An Overview of Humpback Chub Monitoring in the Little Colorado River and in the Mainstem Colorado River in Grand Canyon during 2011

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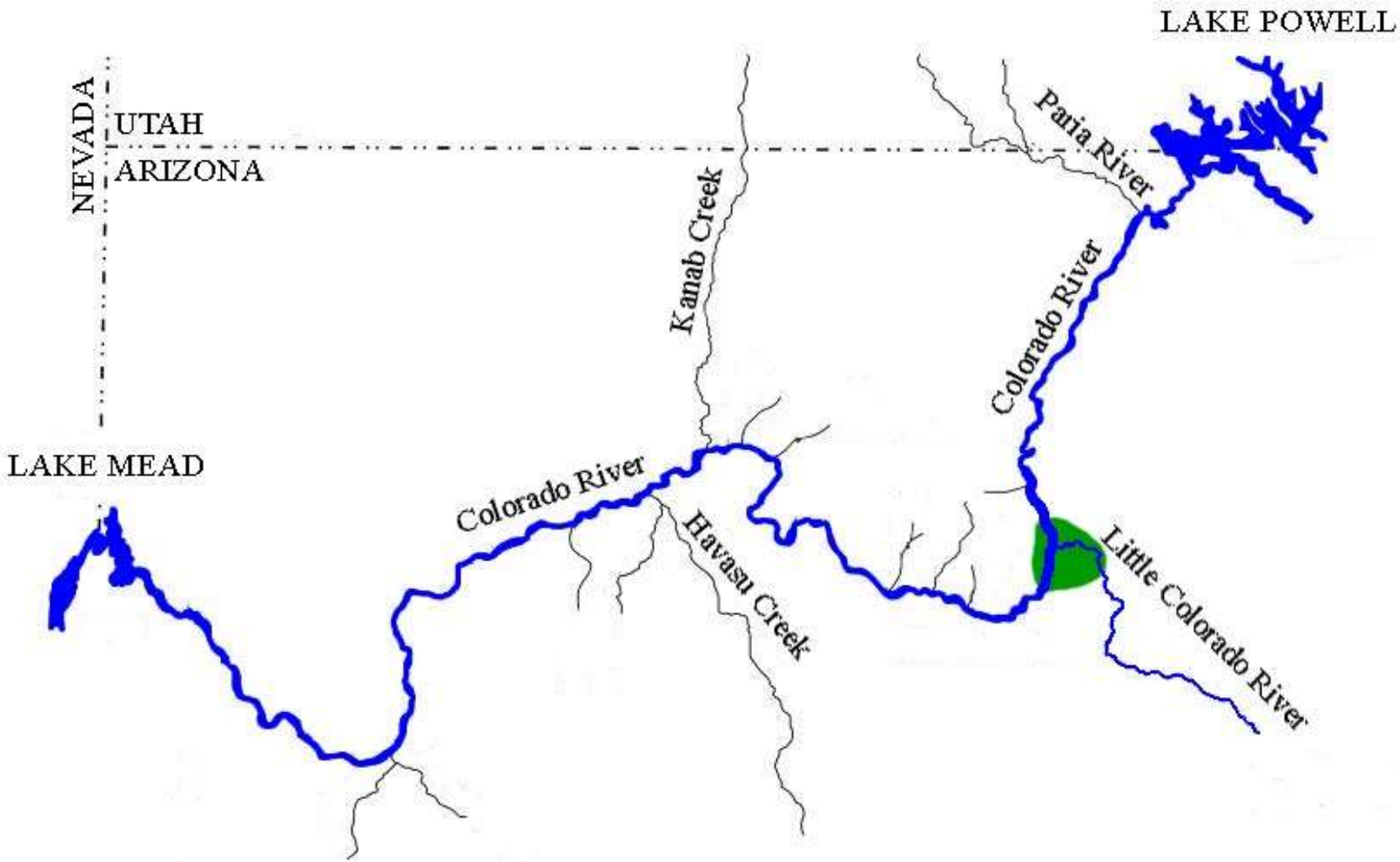
Objectives

- Obtain spring and fall closed mark-recapture population estimates of humpback chub in the Little Colorado River (0 to 13.6 km).
- Obtain population estimates of humpback chub in Chute Falls reaches (13.7-18 km).
- Monitor native suckers in Little Colorado River.
- Monitor humpback chub in the mainstem Colorado River.

Methods in Little Colorado River

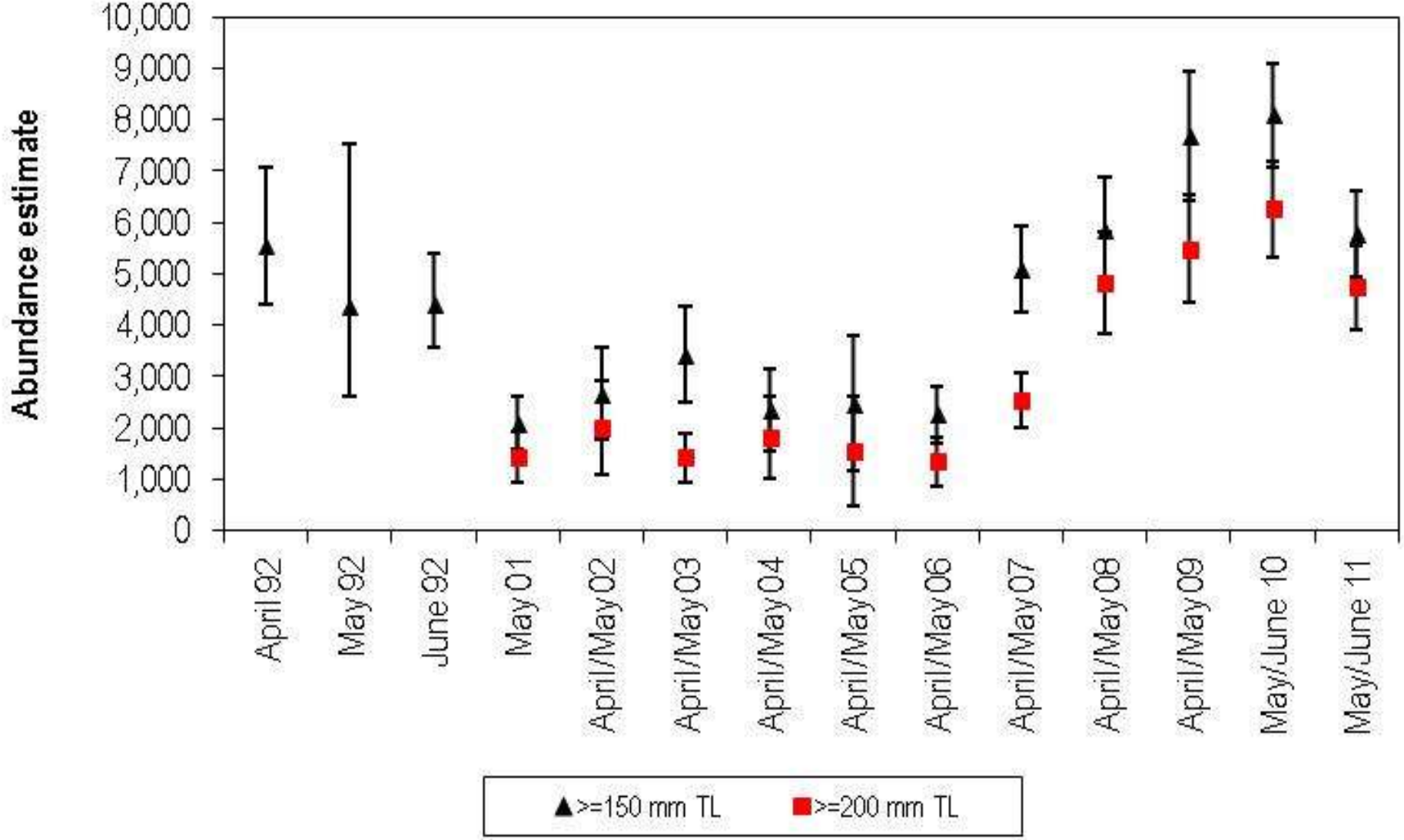
- Mark-Recapture Methodologies
- Closed Chapman Petersen Estimator is used.

- Mark trips: 3 to10 days
- Recapture trips: 3 to10 days
- ~2 weeks between trips

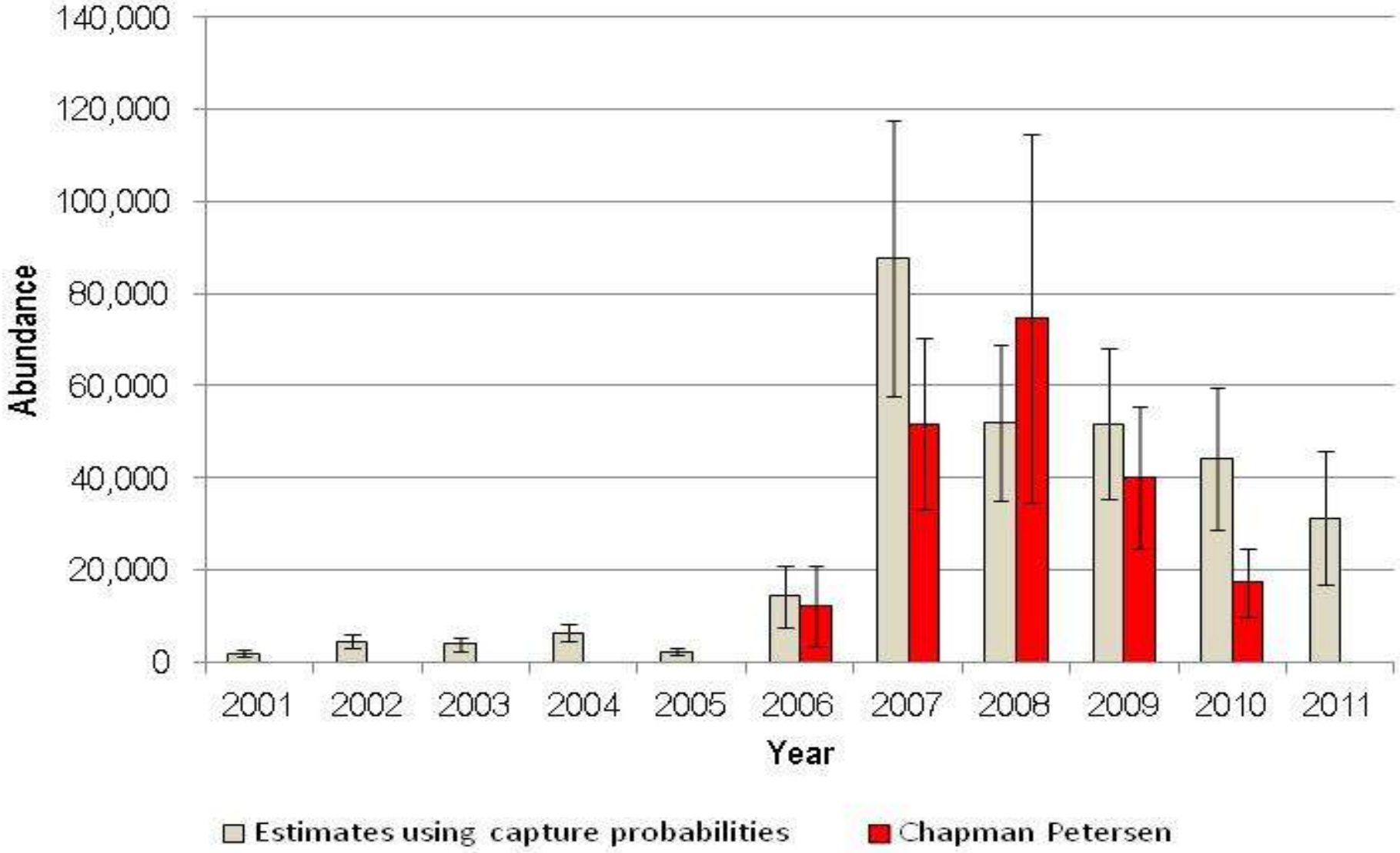

LAKE POWELL
NEVADA
UTAH
ARIZONA
Paria River
Kanab Creek
Colorado River
LAKE MEAD
Colorado River
Havasu Creek
Little Colorado River

Little Colorado River Results

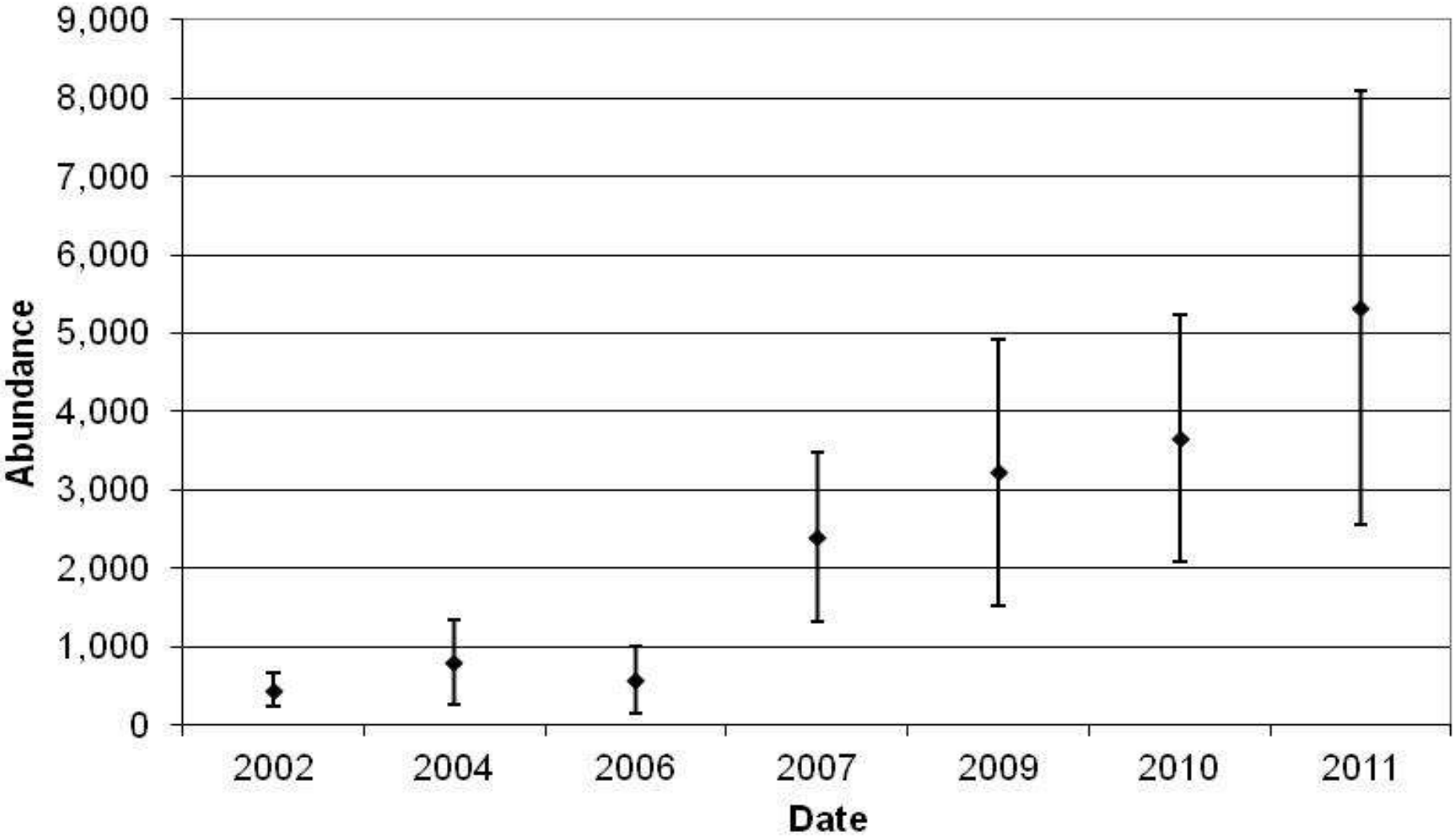
Spring Abundance of Humpback Chub ≥ 150 mm and ≥ 200 mm



Preliminary Spring Bluehead Sucker Abundances (≥ 150 mm)

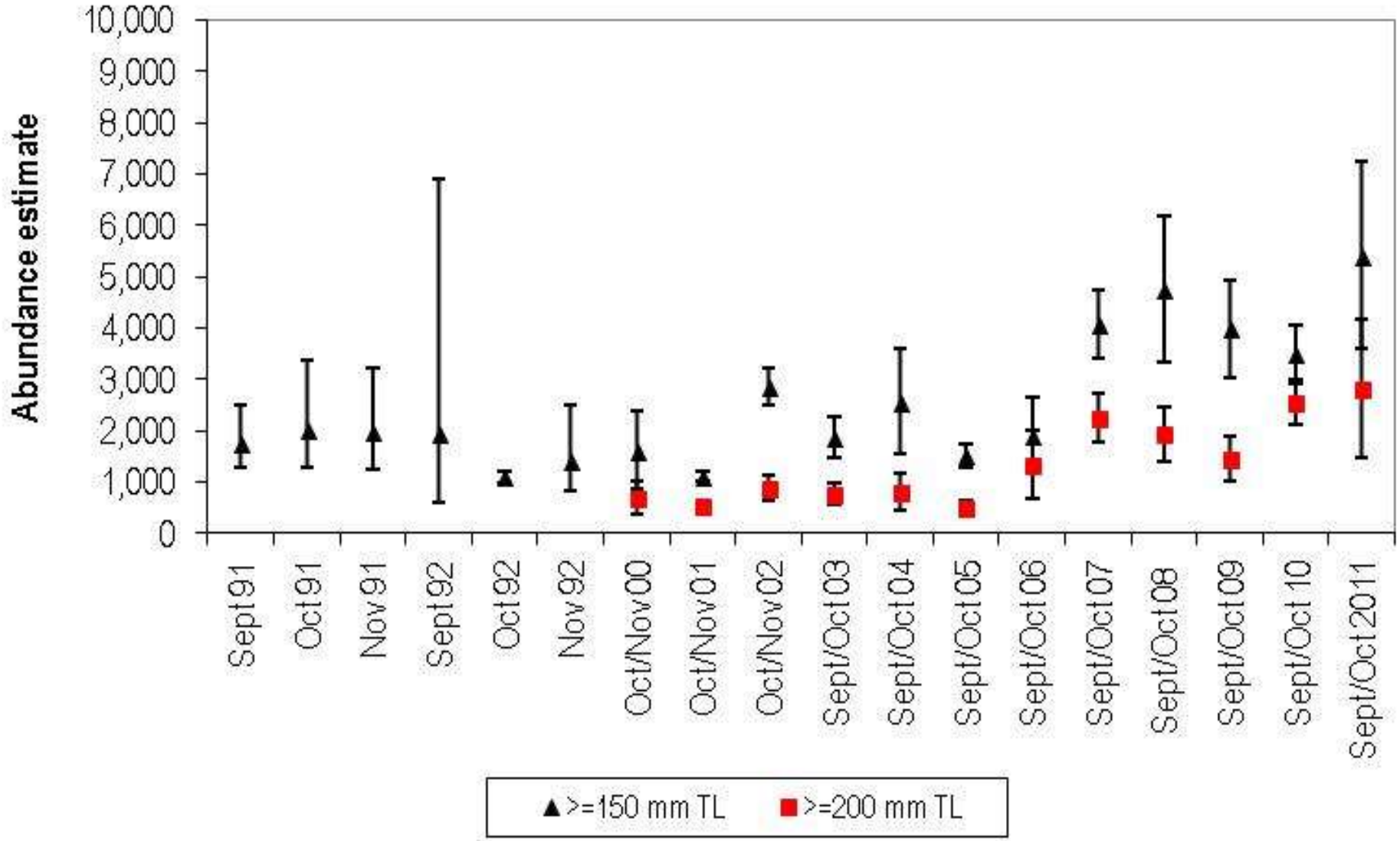


Spring Flannelmouth Sucker Abundances (>150 mm)

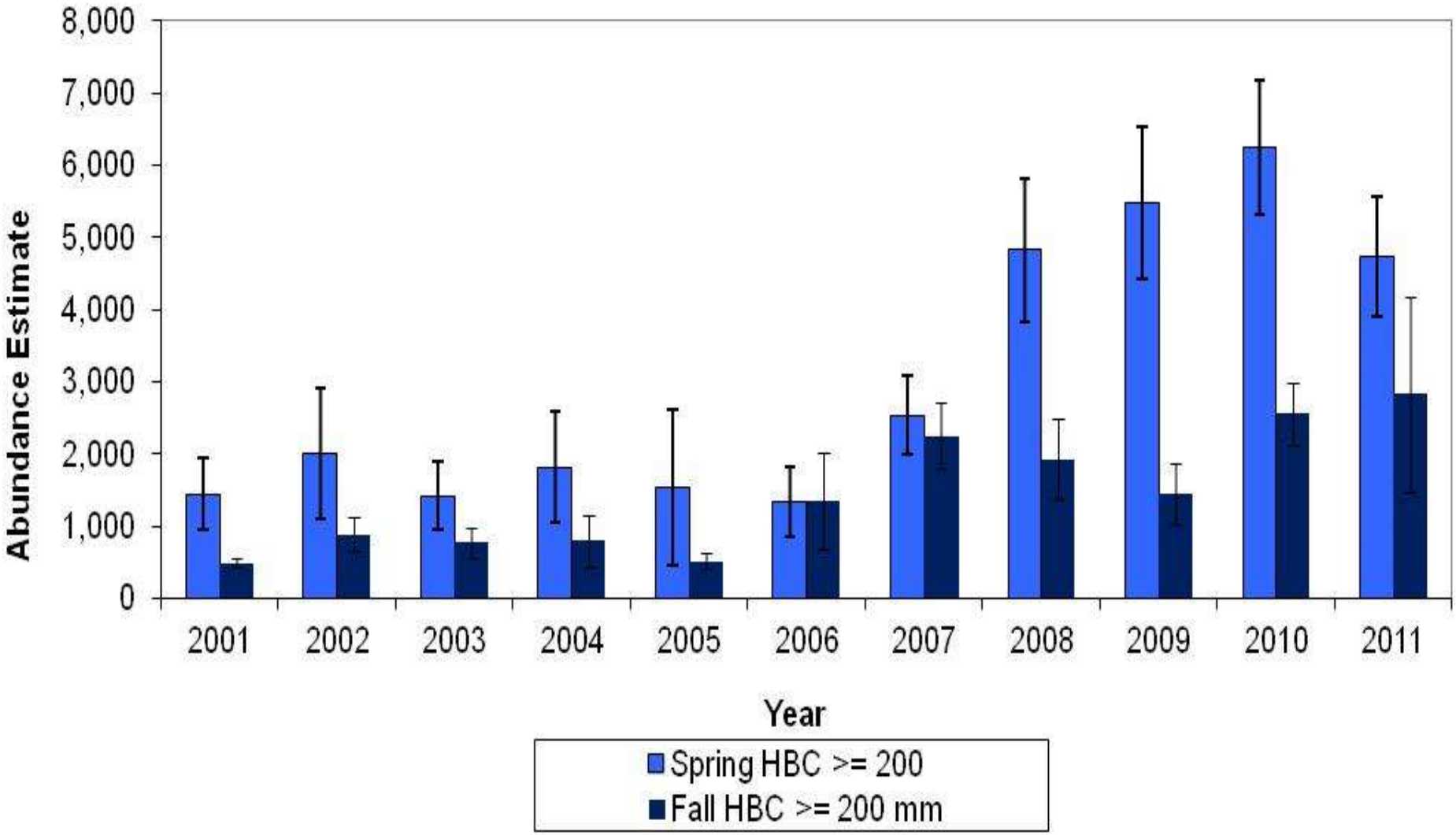


Fall Mark-Recapture Efforts

Fall Abundance of Humpback Chub ≥ 150 mm and ≥ 200 mm

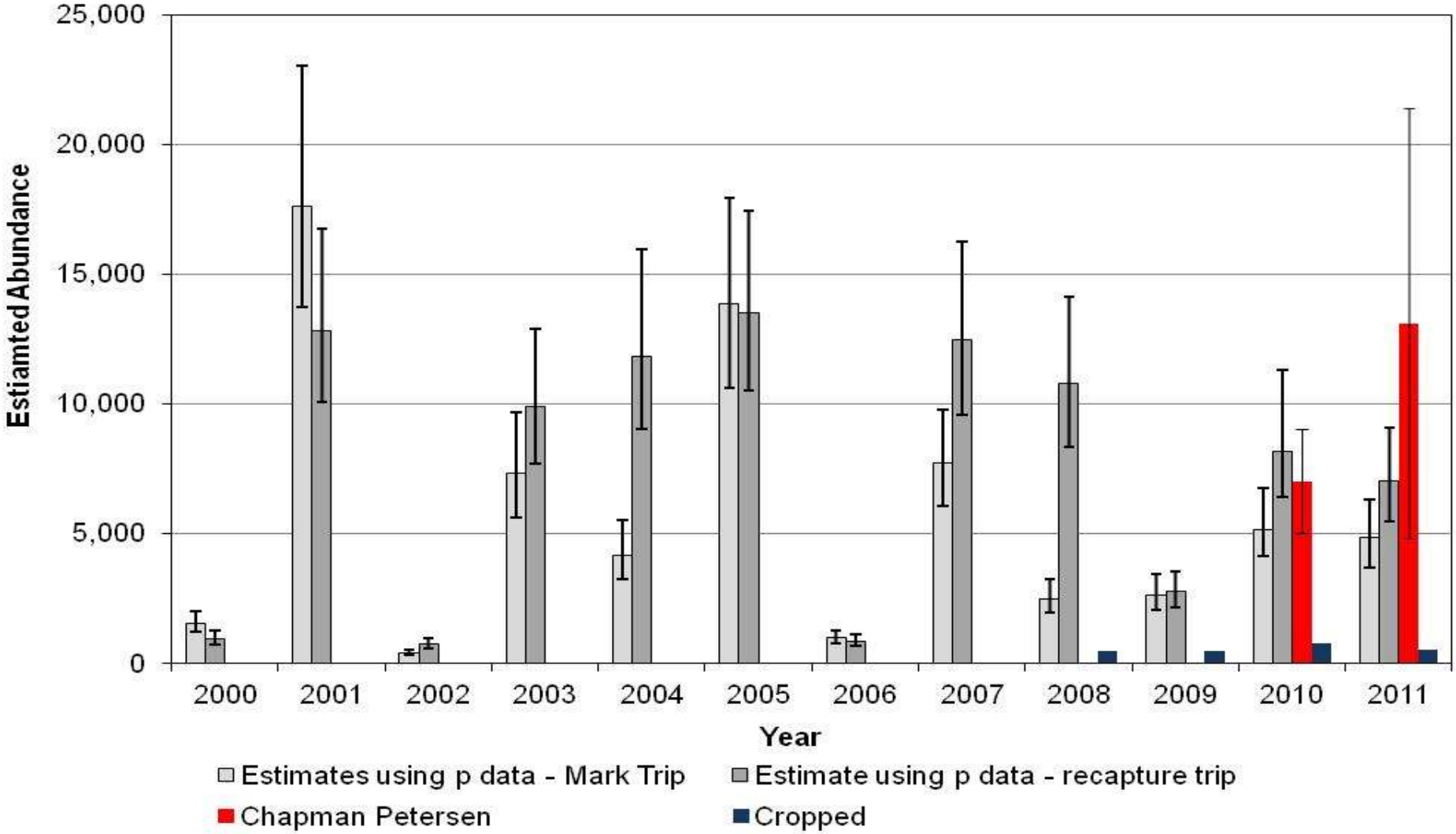


Comparison of spring and fall adult humpback chub ≥200 mm

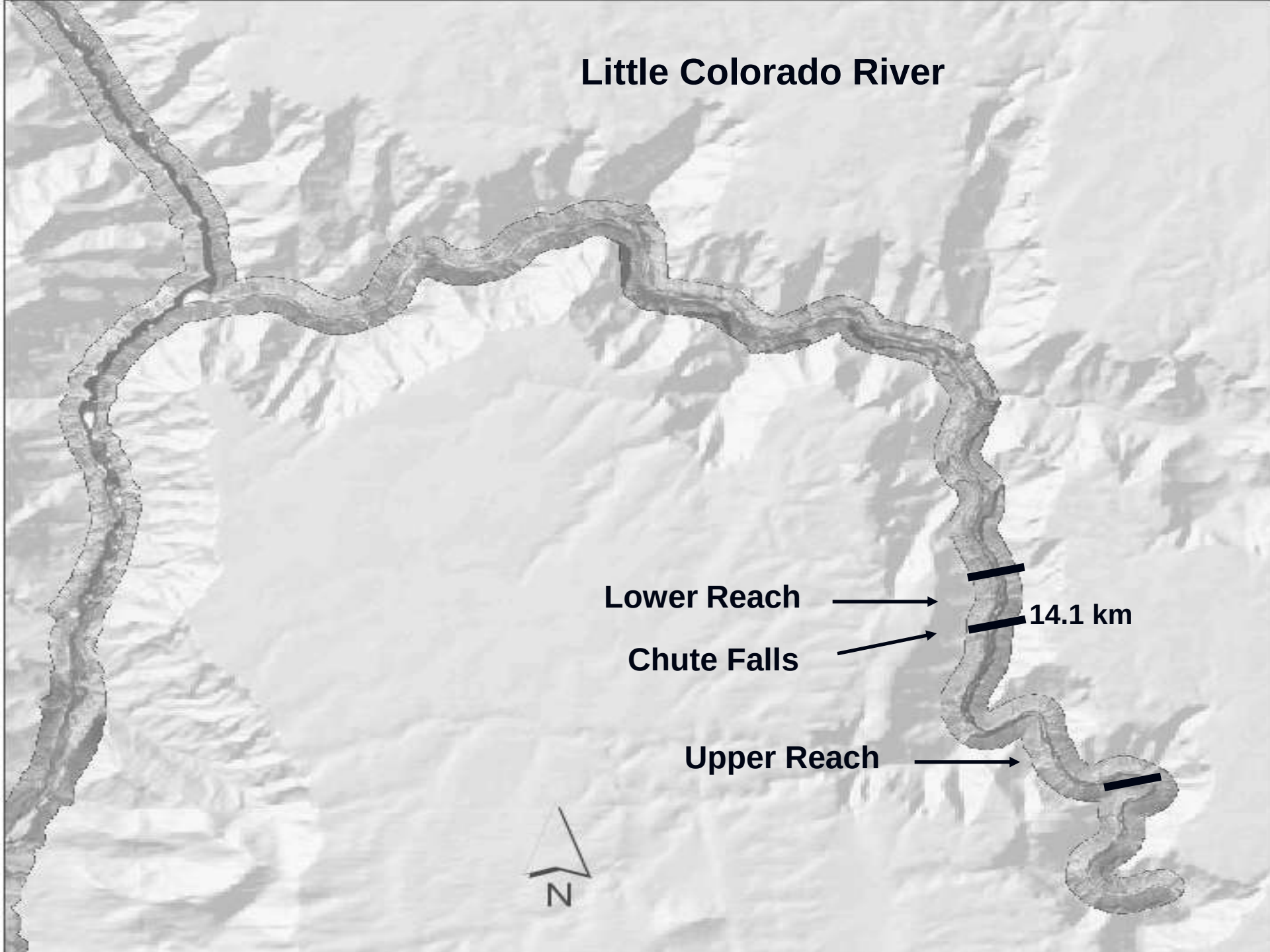


Fall Age-0 VIE Mark-Recapture

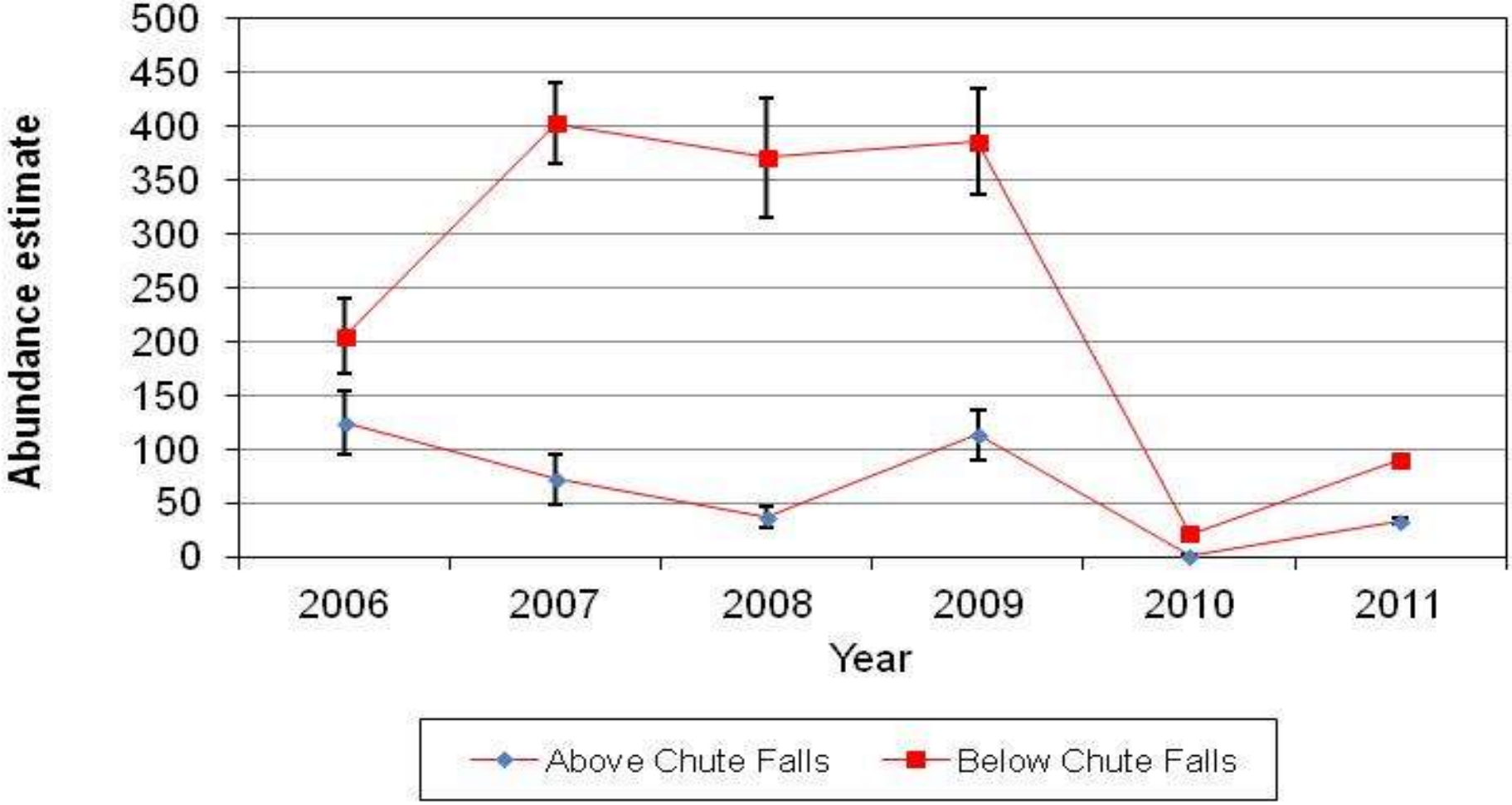
Age-0 HBC Abundances – Chapman-Petersen, preliminary estimations using capture probability, and age-0 cropping



Chute Falls Translocation and Mark-recapture Efforts


Little Colorado River
Lower Reach
14.1 km
Chute Falls
Upper Reach
N

Abundances of Humpback Chub ≥ 200 mm above and below Chute Falls

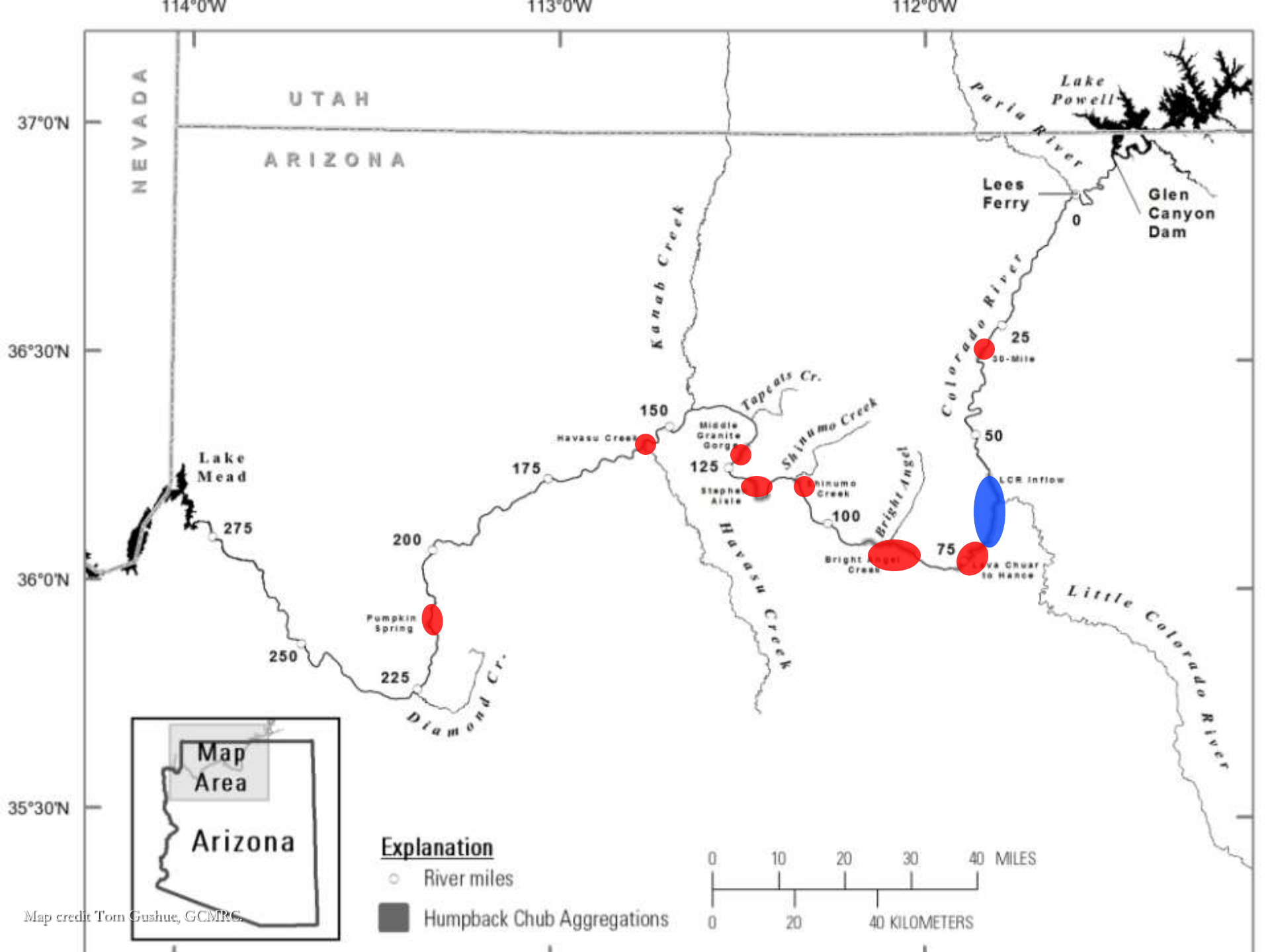


Shinumo Creek – Ongoing
~902 age-0 fish so far

Havasu Creek – 2011 (243 fish)

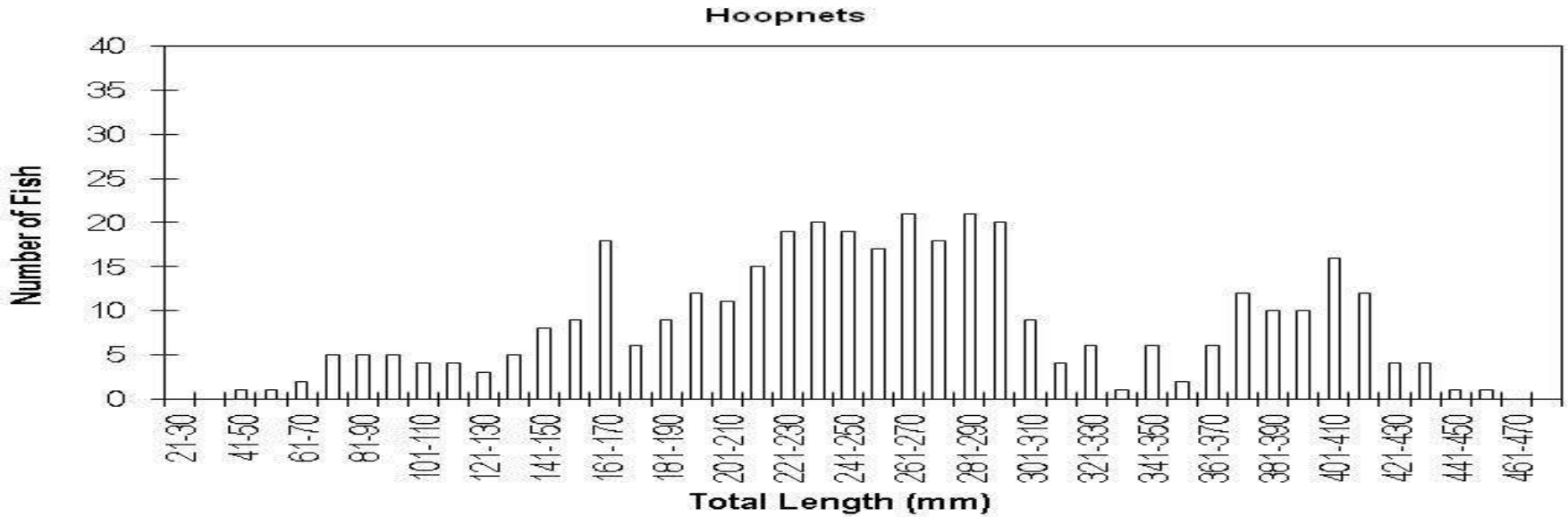
Dexter (~857 on station now)

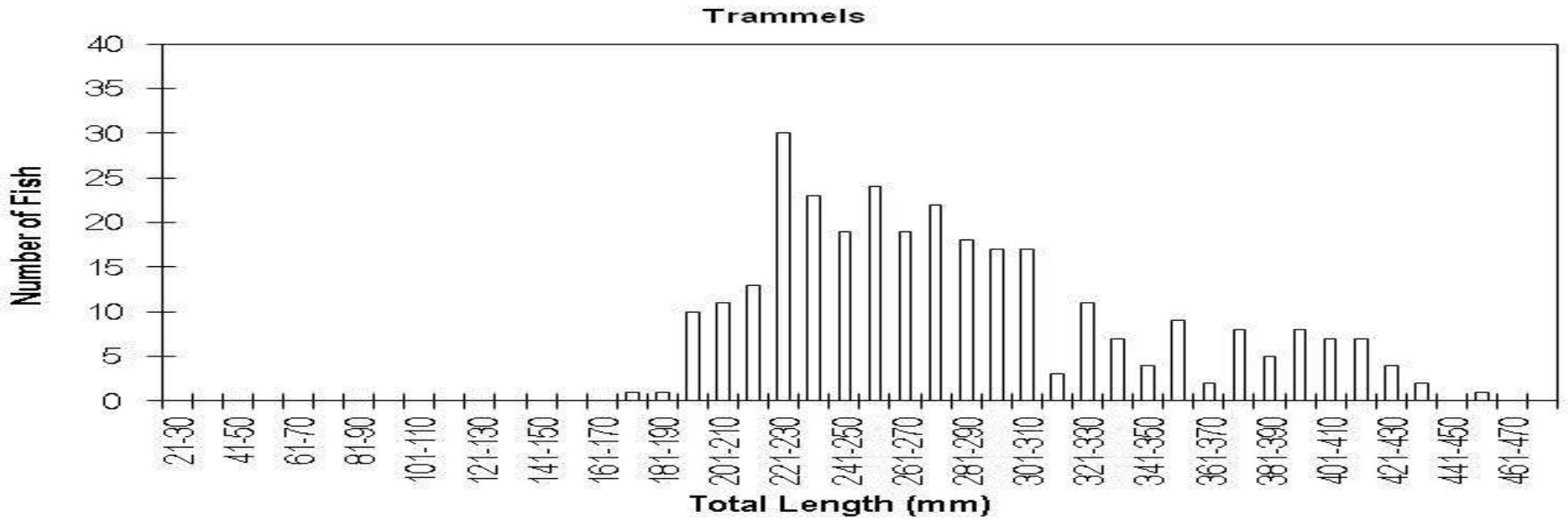
Mainstem Humpback Chub Monitoring (2002-2011)



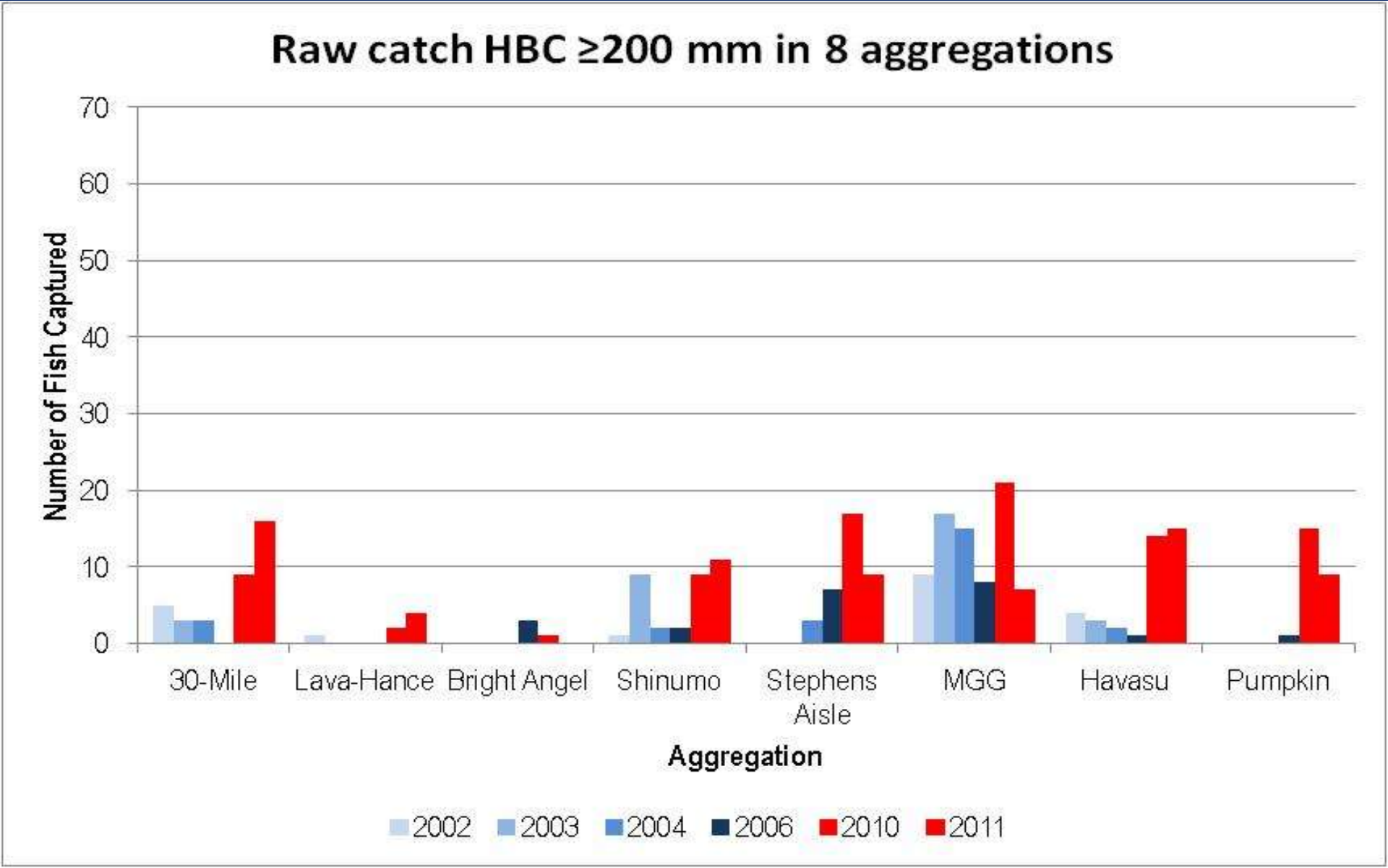
Map credit Tom Gushue, GCMRC.

Gear and length frequencies

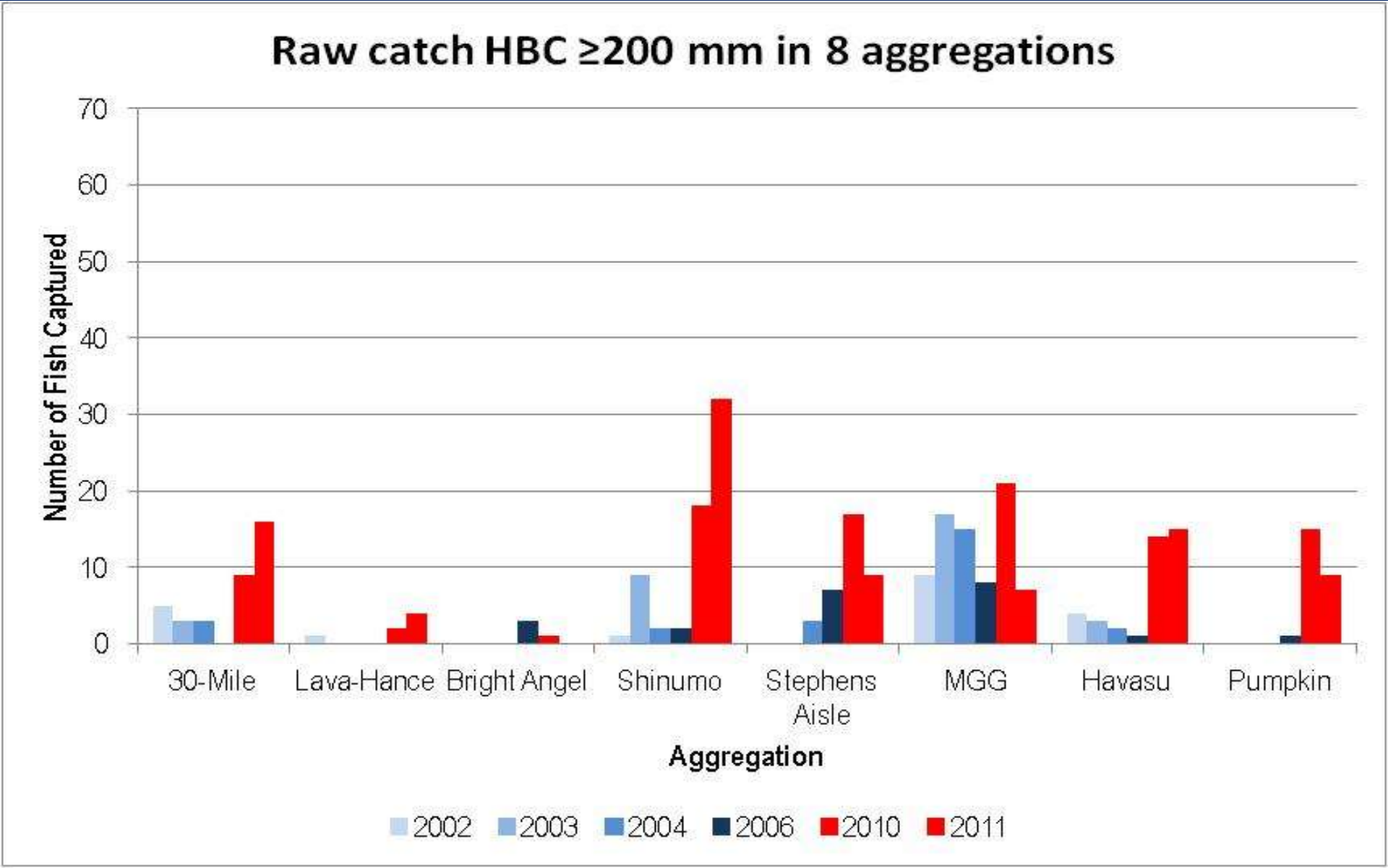




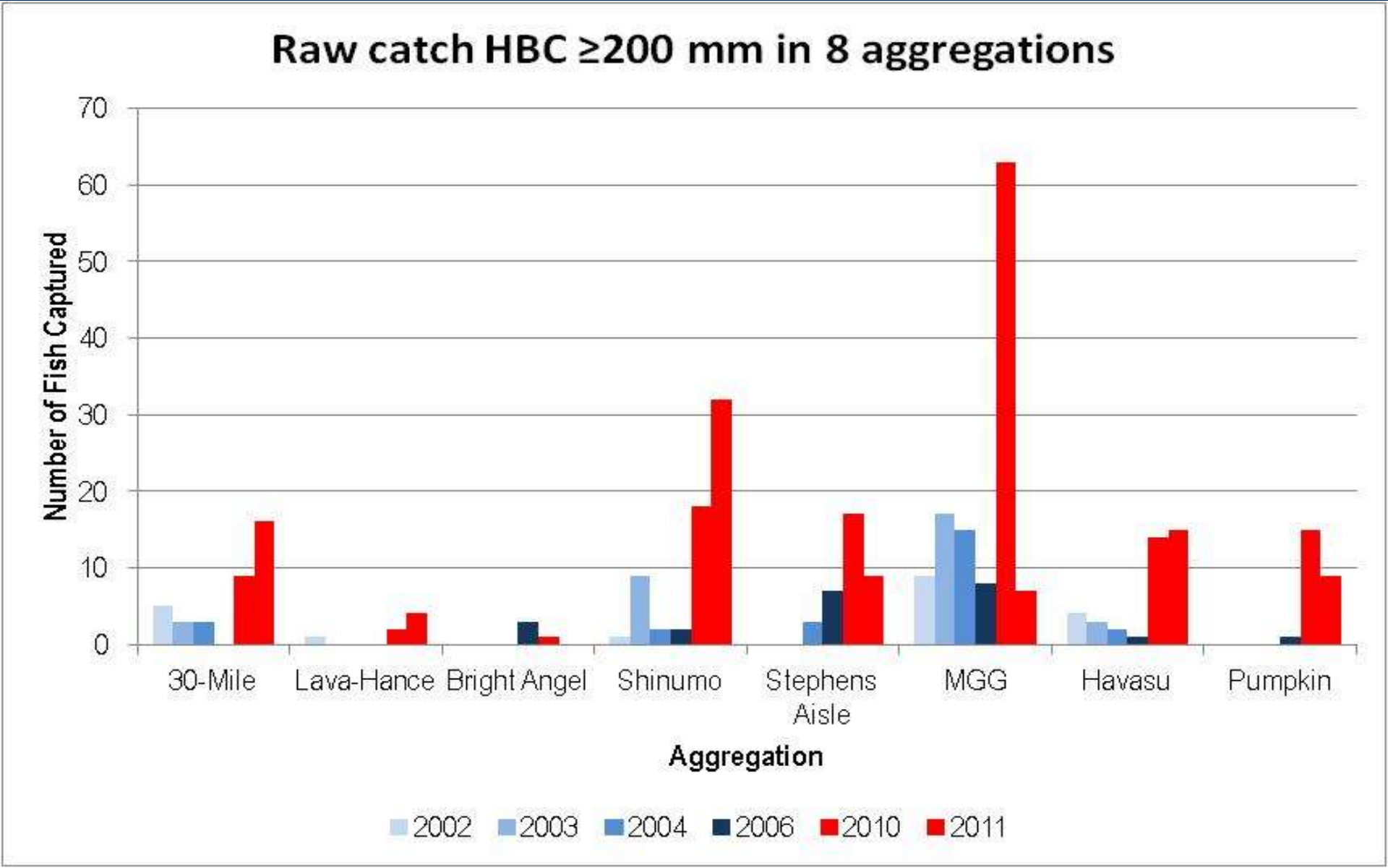
Mainstem Aggregation Monitoring



Mainstem Aggregation Monitoring



Mainstem Aggregation Monitoring

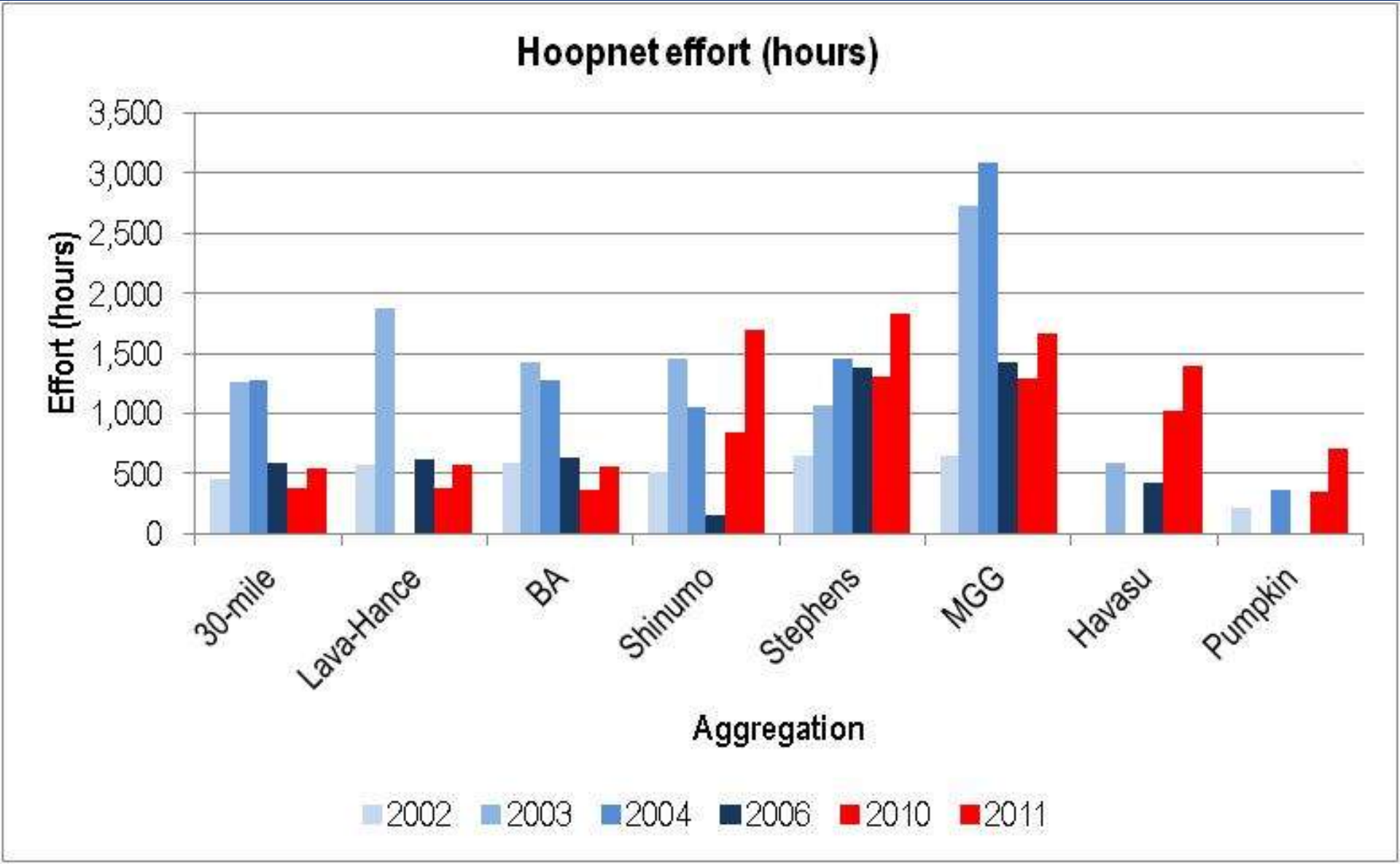


The Bottom Lines and Take Home Lessons

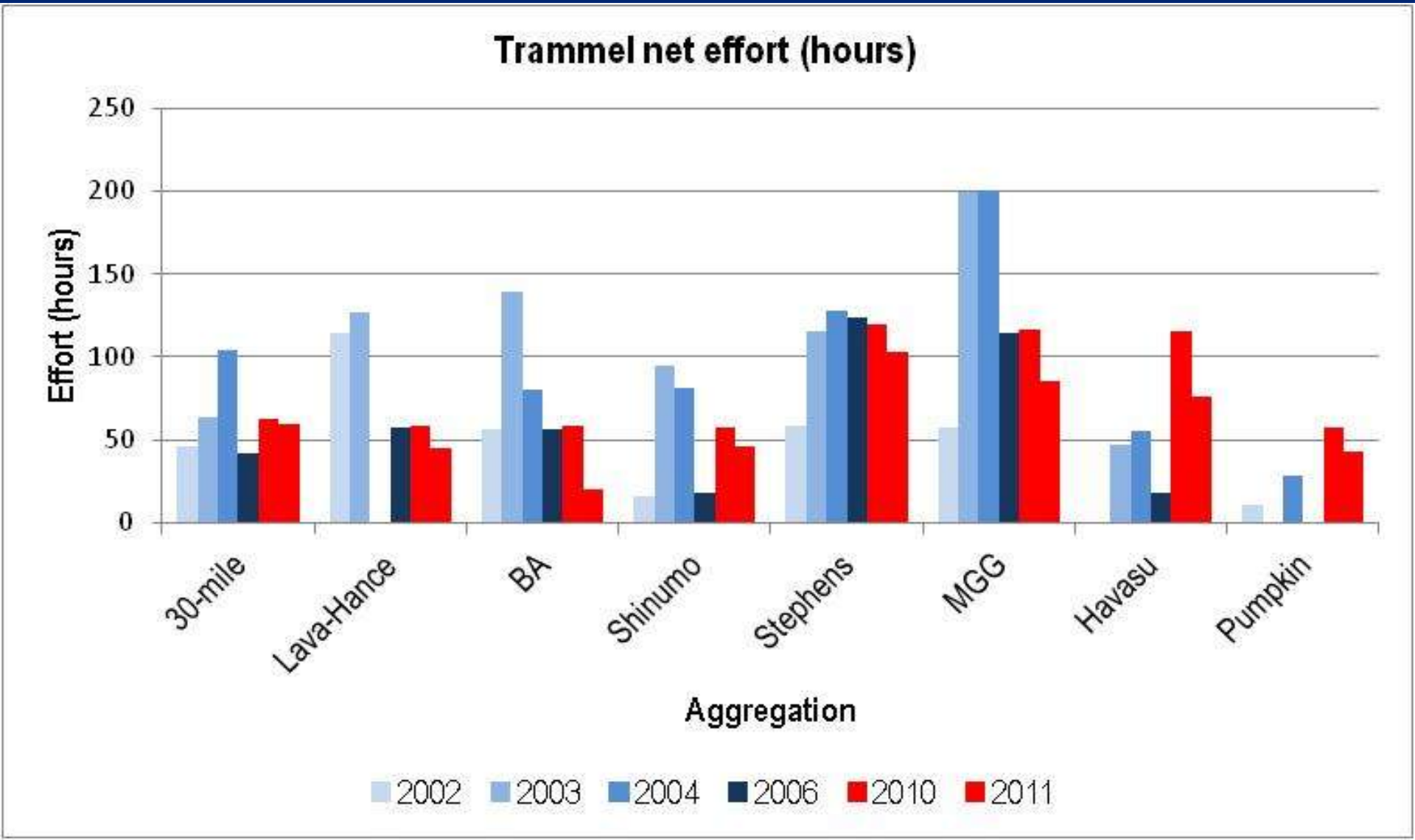
- Humpback chub appear to be doing well in Little Colorado River since 2007.
- Translocations to Chute Falls, Dexter NFHTC, Shinumo and Havasu creeks have been conducted, and have all demonstrated some elements of further improving the situation for humpback chub (e.g., gene pool preservation, population redundancy, high growth rates, recruitment).
- Humpback chub may have been recently increasing in some of the aggregations in the mainstem Colorado River in Grand Canyon.

Thank You

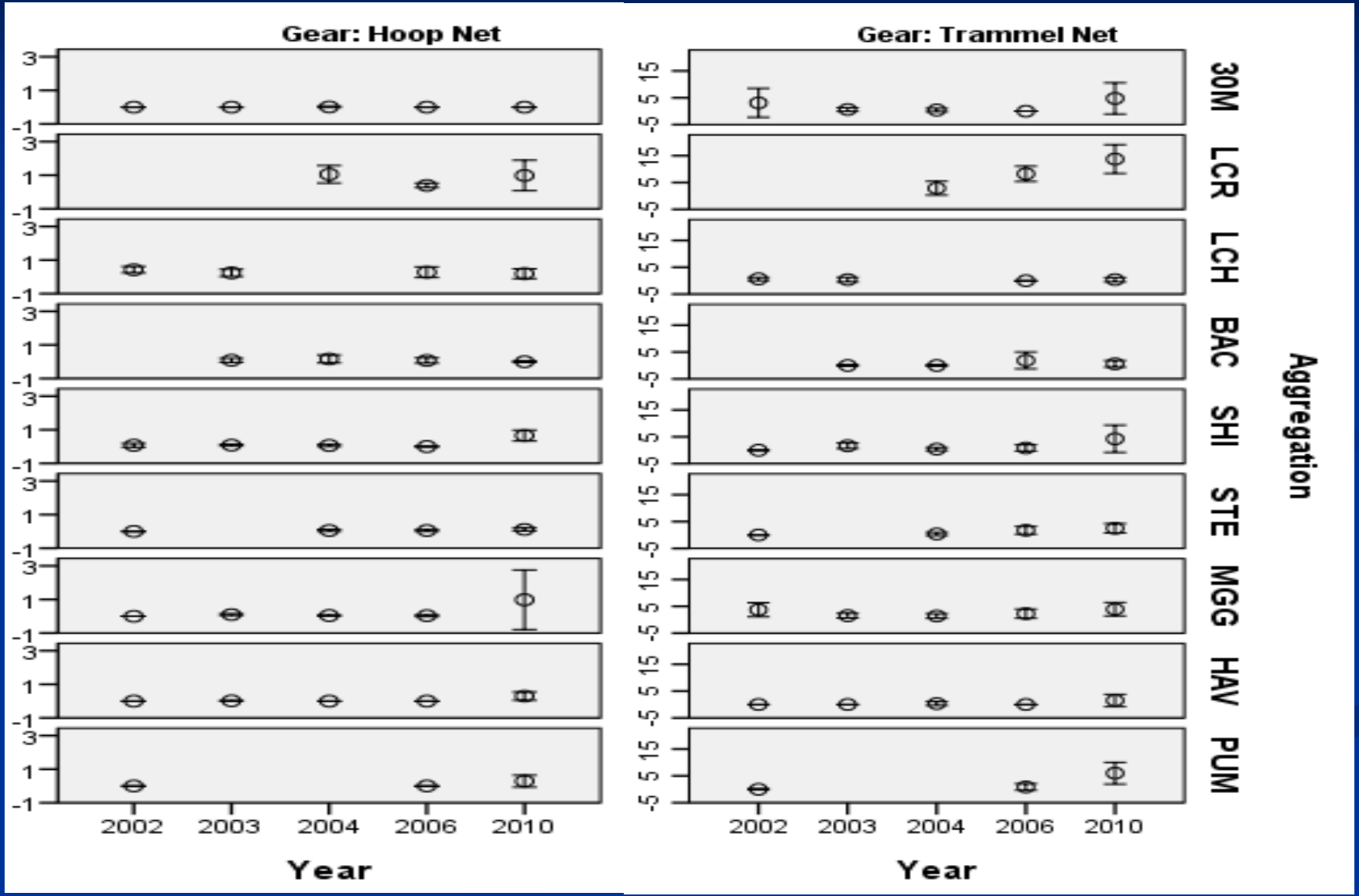
Hoop Netting Effort



Trammel Netting Effort



Catch per Unit Effort



Can we estimate by mark-recapture?

- Method – use consecutive annual sampling to calculate abundance with pooled capture probability data

	Marks	Captures	Recaptures	p1	p2
2002-2003	33	44	3	0.07	0.09
2003-2004	44	28	2	0.07	0.05
2010-2011	175	143	8	0.06	0.05
2010-2011(LCR ag)	106	209	19	0.09	0.17
Pooled	252	215	13	0.06	0.05
Pooled (LCR ag)	358	424	32	0.08	0.09

- We have annual catch numbers of HBC within each aggregation