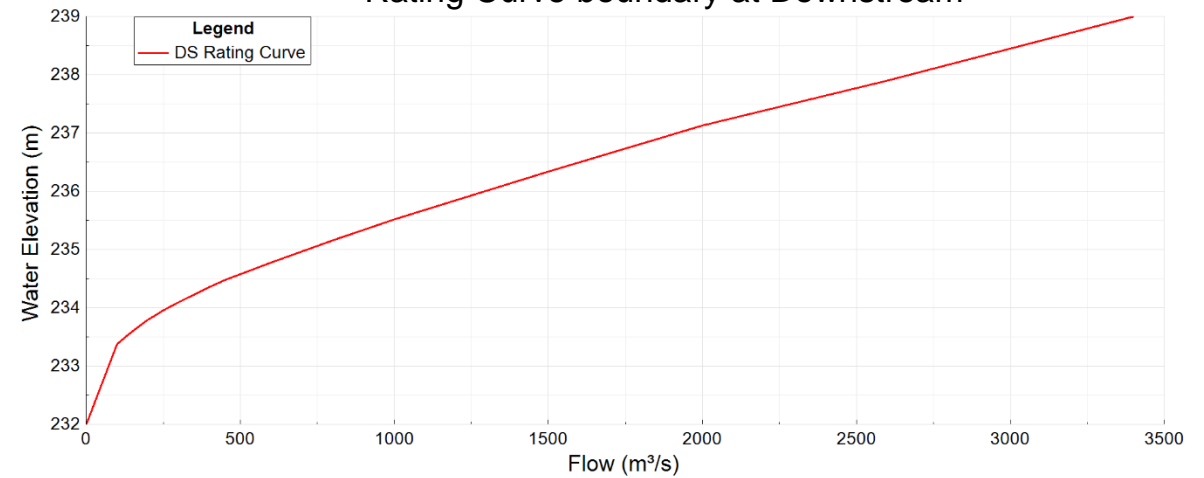


Settings for River Habitat Model

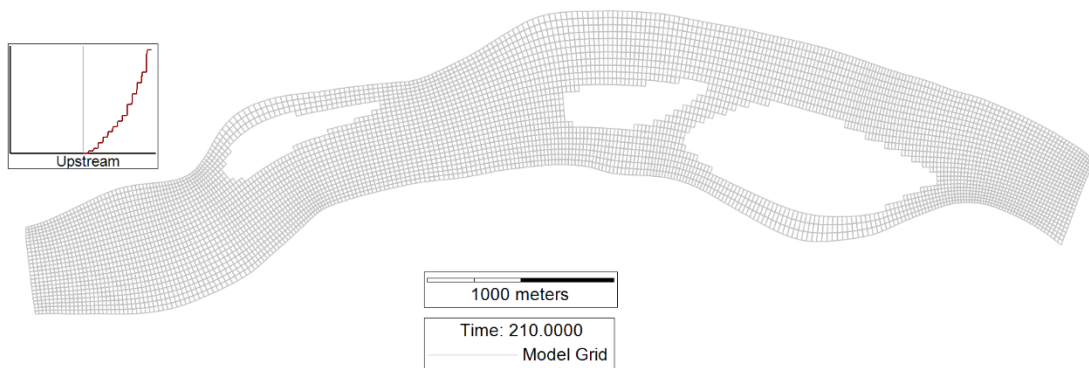
Bottom Elevation



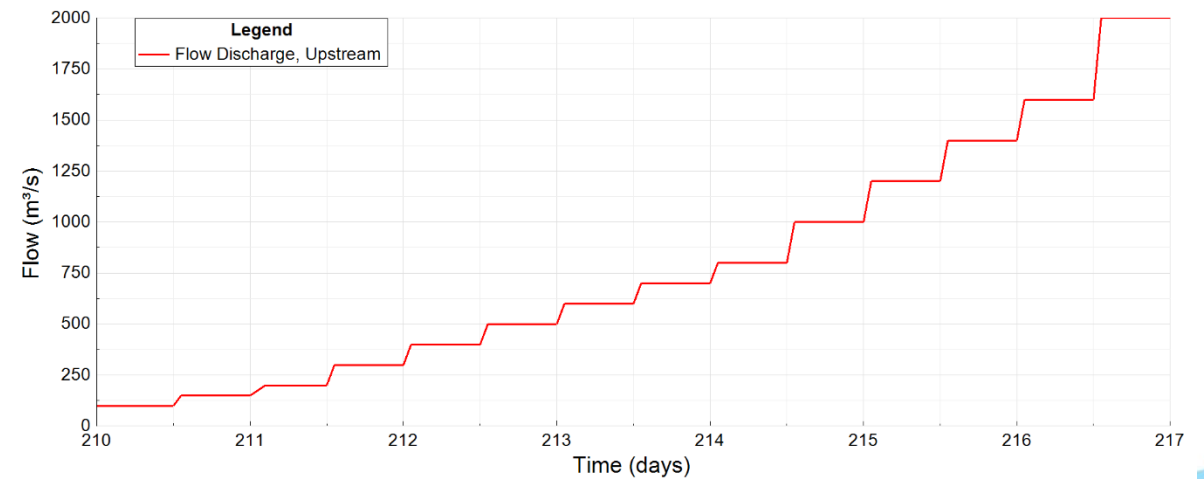
Rating Curve boundary at Downstream



Model Boundaries



Flow boundary at Upstream

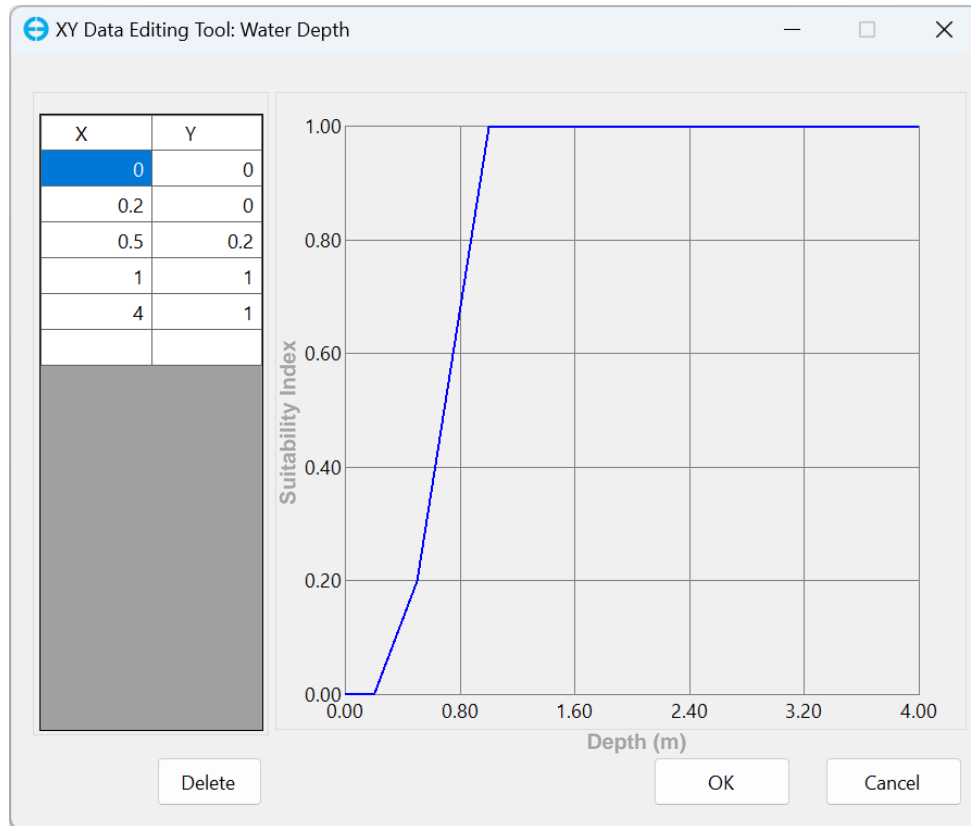


Habitat Suitability Analysis

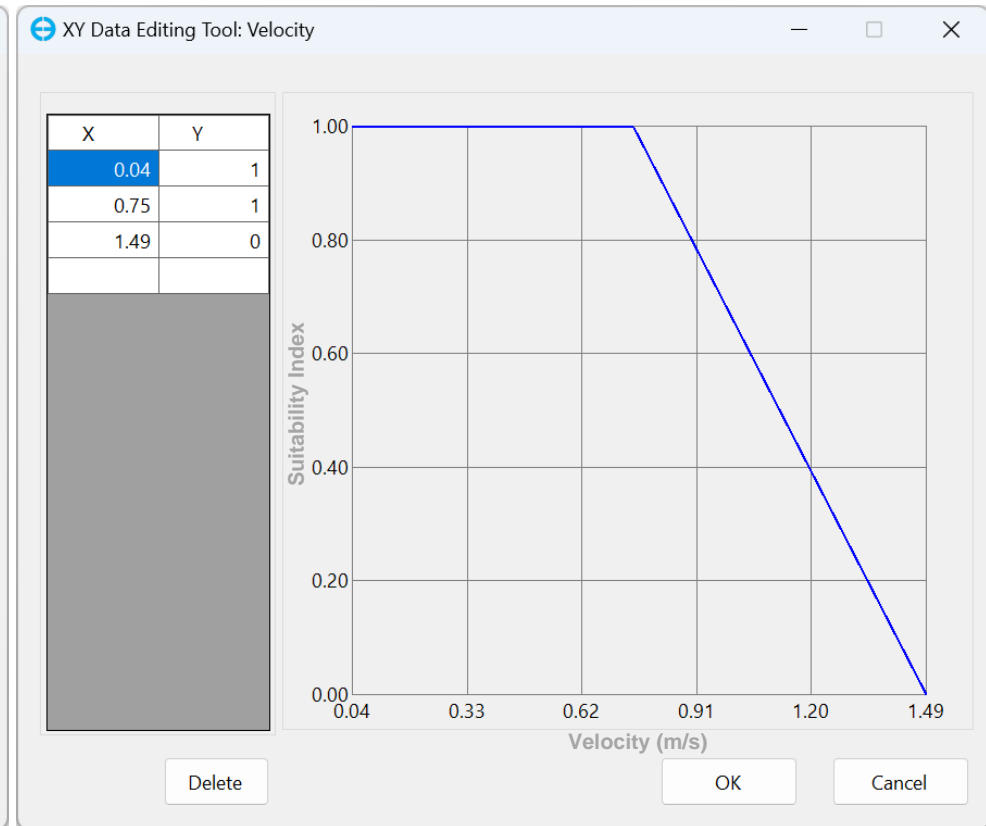
- Burbot (*Lota lota*)



Suitability Curves for Burbot (Adult)



Suitability Curve: Water Depth



Suitability Curve: Velocity

Discharge Time Series

Time	Discharge (m ³ /s)
210.5	100
211.0	150
211.5	200
212.0	300
212.5	400
213.0	500
213.5	600
214.0	700
214.5	800
215.0	1000
215.5	1200
216.0	1400
216.5	1600
217.0	2000



EE Configuration

Habitat Analysis Tools

Habitat Suitability Criteria

Setting File: E:\EEMS\Training Courses\2024-08 Online Training - Habitat River\DM-21_HabitatRiver\Model\#habitat\Burbot Adu

Criteria ID: Burbot Adult

Load

Save

Parameter	Suitability Curve	Layer	Series
Water Depth	0,0;0.2,0;0.5,0.2;1,1;4,1	0	<input checked="" type="checkbox"/>
Velocity	0.04,1;0.75,1;1.49,0	0	<input type="checkbox"/>
Not Used			
Not Used			
Not Used			

HSC Tool

Data: ...

Output: ...

Build IJ Channel Index

Initial Model Results Extraction Options

Start Date: 210.0 2000-07-29 00:00:00

End Date: 217.0 2000-08-05 00:00:00

Generate Initial Time Series

Index: E:\EEMS\Training Courses\2024-08 Online Training - Habitat River\DM-21_HabitatRiver\Model

Sub-set:

Browse

Browse

Secondary Processing of Extracted Results

Type of Processing: WUA versus Q

T vs Q: 210.5,100;211,150;2

View WUA versus Q

Data File:

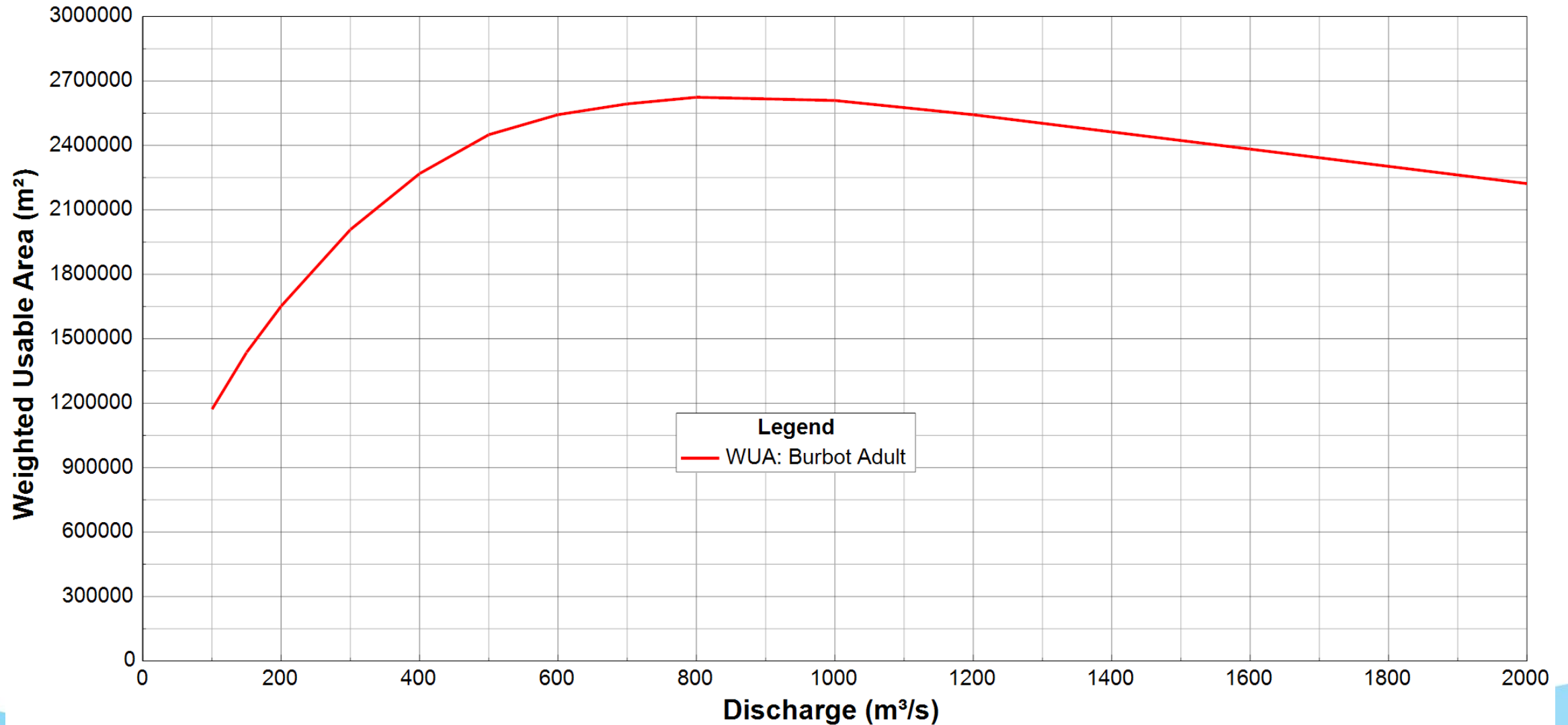
Browse

OK

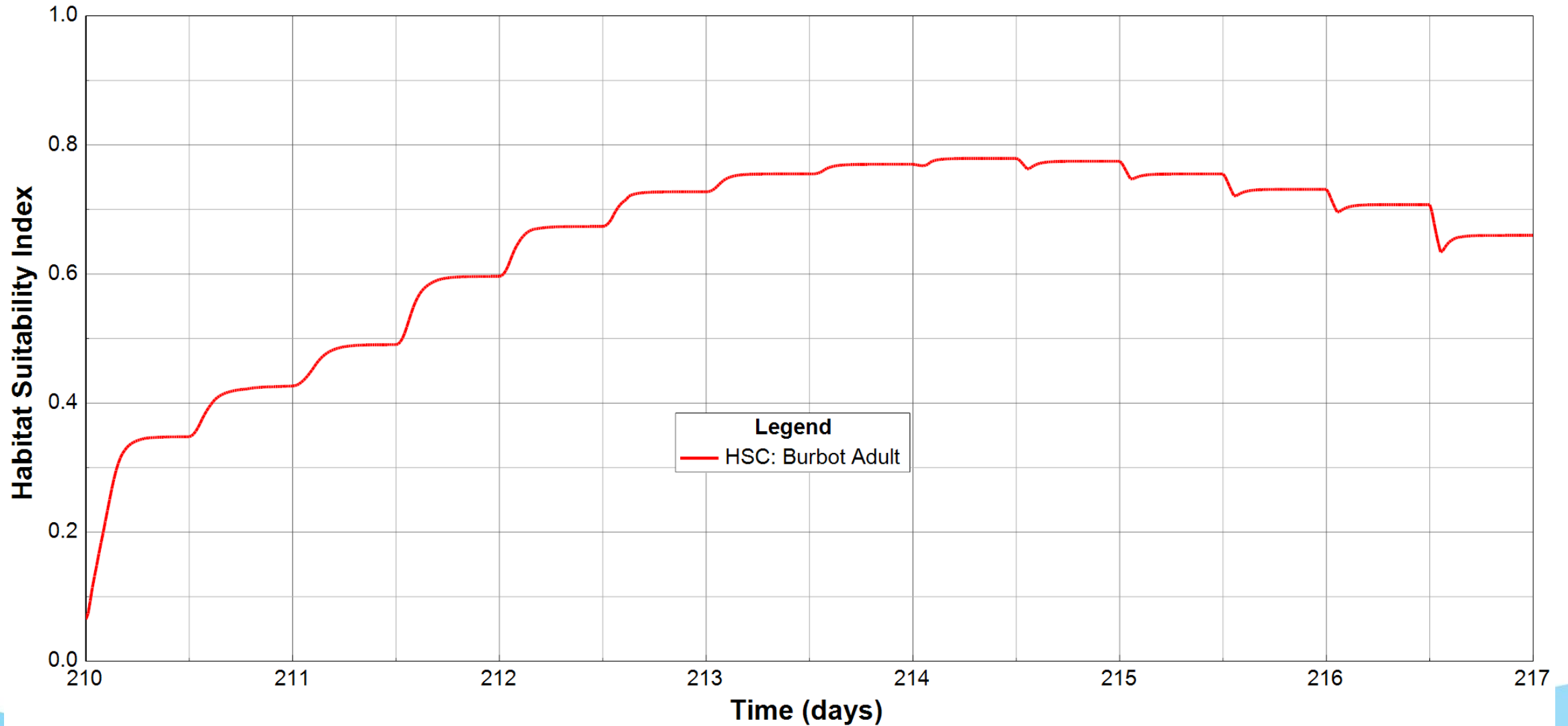
Cancel

Status:

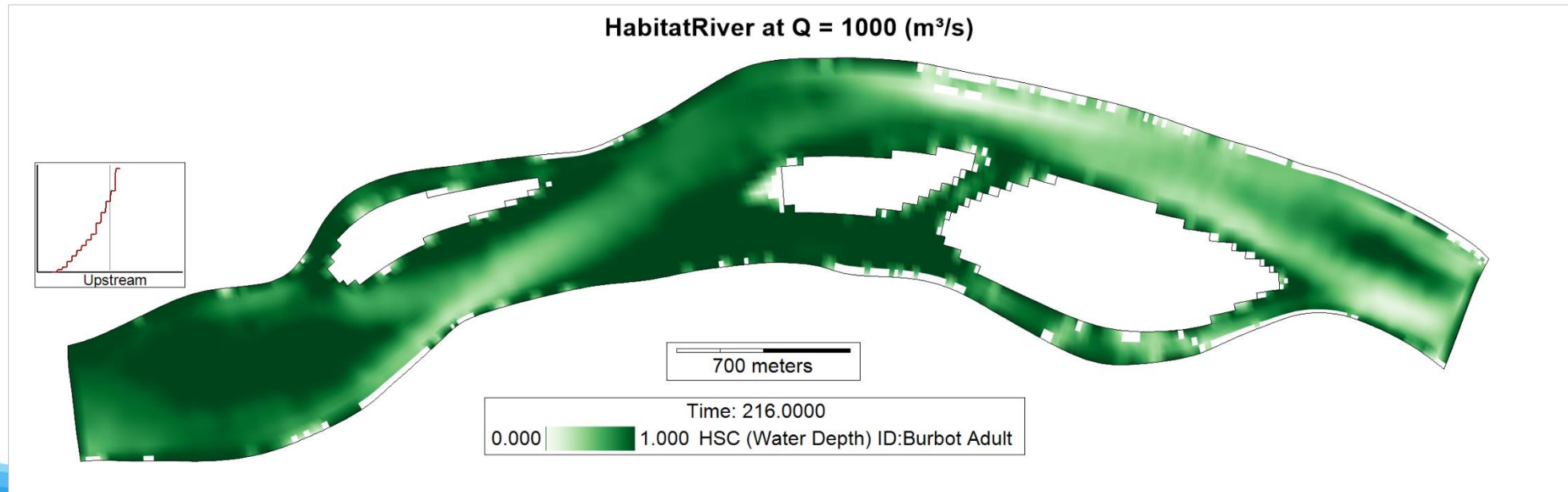
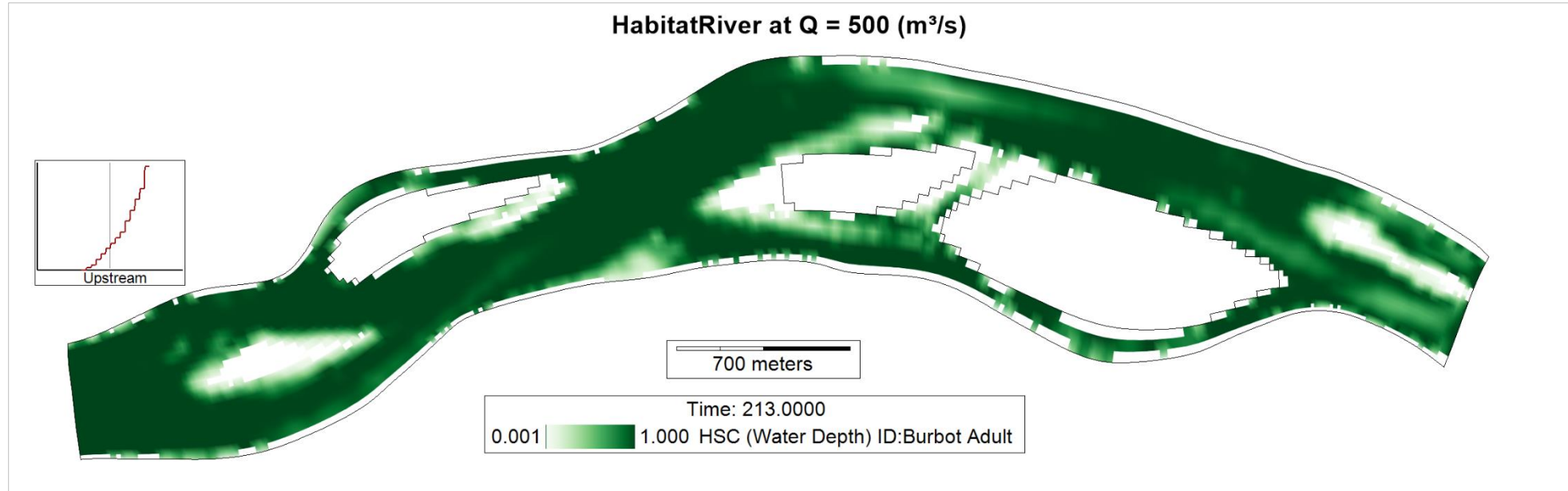
Weighted Useable Areas vs Discharge for Burbot (Adult)



Suitability Index Time Series for Burbot (Adult)



Suitability Index for Burbot (Adult) in ViewPlan



Critical Limits Analysis

- Burbot (*Lota lota*)




Critical Limits Range for Burbot (Adult)

Parameter	Range	Burbot
		Adult
Water Depth (m)	Minimum	0.2
	Maximum	4
Velocity (m/s)	Minimum	0
	Maximum	1.49



EE Configuration

 Habitat Analysis Tools

Critical Limits Series

Setting File:

Criteria ID:

Parameter	Minimum	Maximum	Layer	Series
<input type="text" value="Water Depth"/>	<input type="text" value="0.2"/>	<input type="text" value="4"/>	<input type="text" value="0"/>	<input checked="" type="checkbox"/>
<input type="text" value="Velocity"/>	<input type="text" value="0"/>	<input type="text" value="1.49"/>	<input type="text" value="0"/>	<input type="checkbox"/>
<input type="text" value="Not Used"/>				
<input type="text" value="Not Used"/>				
<input type="text" value="Not Used"/>				

Initial Model Results Extraction Options

Start Date:

End Date:

☒ Cell By Cell

Sub-set:

Secondary Processing of Extracted Results

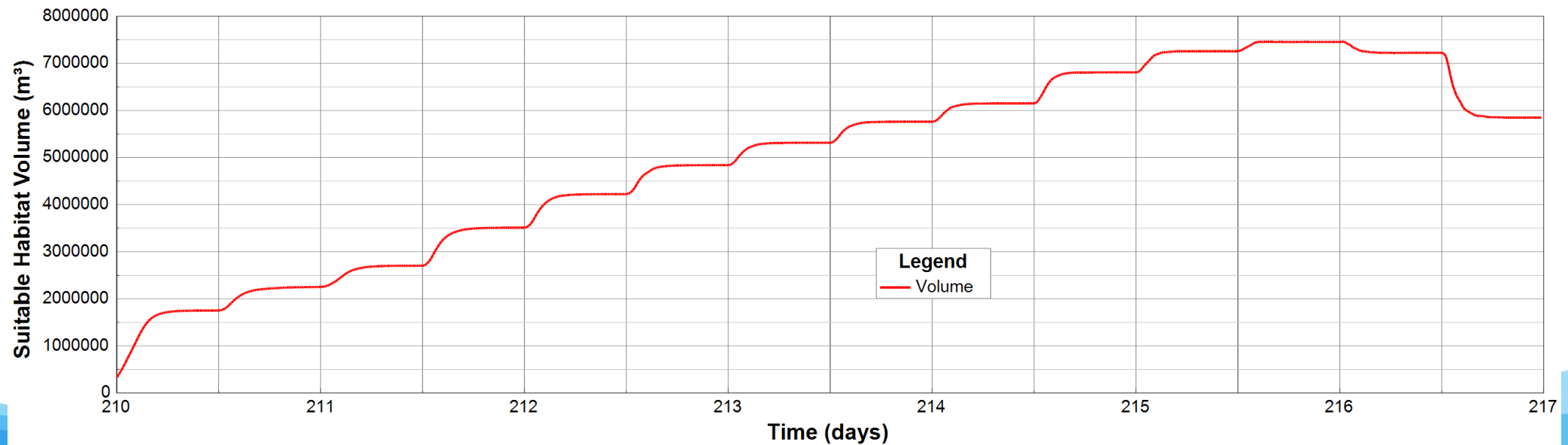
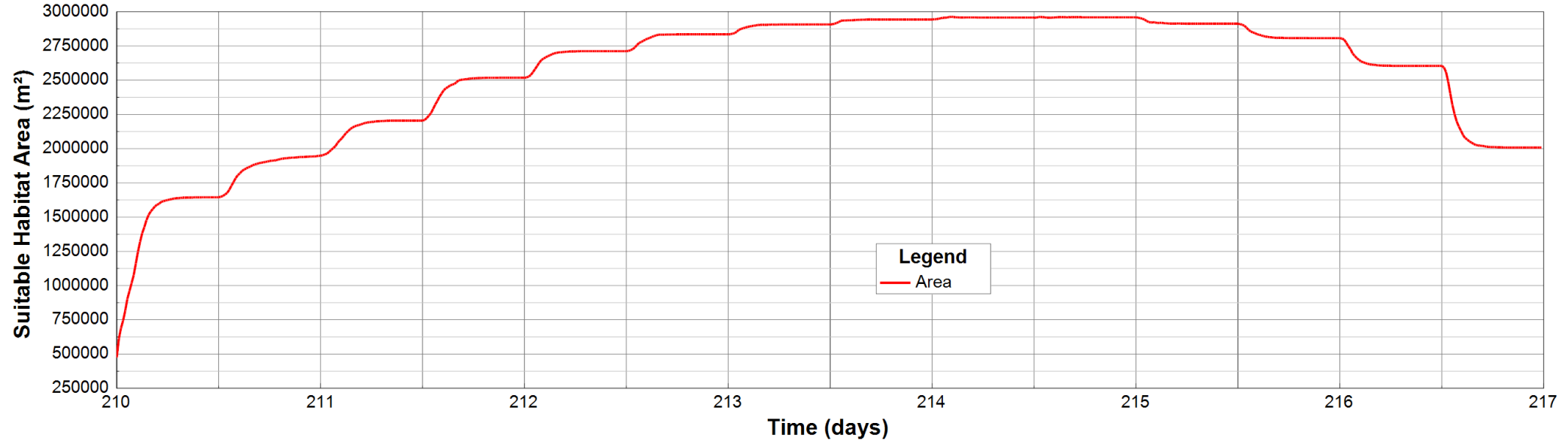
Type of Processing:

Data File:

Status:

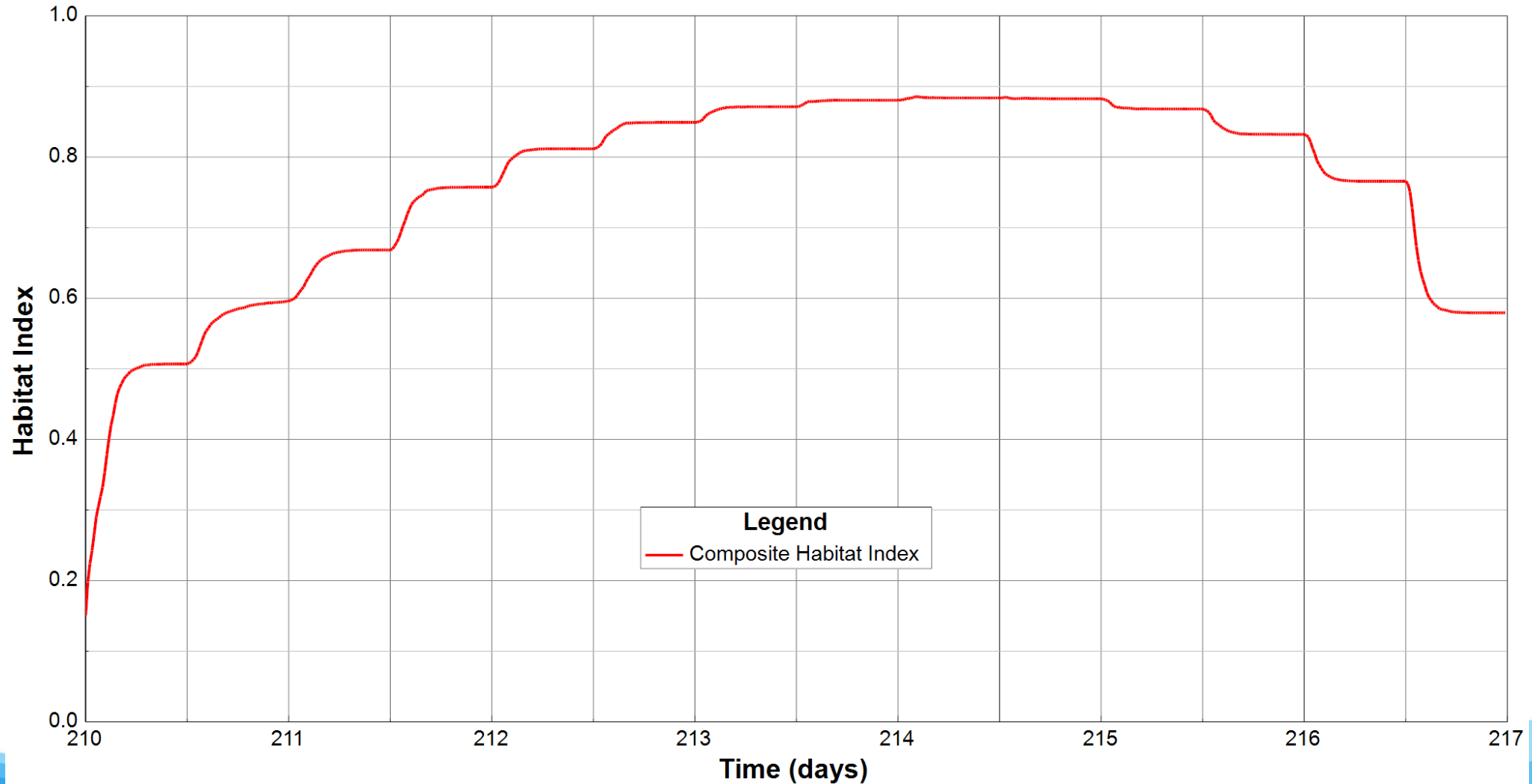


Area and Volume Time Series for Burbot (Adult)

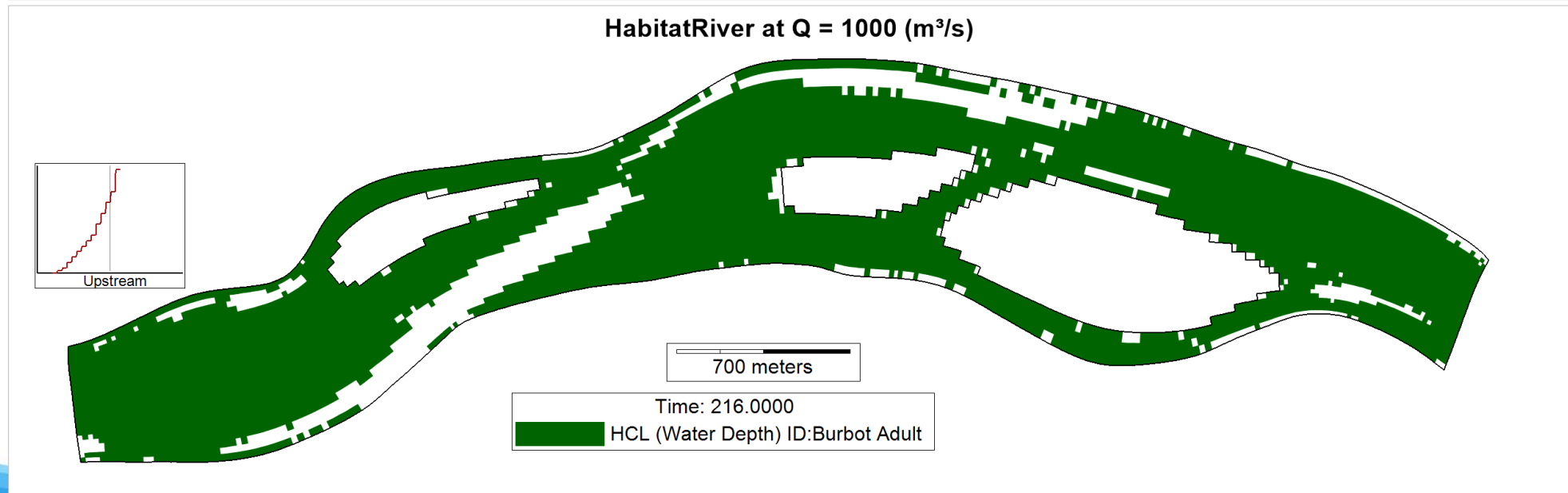
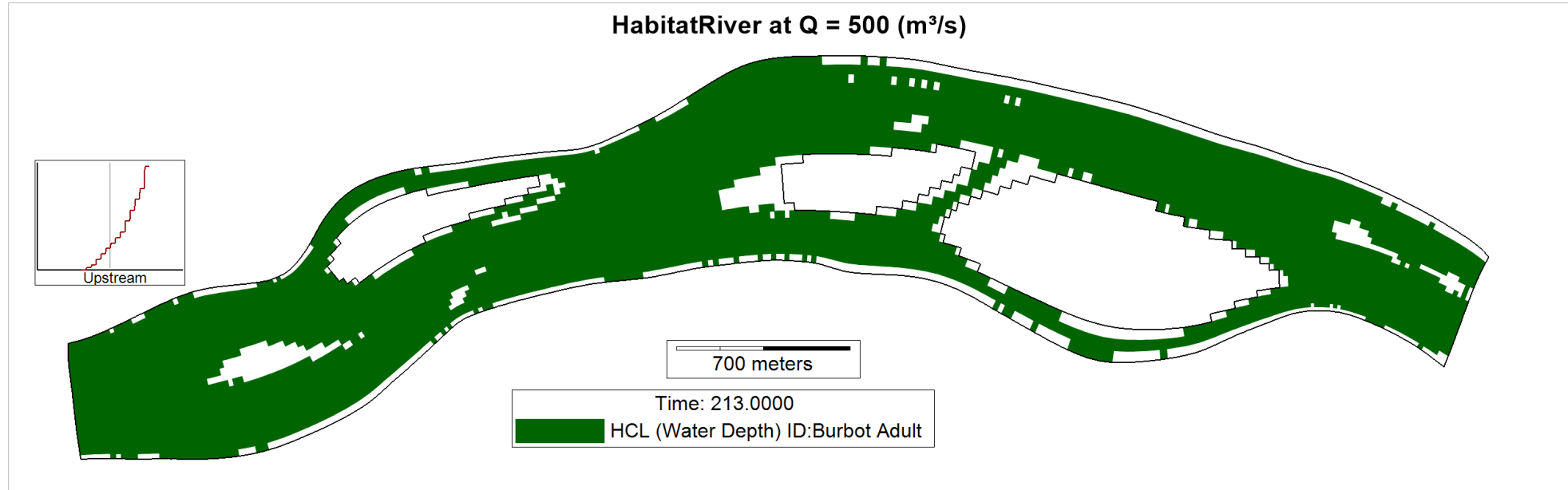


Habitat Index Time Series for Burbot (Adult)

Using Secondary Processing Option



Criteria Satisfied for Burbot (Adult) in ViewPlan

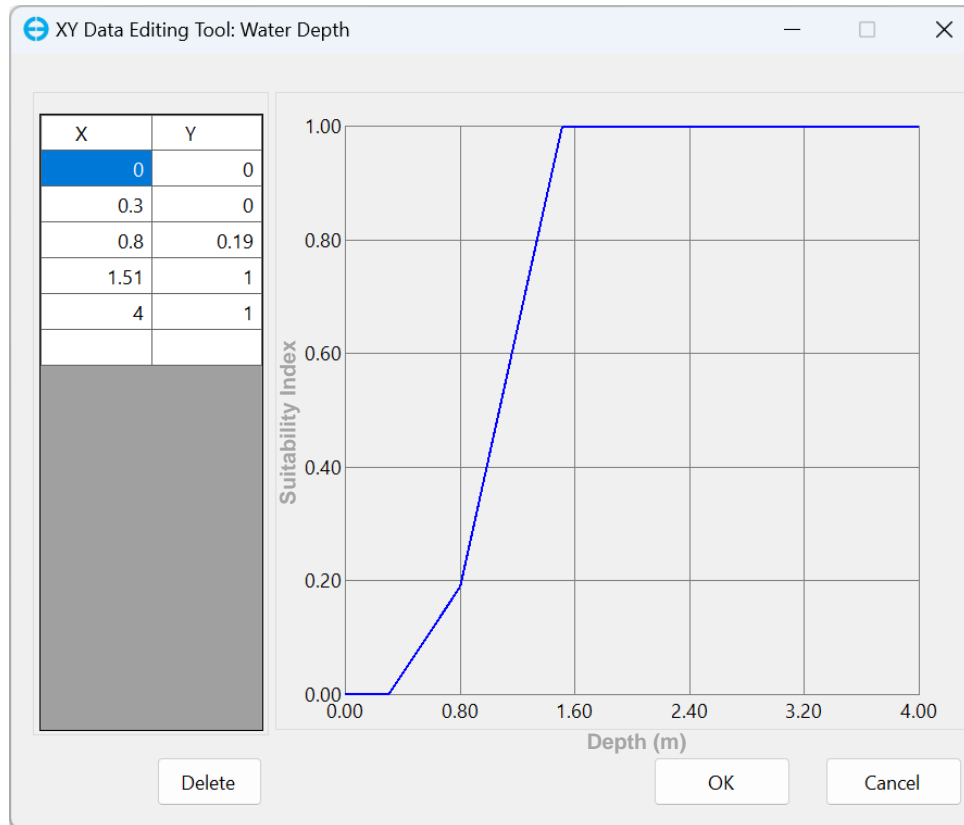


Habitat Suitability Analysis

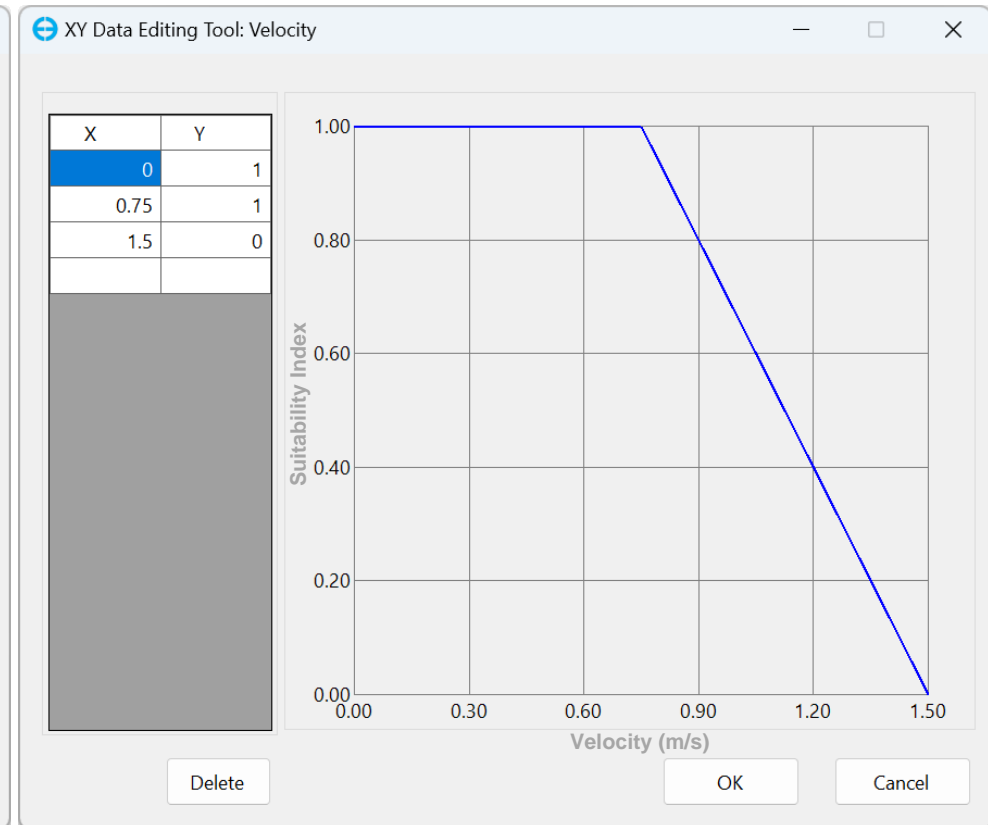
- Muskellunge (*Esox masquinongy*)



Suitability Curves for Muskellunge (Adult)

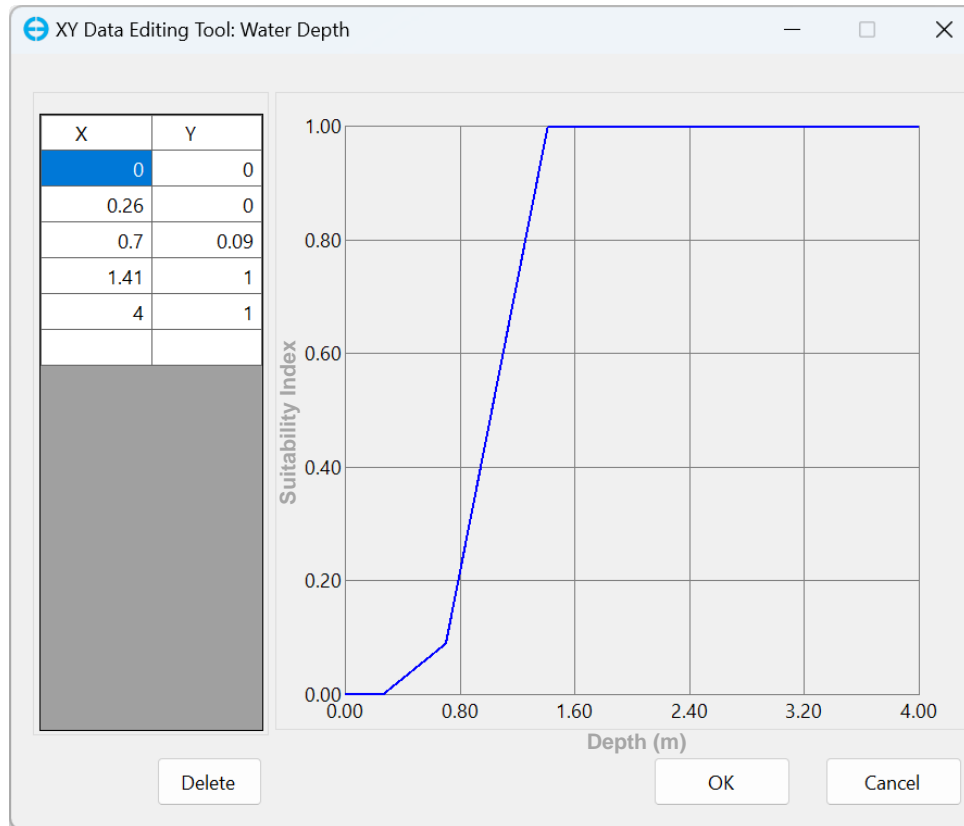


Suitability Curve: Water Depth

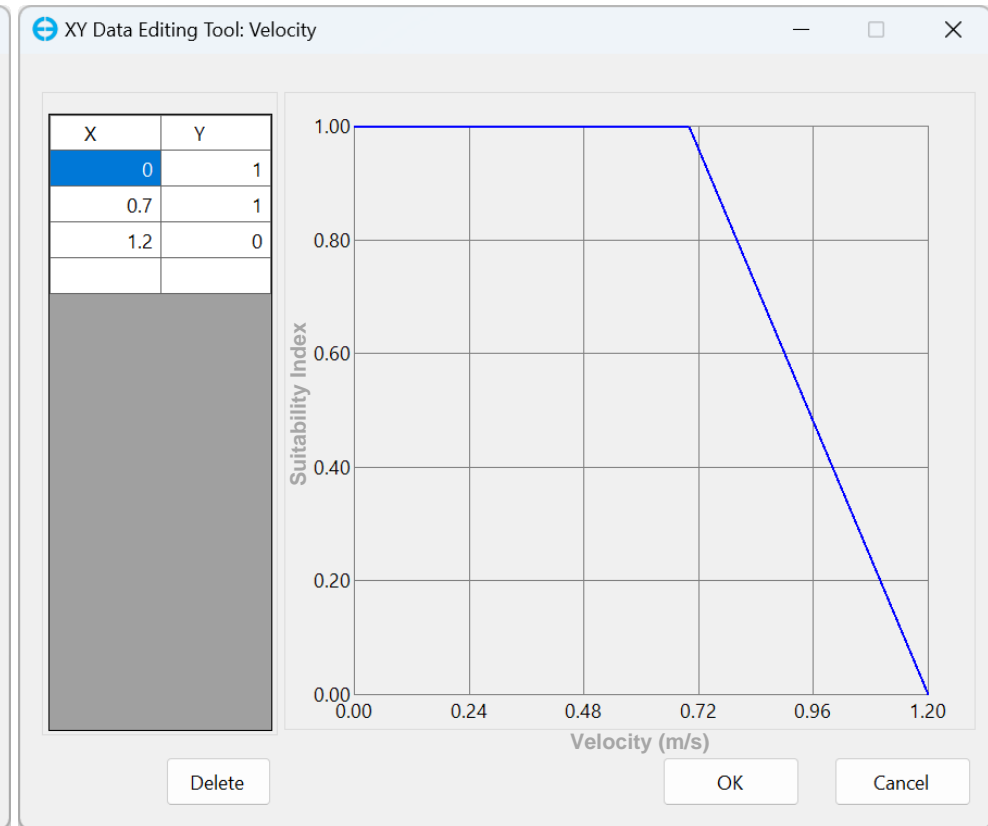


Suitability Curve: Velocity

Suitability Curves for Muskellunge (Juvenile)

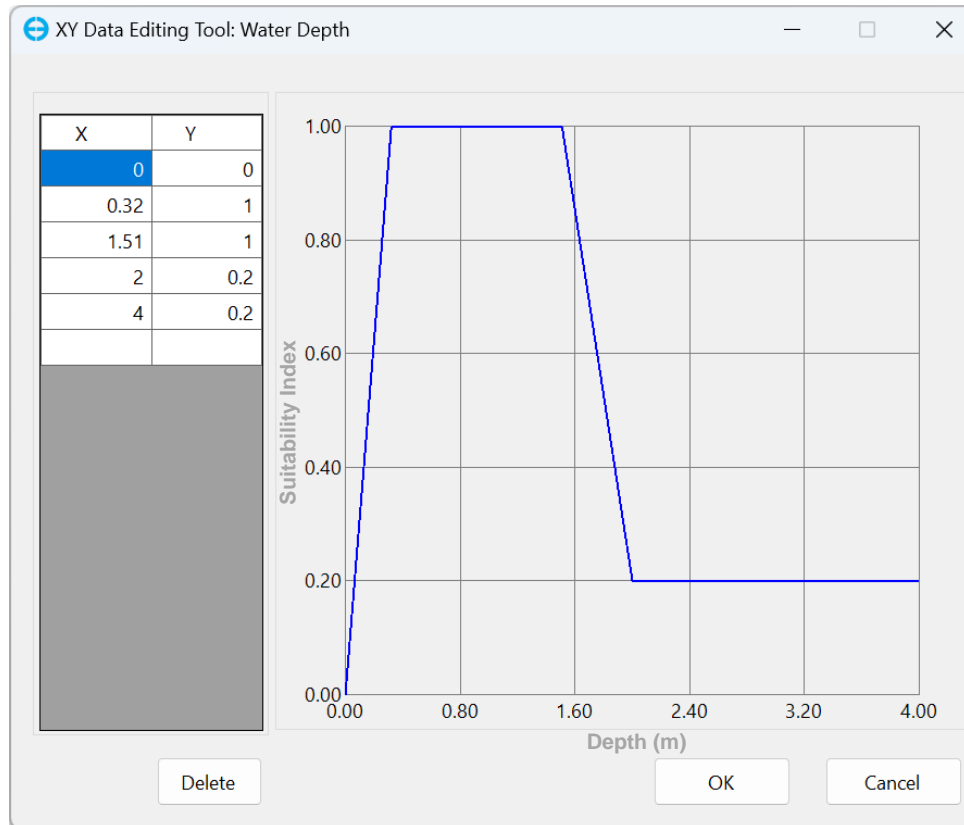


Suitability Curve: Water Depth

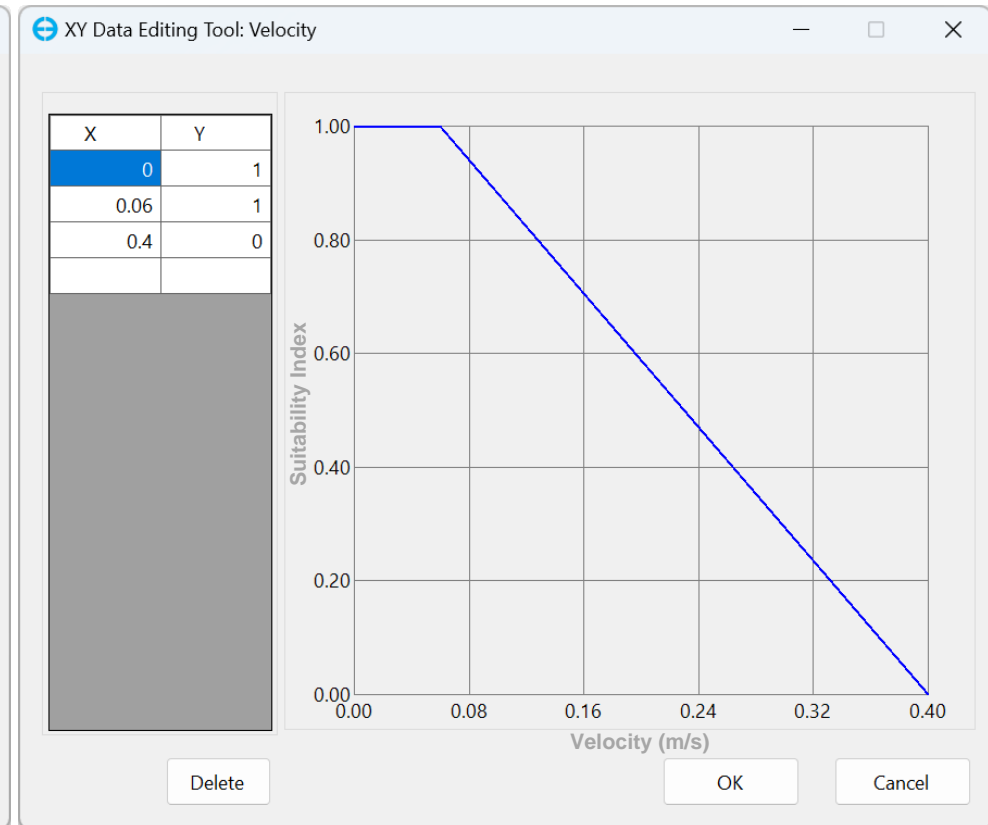


Suitability Curve: Velocity

Suitability Curves for Muskellunge (Fry)

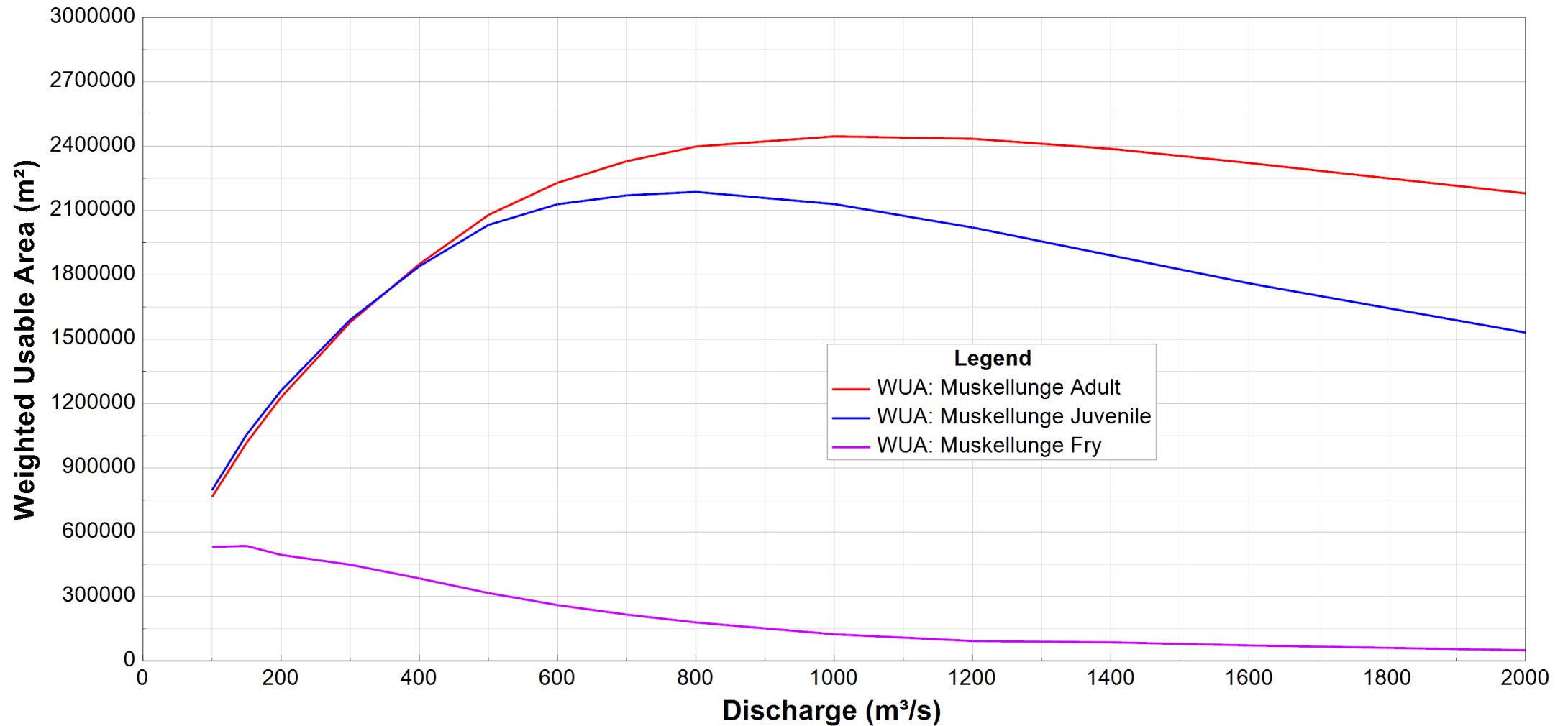


Suitability Curve: Water Depth

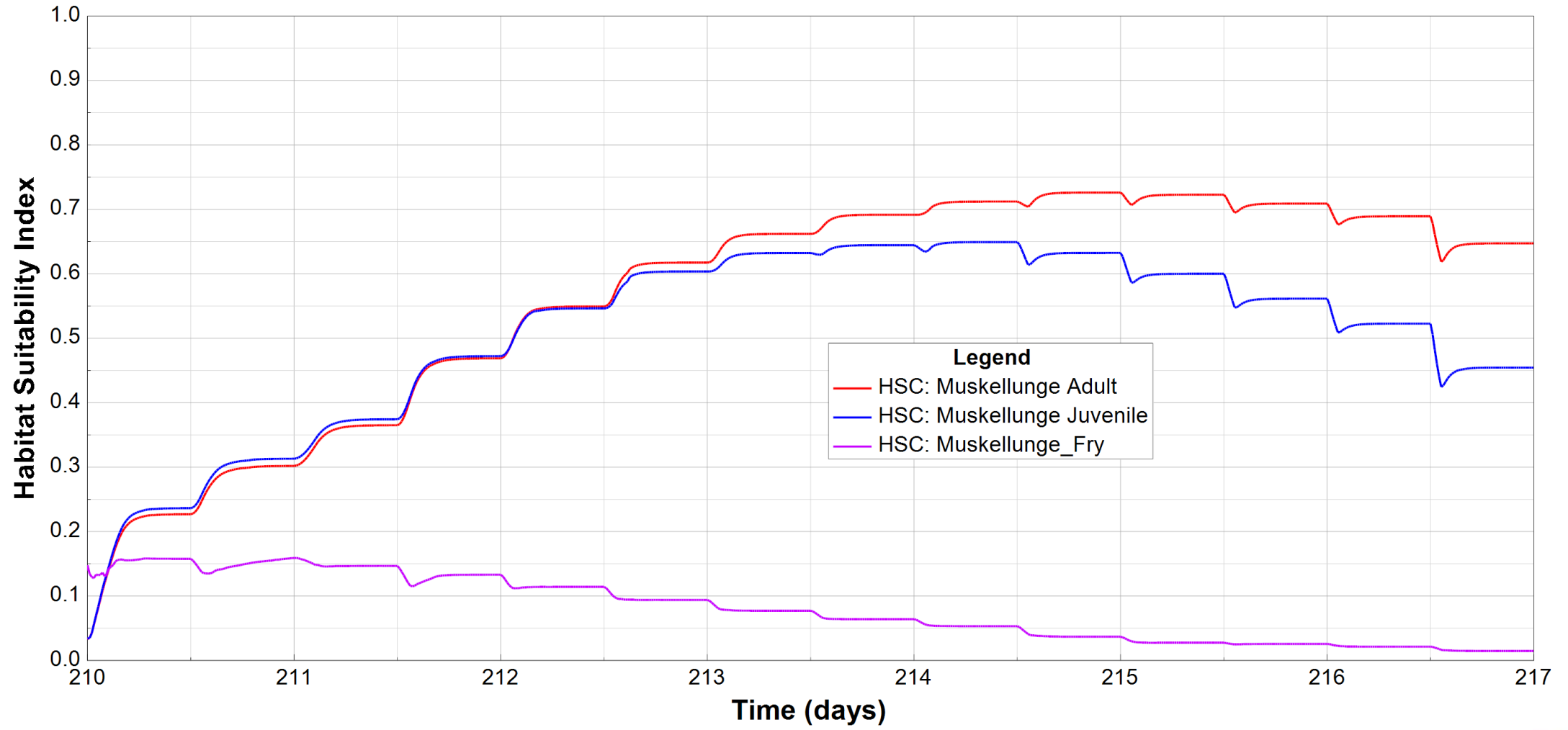


Suitability Curve: Velocity

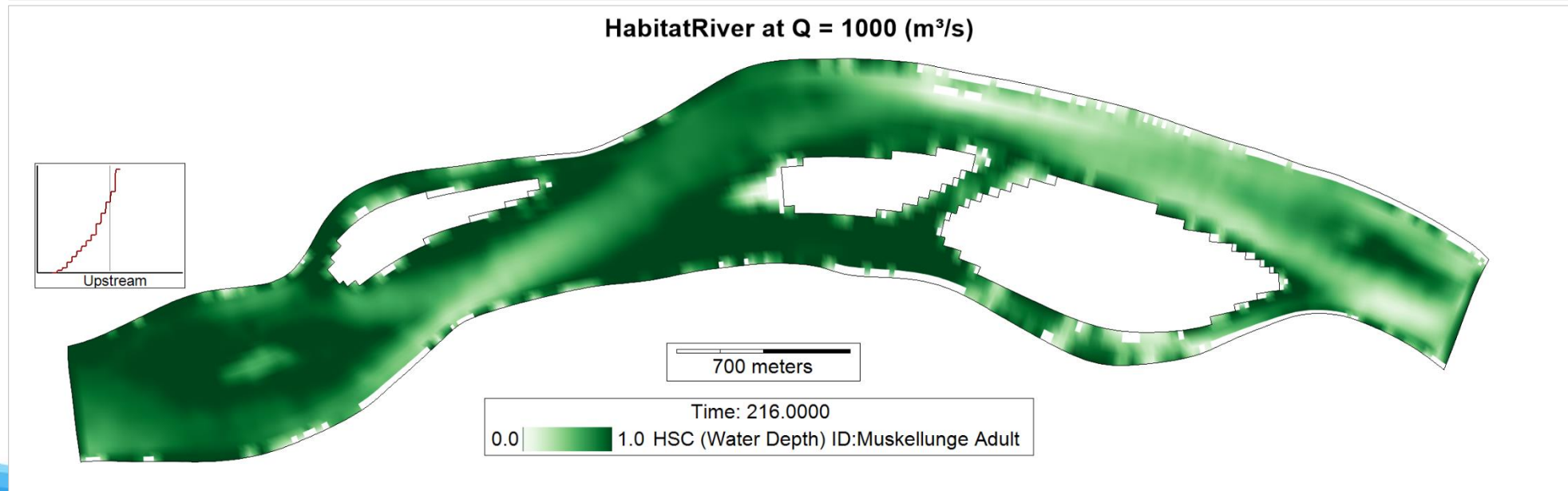
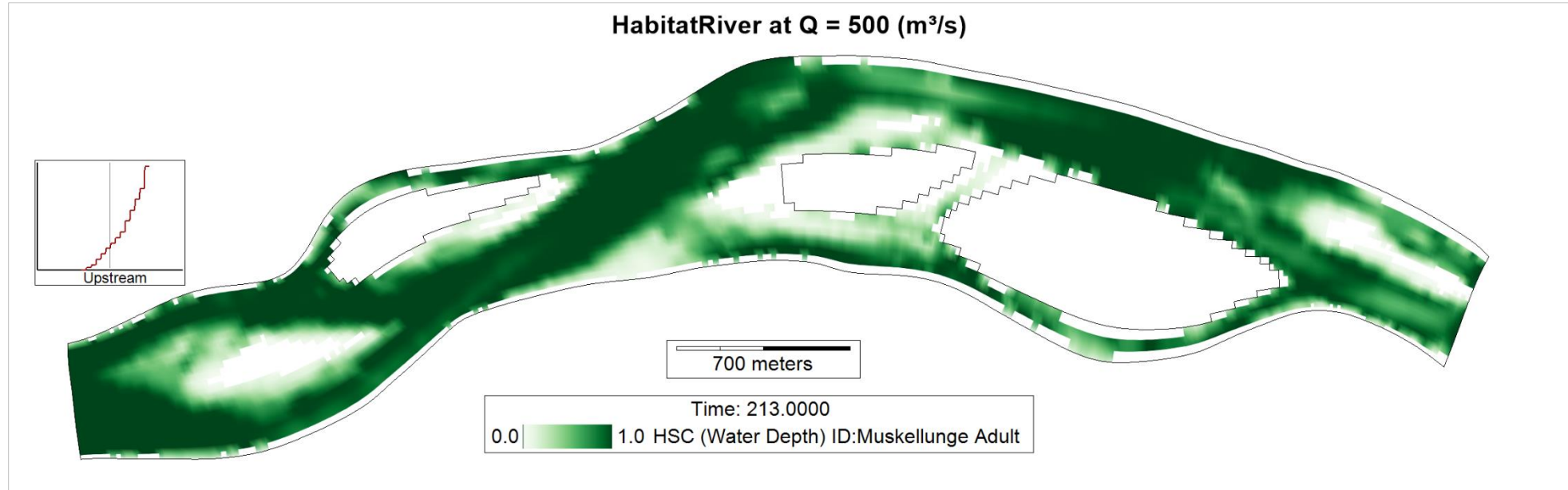
Weighted Useable Area vs Discharge for Muskellunge



Suitability Index Time Series for Muskellunge



Suitability Index Muskellunge Adult in ViewPlan



Critical Limits Analysis

- Muskellunge (*Esox masquinongy*)

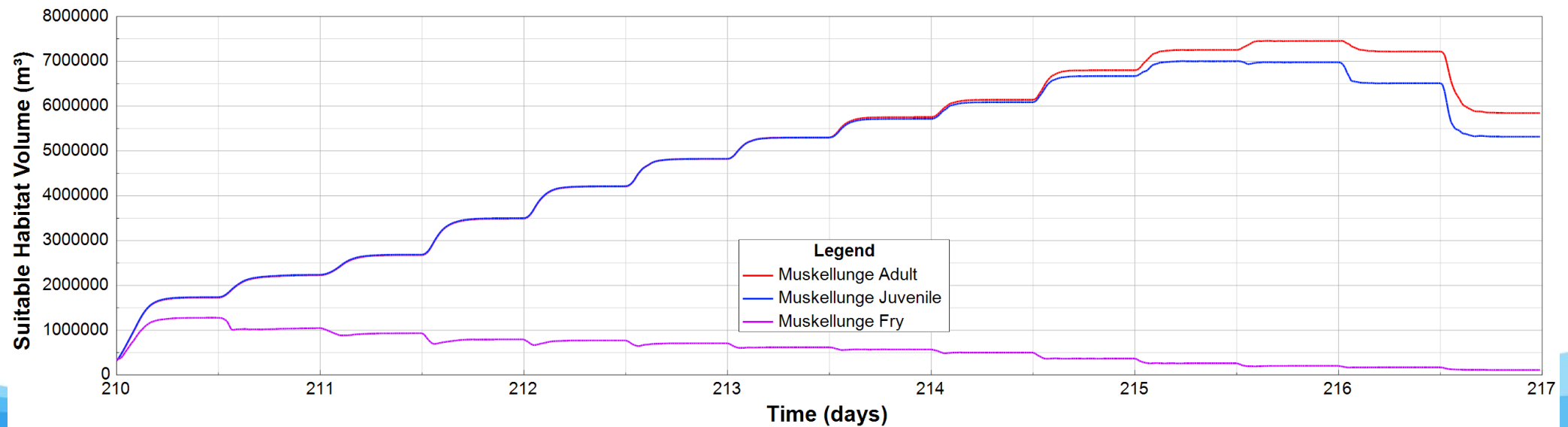
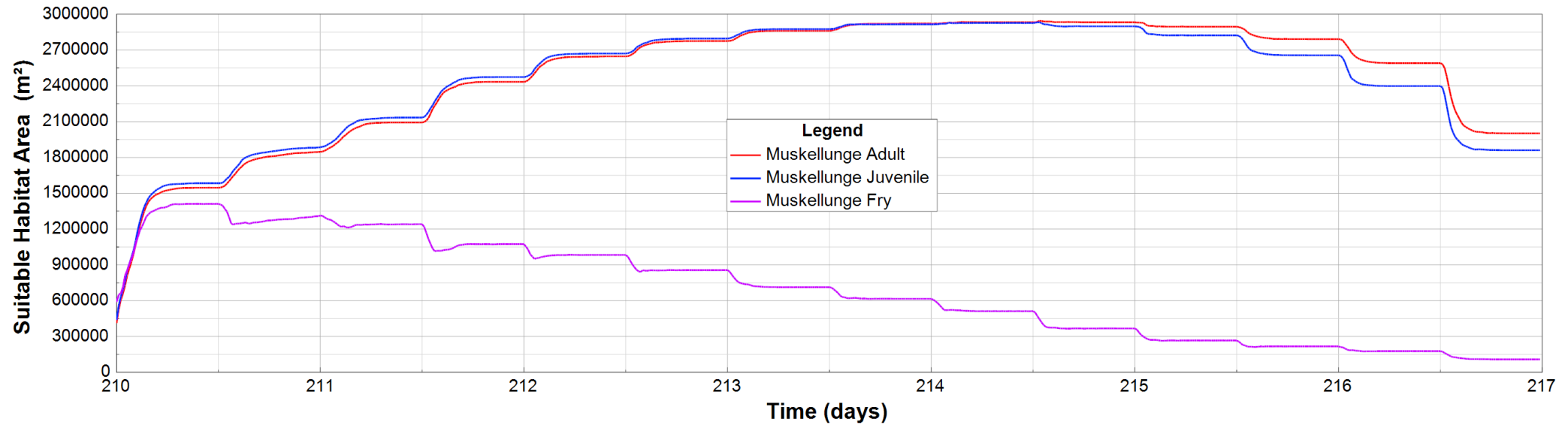


Critical Limits Range for Muskellunge

Parameter	Range	Muskellunge		
		Adult	Juvenile	Fry
Water Depth (m)	Minimum	0.3	0.26	0
	Maximum	4	4	4
Velocity (m/s)	Minimum	0	0	0
	Maximum	1.5	1.2	0.4



Area and Volume Time Series for Muskellunge



Criteria Satisfied for Muskellunge Adult in ViewPlan

