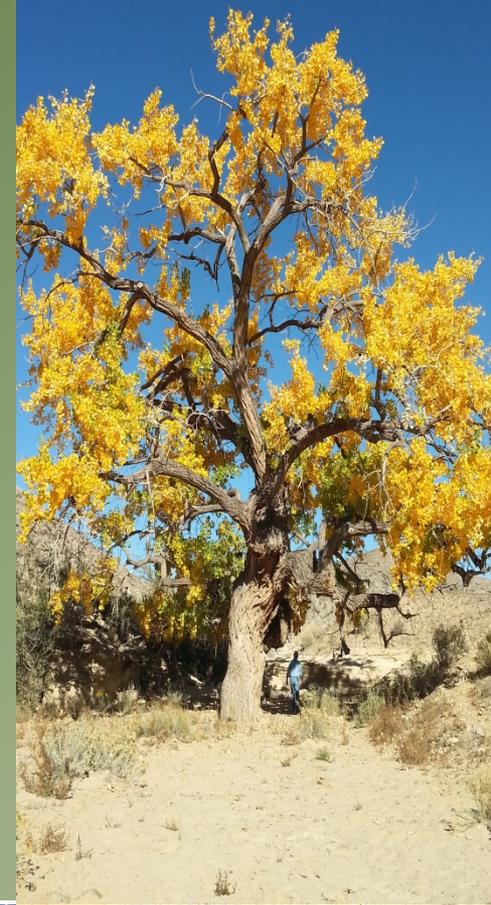


Phase II Channel Restoration: Improving Habitat Conditions

Annual Meeting

Durango, Colorado

May 13, 2015



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2015 Long Range Plan

Goal 2.1: Provide suitable habitat to support recovery of CPM & RBS

- **Action 2.1.1:** Create & maintain habitat complexity to minimize habitat loss & degradation for endangered fish

Goal 4.3: Evaluate habitat restoration strategies & monitor habitat restoration projects

- **Action 4.3.1 & 2:** Evaluate & implement habitat restoration strategies; monitor habitat restoration projects



Importance of backwaters, secondary channels & island complexes



San Juan R. Changes since 1930's



- **Narrower, less complex channel**
- **Open sand bars vegetated by Russian olive & saltcedar**
- **2° channels disconnected from main channel & choked with non-native vegetation**
- **50% loss of backwaters & 27% loss of 2° channels since 1992**

Flow recommendations have not been successful





Phase I & II Restoration

- **Phase I: TNC received \$400,000 from NM River Ecosystem Restoration Initiative (RERI) in late 2009**
 - **Six RERI sites restored by Dec. 2011**
 - **3.5 miles of secondary channels**
 - **6.5 acres of non-native vegetation removed**
 - **Monitoring began in 2012-present**
 - **Phase II: TNC received a grant from BHP Billiton & PNM in late 2012**
 - **Restored a large site complex (RM 134-137)**
- 
- 

RM 136.4R
4.3 miles @ \$23.7K/mile



RM136.4L
.22 miles @ \$28.4K/mile



Phase II Project Milestones

- **Site selection meeting**—Aug. 2013
- **Site reconnaissance**—Oct. 2013
- **Topographic survey work**—Jan. 2014
- **Restoration site design**—Mar. 2014
- **Archaeological survey & report**—Jun. 2014
- **401 permit submitted**—June 2014
- **401 & 404 permits issued**—Oct. 2014
- **Construction starts**—Oct. 2014
- **Construction completed**—Nov. 14, 2014
- **Re-treated 6 RERI sites (NFWF)**—Nov. 21.







**4.7 miles 2° channel restored
17 acres non-native vegetation removed**



















2014 RERI Larval Fish & 2013 Small-bodied Fish Monitoring

- 5 monthly larval fish surveys conducted; 16 collections made at RERI sites; small-bodied fish sampled in Sept.
- 970 age-0 fish, 9 species collected, including 3 RBS larvae; 4 age-1⁺ CO Pikeminnow
- 74% of larval fish collected were natives in RERI sites vs. 61% in control sites (n = 17)
- 1 RBS & CPM sub-adult captured; mean density of Redshiner, Channel Catfish & Flannelmouth Sucker was lower in restored channels vs. controls

Conclusion: Restored channels provide suitable habitat for larval & small-bodied fish

RERI Sites 2013

	Sampling Date (2013)				
RERI Site	April 22 (472 cfs)	May 21 (1,300 cfs)	June 10 (610 cfs)	July 16 (1,040 cfs)	July 30 (730 cfs)
RM 132.2	*				
RM 132.0					
RM 130.7 A	*				
RM 130.7 B					
RM 128.6	*				
RM 127.2	*				

	Flowing w/ nursery habitat
	Flowing, no nursery habitat
	Not flowing, no nursery habitat

From: Farrington,
Brandenburg, & Platania

Phase II Monitoring Questions

- **How do aquatic meso-habitats in restored channels change seasonally and between years?**
- **How do the abundances of larval & small bodied fish change with habitat changes in restored channels?**
- **Do small-bodied fish have preferences for specific meso-habitats in restored channels?**
- **How do environmental flow releases & large flood events affect aquatic habitats in restored channels?**
- **How do habitat features and larval & small bodied fish abundance compare between restored & control sites?**

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San Juan Dineh Water Users & Ancestral Lands Crew

SJRRIP Biology Committee & Peer Reviewers

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Questions?

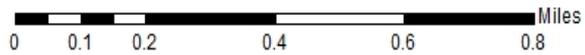






Legend

-  Phase_II_Pressure
-  Phase_II_Transect
-  Phase_II_Channel



Center for Watershed Protection

Sampling Date	Measurements
Pre-spring runoff (April)	M, XS, E, LF, SBF
Post-spring runoff; includes environmental flow releases, Navajo Dam; timed with presence of razorback sucker and Colorado pikeminnow larvae (mid- to late July)	M, XS, E, LF, SBF
Post-monsoon (August-September)	XS, E
Late fall (October); after irrigation season	M, XS, E, LF, SBF

4 Methods to Promote Channel Complexity

- Secondary channel inlet re-establishment, cleaning
- Excavation of portions of 2^o channel
- Mechanical clearing/chemical treatment of Russian olive, saltcedar
- Secondary channel scouring/flushing



Presentation Outline

- **Background: why we are doing secondary channel restoration**
- **Update on Phase II channel restoration**
- **Monitoring Phase I RERI sites: how are the sites performing?**
- **Monitoring Phase II restoration site**

