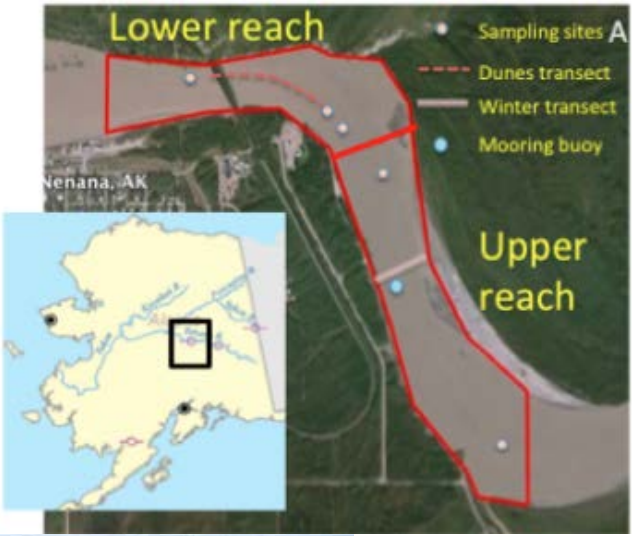
PMEC : Tanana River Test Site



J. Kasper
J.B. Johnson, J. Schmid, P. Duvoy, A. Seitz, A. Kulchitsky, N. Konefal

http://acep.uaf.edu/programs/alaska-hydrokinetic-energy-research-center.aspx

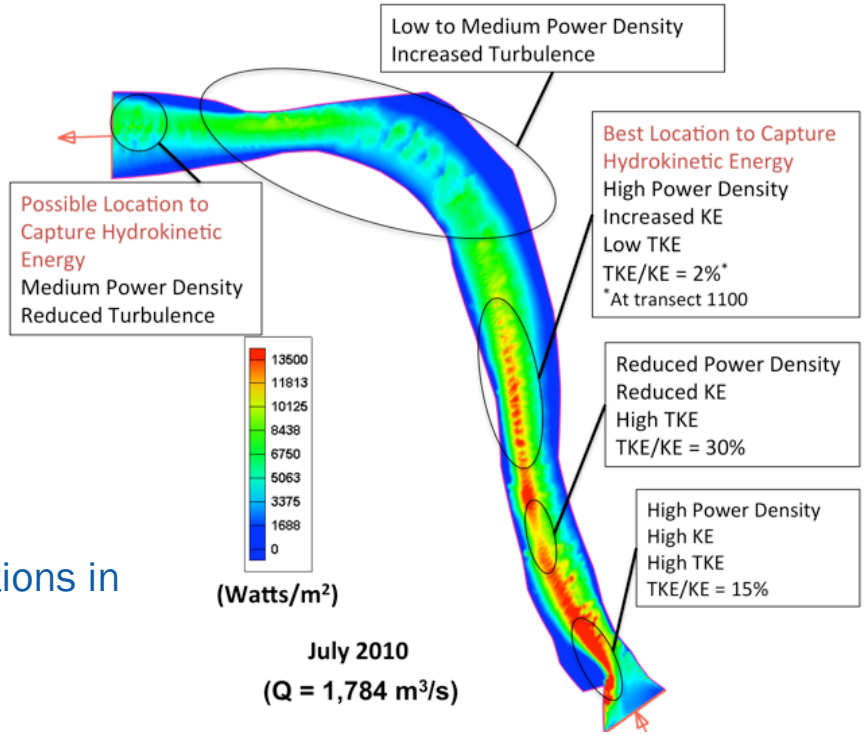
Photo by Todd Paris, UAF

NNMREC Annual Meet, Oct. 2014

Permitted Site for Hydrokinetic Research and Testing in Natural Alaskan River Conditions

- Complete site characterization
  - Hydrodynamic measurement & modeling
    - Discharge, velocity, sediment, turbulence
  - Endemic fish species
  - Debris (size, type, frequency, location)
- Technology development and testing
  - Debris modeling and mitigation
  - River energy converter testing
    - Fish interaction monitoring
  - Infrastructure anchoring, deployment and operations in remote communities with islanded grids

Power density



(Modified from Duvoy and Toniolo, 2012)

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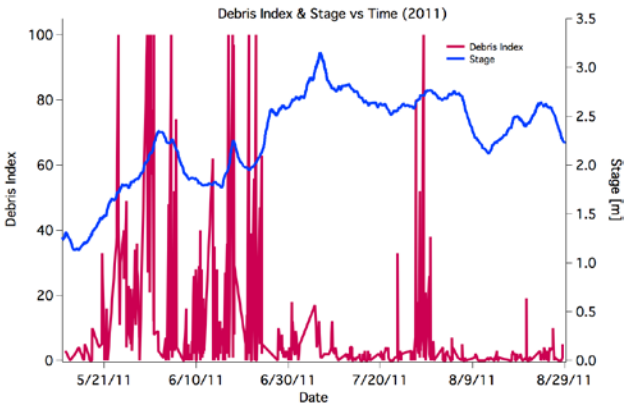
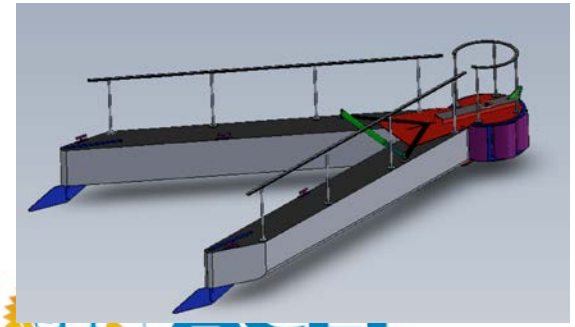
Debris Mitigation

Interaction

Characterization



Mitigation Technology



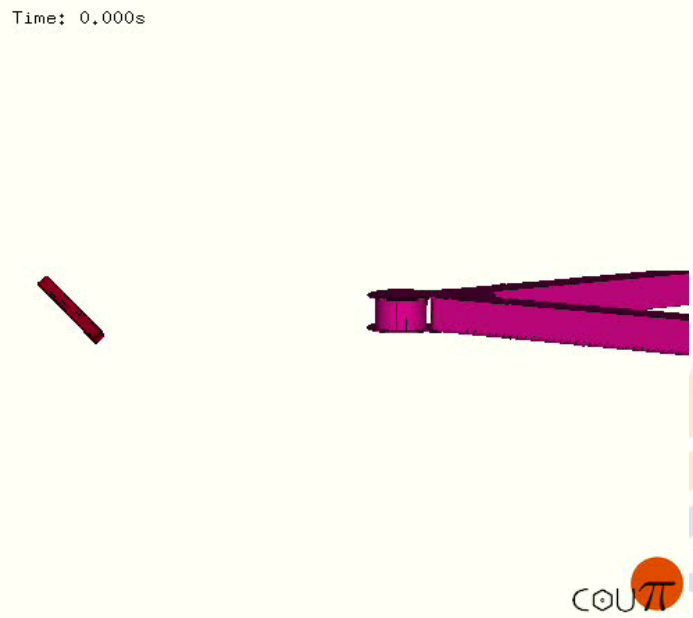
Technology Testing

Alaska Center for Energy and Power

Debris Mitigation Technology Testing and Modeling

RDDP debris diversion test

RDDP/debris interaction



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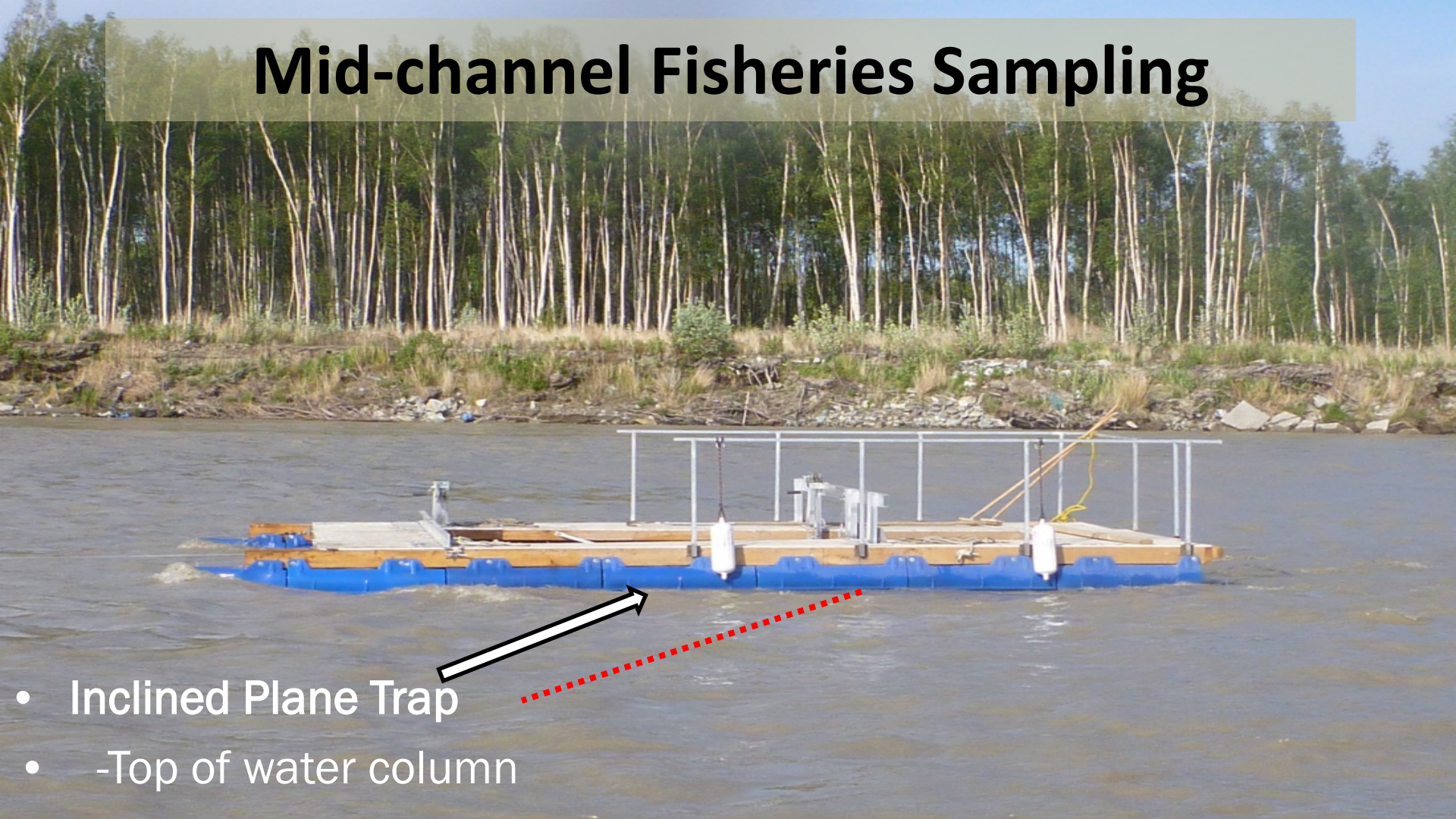
Mid-channel Fisheries Sampling

- Frame Trawl
  - Top of water column
  - Middle of water column
  - Bottom of water column

Mid-channel Fisheries Sampling



- Inclined Plane Trap
- -Top of water column

Information from pre-deployment studies

- First documented mid-channel sampling in large glacially influenced Alaskan Rivers
- Abundance and species composition of catches depends on river, and timing and location of sampling
- Some primarily captured in margins

  Longnose sucker Arctic grayling Whitefish spp. Chum salmon
  Lake chub Burbot Inconnu Slimy sculpin
  Northern pike Lamprey
- Some primarily captured in the middle of the channel

  Chinook/coho salmon Chum salmon

Tanana River Test Site Summer 2014

http://acep.uaf.edu/programs/alaska-hydrokinetic-energy-research-center.aspx

Turbine Test at the Tanana River Test Site

Turbine Test Platform and RDDP

Oceana Turbine Testing

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Acknowledgements

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