National Park Service
U.S. Department of the Interior

Grand Canyon National Park

Bright Angel Creek Non-Native Trout Reduction Grand Canyon National Park

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Cooperators

- Funded by Reclamation and NPS

- Volunteers (several thousand hours)

Project Background

- Trout initially introduced to GCNP,1920's and 1930's
  - Greatest concentration of Brown Trout occurs in Bright Angel Creek and its confluence with the Colorado River
  - Brown Trout prey on and may compete with native fish (Whiting et al. 2014, Yard et al. 2011)
- Non-native trout control: Conservation Measure for Humpback Chub in Biological Opinion (USFWS 2008, 2011)
- NPS Comprehensive Fisheries Management Plan (CFMP) 2013

Objectives

- Conduct comprehensive trout reduction efforts in BAC and the BACI for 5 consecutive years.

- Through the reduction of non-native fish:
  - Enhance and restore native fish populations in BAC
  - Contribute to overall conservation of Humpback Chub

- Components
  - Installing and operating a weir
  - Electrofishing for monitoring and removal in BAC
  - Electrofishing for monitoring and removal in BACI

Monitoring Metrics

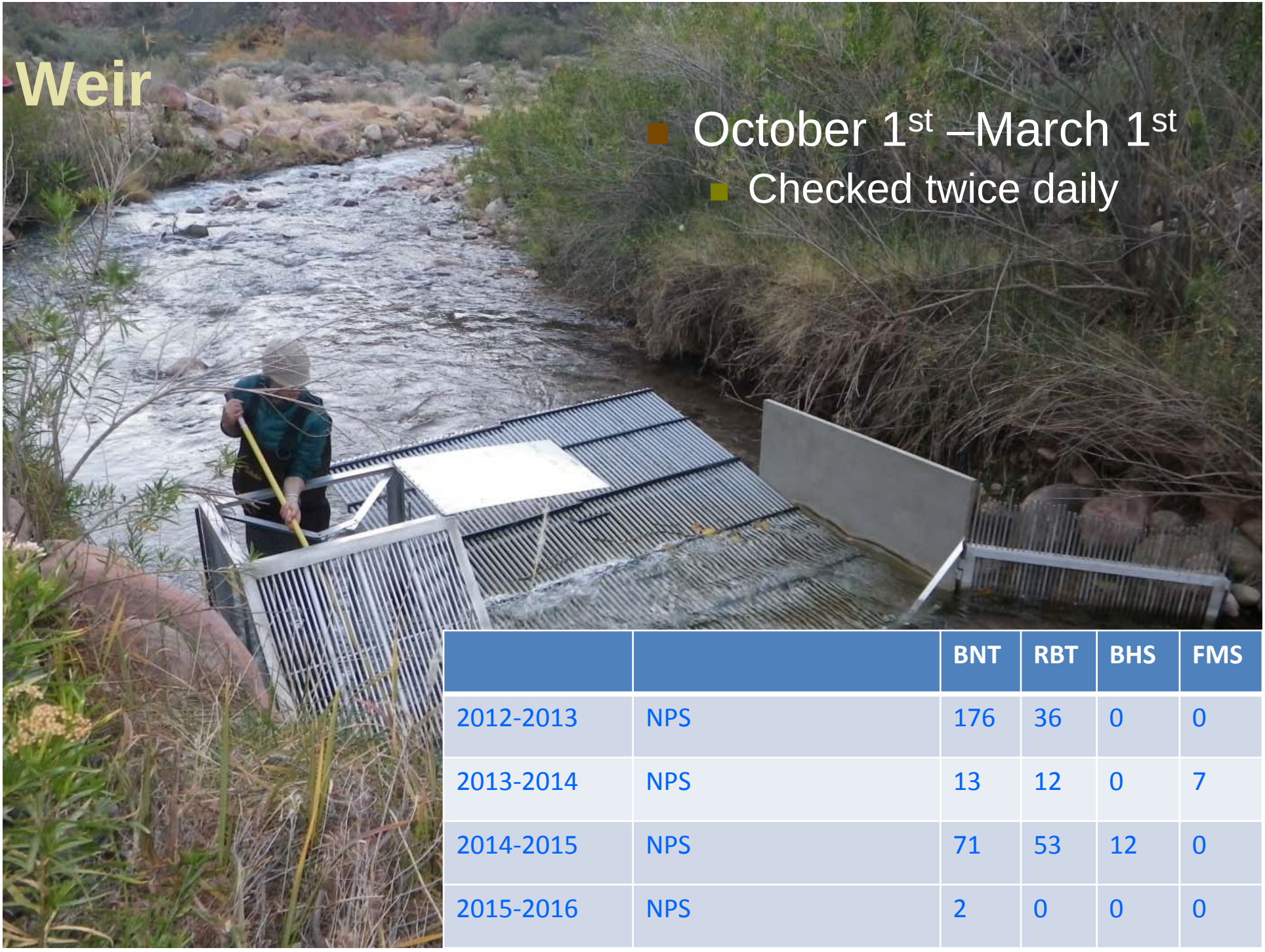
- Non-native fish:
  - Overall reduction of the non-native fish population in BAC
  - Changes in abundance and size structure over time

- Native fish:
  - Maintain or increase native fish
  - Evaluated by abundance, recruitment & survival

- Adaptive Management Strategy
  - Evaluation project results
  - Possible adaptation of methods to achieve desired outcomes

*All data presented are considered preliminary

Weir



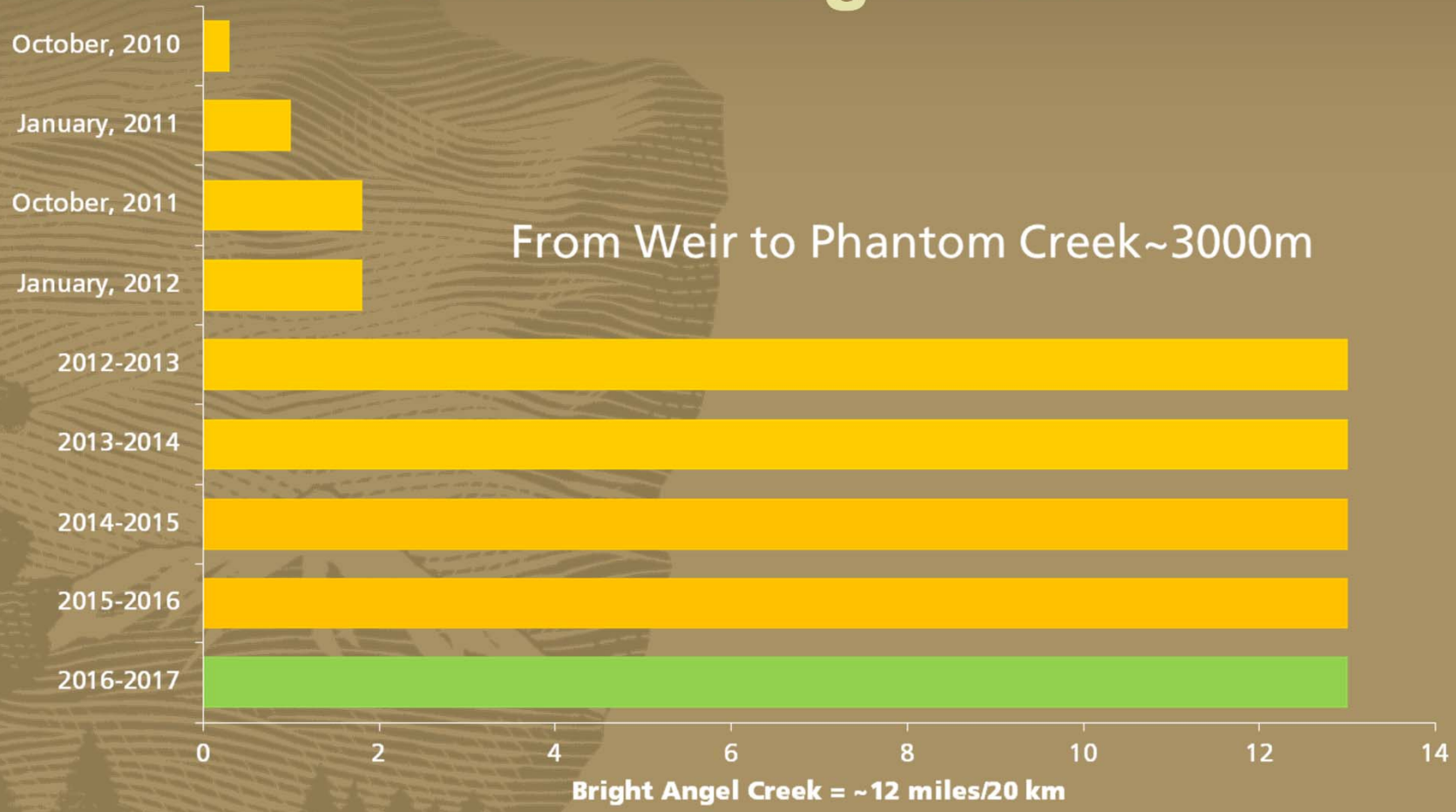
- October 1st –March 1st
  - Checked twice daily

		BNT	RBT	BHS	FMS
2012-2013	NPS	176	36	0	0
2013-2014	NPS	13	12	0	7
2014-2015	NPS	71	53	12	0
2015-2016	NPS	2	0	0	0

Bright Angel Creek Annual Electrofishing Effort

- October –February
  - 8-10 people, ~120 days

Bright Angel Creek Annual Electrofishing Effort



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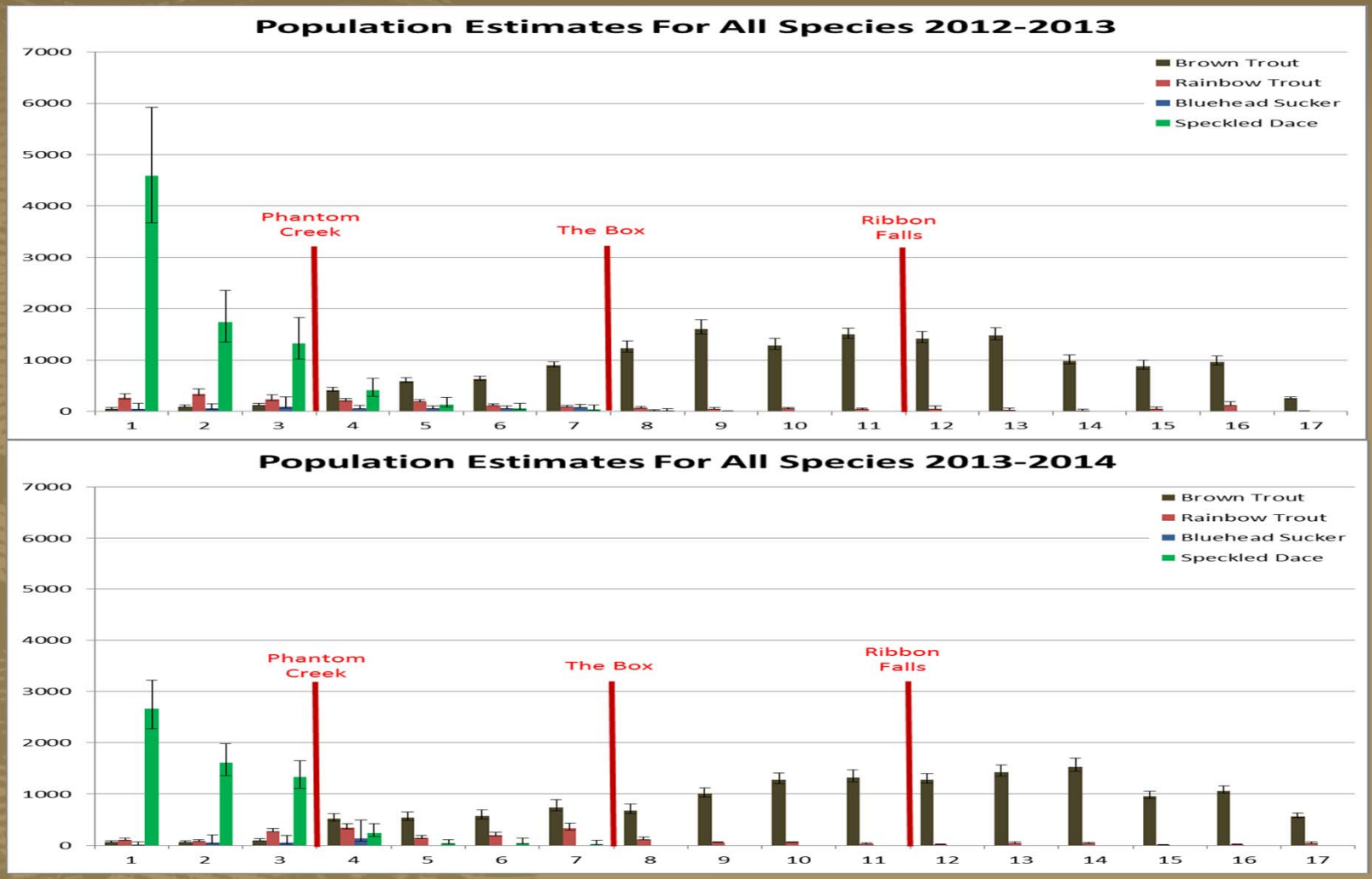
Population Estimates



Estimated Fish Density/1000m

Meters x 1000 from the Mouth to Headwaters

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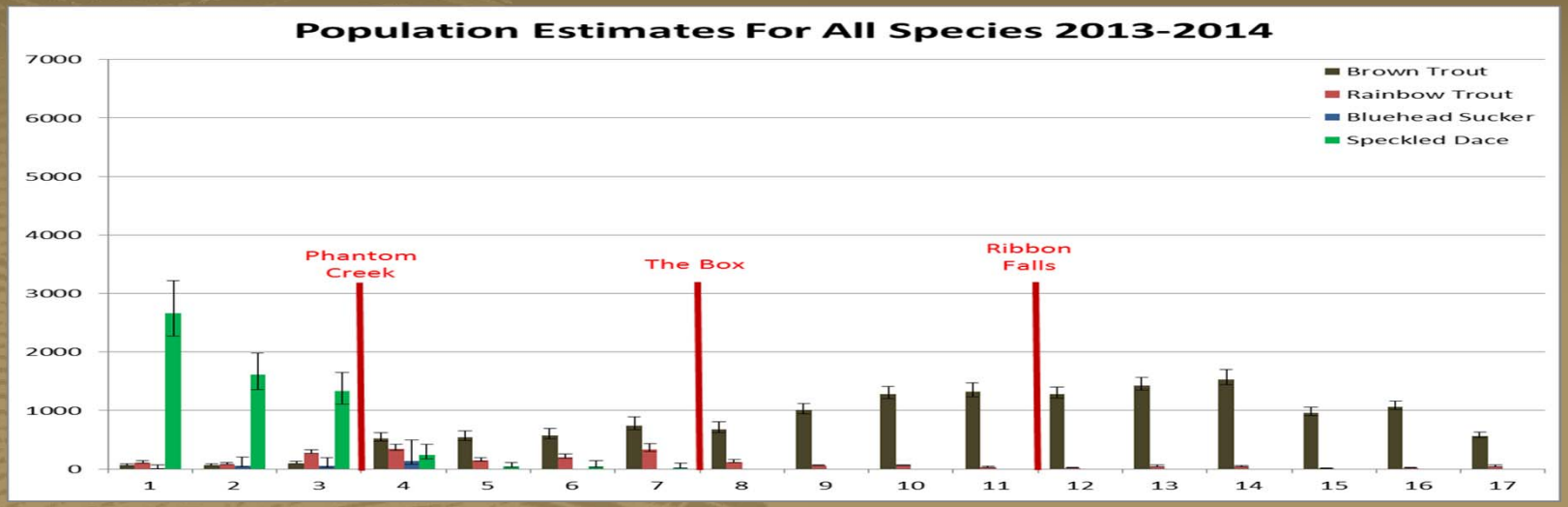

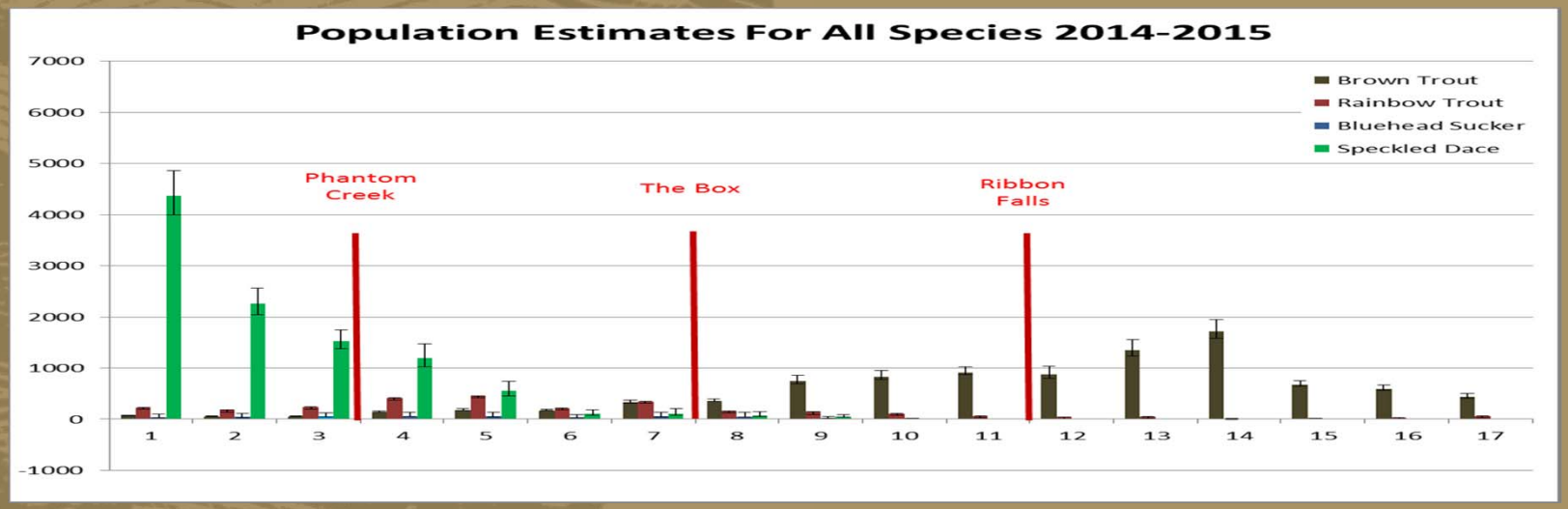

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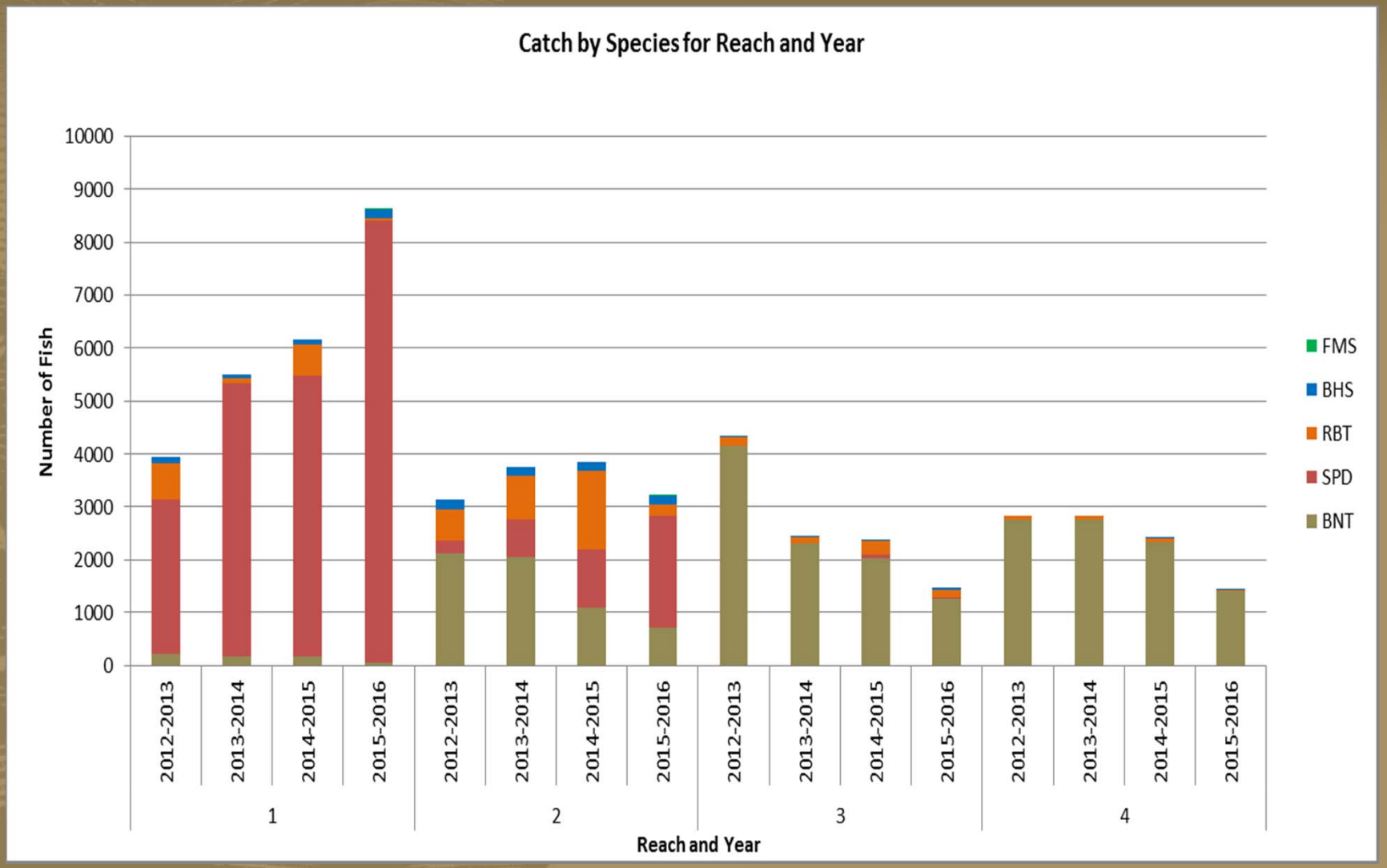
Total Catch by Reach



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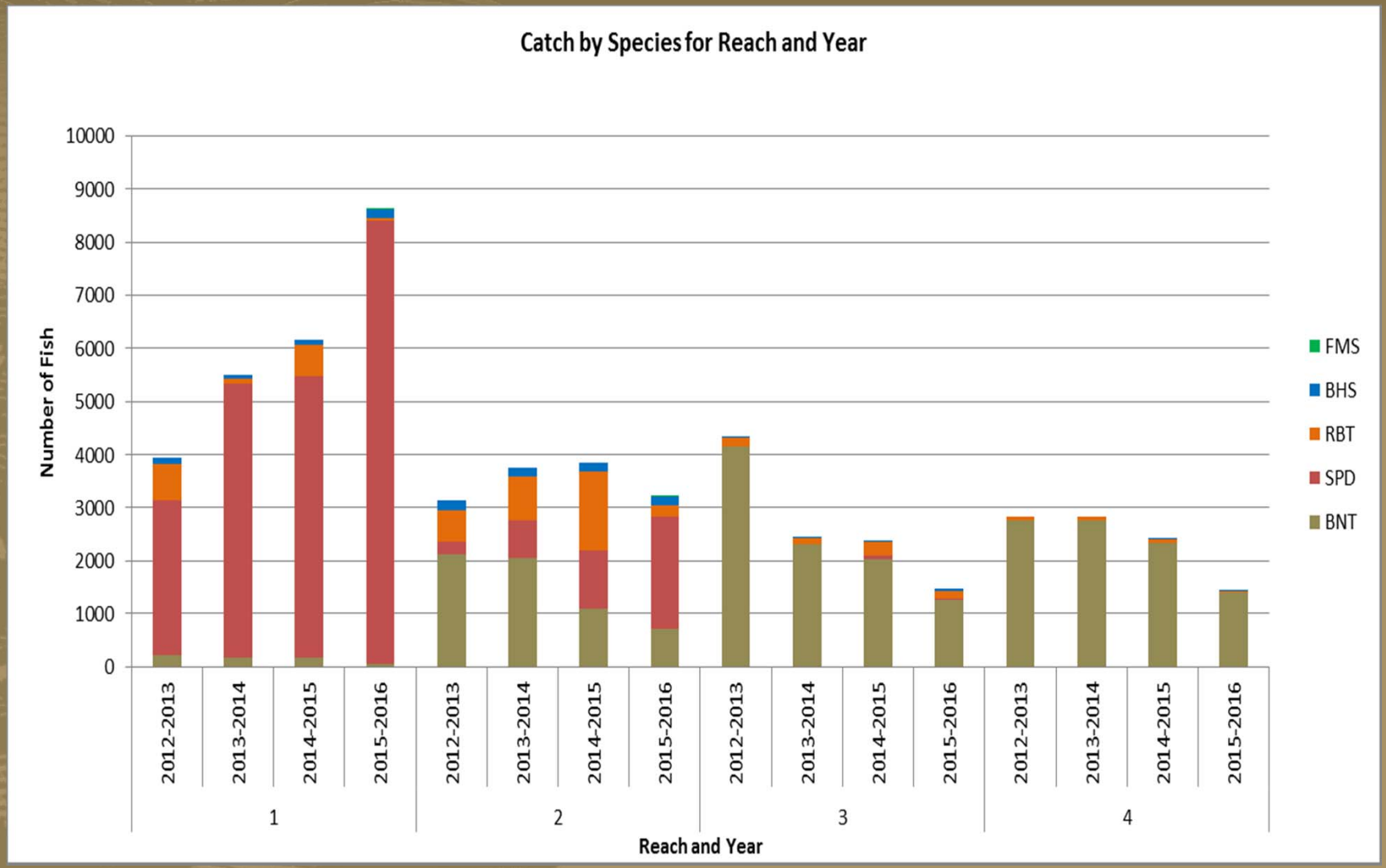

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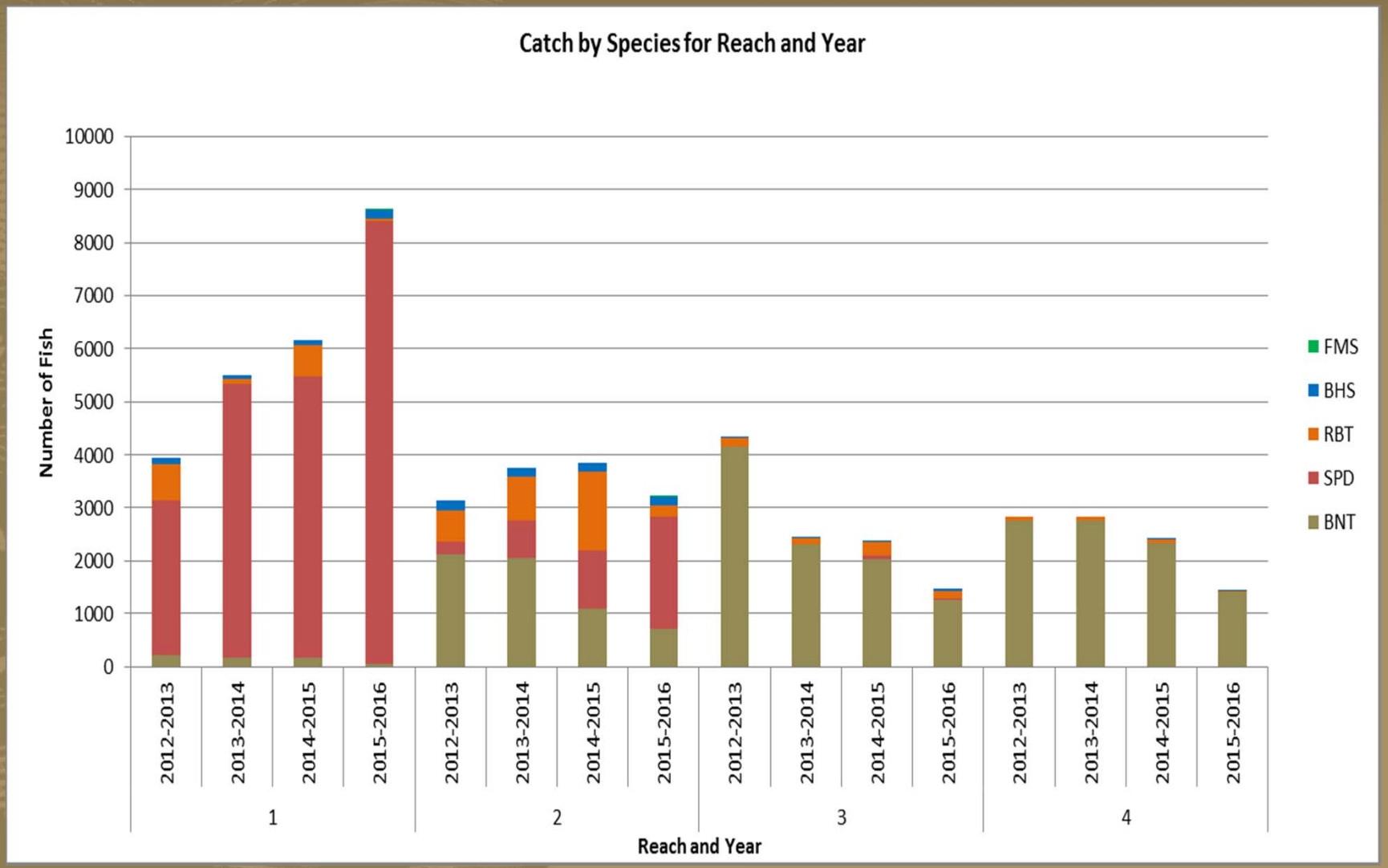

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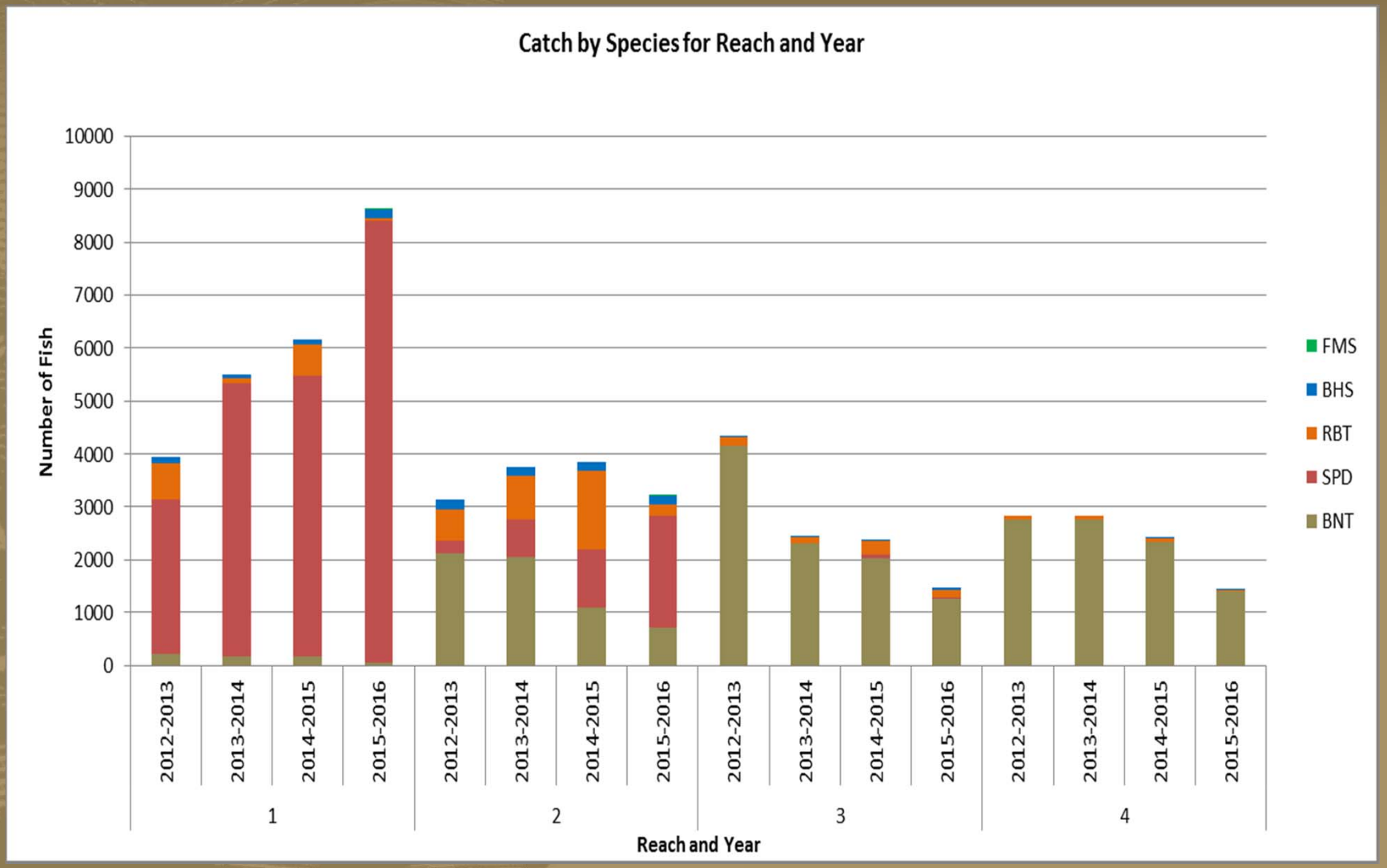

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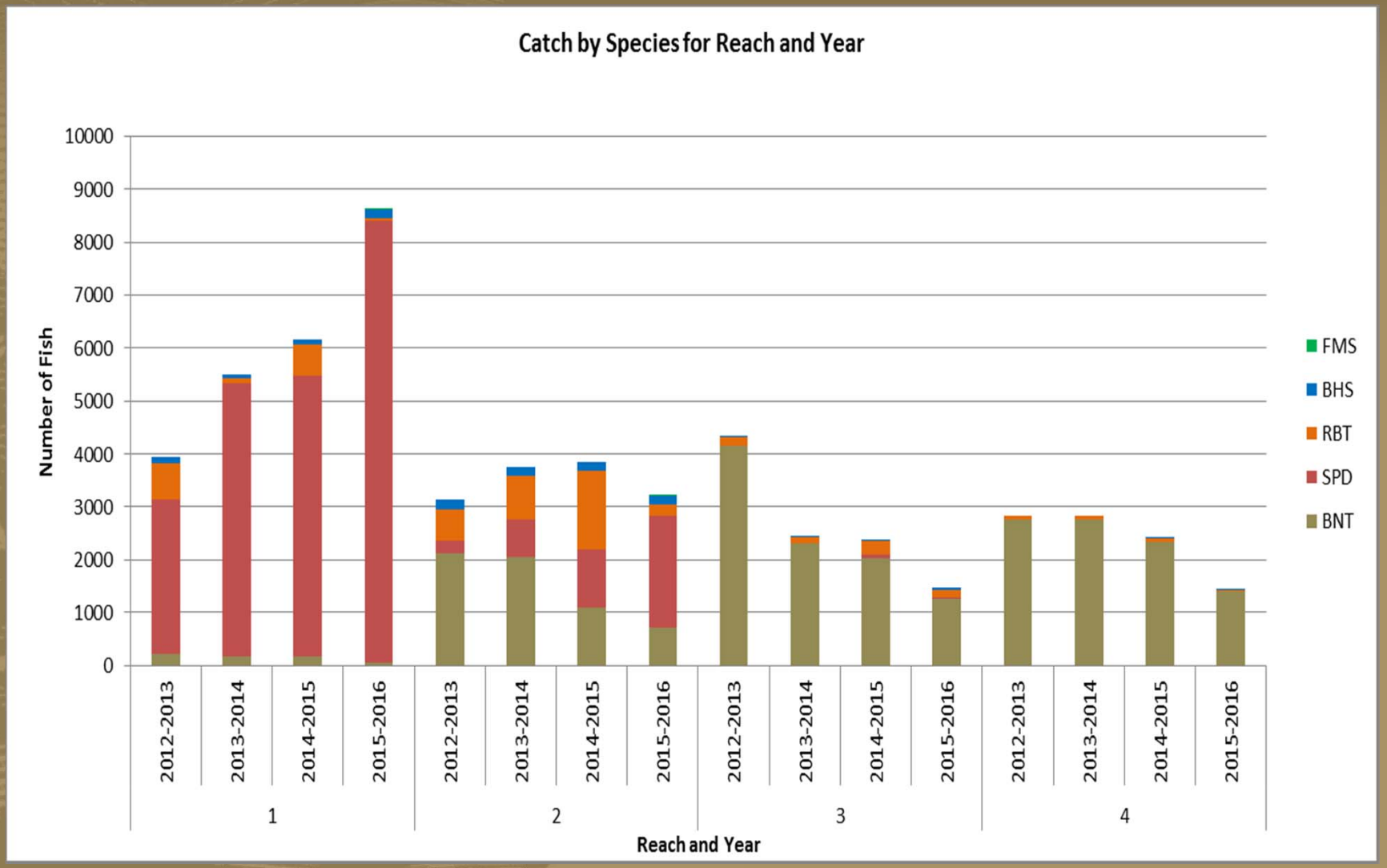
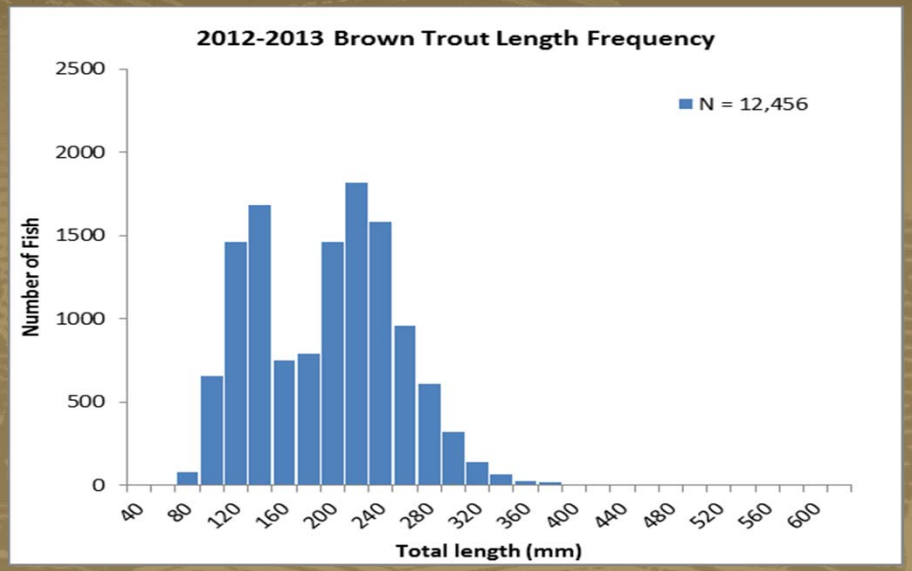
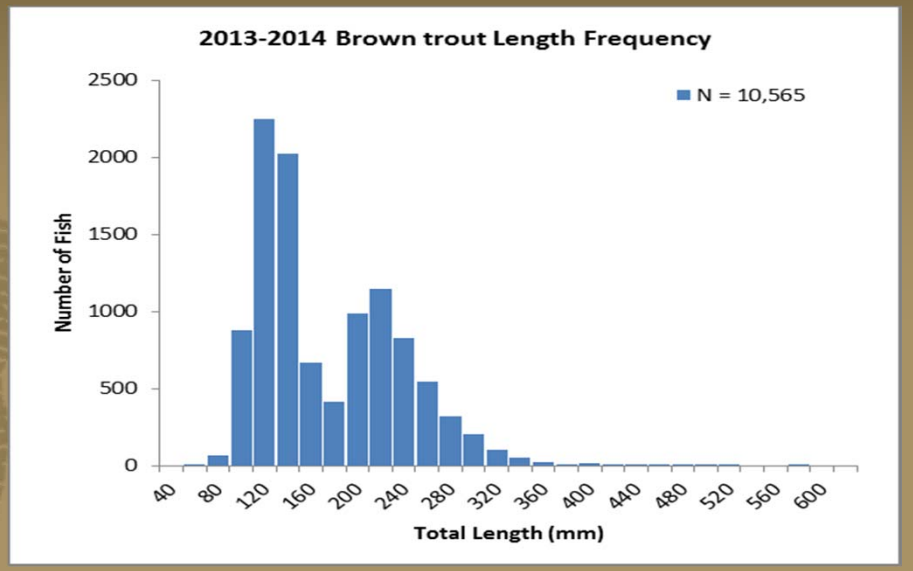
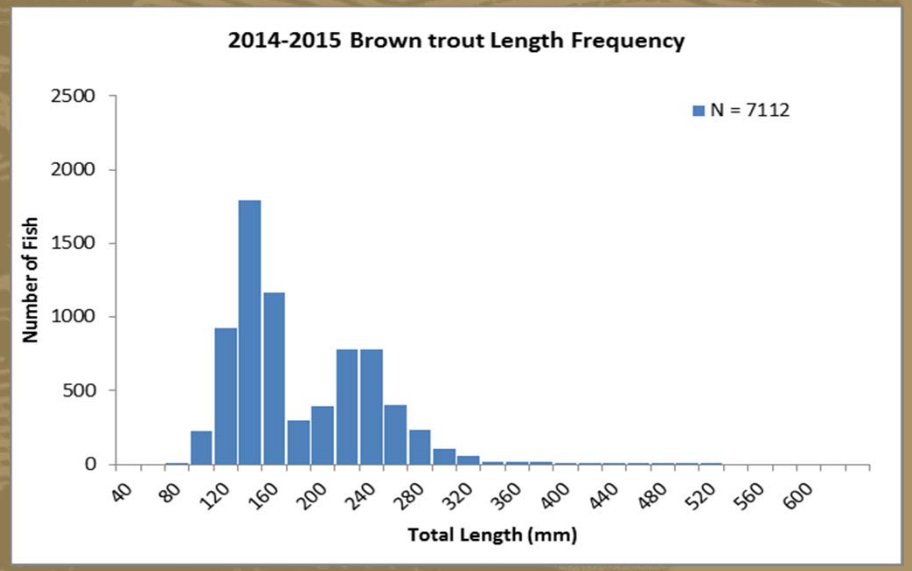
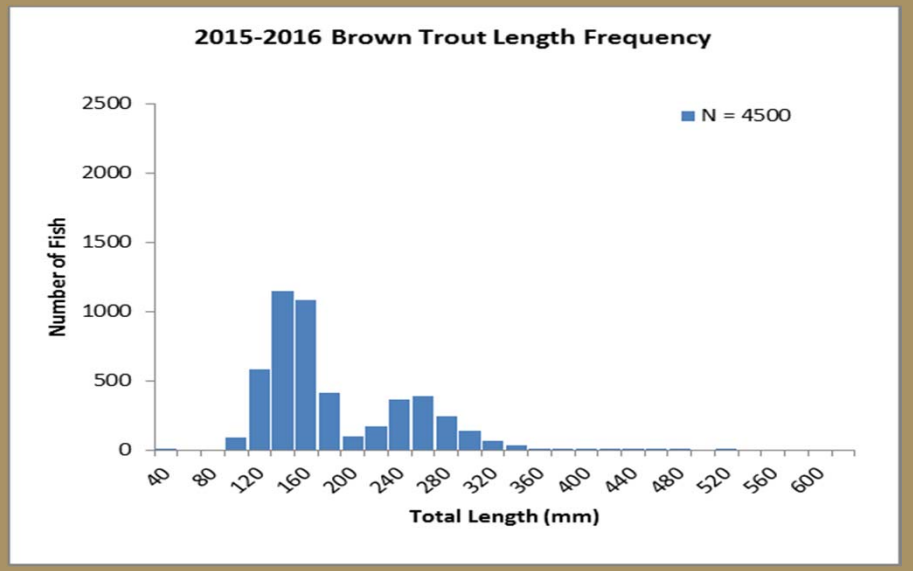


Brown Trout Size Structure

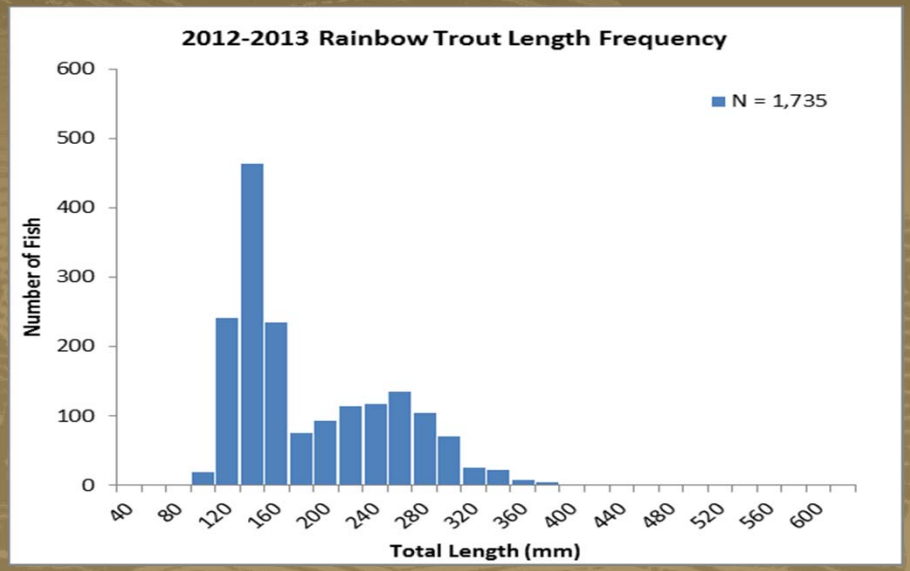


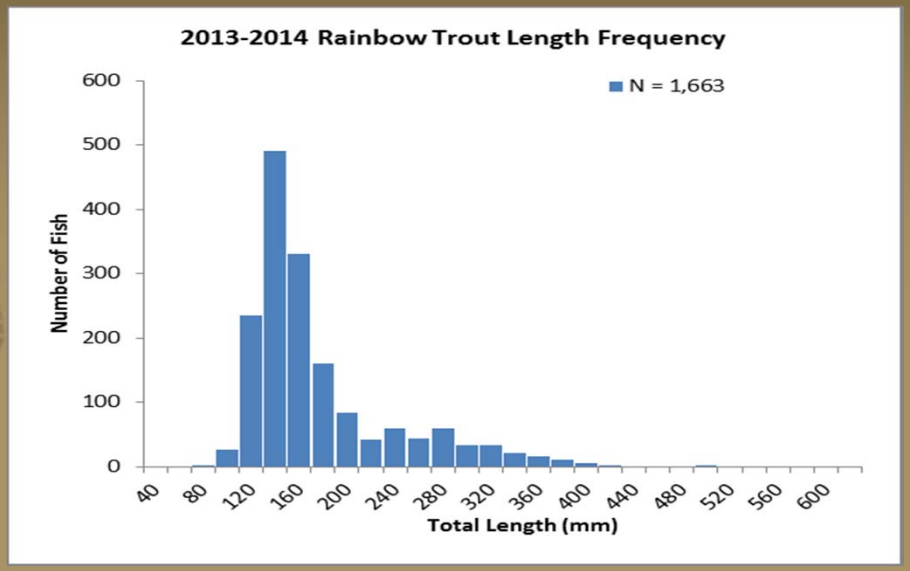


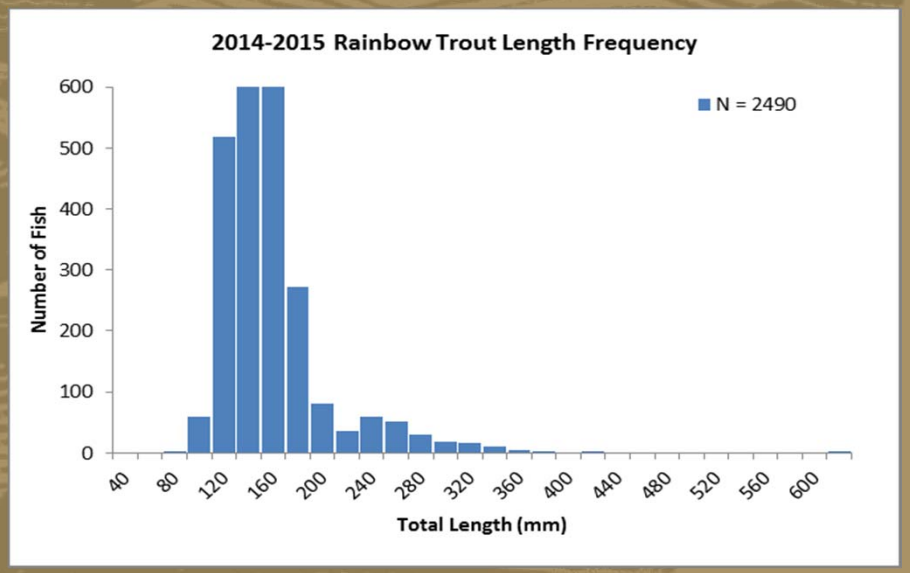


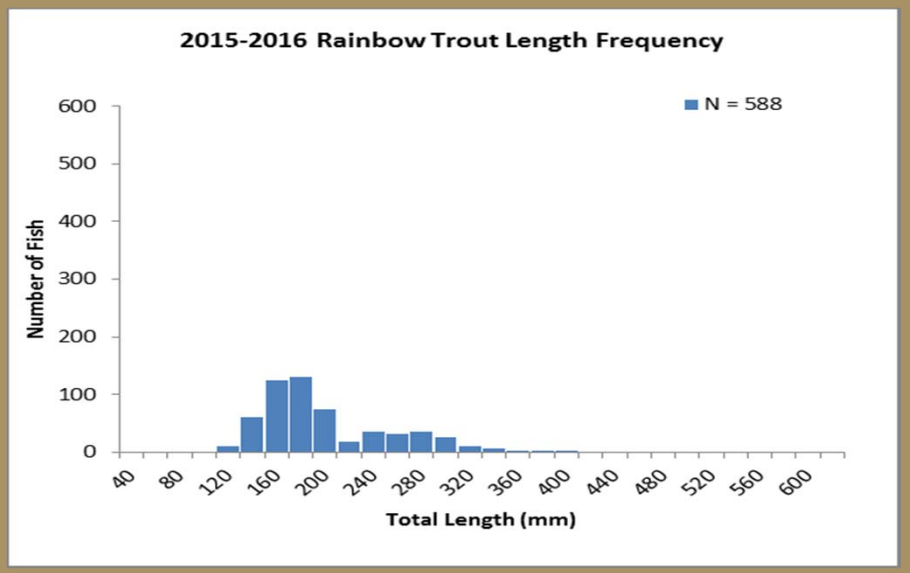


Rainbow Trout Size Structure

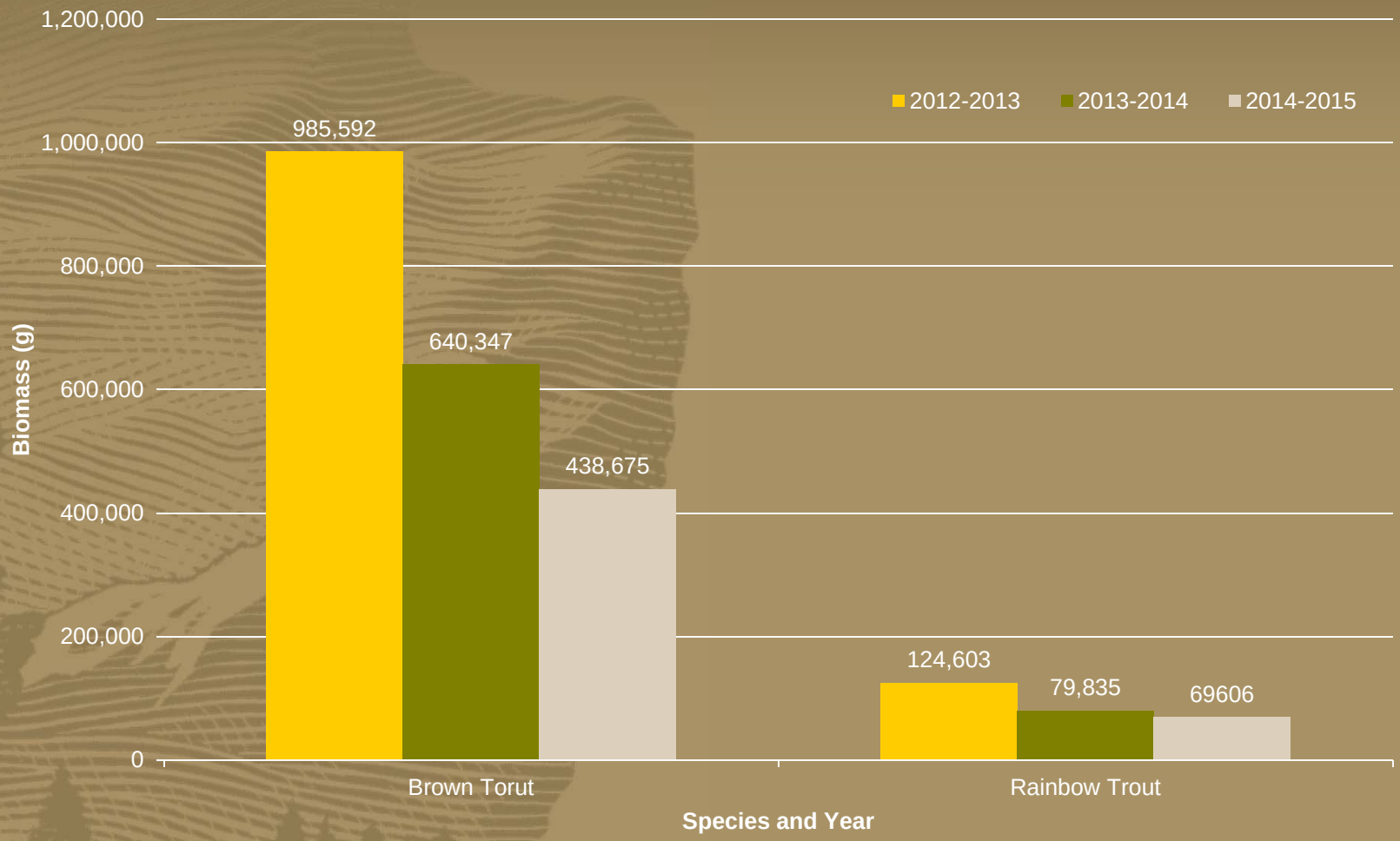








Biomass of Trout Removed



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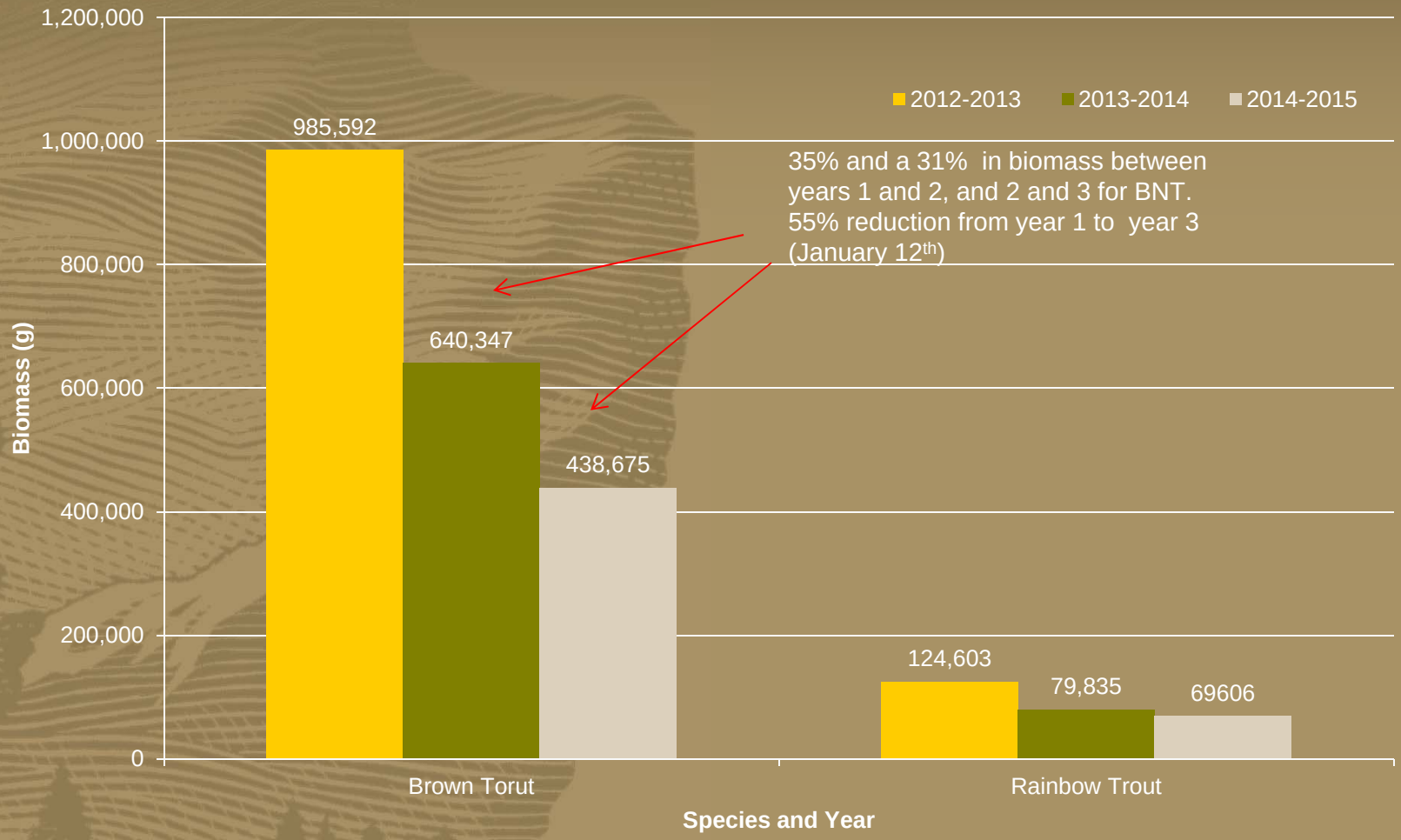

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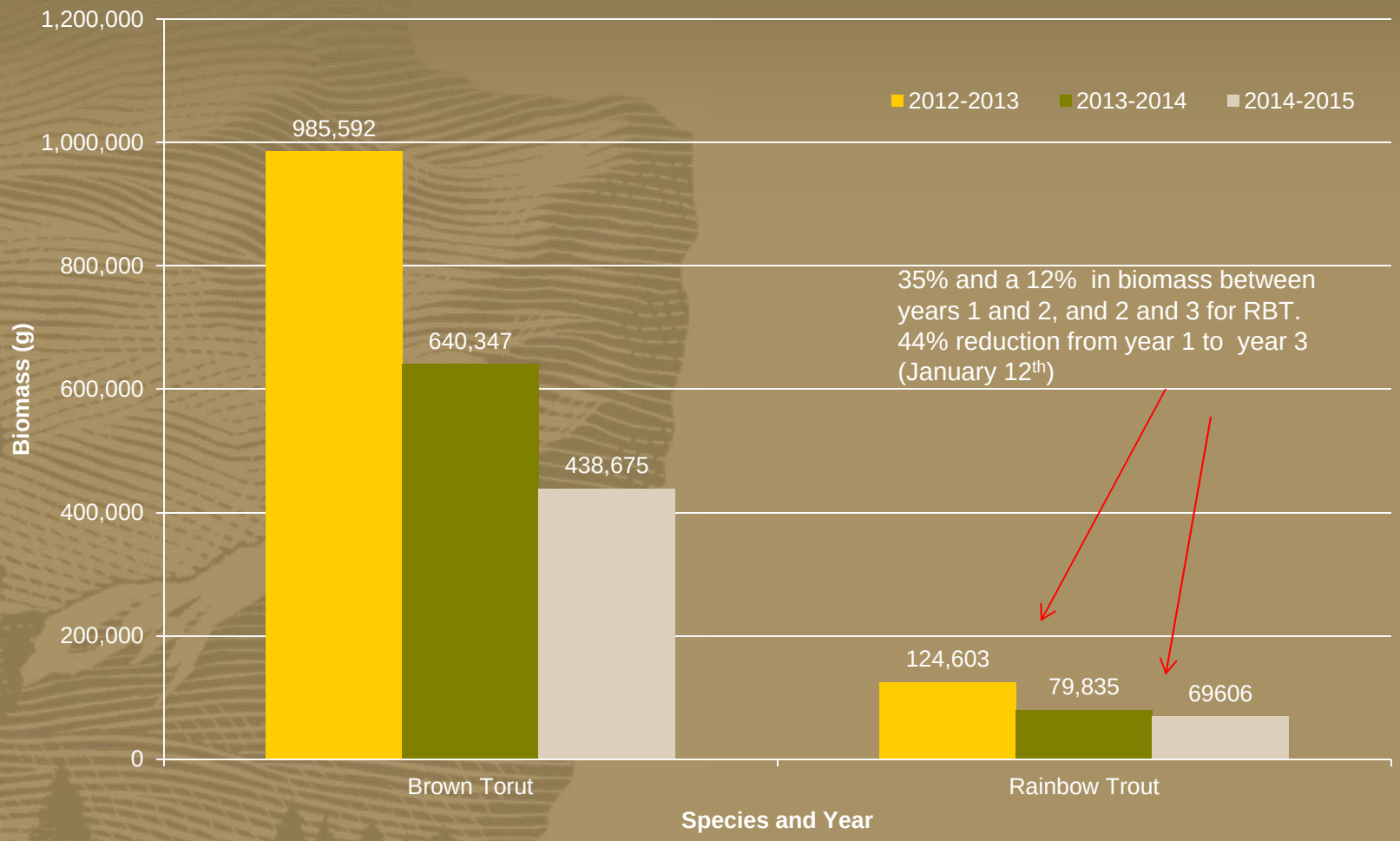
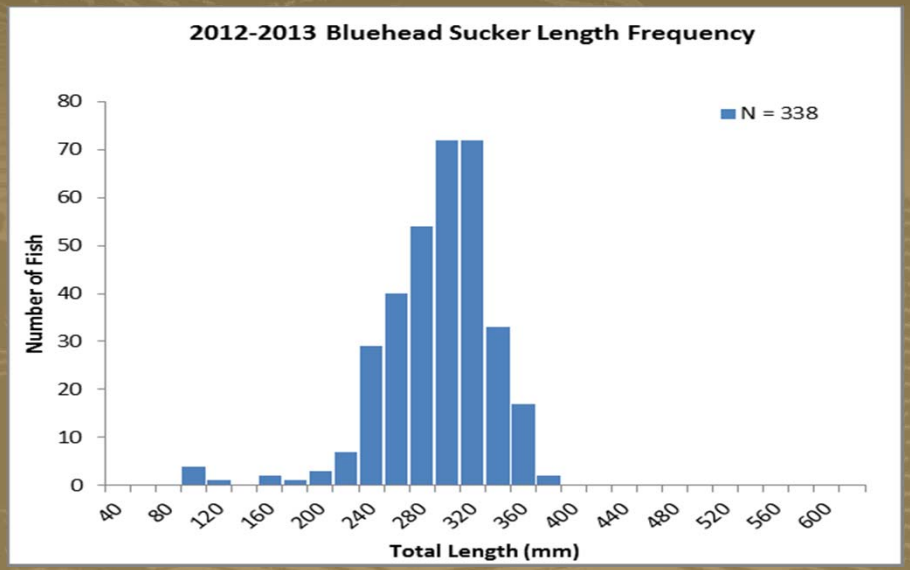
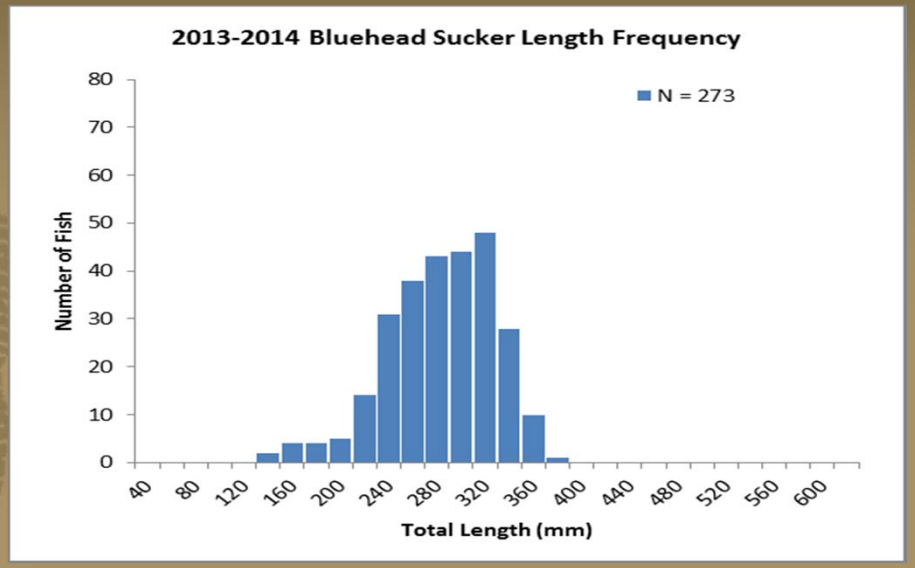
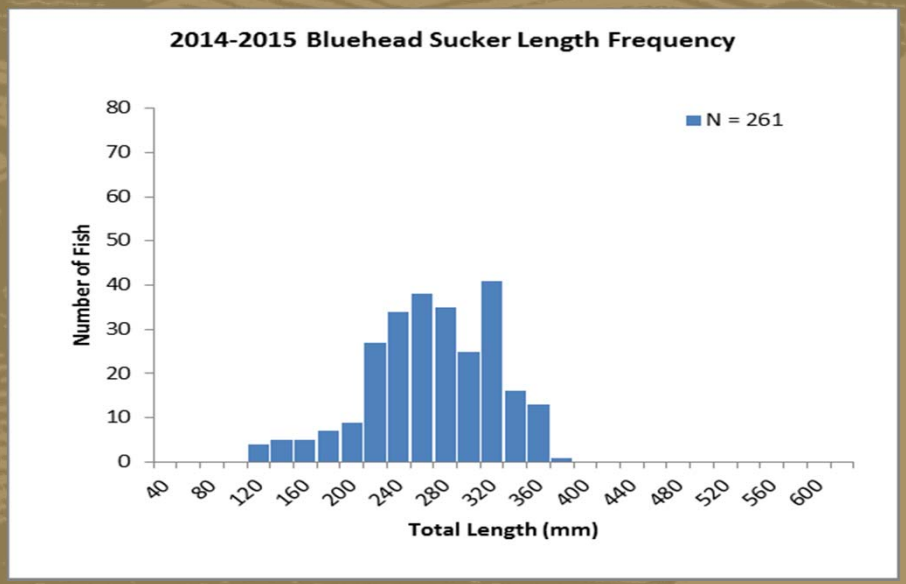
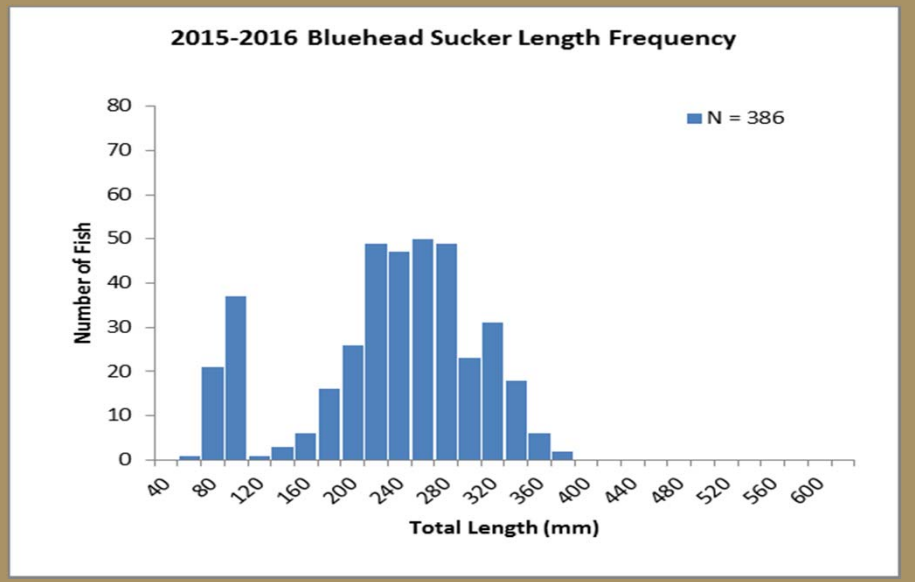


Bluehead Sucker Size Structure









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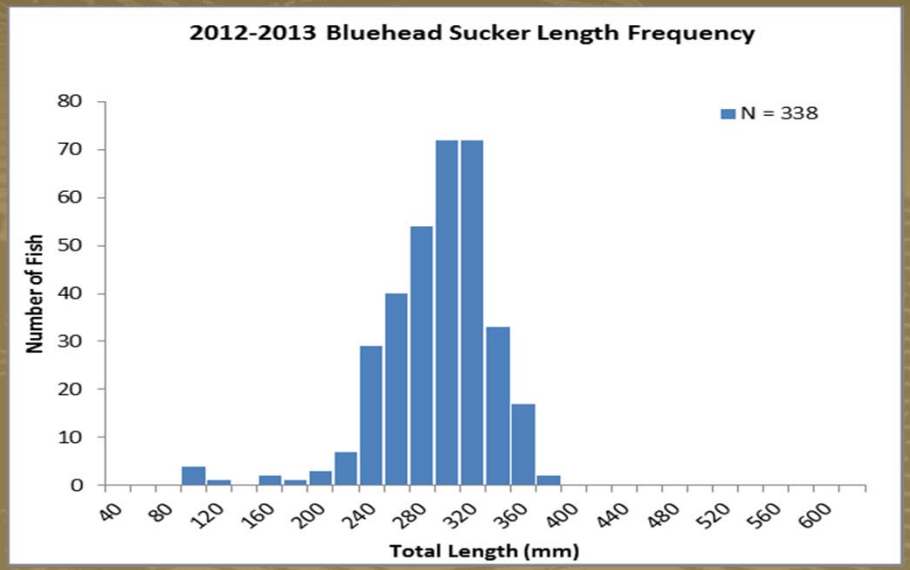
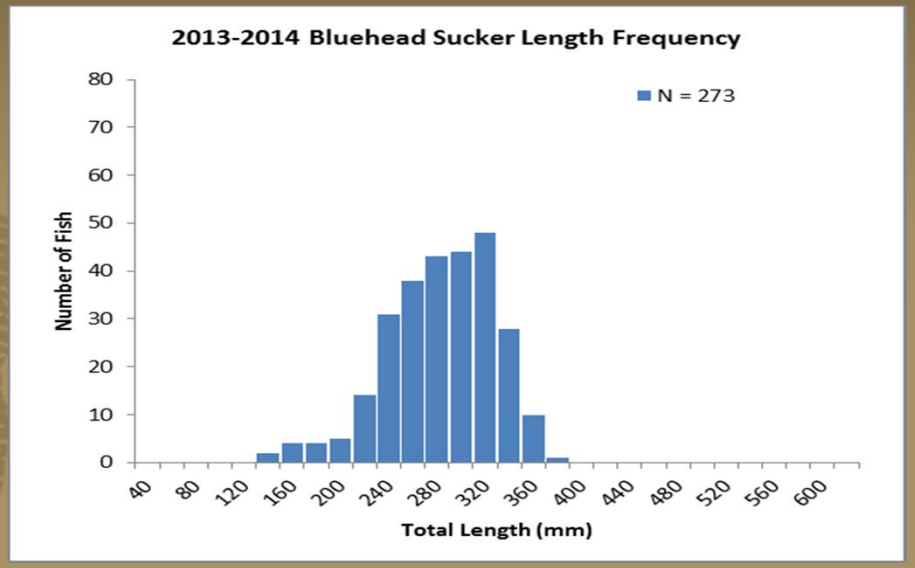
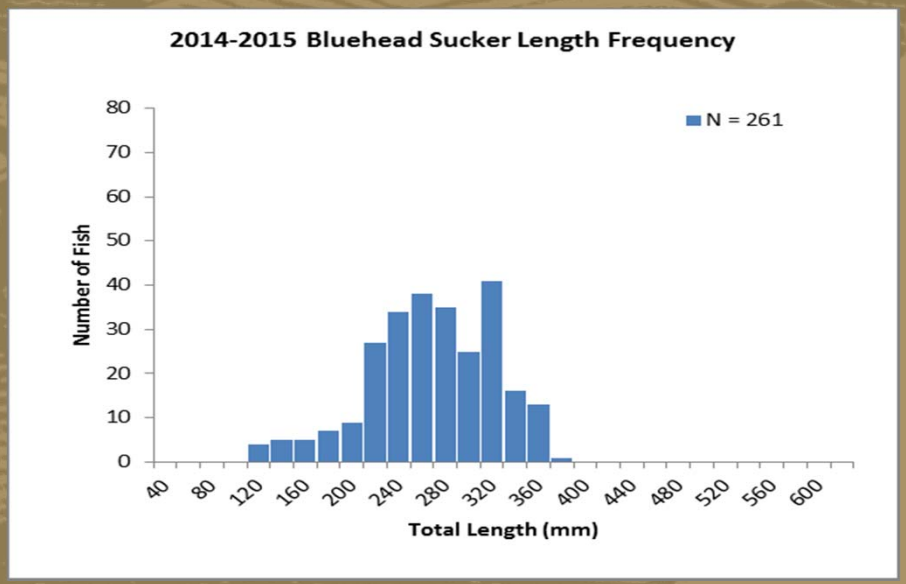
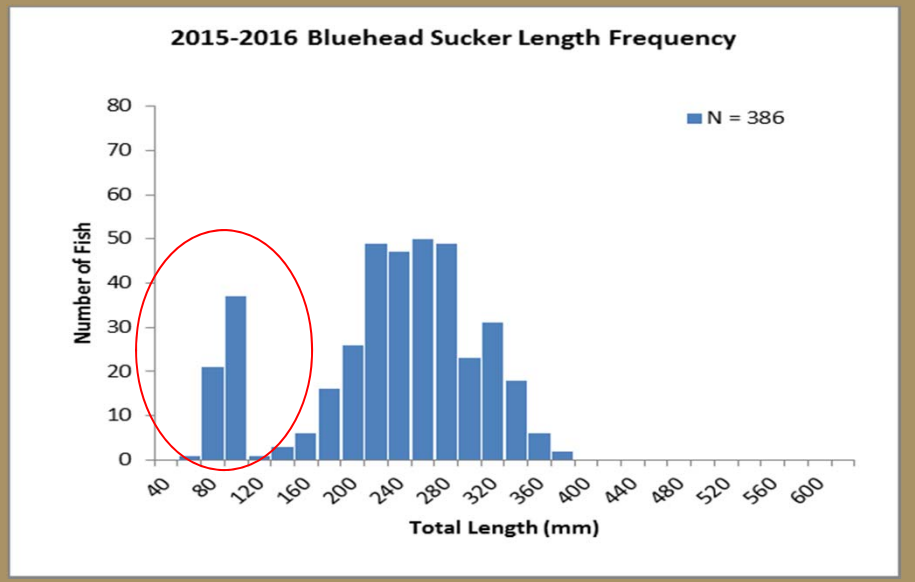
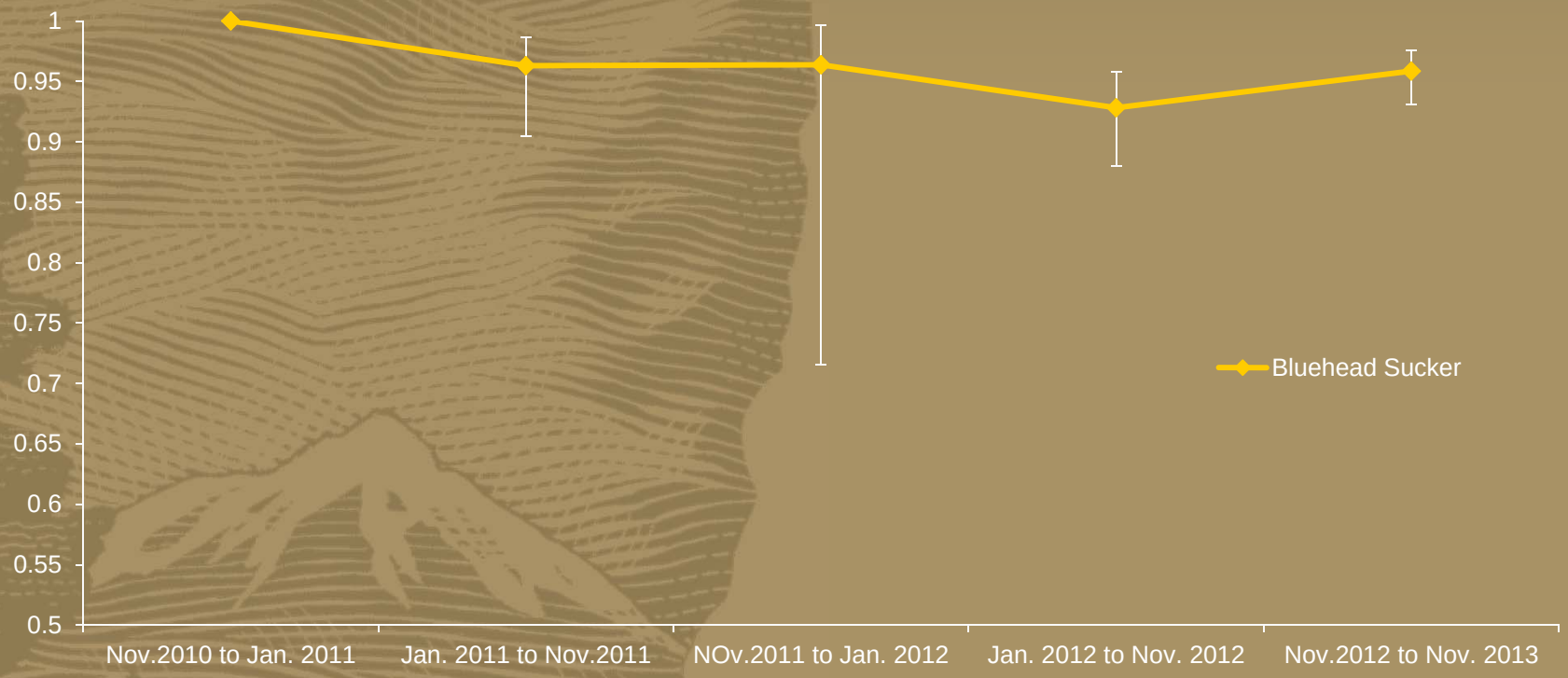








Bluehead Sucker Survival



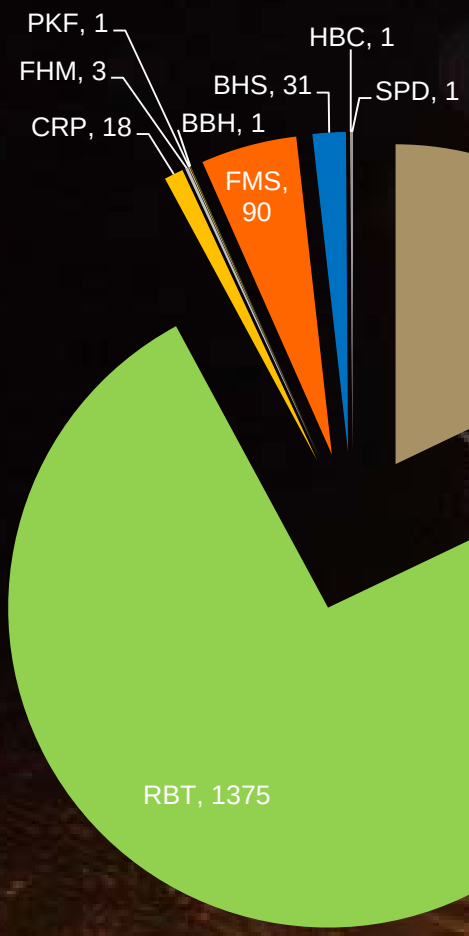
Bright Angel Creek Inflow– Electrofishing

- Cooperative effort with GCMRC
  - Goal of 80% trout reduction = 10 depletions
  - 2013-2014 Pilot study and February 2015

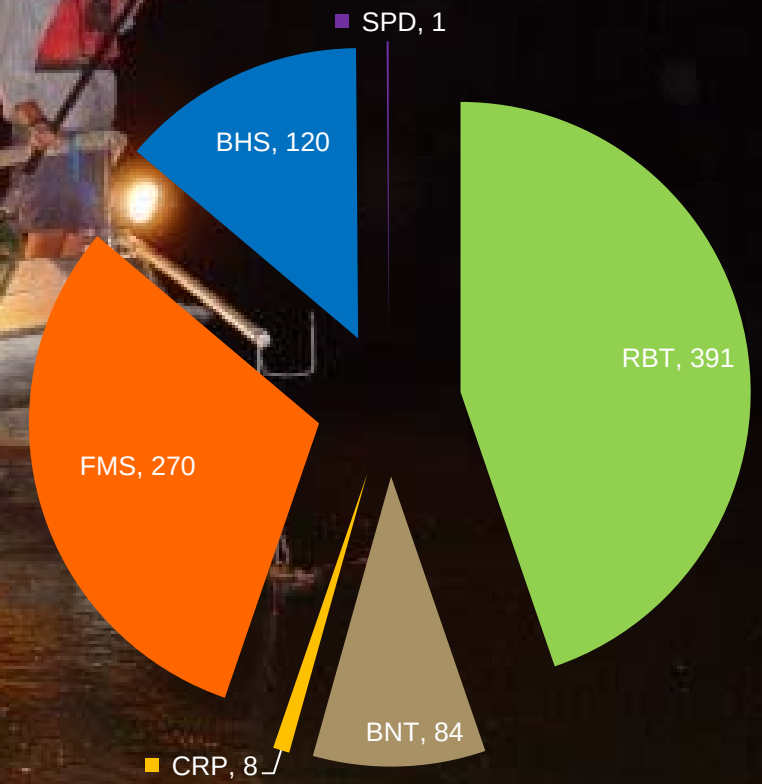
- High Flow Experiments
- Flooding in tributaries = High turbidity
- Resulted in two trips conducted in high turbidity- confounding results

Bright Angel Inflow– Electrofishing

2013-2014



2014-2015



Beneficial Use

- To date: > 49,000 trout to beneficial use

Summary –

- Completed 4th year of comprehensive trout reduction efforts, with 1 more year left…..
  - Efficiently removing trout in BAC using backpack electro-fishing
    - Decrease in overall abundance (pop estimates)
      - Size class shift
      - Decreased biomass
- Electro-fishing doesn't appear to be impacting native fish negatively
  - Bluehead Sucker survival is high
  - Speckled Dace abundance remains high
  - Increased abundance and distribution of SPD, BHS, and FMS

Questions?

Phantom Ranch Boat Beach, circa 1911