

# Meander migration modeling to predict river evolution on the lower Stanislaus River.

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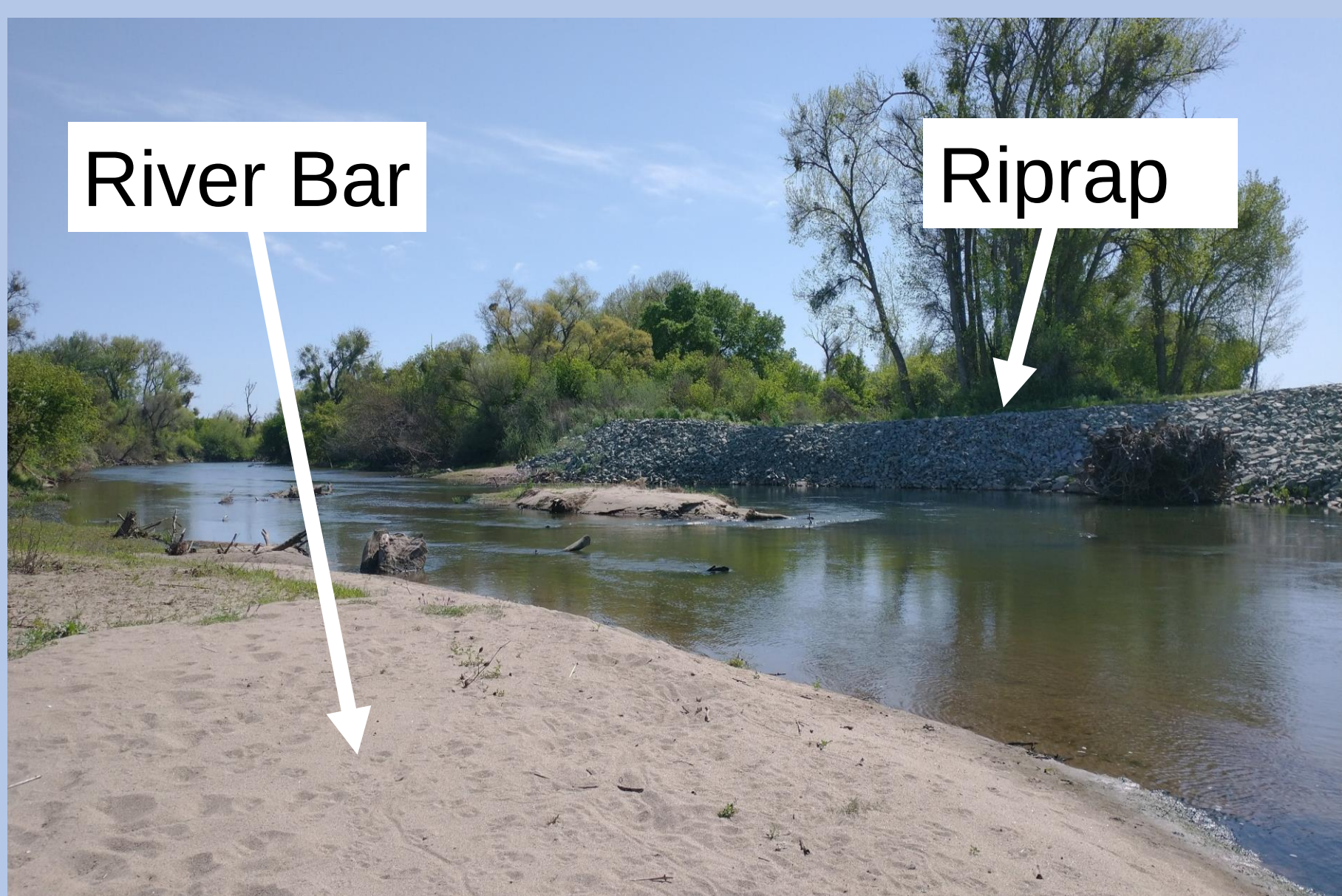
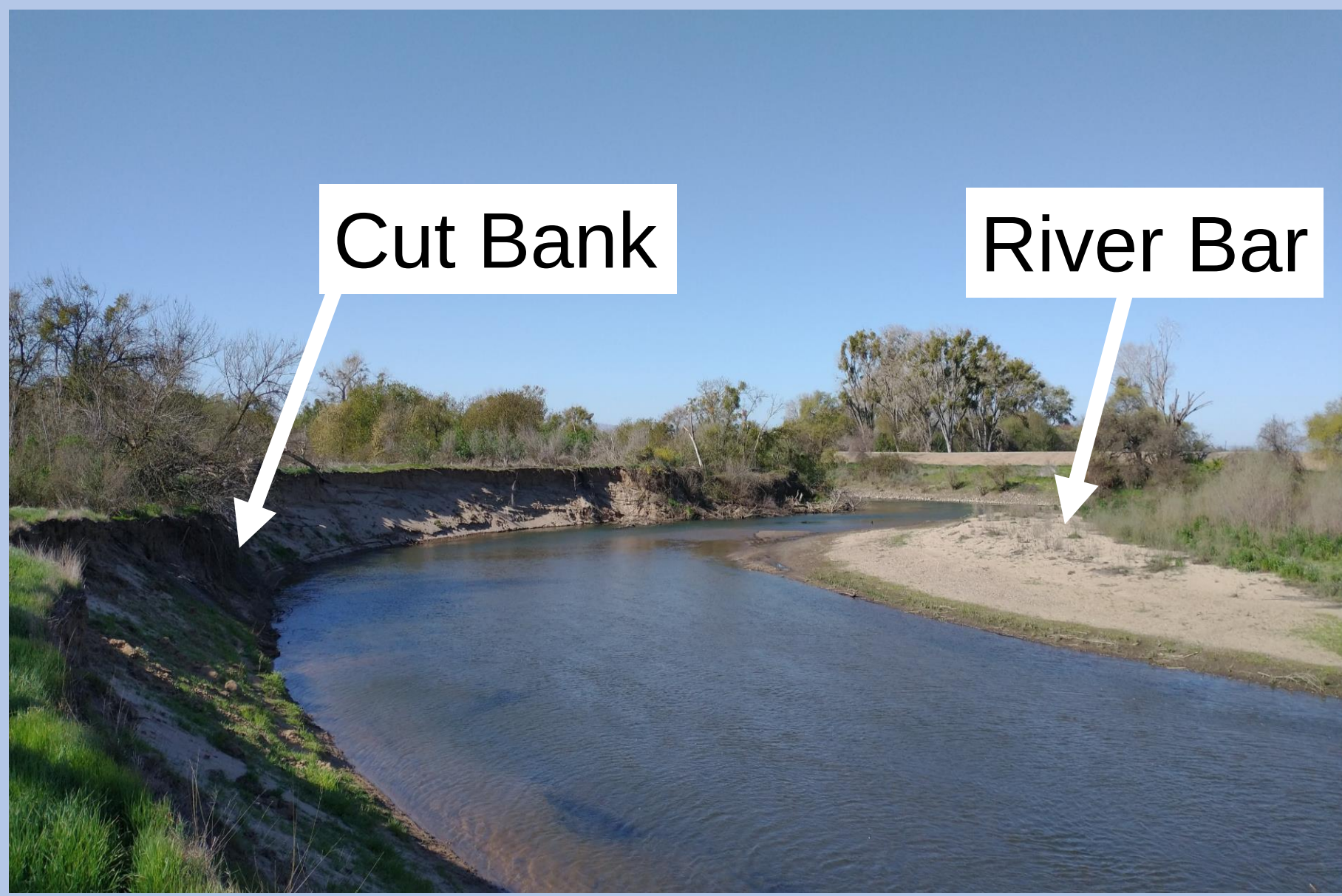
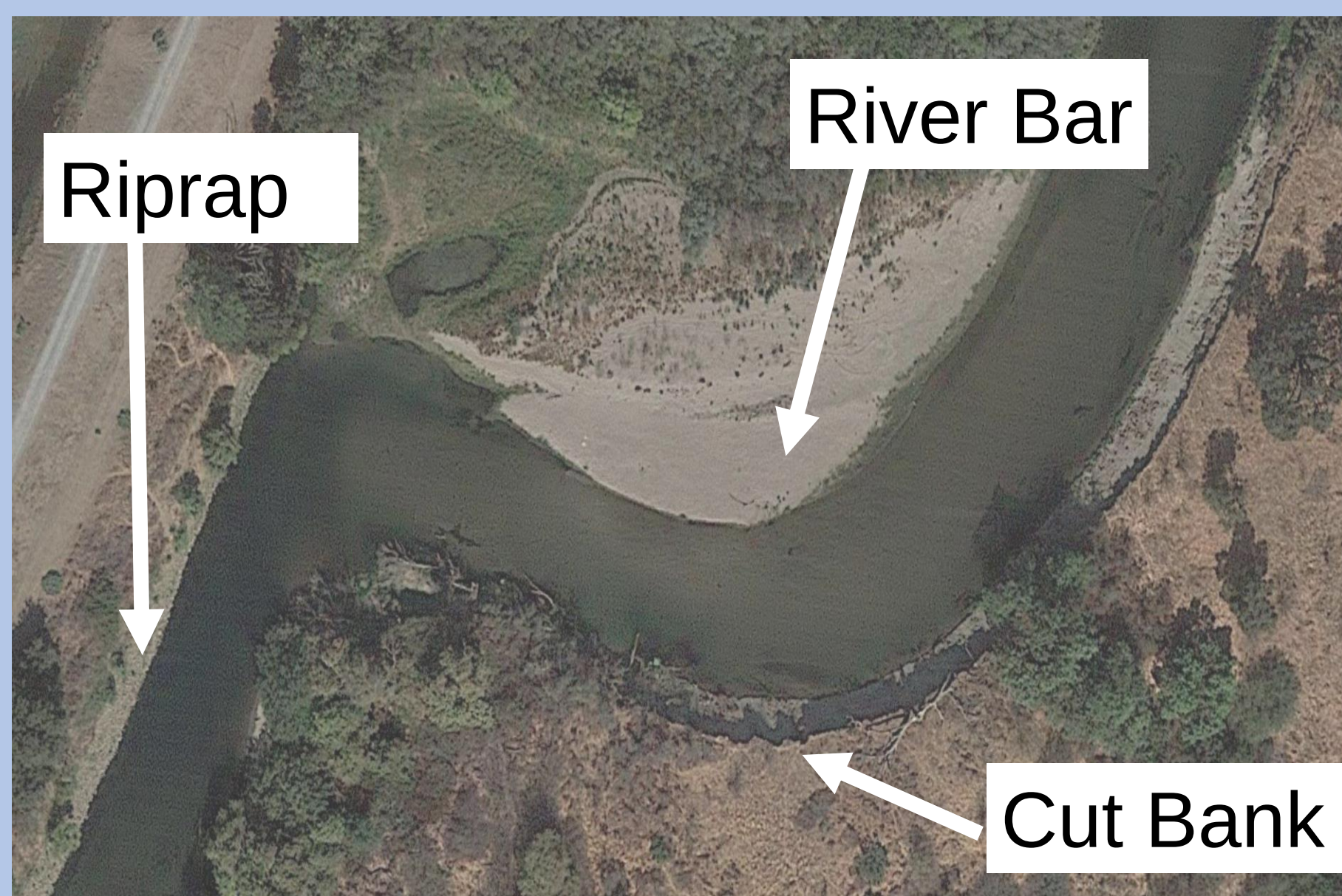
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## Simplified erosion model may be used to predict salmonid habitat evolution

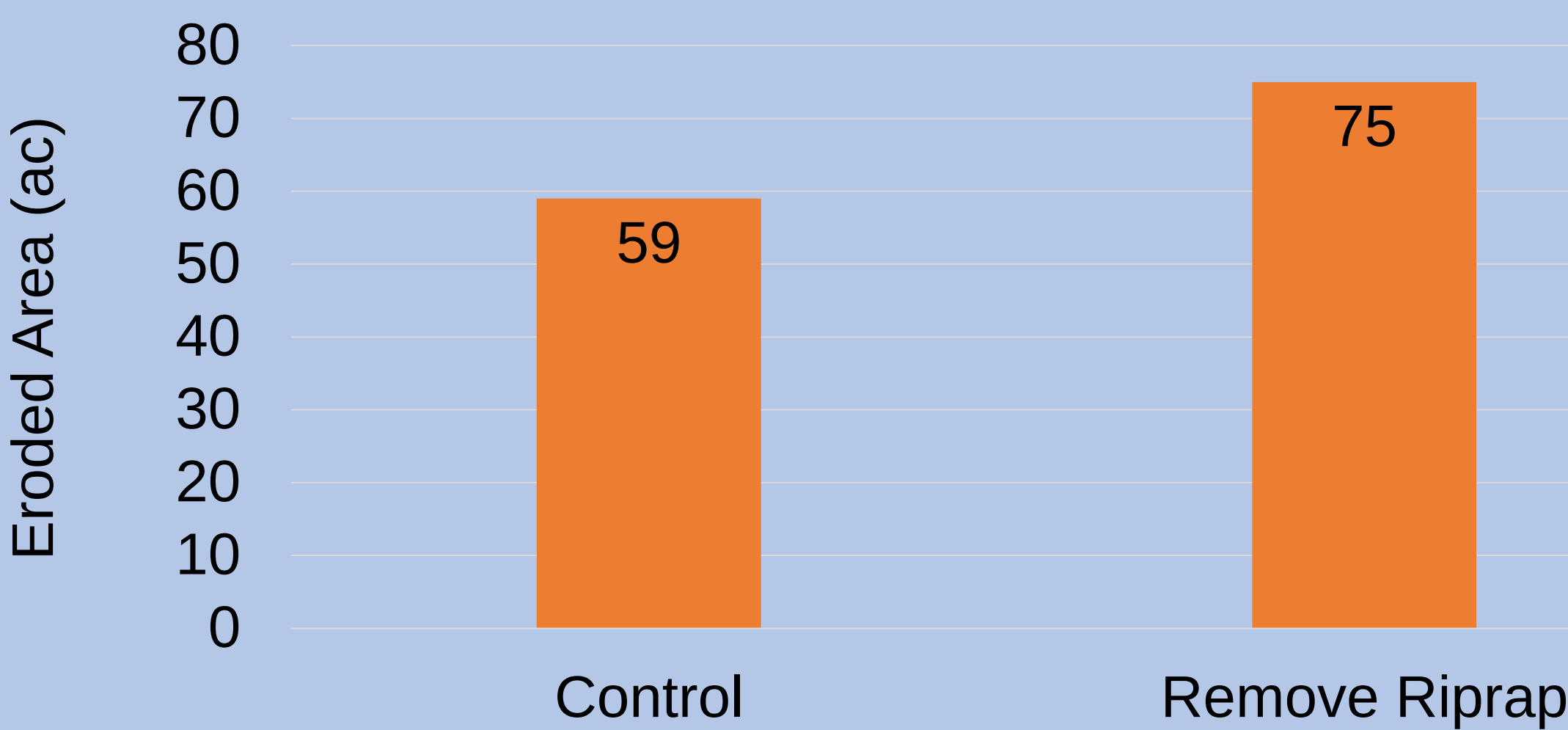
### Background

River meander migration is important process for creation of rearing habitat for juvenile Chinook Salmon (Trush et al., 2002). Gradual slopes of river bars provide suitable depth for rearing salmonids at ecological relevant flows.



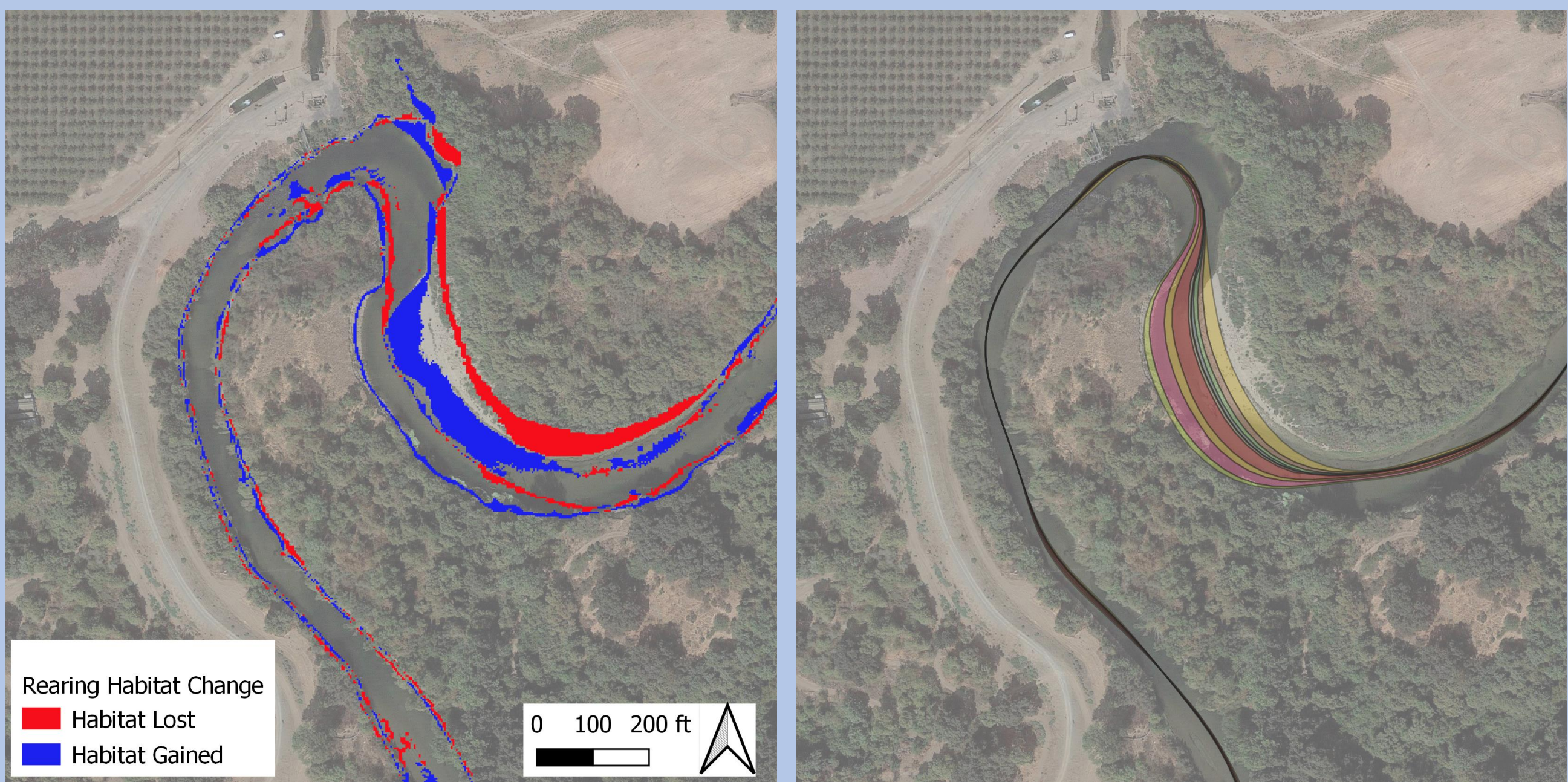
### Results

River evolution after 50-year simulation predicts **16 acre** increase in eroded area after removal of riprap



### Next Steps

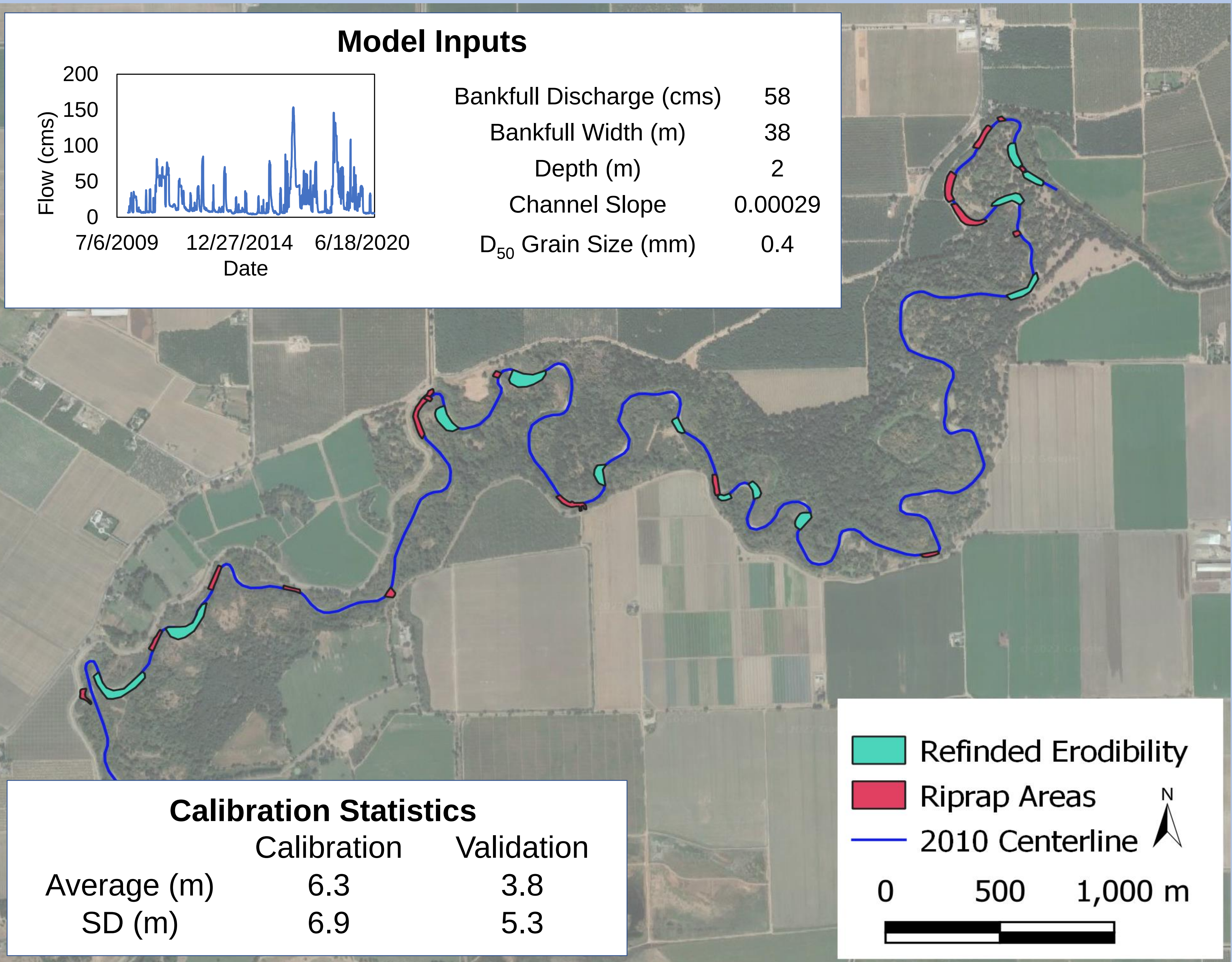
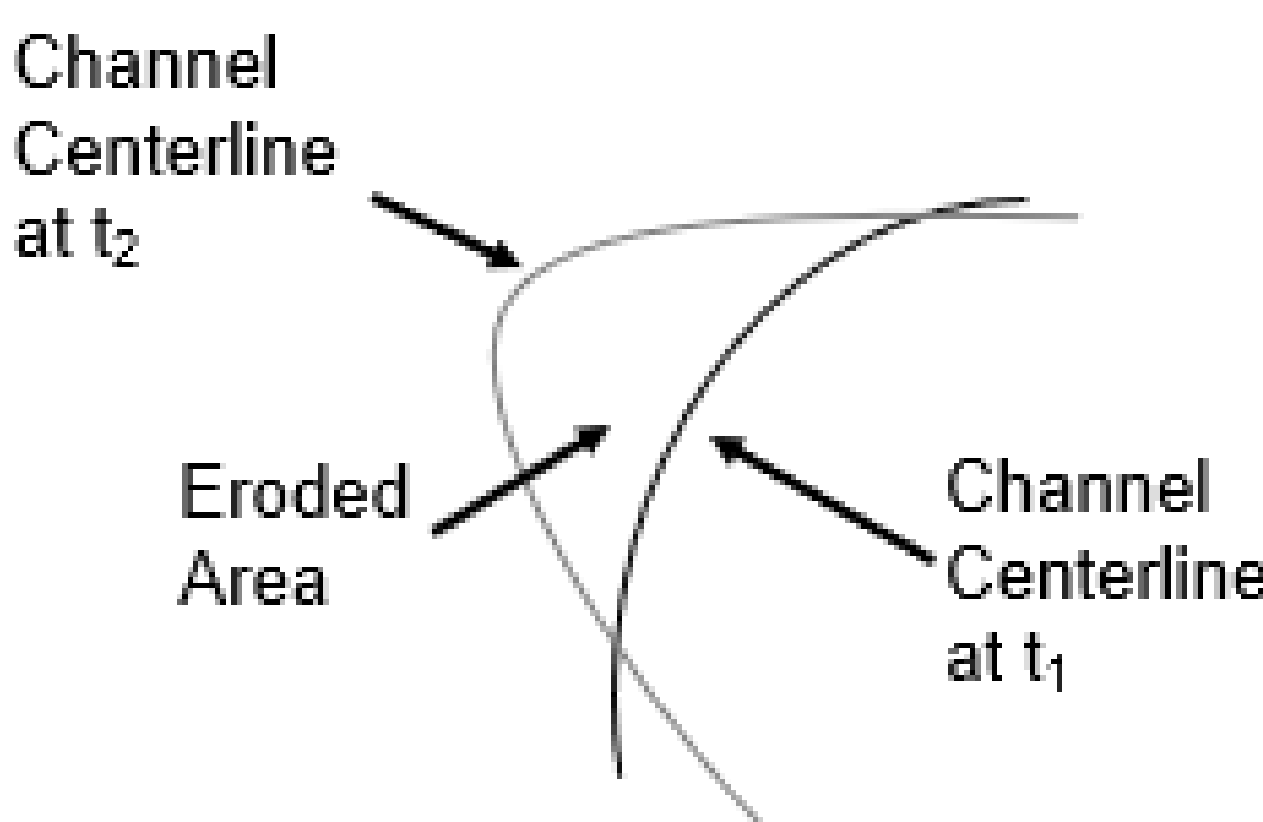
Investigate if eroded area correlates to suitable rearing habitat



### Methods

Simplified linear meander model (Johannesson & Parker, 1989)

- $M = E_o u'_b$
- $M$  = bank erosion rate (m/year)
  - $E_o$  = bank erodibility coefficient
  - $u'_b$  = velocity factor (m/s)



### Acknowledgments

- Jesse Anderson, Eric Larsen, J.D. Wikert, USFWS, USFWS Grant F18AP00014

### Citations

- Johannesson, H., and G. Parker (1989), Linear theory of river meanders, in *River Meandering*, Water Resour. Monogr. Ser., vol. 12, edited by S. Ikeda, and G. Parker, pp. 181-213, AGU, Washington, D.C.
- Trush, W.J., S.M. McBain, and L.B. Leopold (2000), Attributes of an alluvial river and their relation to water policy and management, *Proc. Natl. Acad. Sci. U.S.A.*, 97, 11,858-11,863, doi:10.1073/pnas.97.22.11858

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