Using stocked Razorback Sucker survival estimates to guide management

Nate Franssen
Scott Durst
Chris Cheek
D. Weston Furr
Jason Davis
Thomas Sinclair

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Survival estimates of stocked Razorback Sucker

Survival and movement of stocked Razorback Suckers (*Xyrauchen texanus*) in the San Juan River, New Mexico and Utah

Nathan R. Franssen[1*] and Scott L. Durst[2]

[1]Department of Biology and Museum of Southwestern Biology, University of New Mexico, 167 Castetter Hall, Albuquerque, New Mexico 87171, USA

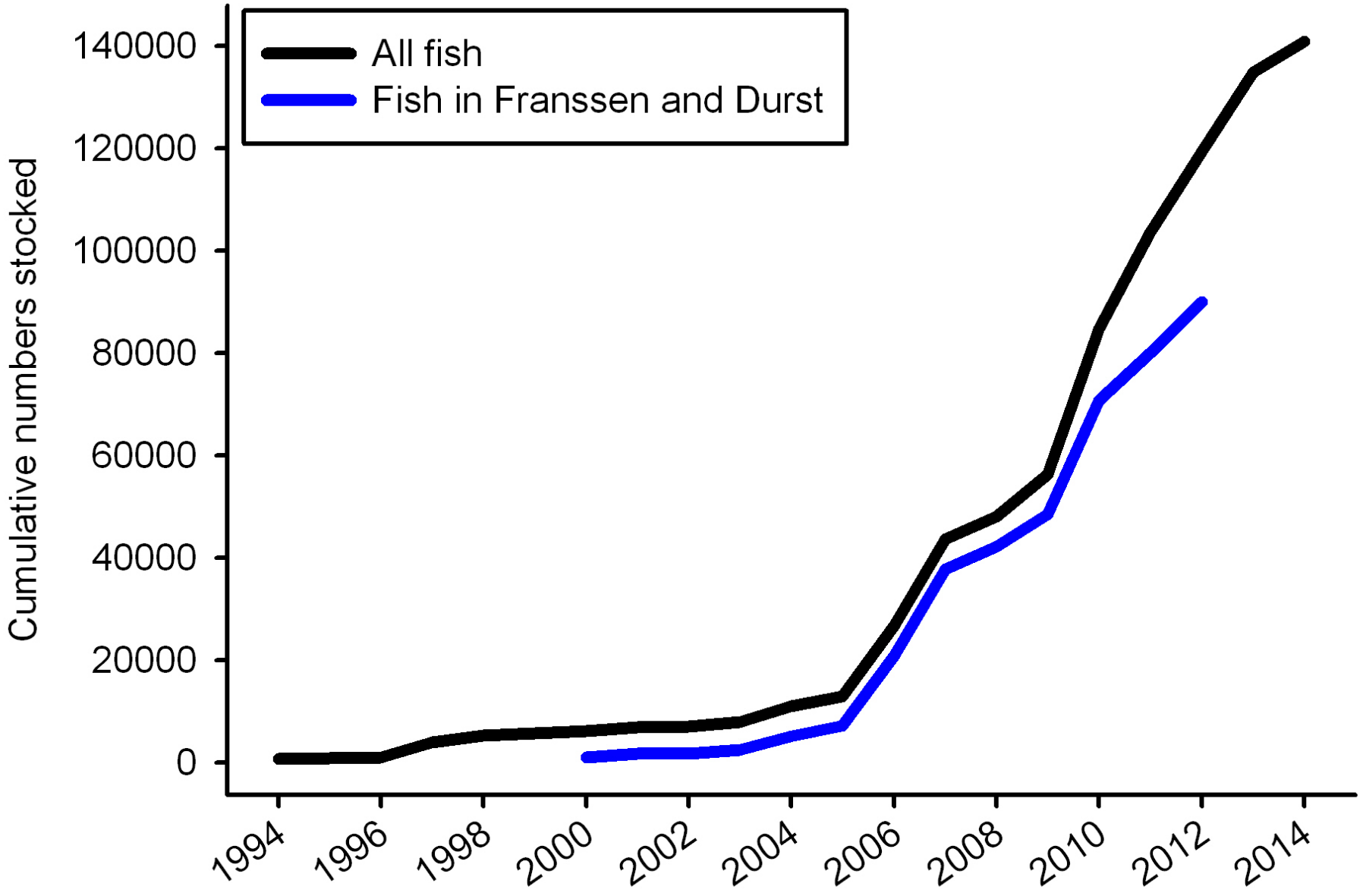
*Correspondence author: nrfranssen@gmail.com

[2]San Juan River Basin Recovery Implementation Program, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, Albuquerque, New Mexico 87113, USA

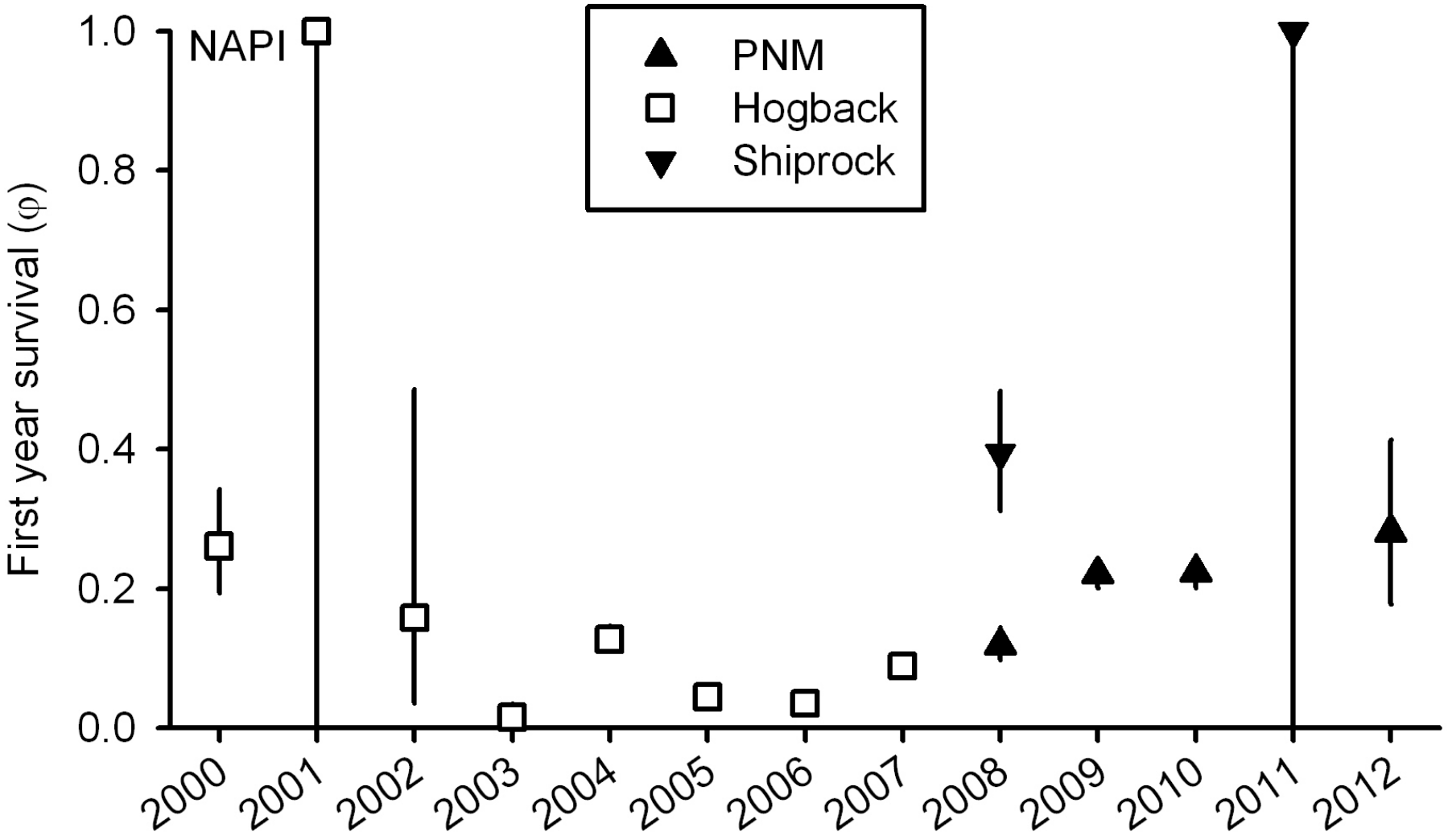
Keywords: desert streams, endangered species, program MARK, population augmentation

Running head: Survival and movement of Razorback Sucker

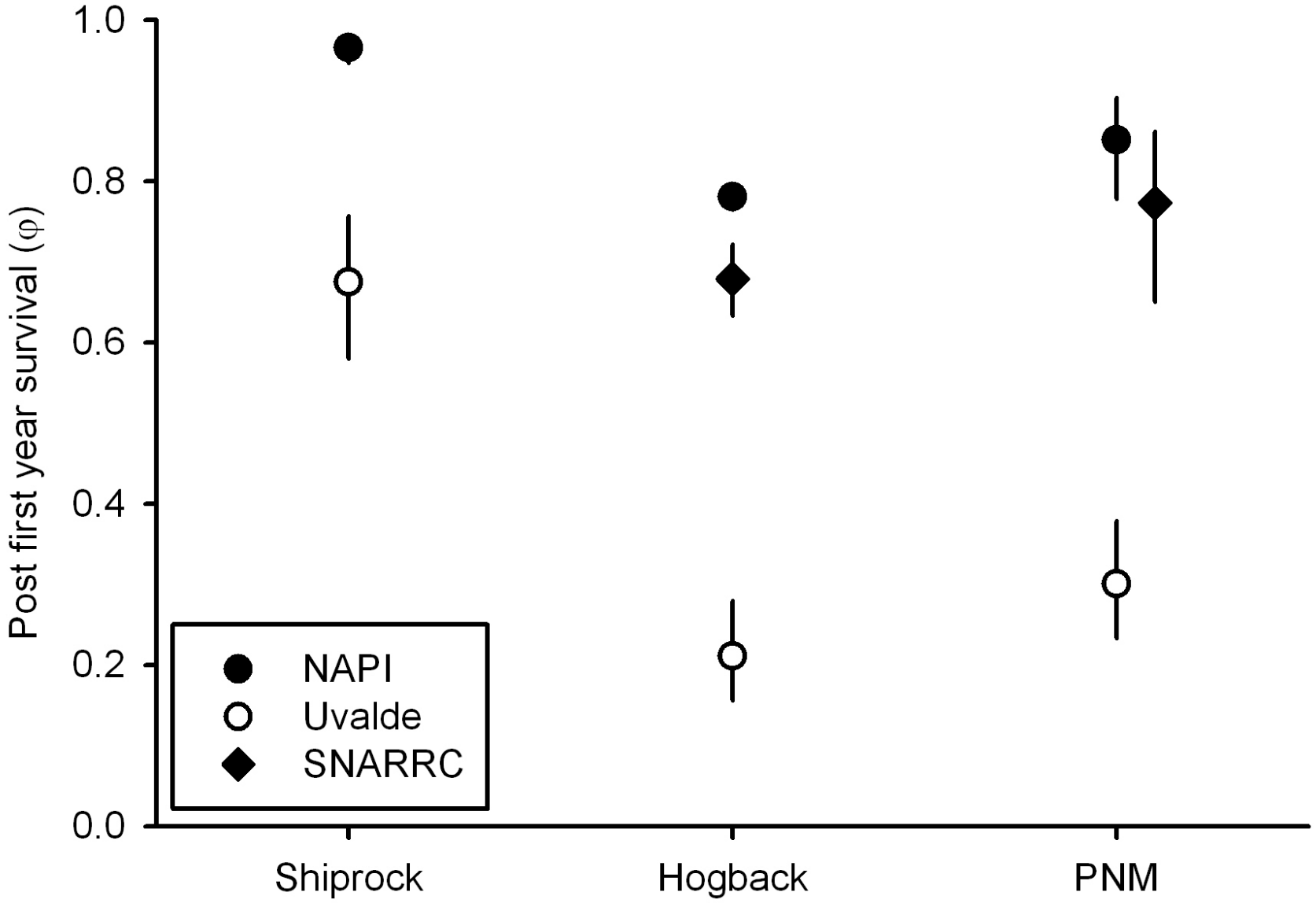
Survival estimates of stocked Razorback Sucker



First year survival estimates of stocked Razorback Sucker



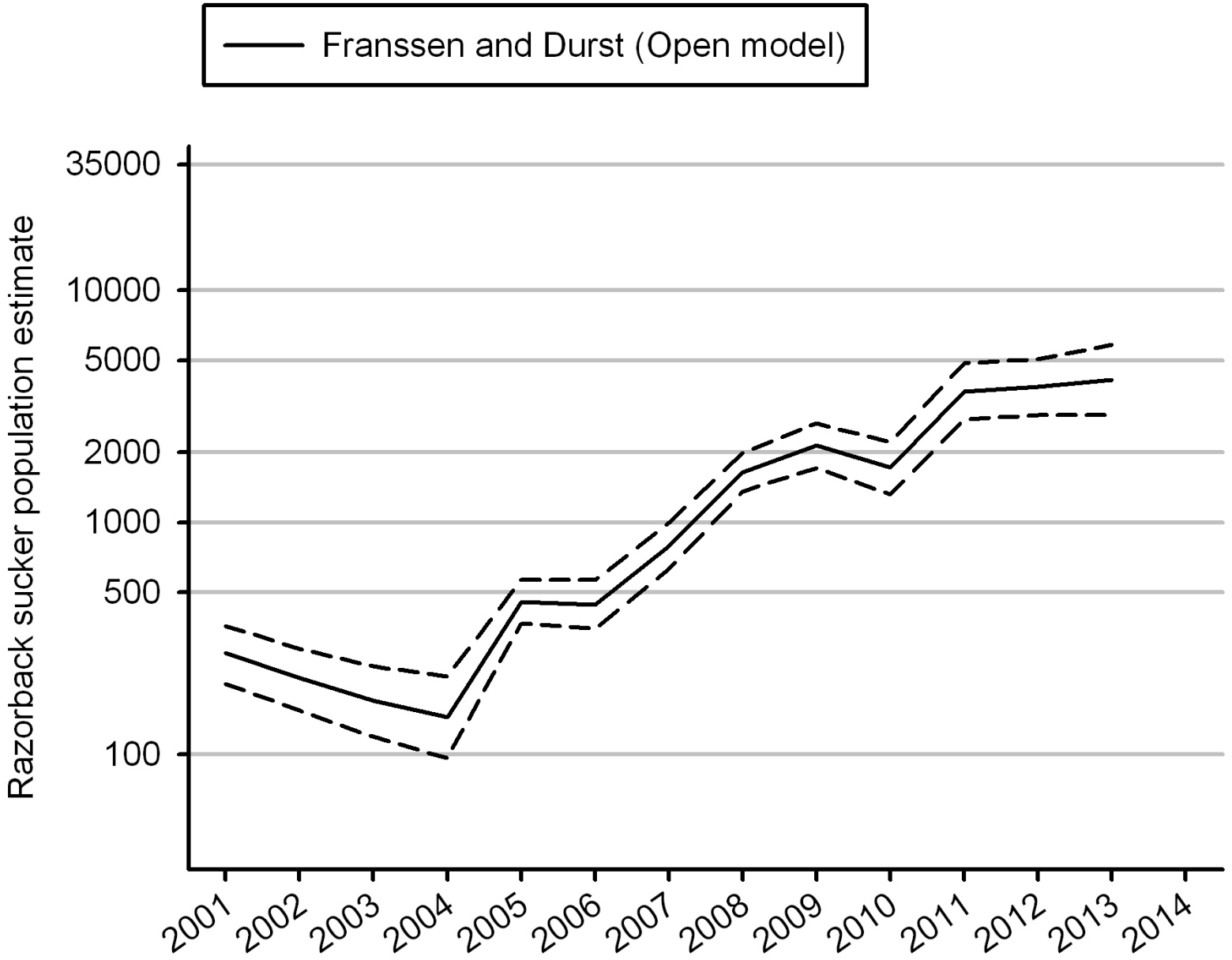
Post first year survival estimates of stocked Razorback Sucker



Questions we can ask

- Progress? (i.e., how many fish are in the river?)
- How many fish should we be stocking?
- How many natural recruits needed to maintain population size?
- How much is a fish in the river worth ($)?
- How can we increase efficiency of the augmentation program?

How many fish are in the river?



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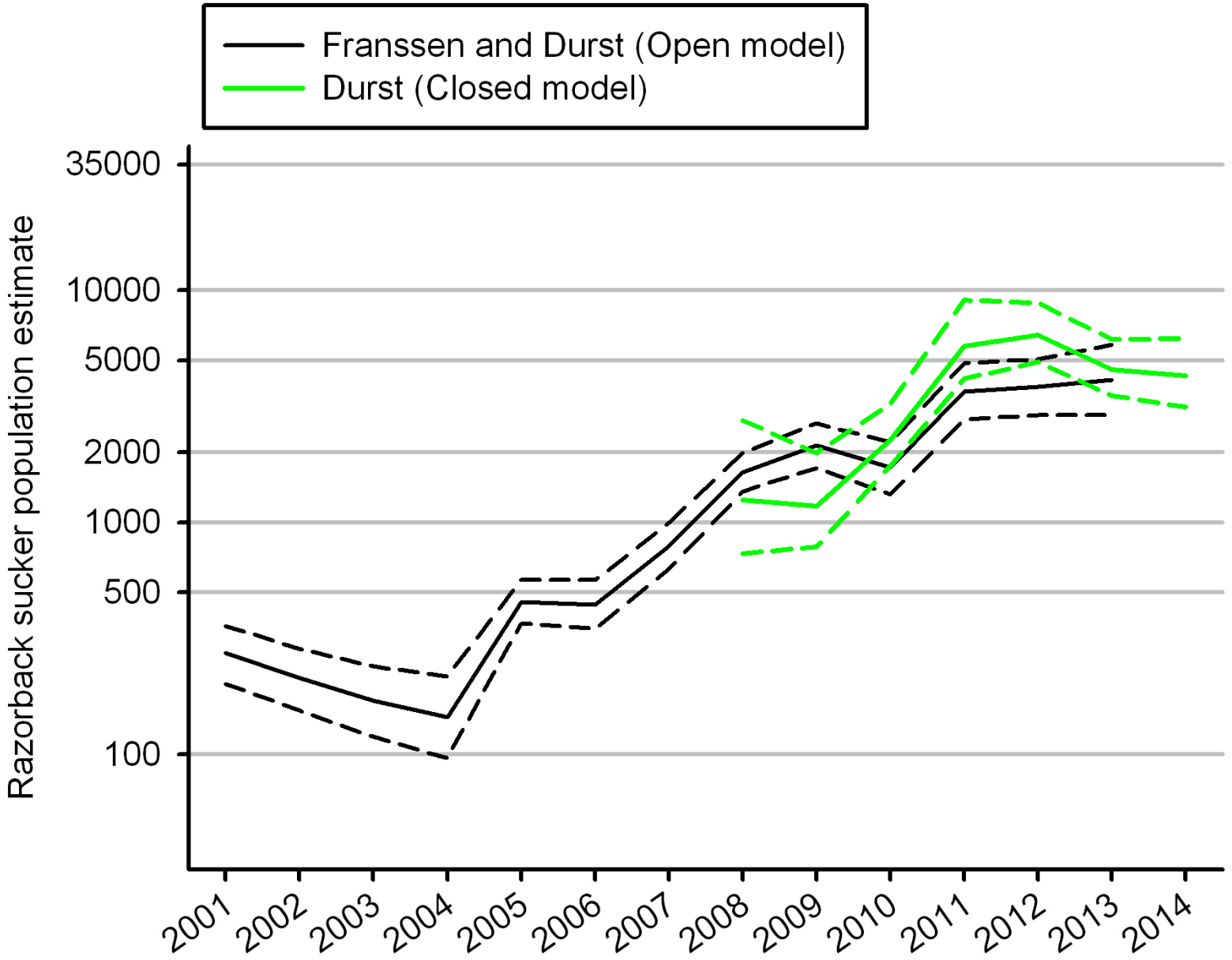

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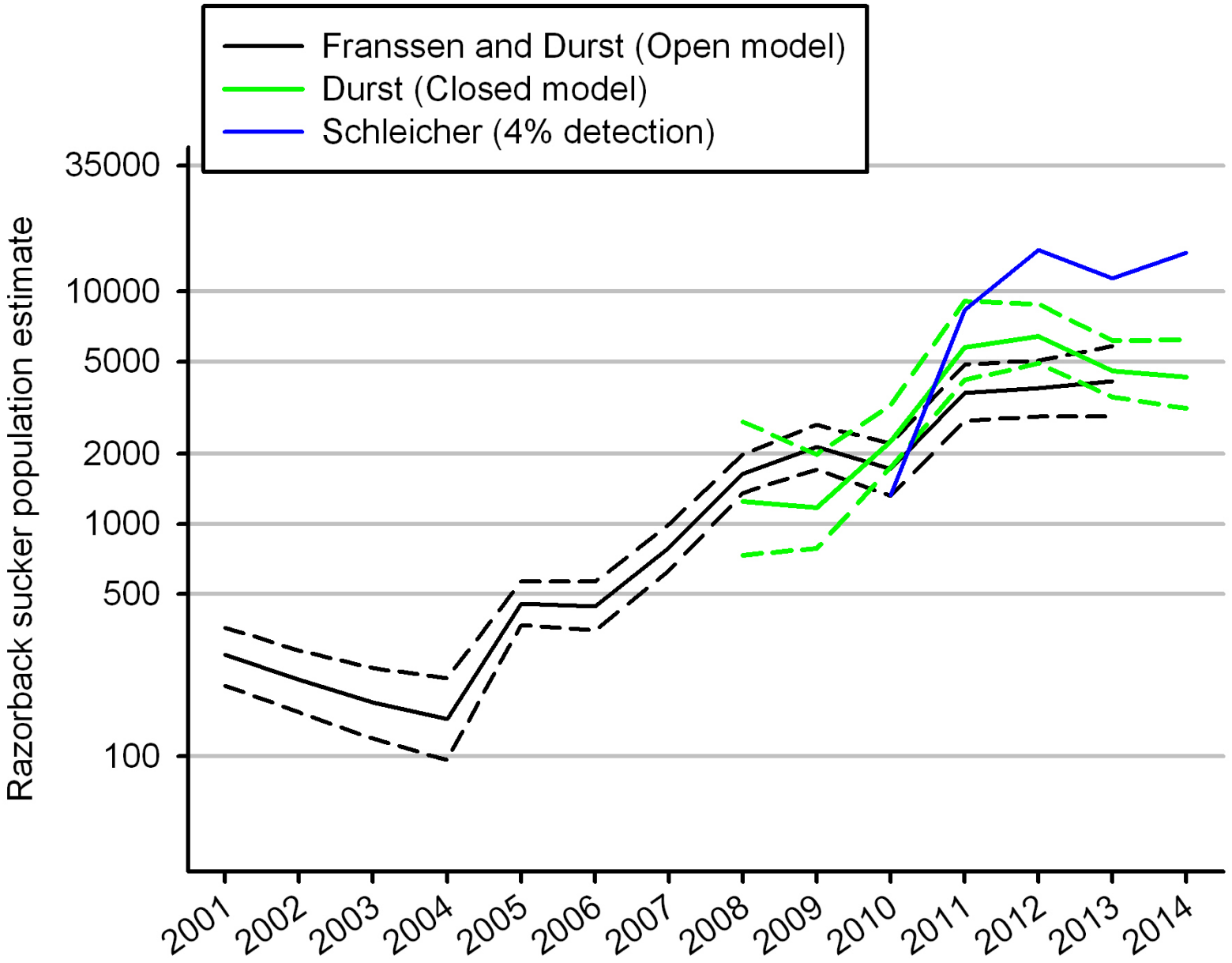
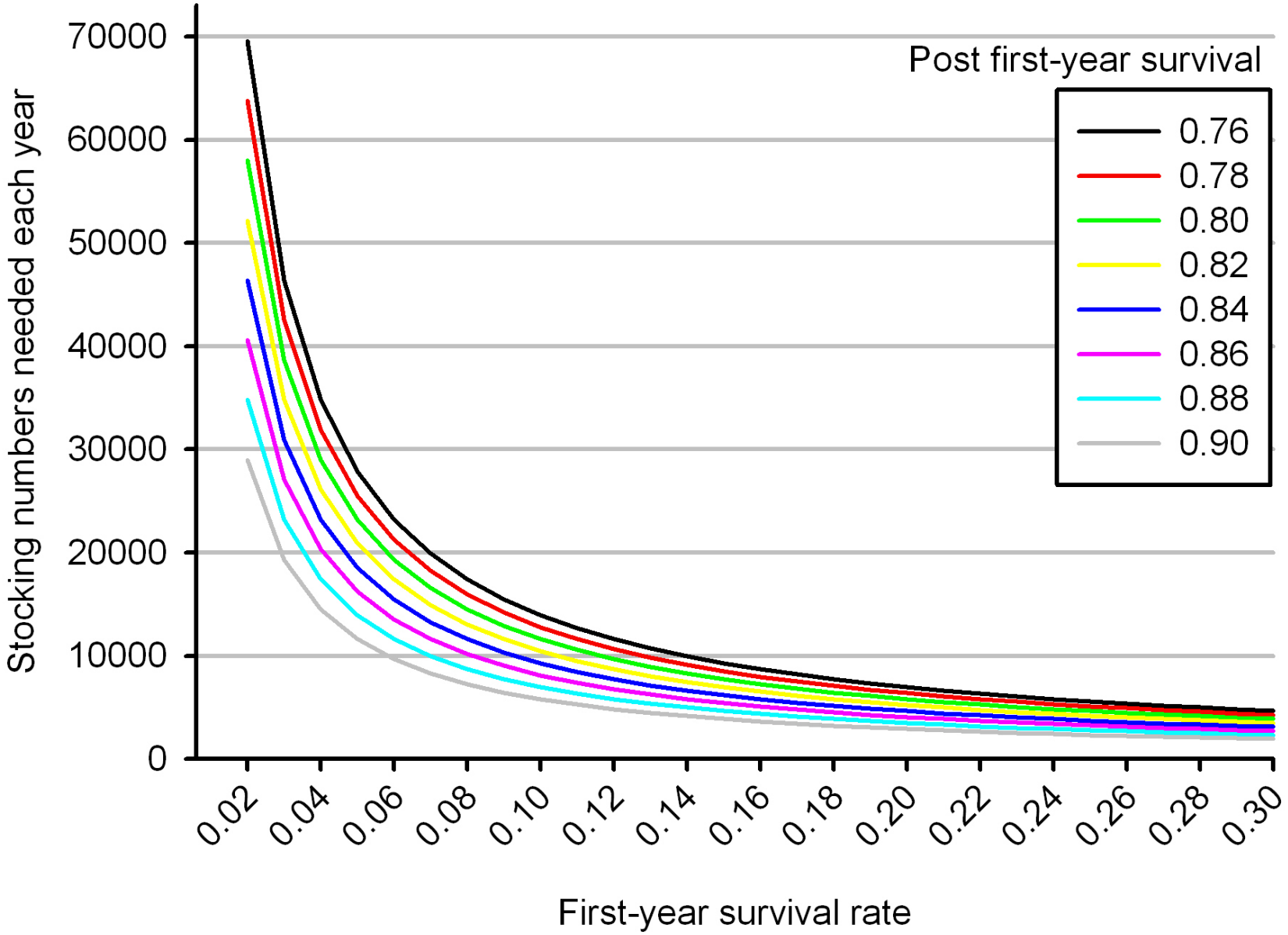


How many individuals do we need to stock each year?



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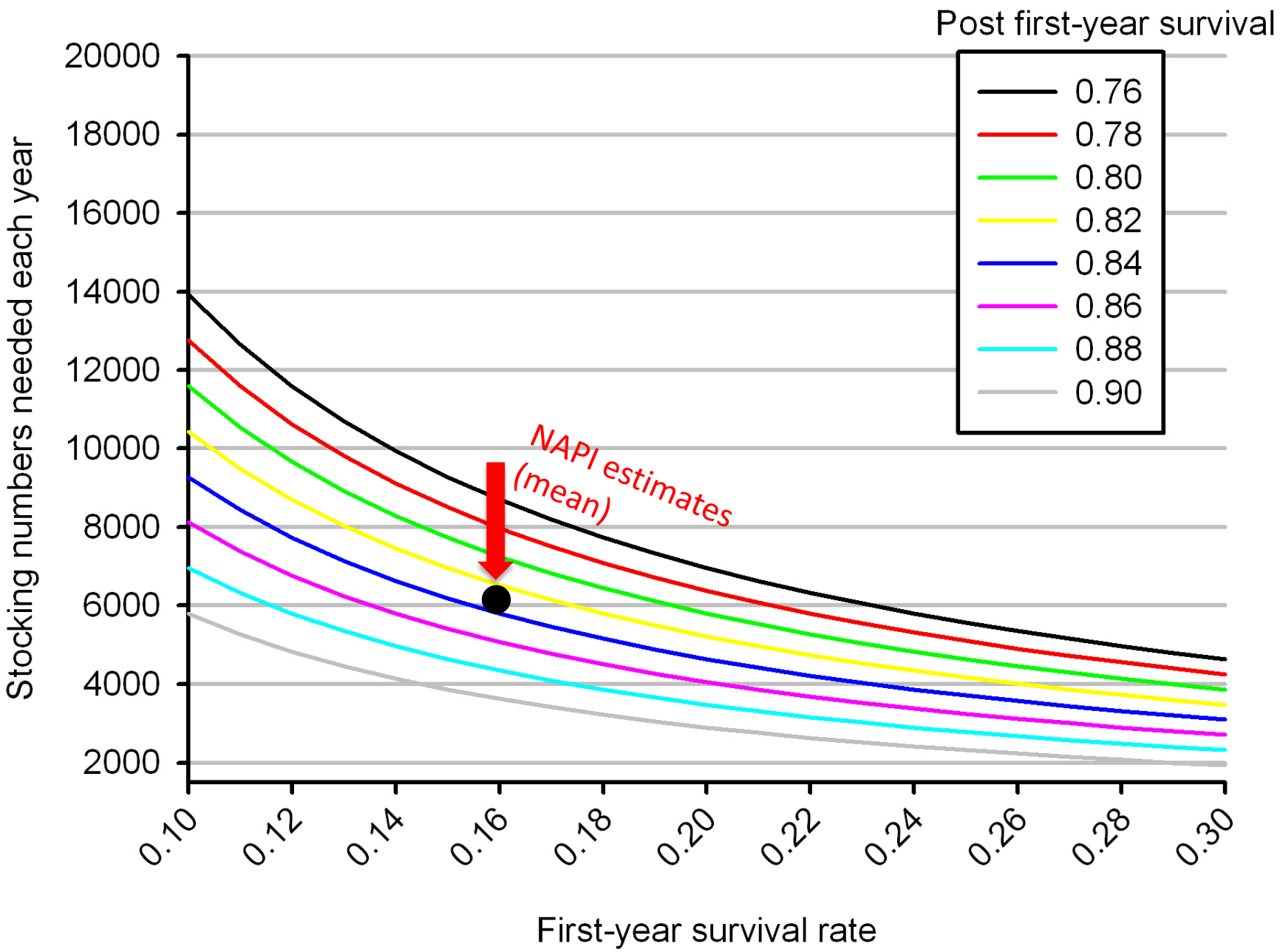

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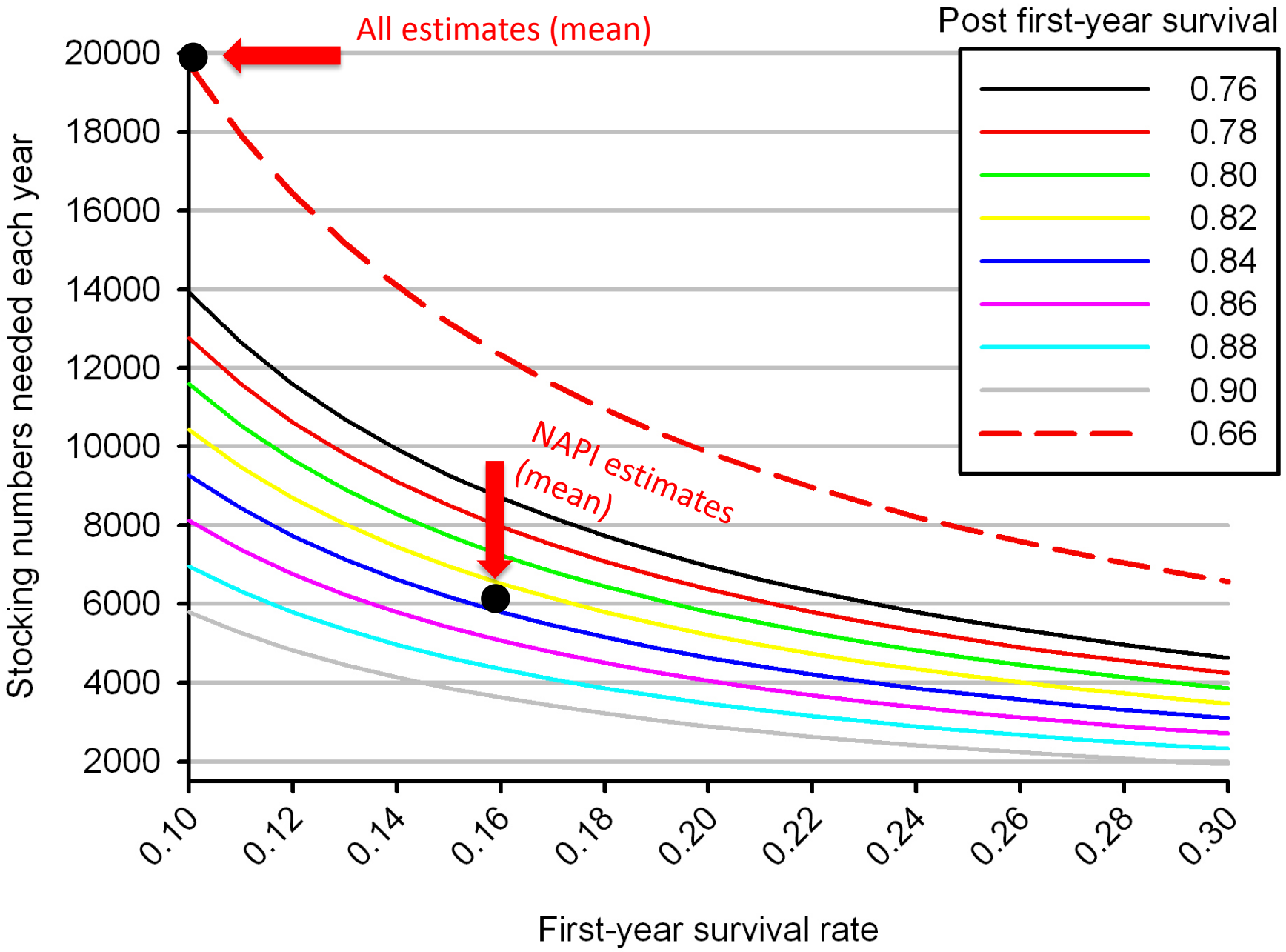
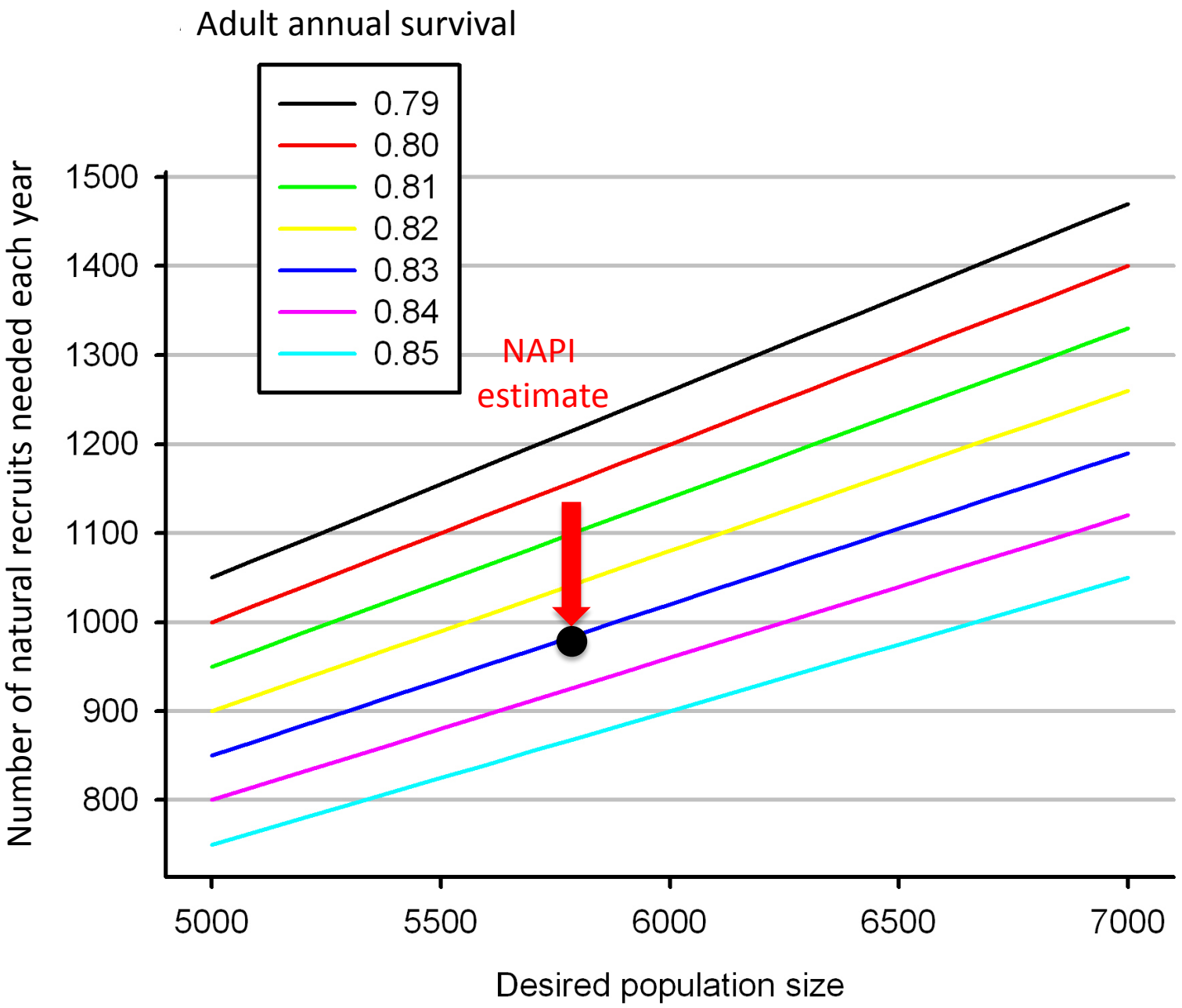
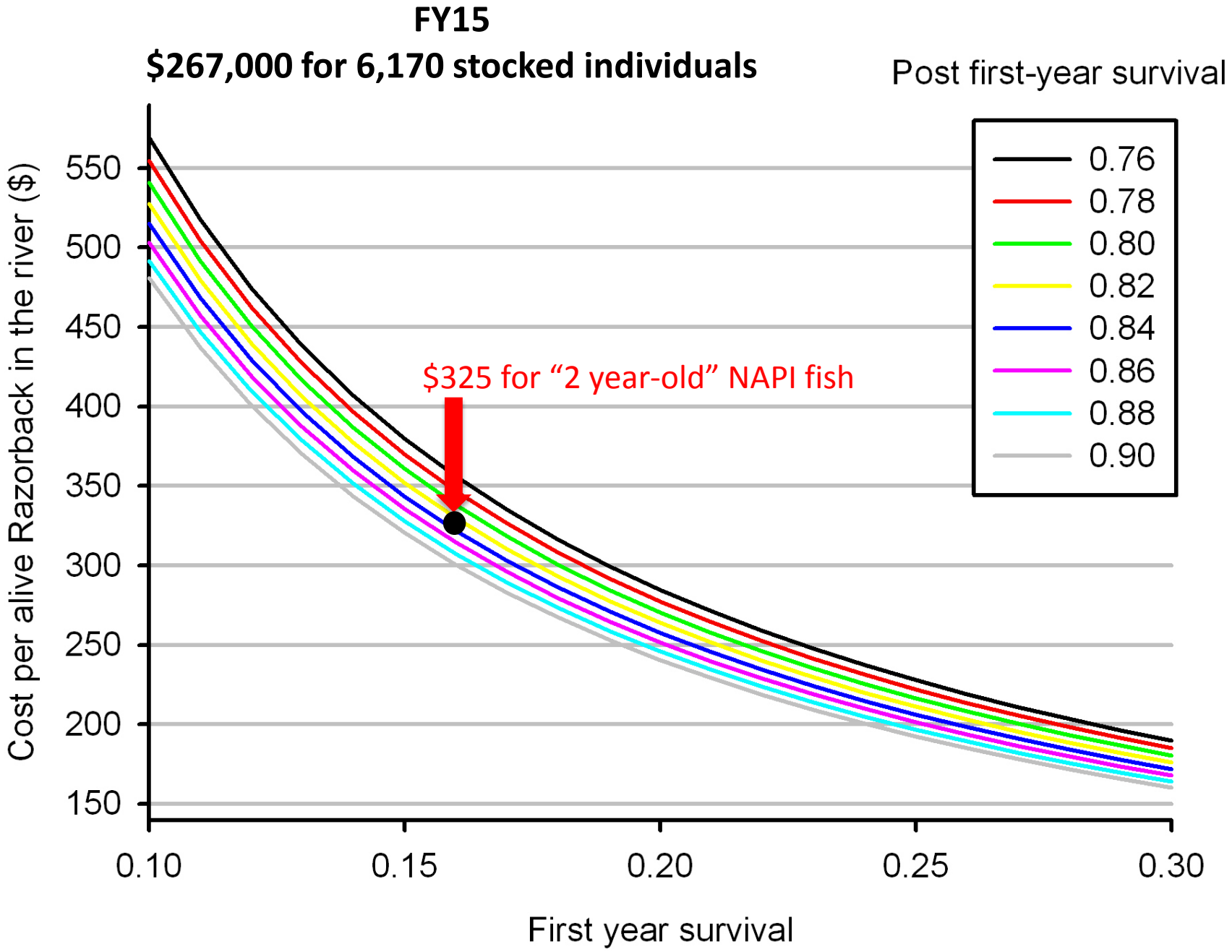


How many recruiting individuals do we need?



How much is a fish in the river worth?



What are we doing/can we do to increase efficiency?

- **Quantify variation between stocking sources (i.e., Horse thief, NAPI) and among stocking sites (4 river locations) over time.**
  - -Standardized annual "source" X "site" design (started in 2014)
  - -Estimate survival every year

- **Quantify tradeoff between hard- and soft-release (i.e., soft-release sites are spatially limited).**
  - -Hard vs soft-release experiments conducted in 2014 (hopefully 2015)

- **Improve return rates from NAPI ponds (mean = 65%, range = 48-78).**
  - -Improve water quality
  - -Prophylactic measures

- **Increase first-year survival of stocked fish (mean = 10%, range = 0-39%).**
  - -Increase "condition" of fish prior to stocking
  - -Planned experiment at SNARCC (1000 fish conditioned to flow, 1000 control fish will be experimentally stocked 2015 or 2016)

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