



PENOBSCOT RIVER RESTORATION TRUST

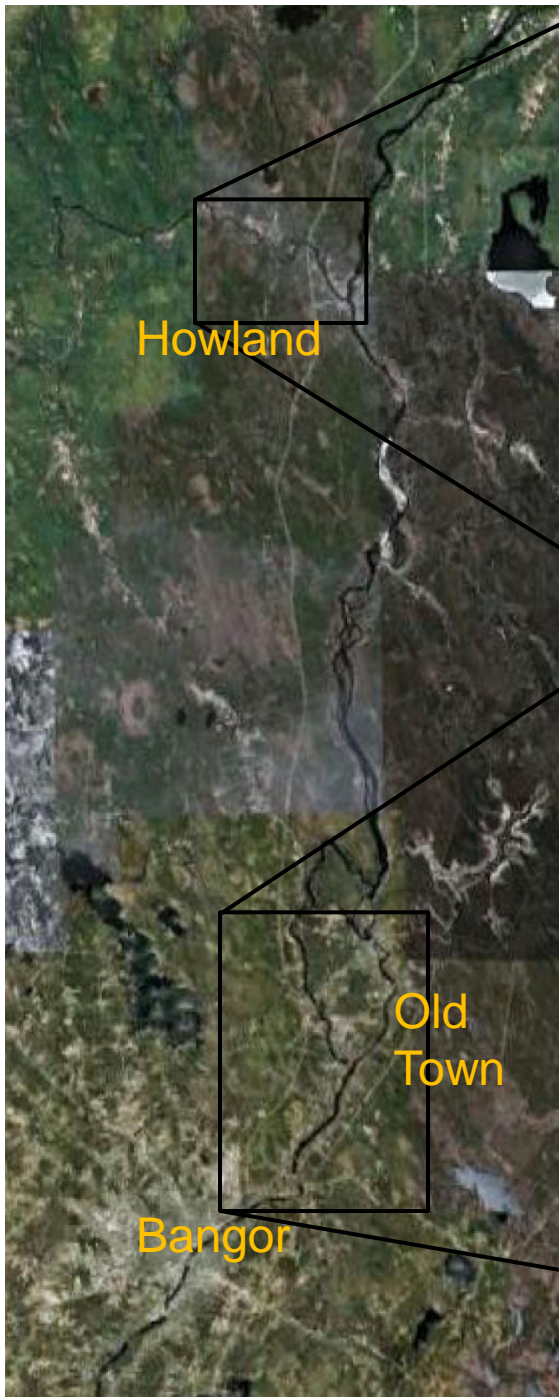
AMERICAN RIVERS ~ ATLANTIC SALMON FEDERATION ~ MAINE AUDUBON ~ NATURAL RESOURCES COUNCIL OF MAINE ~ PENOBSCOT NATION ~ THE NATURE CONSERVANCY ~ TROUT UNLIMITED

Photographic Survey



Daniel F. Belknap, Alice R. Kelley, Andrew R. Heller
Department of Earth Sciences

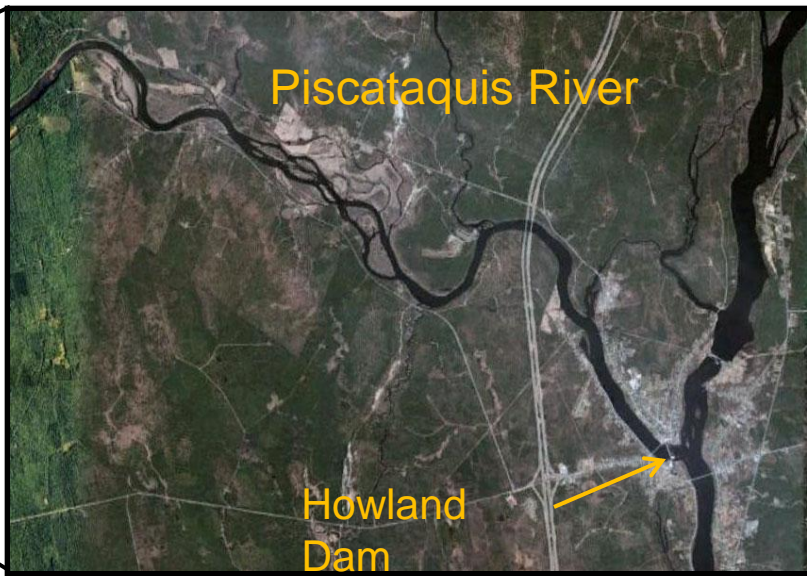




Howland

Old
Town

Bangor



Piscataquis River

Howland
Dam

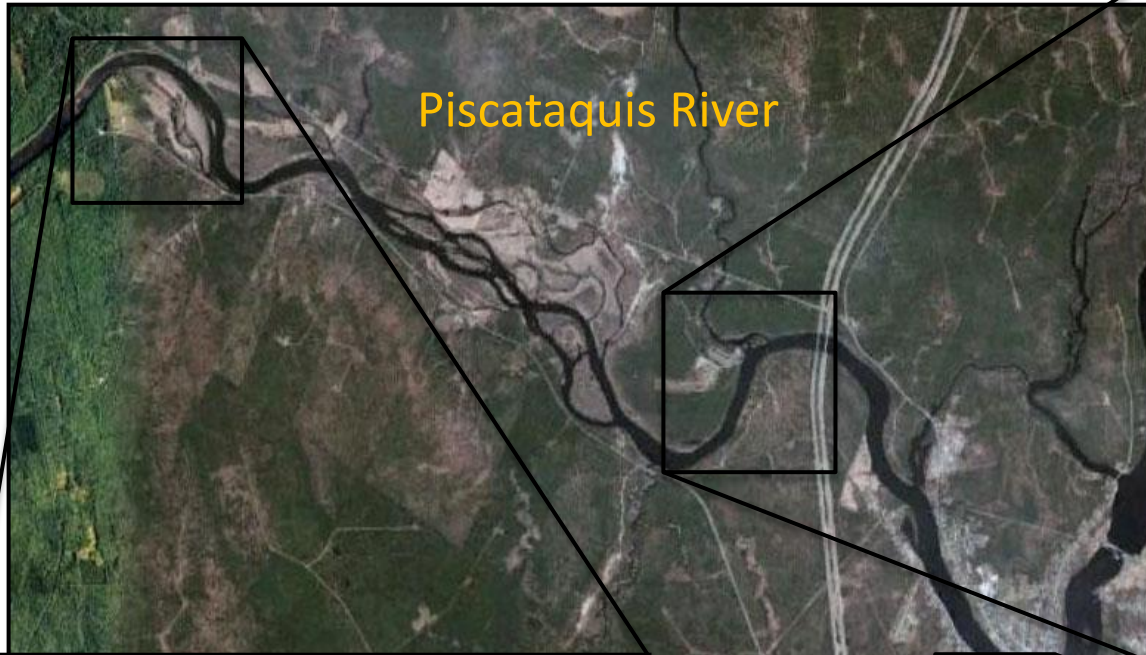


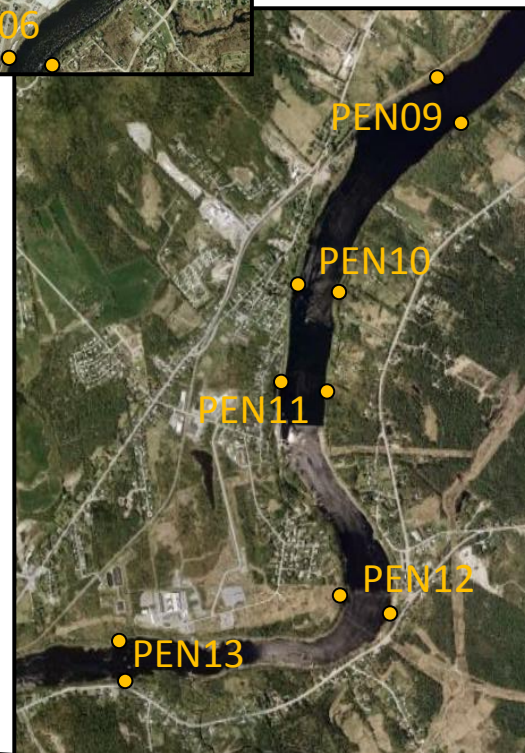
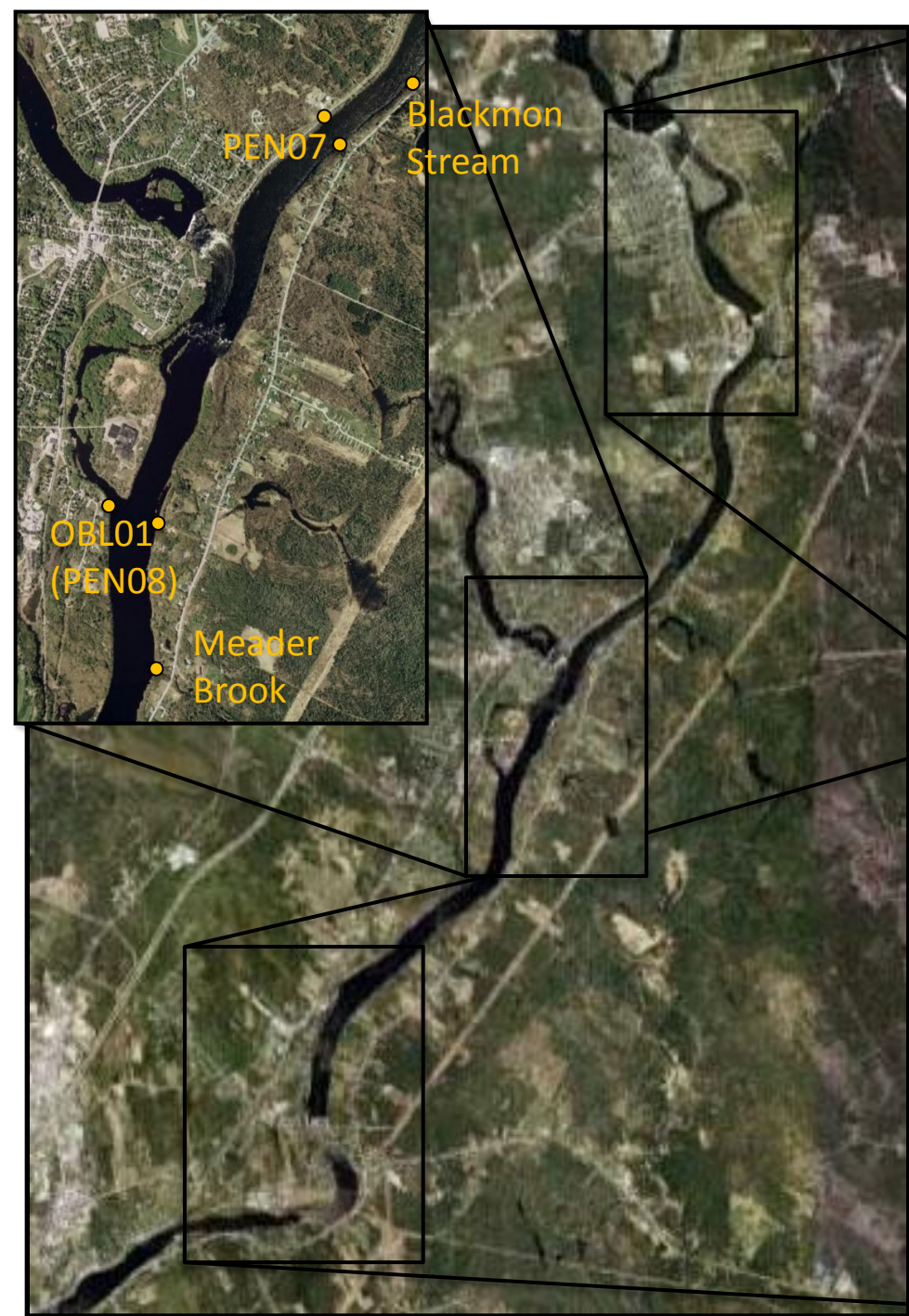
Milford Dam

Great Works
Dam


Penobscot River

Veazie Dam





Procedure

- 
- A photograph showing a person standing in a field of bare, thin trees. The person is wearing a grey jacket, dark pants, and a cap, and is looking down at a device in their hands. In the background, there is a body of water and a line of trees under a clear blue sky.
- Collection of primary photographs
 - Record GPS location
 - Measure azimuth of primary photos
 - Record conditions
 - Record notes about access
 - Document Photos in notes

Primary Photographs



Penobscot River Cross
Section 7 Left Edge
(Facing Northwest)

Permanent Features



Data Archive

- Data archived in three formats
 - Raw Images
 - Report with notes and imagery
 - Google Earth

29. PENTLE

Location: N 44 53' 21.6" W 68 39' 18.7"

Site Description: Chiseled square in 4 feet by 2 feet boulder at edge of water behind house #629 on Rt. 178 streamward of 3-stemmed hardwood tree.

Special Access Notes: During Round 3, landowner suggested that there was no need to check in during subsequent visits.

Survey Round	Date	Time
Round 1	01/30/2010	1206
Round 2	04/01/2010	1030
Round 3	06/09/2010	1351
Round 4	08/20/2010	1002
Direction	Bearing	Magnetic Declination
Across	304°	17.1° W
Upstream	45°	17.1° W
Downstream	249°	17.1° W



Figure 29a: Round 1 (01/30/2010) View Downstream / View Across / View Upstream



Figure 29b: Round 2 (04/01/2010) View Downstream / View Across / View Upstream



75

Figure 29c: Round 3 (06/09/2010) View Downstream / View Across / View Upstream




Figure 29d: Round 4 (08/20/2010) View Downstream / View Across / View Upstream



76


Google Earth




PIS1RE

The Penobscot River Monitoring Project Photographic Survey (Rounds 1 - 4)
 Piscataquis River Cross Section 1 - Right Edge
 N 45° 15.995' W 068° 41.753"

Round 3 [View Upstream](#) / [View Across](#) / [View Downstream](#)



Round 4 [View Upstream](#) / [View Across](#) / [View Downstream](#)



Title	Penobscot River Monitoring Project
Sub Title	Photographic Survey Rounds 1 - 4
Location	N 45° 15.995' W 068° 41.753"
Datum	Lat / Lon WGS 84
Elevation	60m
Bearing	40° (17.1° W)
Bearing Upstream	332° (17.1° W)
Bearing Downstream	130° (17.1° W)
Round 3	06:08:2010 1119
Round 4	08:19:2010 1126
Time Zone	(GMT-04:00) Eastern Daylight Time
Camera Make	NIKON CORPORATION
Camera Model	NIKON D5000
Camera Software	Ver.1.00
GPS Unit	NIKON GP-1

Directions: [To here](#) - [From here](#)

8629 ft

Imagery Date: Jul 25, 2007

Image © 2010 DigitalGlobe

45°16'03.30" N 68°45'57.60" W elev 295 ft

Eye alt 30395 ft

Problems

Access

- Permission from Landowners
- Finding Landowners

Consistency of Photo Sites

- Due to changing water conditions
- Due to changes in access permission
- Seasonal access to monuments

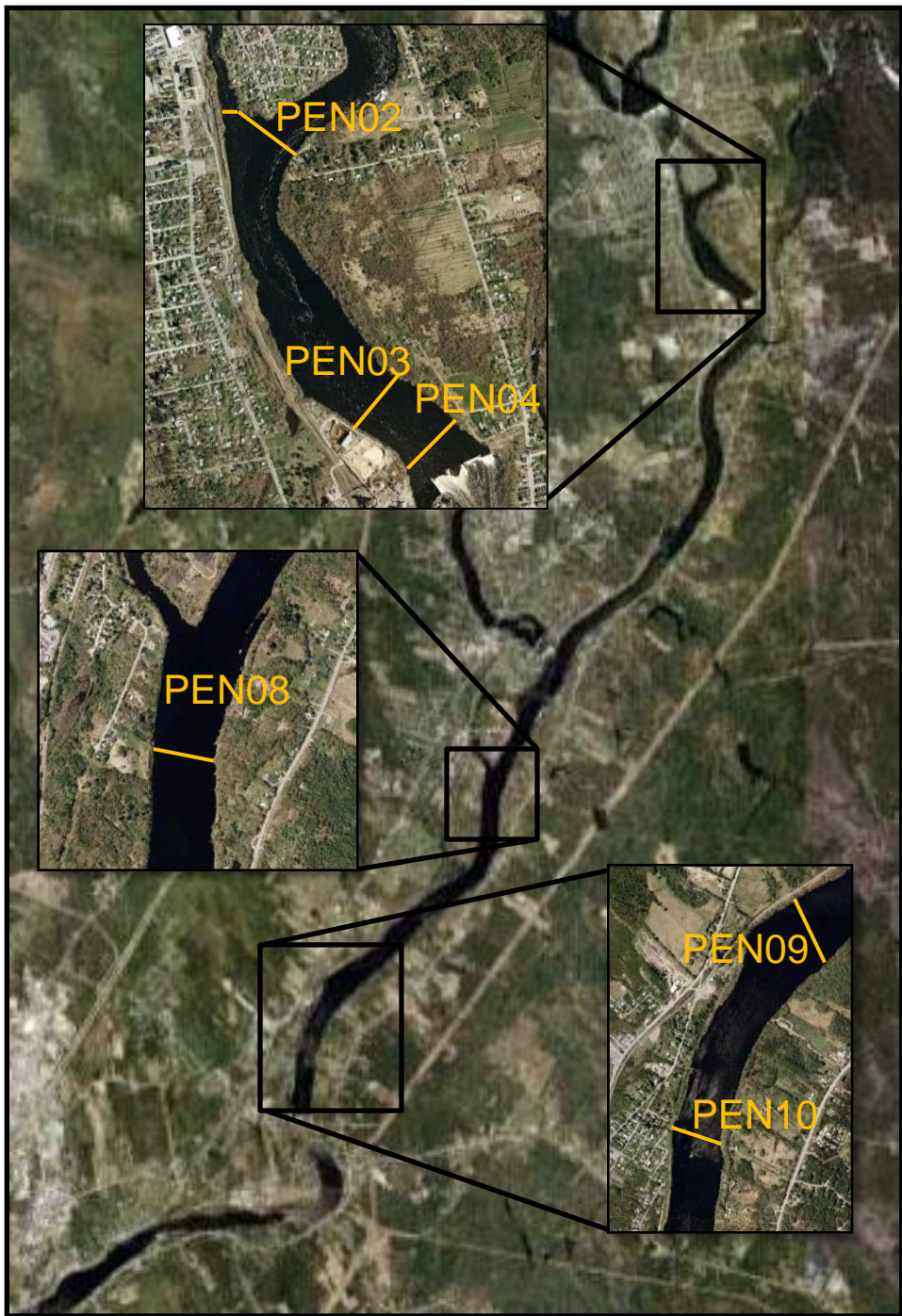


Underwater Photography



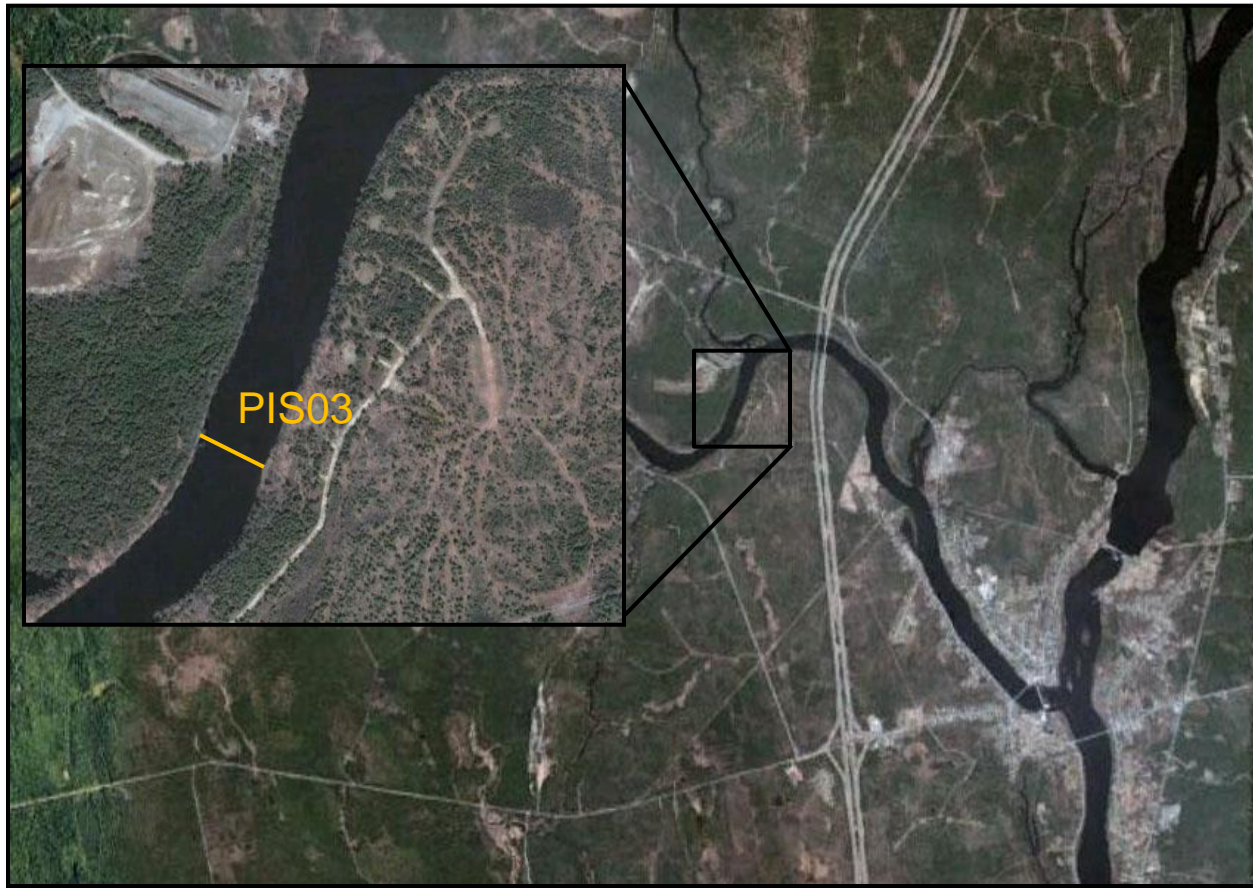
Underwater Camera Survey on the Penobscot River:

- PEN02
- PEN03
- PEN04
- PEN08
- PEN09
- PEN10



PEN03:





Underwater Camera
Survey on the
Piscataquis River:

- PIS03

Problems:

- A. Surface Obstacles
- B. Submerged Obstacles
- C. Water Level



Results:

- Data collection at 7 cross-sections
 - 6 on the Penobscot River
 - 1 on the Piscataquis River
- Data archived as video
- Still image extraction



Next Steps:

- Geophysics in Impoundments (Fall or Spring)
 - Bathymetry
 - Seismic Reflection
- Bank Sediment Surveys (Fall)
- Fall and Winter Photographic Survey
- USGS Cross-sections into Database (Winter)

Summary of Data Collection

Photographic Survey (All Locations)	Survey Dates
Round 1	01/30/2010 – 2/12/2010
Round 2	03/31/2010 – 04/01/2010
Round 3	06/08/2010 – 06/09/2010
Round 4	08/19/2010 – 08/20/2010
Underwater Camera Survey	
PEN03, PEN04, PEN08, PEN09, PEN10	07/07/2010 – 07/08/2010
PEN02 and PIS03	09/15/2010