
WF4313/6413-Fisheries Management

Class 18

A dark, atmospheric photograph of a fishing vessel at sea. The boat is a blue and white motor fishing vessel, likely a Class 18, with a large net being hauled in. Two crew members in bright yellow rain gear are visible on the deck. The background is a dark, overcast sky and calm water.

Announcements

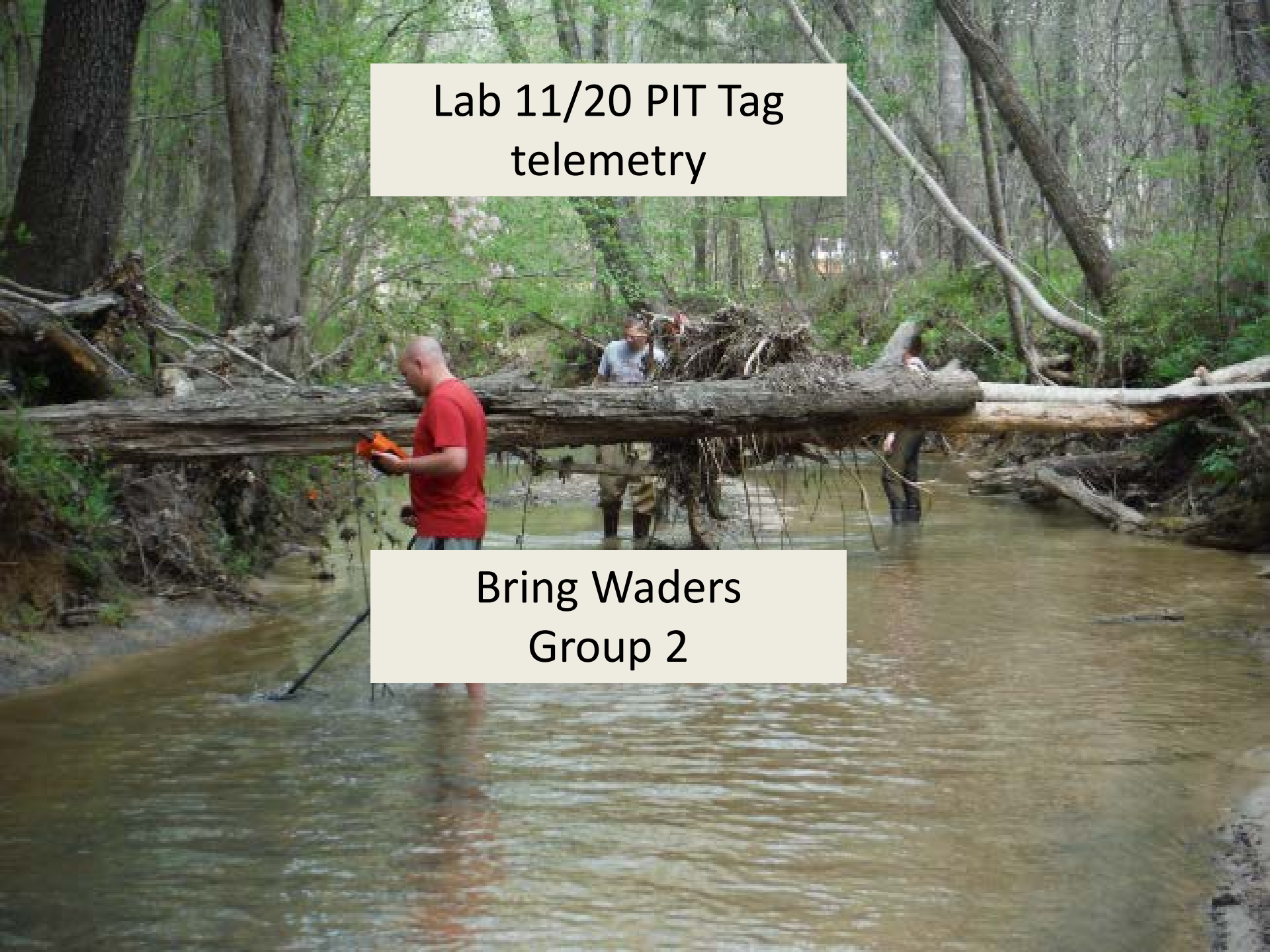


Revised Schedule**

- ~~October 30 = Group 1 @ Panther Creek~~
- ~~November 6th = Group 2 we'll do something~~
- November 13th = NO LAB... ☹
- Exam II = November 14th
- November 20th = Group 1 will do what group 2 did
- November 27th & December 4th ???

** Contingent on van availability





Lab 11/20 PIT Tag
telemetry

Bring Waders
Group 2

Tonight @ 5pm TH118

Pizza and Olives



Interested in chasing more lamprey?
Opportunities to assist on an
undergraduate research project.
Saturday November 17th



Lab Results...? Holy crap...

15
unique
tags!

Row Labels	P1	P2	P3	P4	P5	P6	Grand Total
384.0A0301E963			1		1		2
384.0A0301E978	1		1	1	1	1	5
384.0A0301E97D			1				1
384.0A0301E986			1				1
384.0A0301E992		1				1	2
384.0A0301E998					1		1
384.0A0301E999		1	1				2
384.0A0301E99B		1	1	1		1	4
384.0A0301E9A2		1					1
384.0A0301E9A7	1		1				2
384.0A0301E9AF	1						1
384.0A0301E9B0	1				1		2
384.0A0301E9B8	1	1		1	1		4
384.0A0301E9BC	1	1		1			3
384.0A0301E9C0		1				1	2
Count	6	7	7	4	5	4	

Row Labels	P1	P2	P3	P4	P5	P6	Grand Total	Pr(Detect)
384.OA0301E963			1		1		2	0.13
384.OA0301E978	1		1	1	1	1	5	0.33
384.OA0301E97D			1				1	0.07
384.OA0301E986			1				1	0.07
384.OA0301E992		1				1	2	0.13
384.OA0301E998					1		1	0.07
384.OA0301E999		1	1				2	0.13
384.OA0301E99B		1	1	1		1	4	0.27
384.OA0301E9A2		1					1	0.07
384.OA0301E9A7	1		1				2	0.13
384.OA0301E9AF	1						1	0.07
384.OA0301E9B0	1				1		2	0.13
384.OA0301E9B8	1	1		1	1		4	0.27
384.OA0301E9BC	1	1		1			3	0.20
384.OA0301E9C0		1				1	2	0.13
Count	6	7	7	4	5	4		
Pr(detect)	0.4	0.47	0.47	0.27	0.33	0.27		Pr(Missing any)
Pr(no detect)	0.60	0.53	0.53	0.73	0.67	0.73		0.06

Product of Pr(no detect)
Probability of capture over all 6
passes is 1-Pr(Missing any)

A large pile of dead fish, likely carp or similar species, is shown on the deck of a boat. The fish are densely packed, filling most of the frame. In the background, a calm lake is visible under a clear sky, with a line of trees on the far shore. The text "WHERE WE LEFT OFF" is overlaid in white, bold, sans-serif capital letters across the middle of the image.

WHERE WE LEFT OFF

Challenges to biodiversity

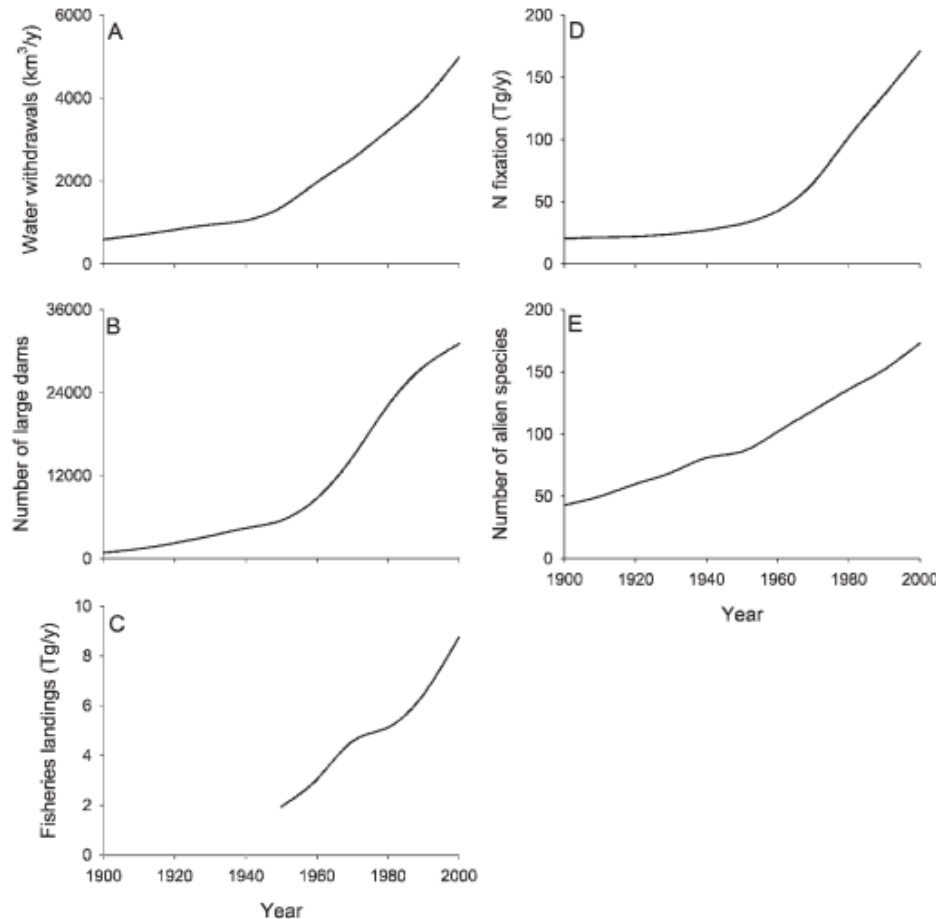
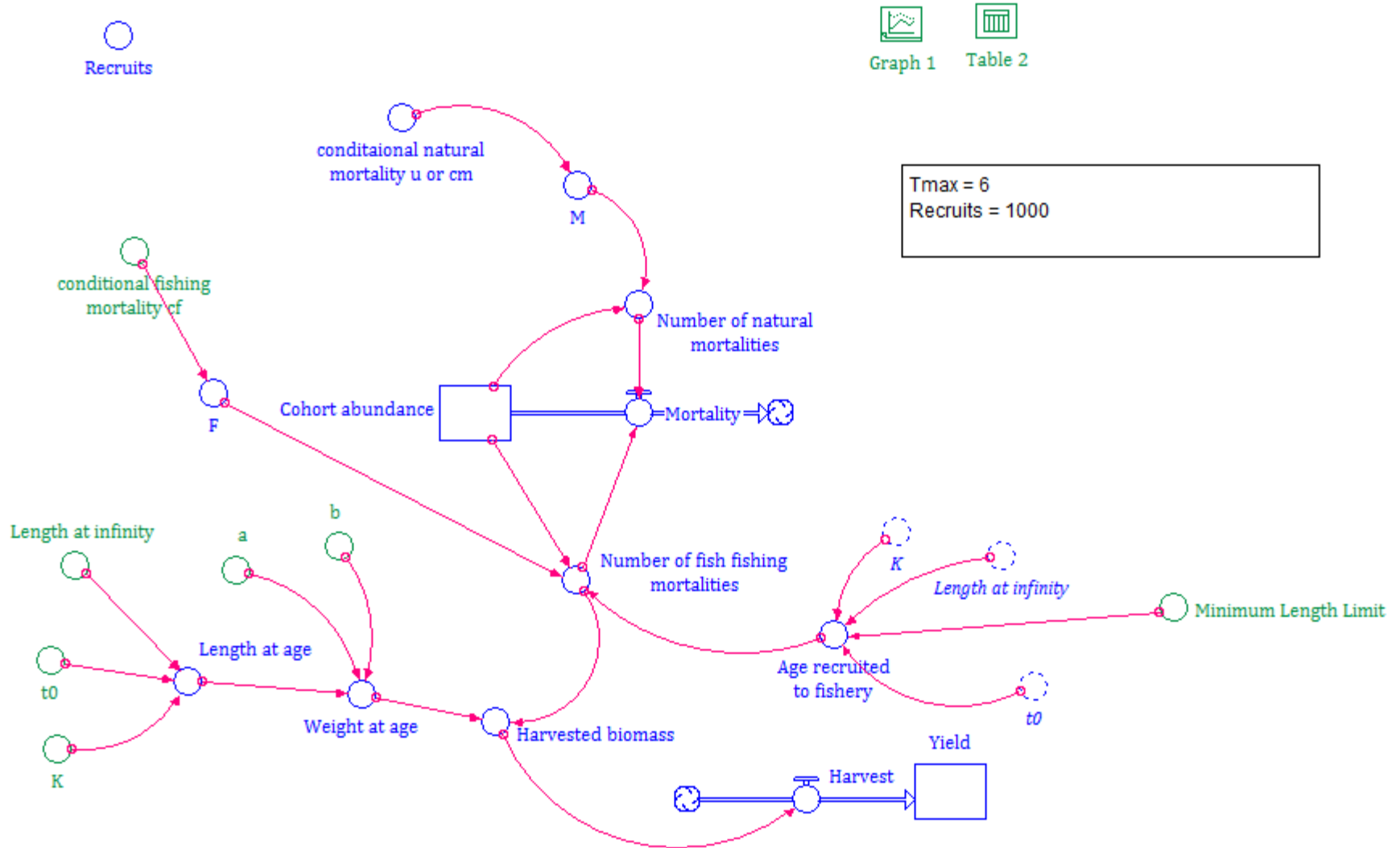


FIG. 1. Five examples of rising human pressures on the world's freshwater ecosystems. A.—Global water withdrawals (after Gleick 1993). B.—Number of large (>15 m high) dams (International Commission on Large Dams 2008). C.—Fisheries landings from inland waters (Allan et al. 2005a). D.—Global inputs of anthropogenically fixed N. Input from all natural sources is ~110 Tg/y (Vitousek 1994, Galloway et al. 2008). E.—Number of known alien species in the Laurentian Great Lakes (Ricciardi 2006).

Where is the habitat?



Fish Habitat



Elements of aquatic habitat

1. Amount

2. Chemical

- Dissolved oxygen, pH, salinity

3. Physical

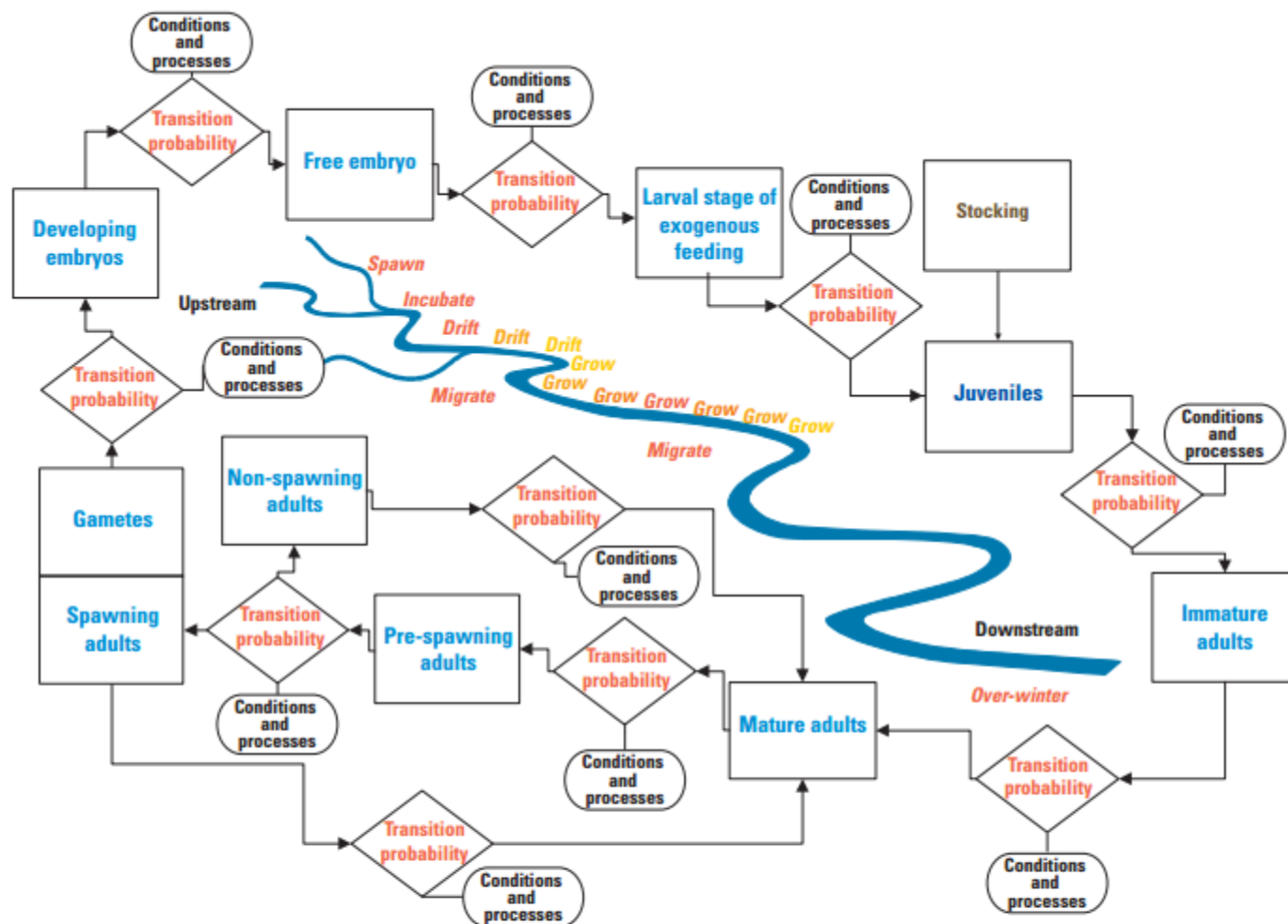
- Sediment, turbidity, substrate

4. Biological

- Macrophytes, Woody debris

Elements of aquatic habitat management

1. Restoration
2. Conservation
3. Mitigation



EXPLANATION



Indicates distinct life stages



Determines whether individual sturgeon complete the transition from one life stage to the next



Indicates transition from one life stage to the next



Indicates direction of sturgeon development



Figure 2. Conceptual model of *Scaphirhynchus* sturgeon life history.

An aerial photograph of a large body of water, likely a reservoir or a wide river. In the foreground, there is a small, elongated green island on the left and a large, light-colored sandbar on the right. The water is a murky, greyish-brown color. In the background, a hilly landscape with patches of green and brown is visible under a clear sky.

HABITAT MANAGEMENT

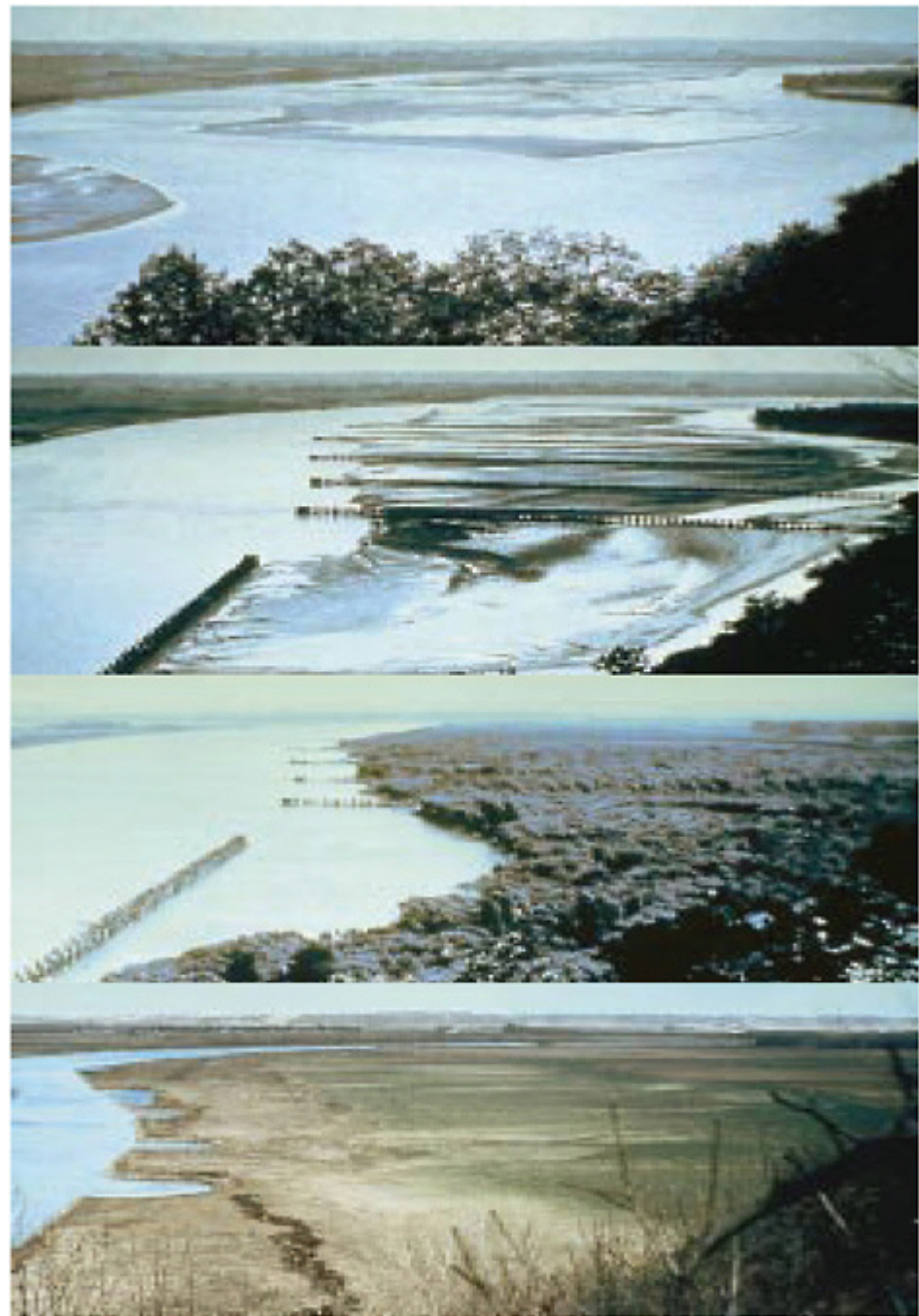
Lo. Mo. River @ Yankton



Channelization of the river



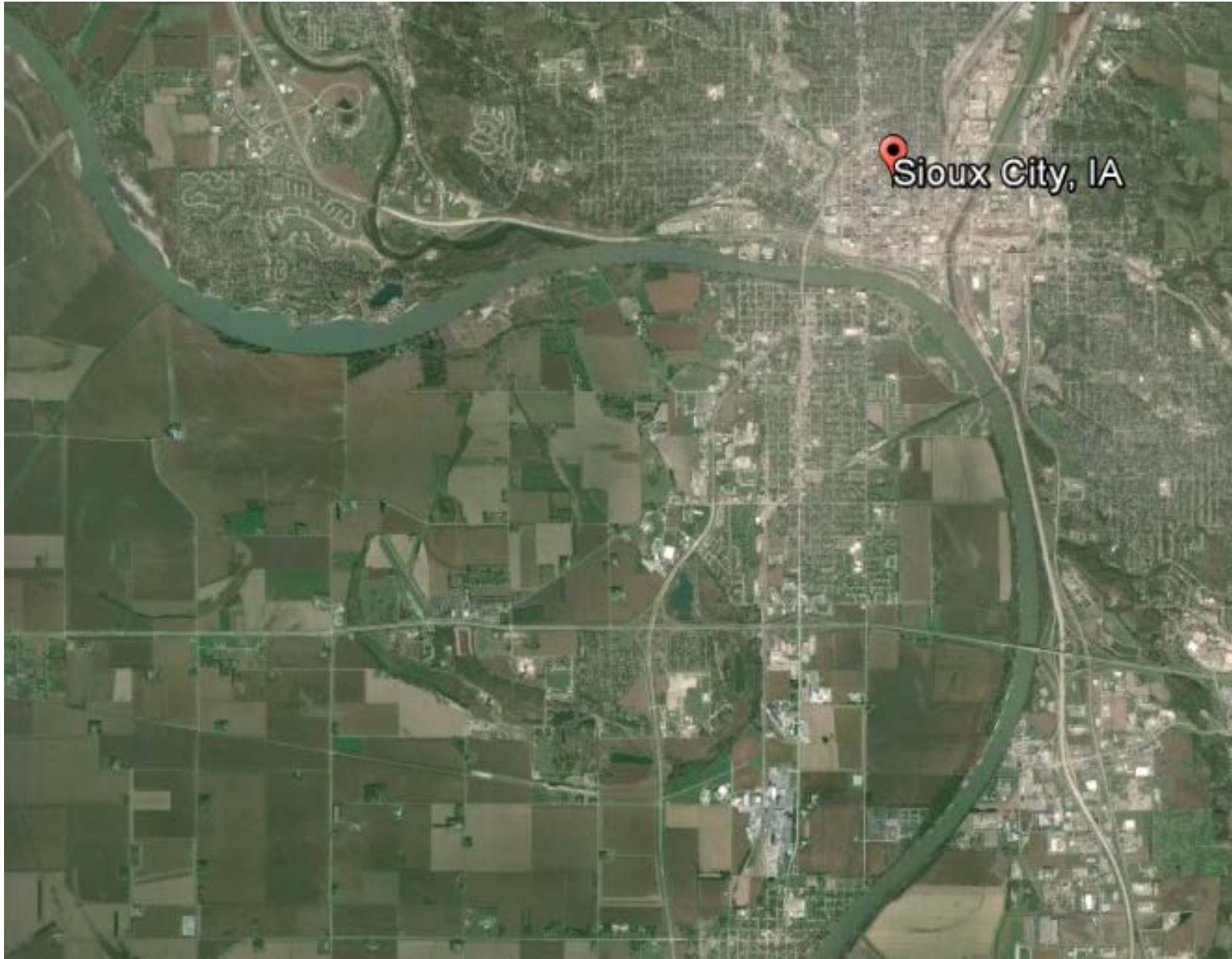
Indian Cave Bend on the Missouri River near river mile 517, about 18 miles upstream from Rulo, Nebraska. They illustrate the river before (1934; top photo) and after (1935, 1946, and 1977) the construction of brush dikes that narrowed and channelized the river.



Straightening Meanders



Lo. Mo. River @ Sioux City



Maintaining channels



Training outer bends



Flood control



Effects of channelization

1. Chemical

- Contaminants

2. Physical

- Sediment, turbidity, substrate, flow

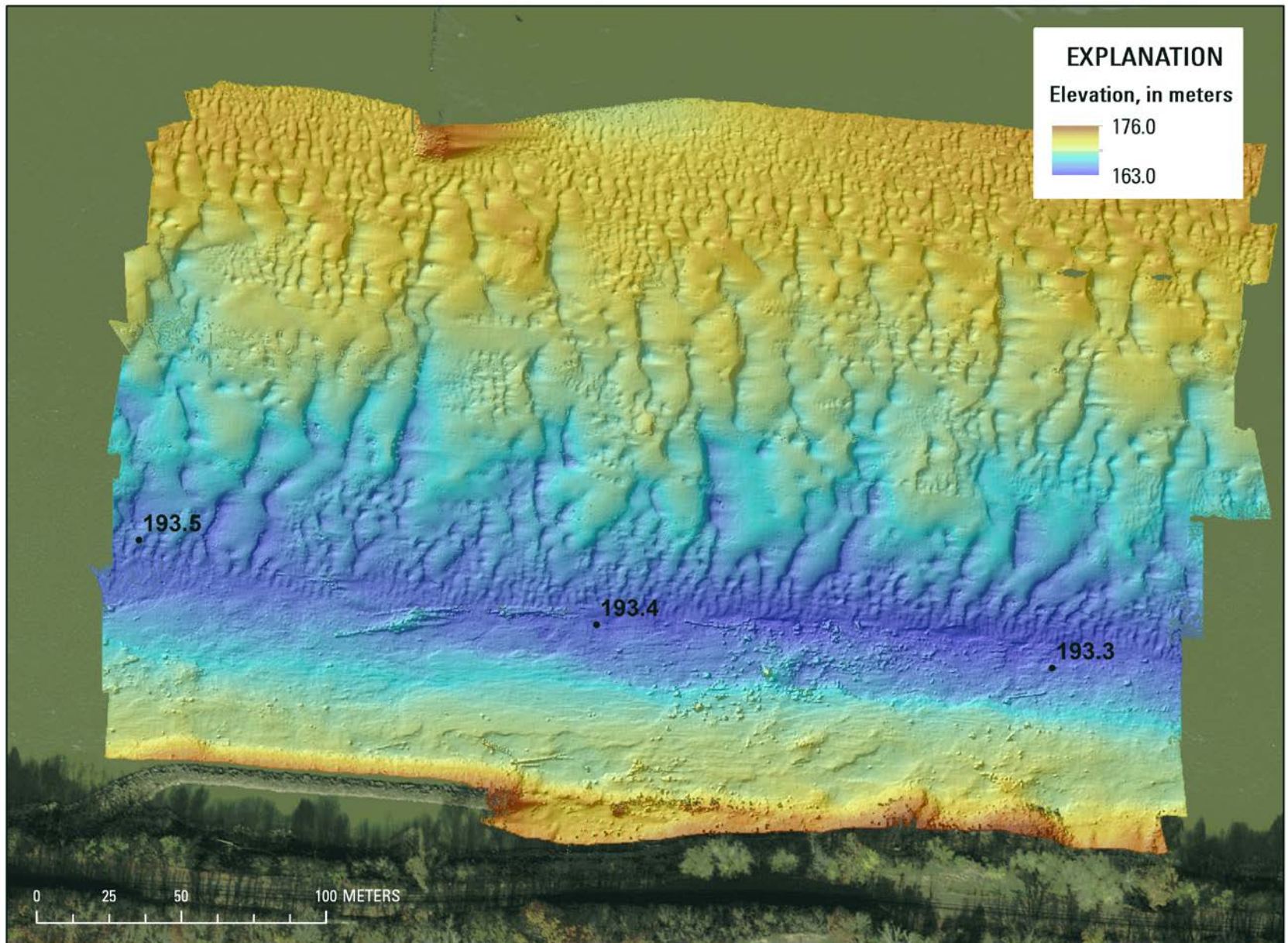
3. Biological

- Energetic demand, life history habitats, prey communities

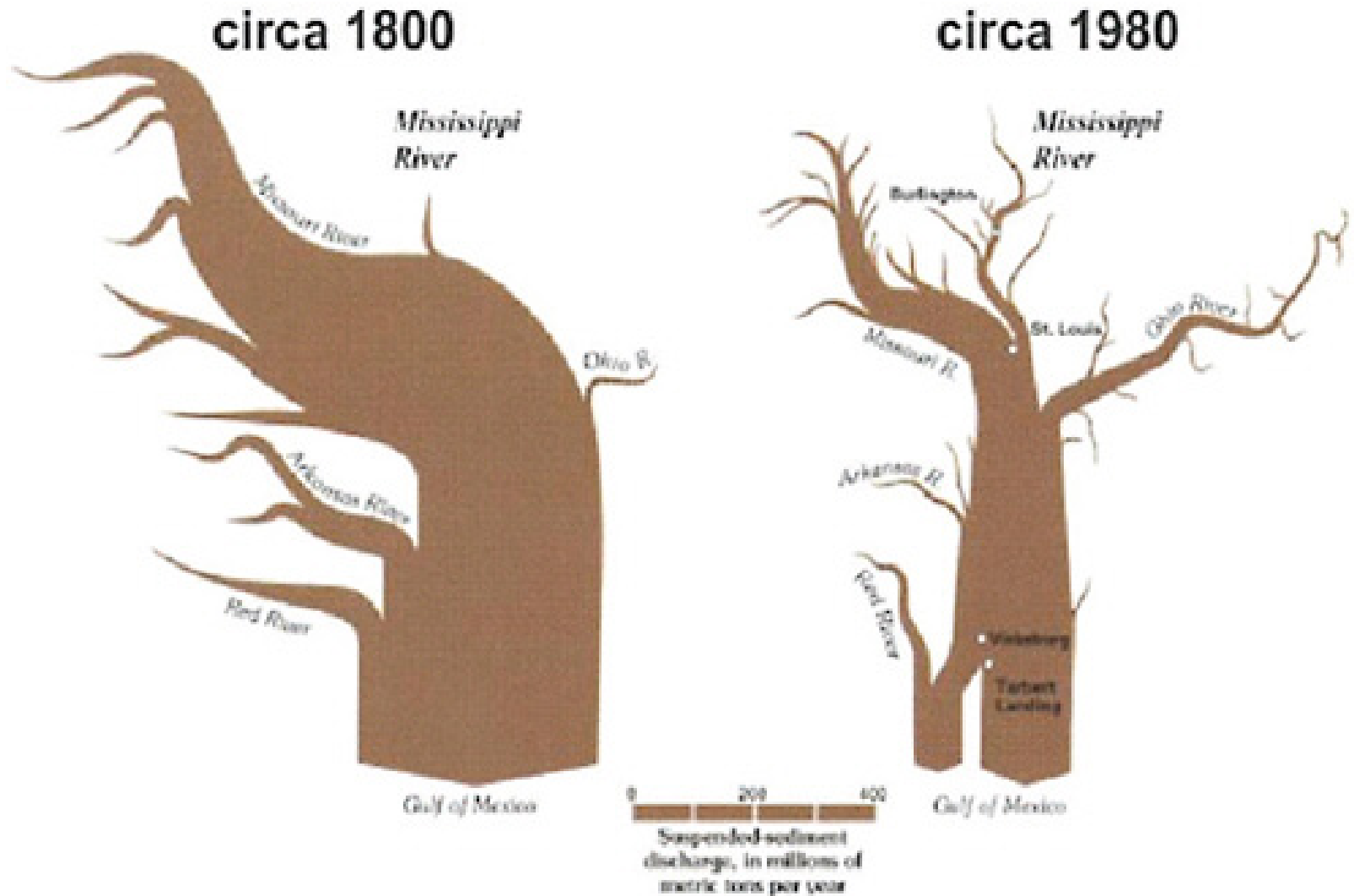
Elevated Flows



Dynamic Habitat



Sediment delivery





Upstream dams
allow sediment to
settle out &
increase water
clarity

Emergent Sandbar Habitat



Shared habitat



Restoration

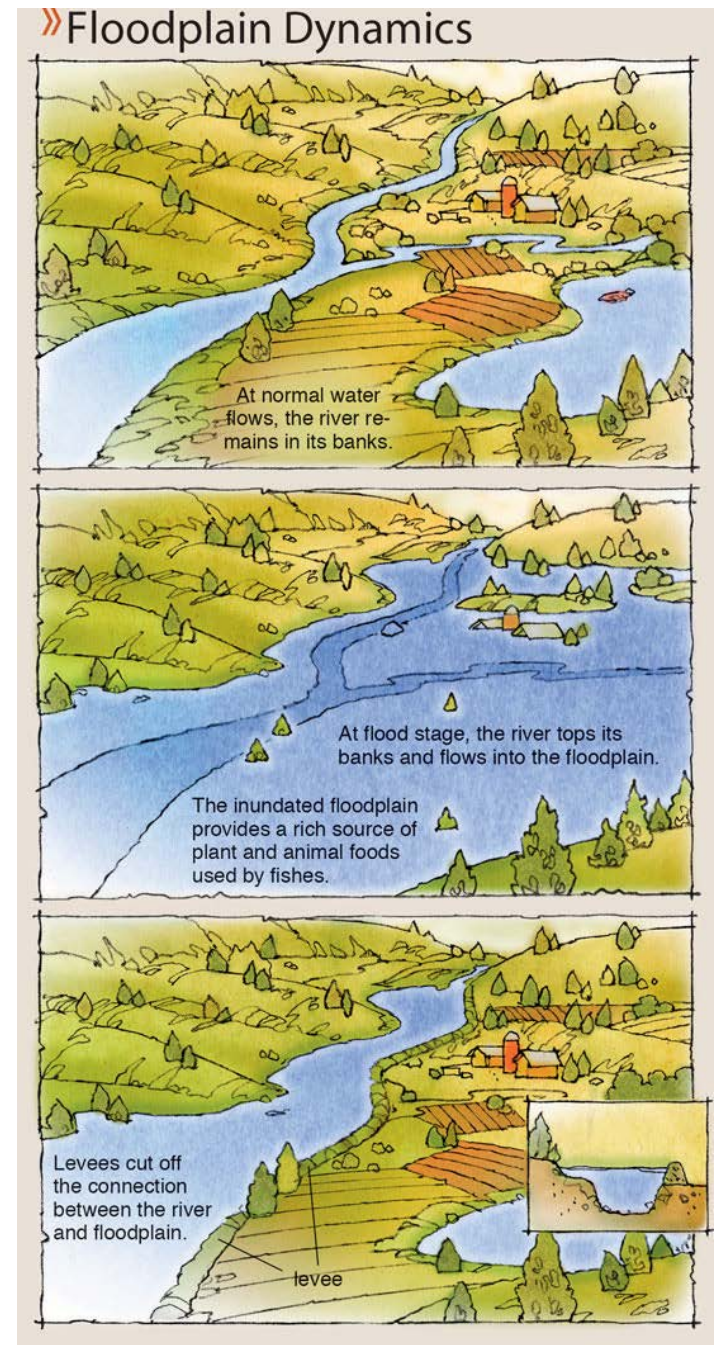


Floodplain connectivity



Floodplain dynamics

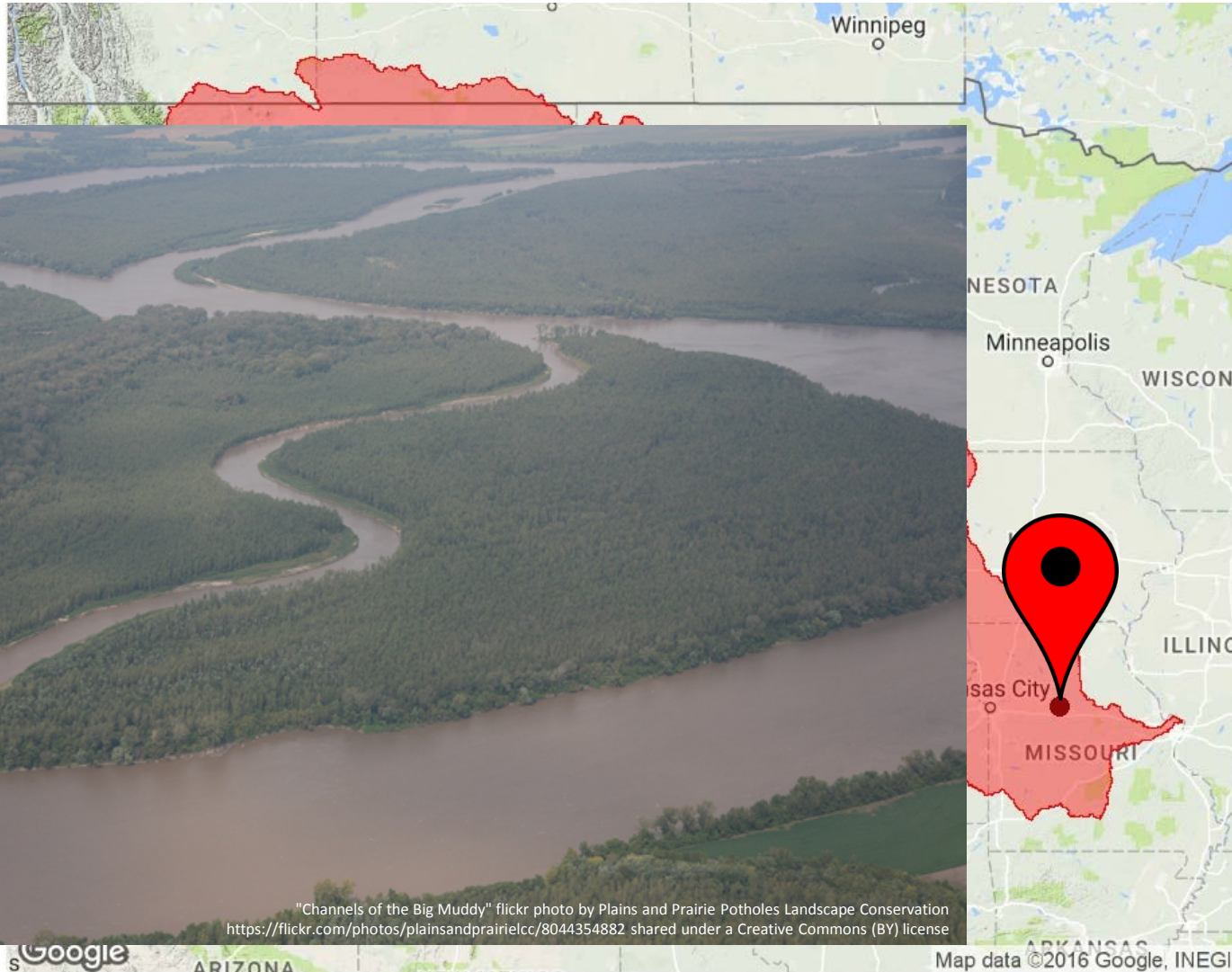
- Nutrient spiraling
- Dike notching



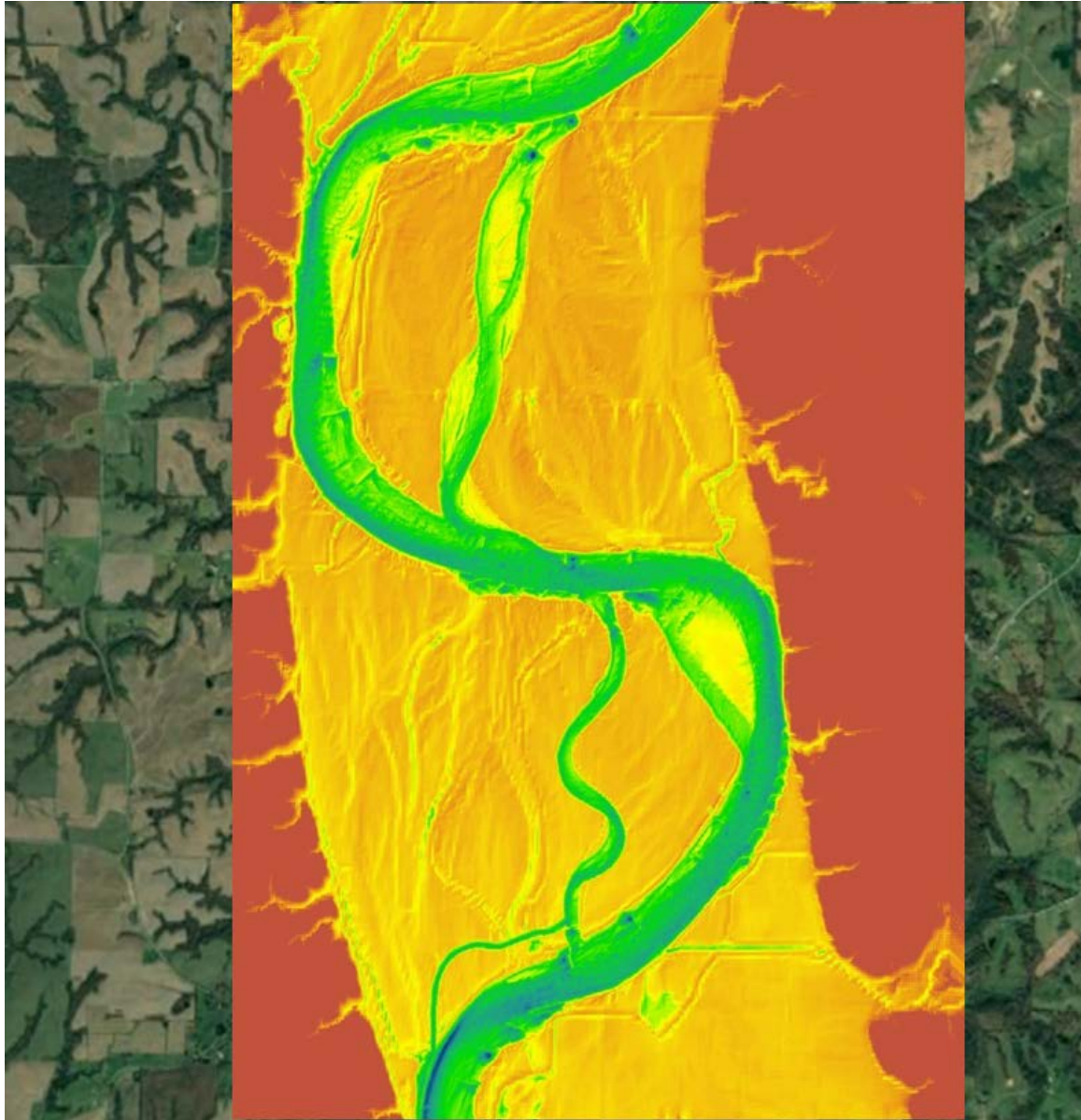
Floodplain connectivity



Habitat Restoration



Habitat Restoration

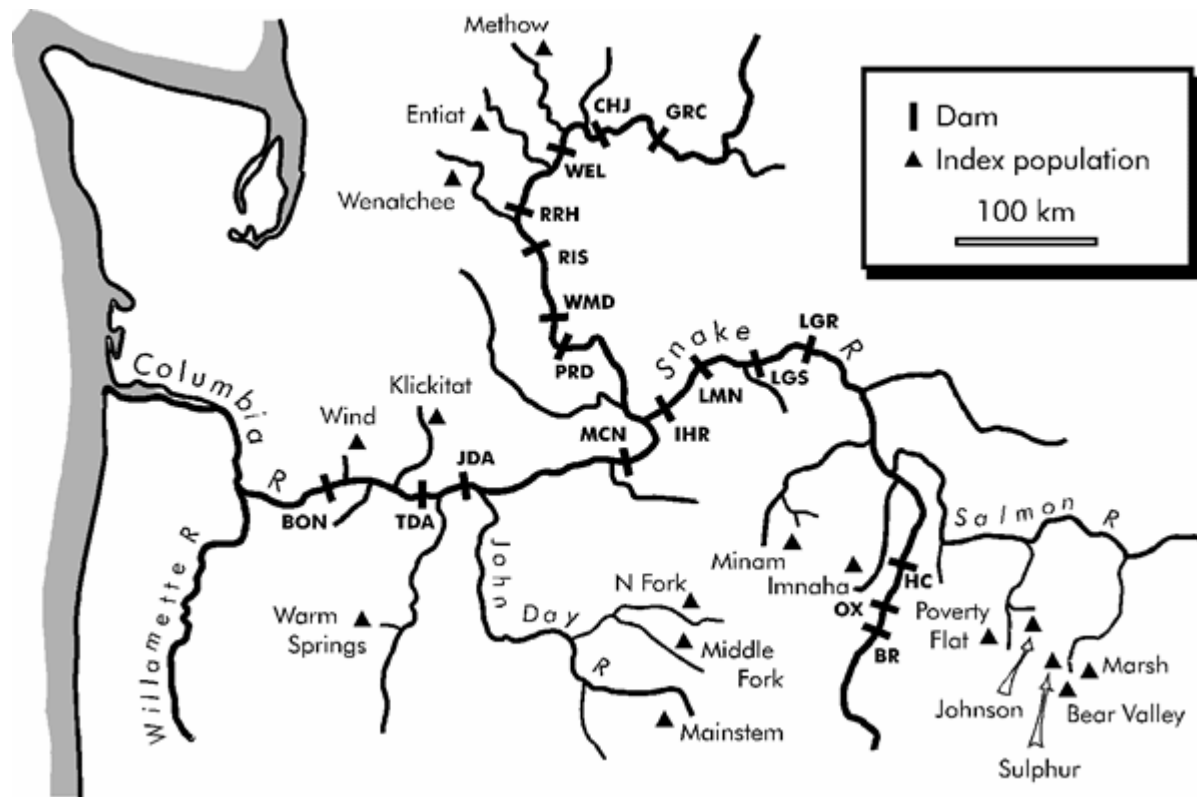


An aerial photograph of a large body of water, possibly a bay or estuary. In the foreground, there is a small, elongated green island on the left and a large, light-colored sandy spit on the right. The water is a murky, greyish-brown color. In the background, a distant shoreline with green fields and some buildings is visible under a clear sky.

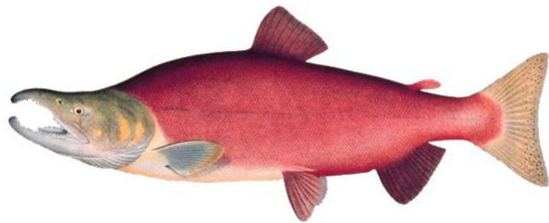
RESTORATION, CONSERVATION, & MITIGATION EXAMPLE

Restoration, Conservation, & Mitigation Example

- Supplement population for lost habitat
- Example: Dams & anadromous fish



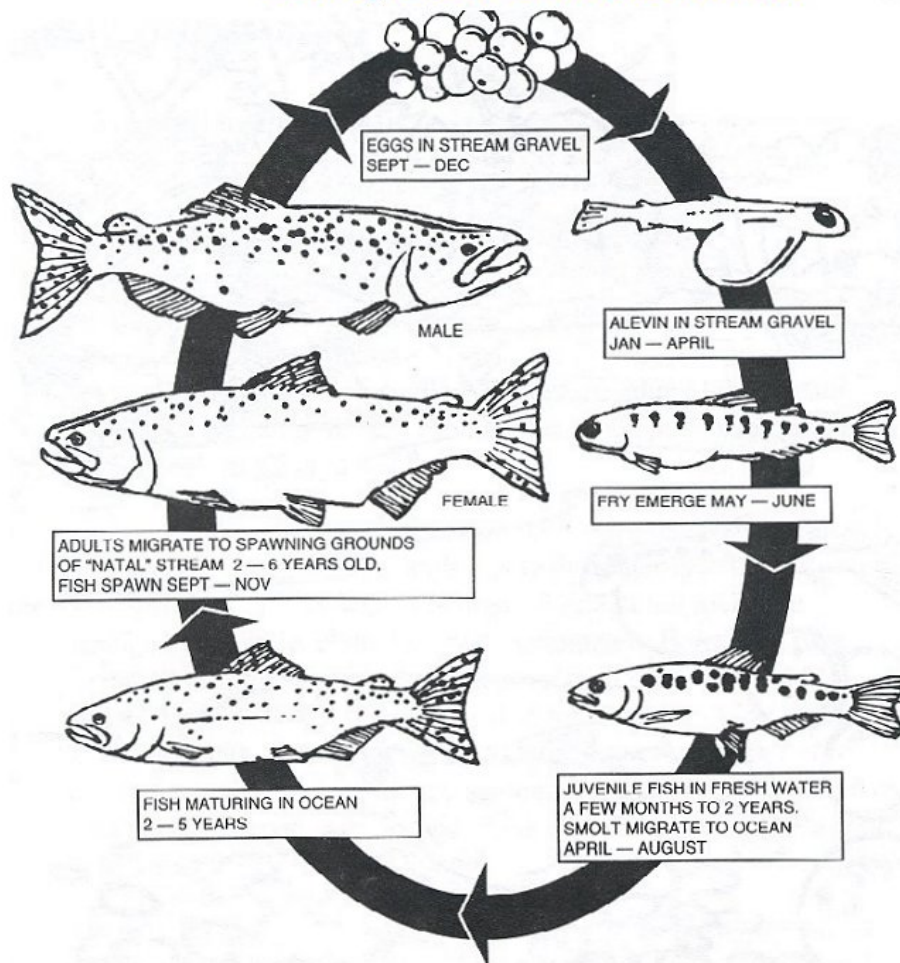
Columbia Basin



Anadromous life history



Life Cycle of Chinook Salmon



Habitat restoration

- Watershed improvements (land uses, strategic land acquisitions)
- Improve riparian corridors (Nutrients, sedimentation, thermal)
- Improve stream connectivity (stream reconnection, fish ladders, physical transport)

Pahsimeroi River

Land acquisition

Stream reconnection

