

Monitoring and Evaluation of Avian Predation on Juvenile Salmonids on the Yakima River, Washington



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Objective

Monitor the impacts of avian predation on juvenile salmonids on the Yakima River

- Hotspot Surveys
- River Reach Surveys
- Acclimation Site Surveys
- North Fork Teanaway
- Aerial Surveys
- Pelican Carcass Surveys



Great Blue Heron June 2005

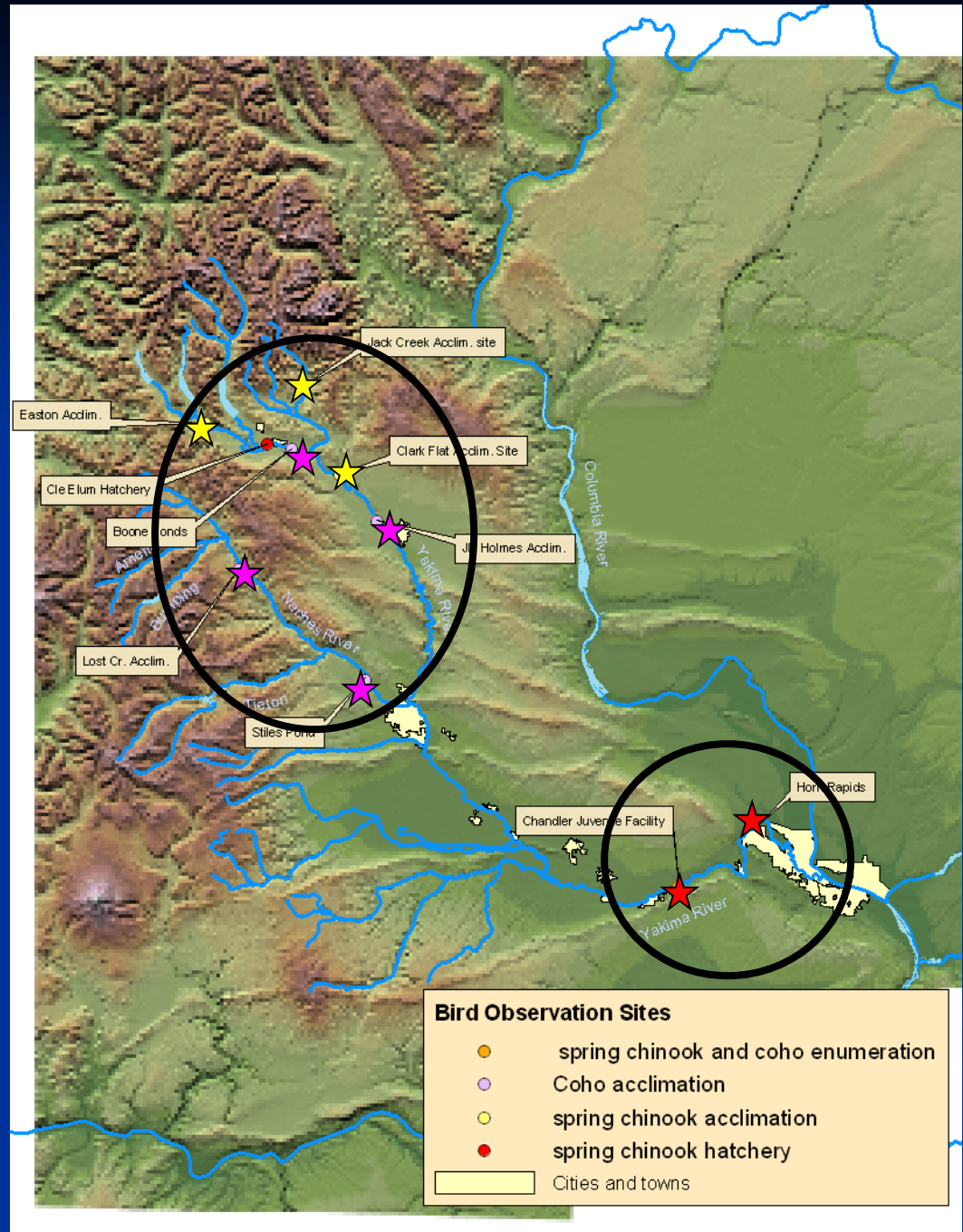
Study Location

Hotspots: ★

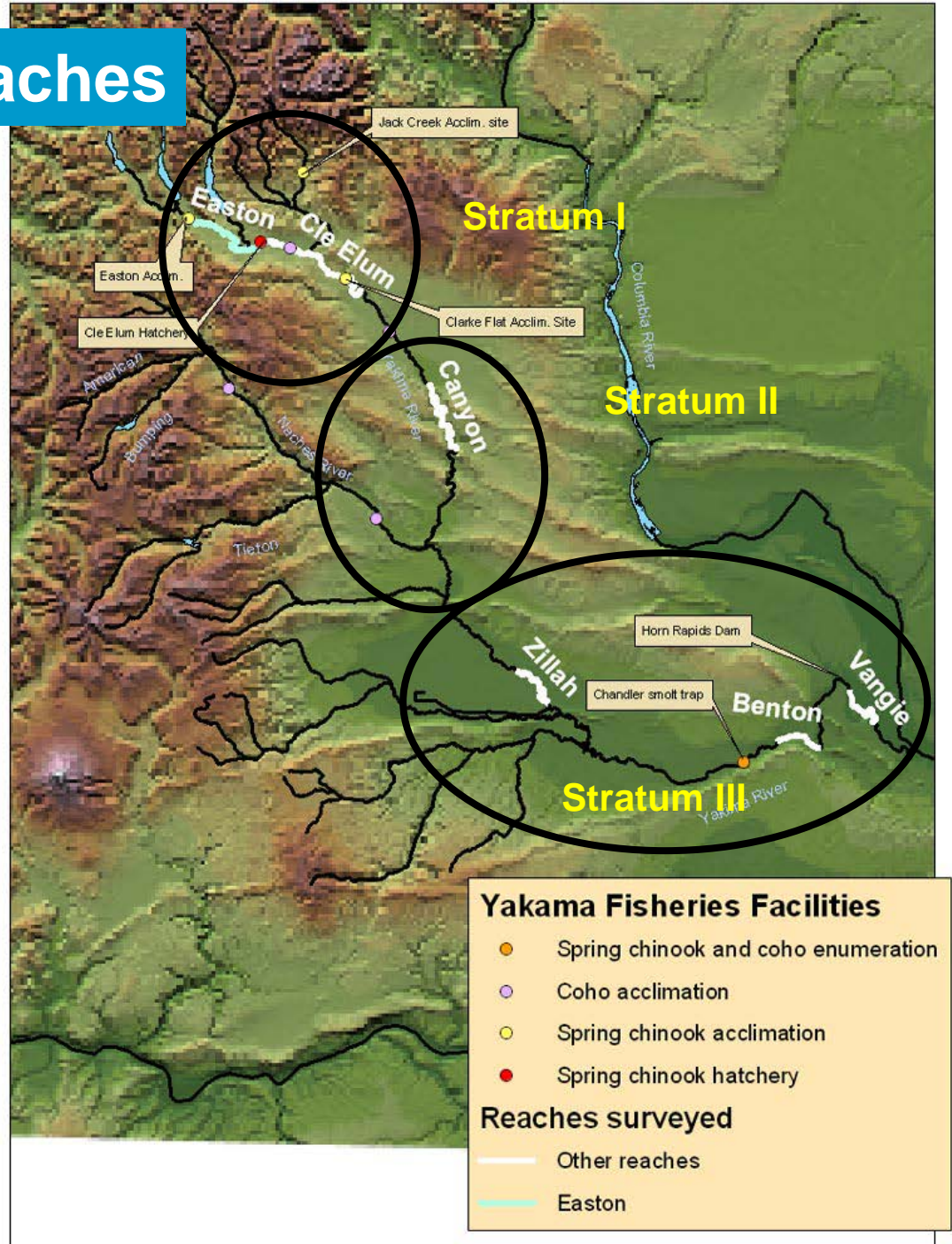
- Chandler Juvenile Fish Facility
- Horn Rapids Dam

Acclimation Sites:

- Spring Chinook ★
- Coho ★



River Reaches



Data Collection Methods – Hotspots

Horn Rapids and Chandler

- Spring
- 3x per week
- AM and PM
- Abundance counts
- Timed intervals between successful takes by a single gull to determine actual consumption of salmonids



Black-crowned night Heron

Data Collection Methods – River Reaches

- Boat surveys
- Abundance counts
- Spring:
Entire River
once every two weeks
- Summer:
Stratum 1 and 2
once a week

Data Collection Methods – Acclimation Sites



- Surveys conducted between January and mid May
- Piscivorous birds counted 2 to 3 times a day

Aerial surveys:

- Appox. 1x per month



Piscivorous Birds Observed 2002-2004:



American White Pelican



Bald Eagle

Belted Kingfisher



Black-crowned Night Herons



California Gull



Ring-billed Gull



Caspian Tern



Forster's Tern



Common Mergansers



Hooded Merganser





Great Blue Heron

Great Egret



Photo by George Jamieson

Osprey



Double-crested Cormorant

Other species observed:



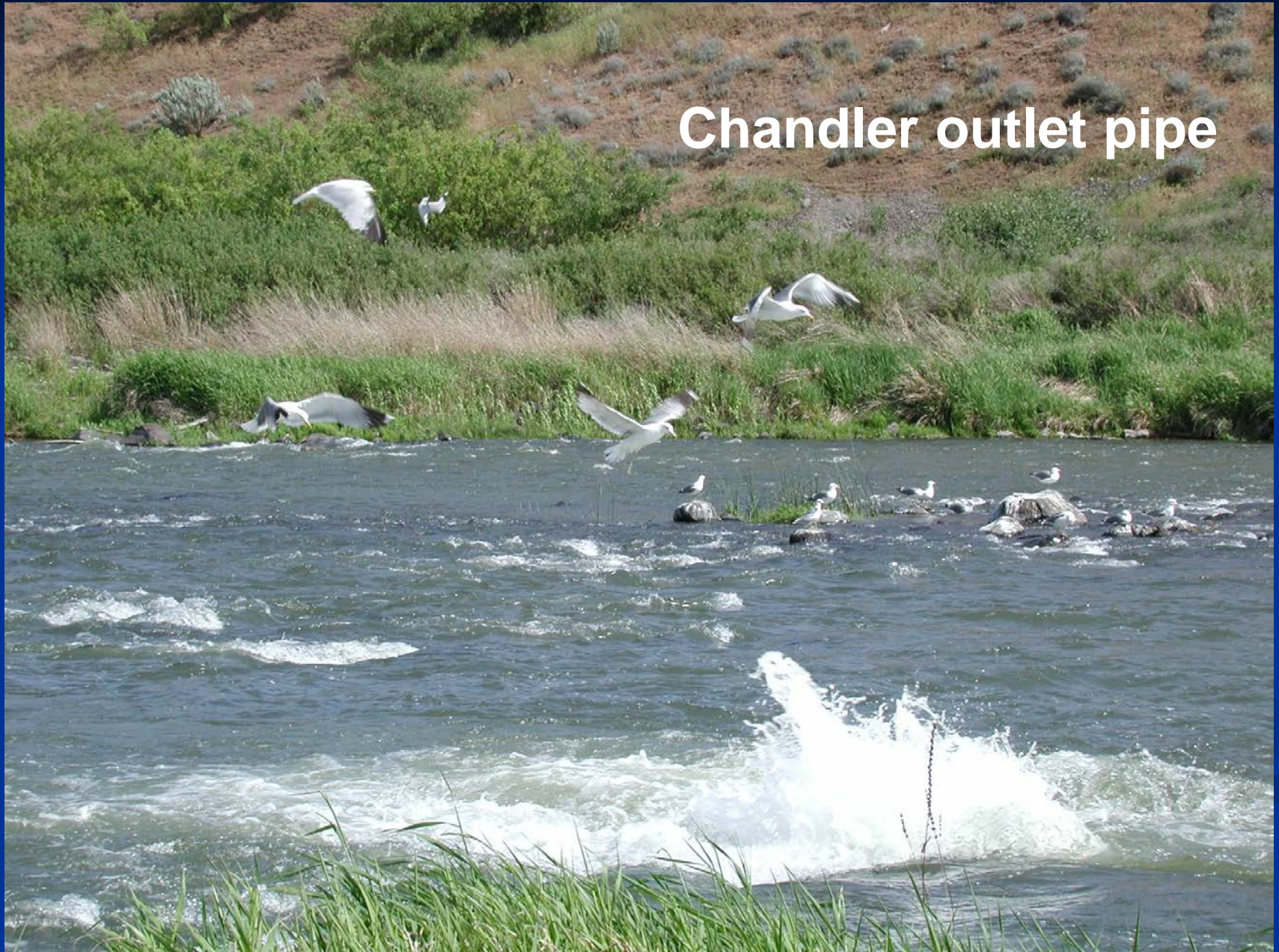
Harlequin Duck

**Barrow's
Goldeneye**



Results - Hotspots

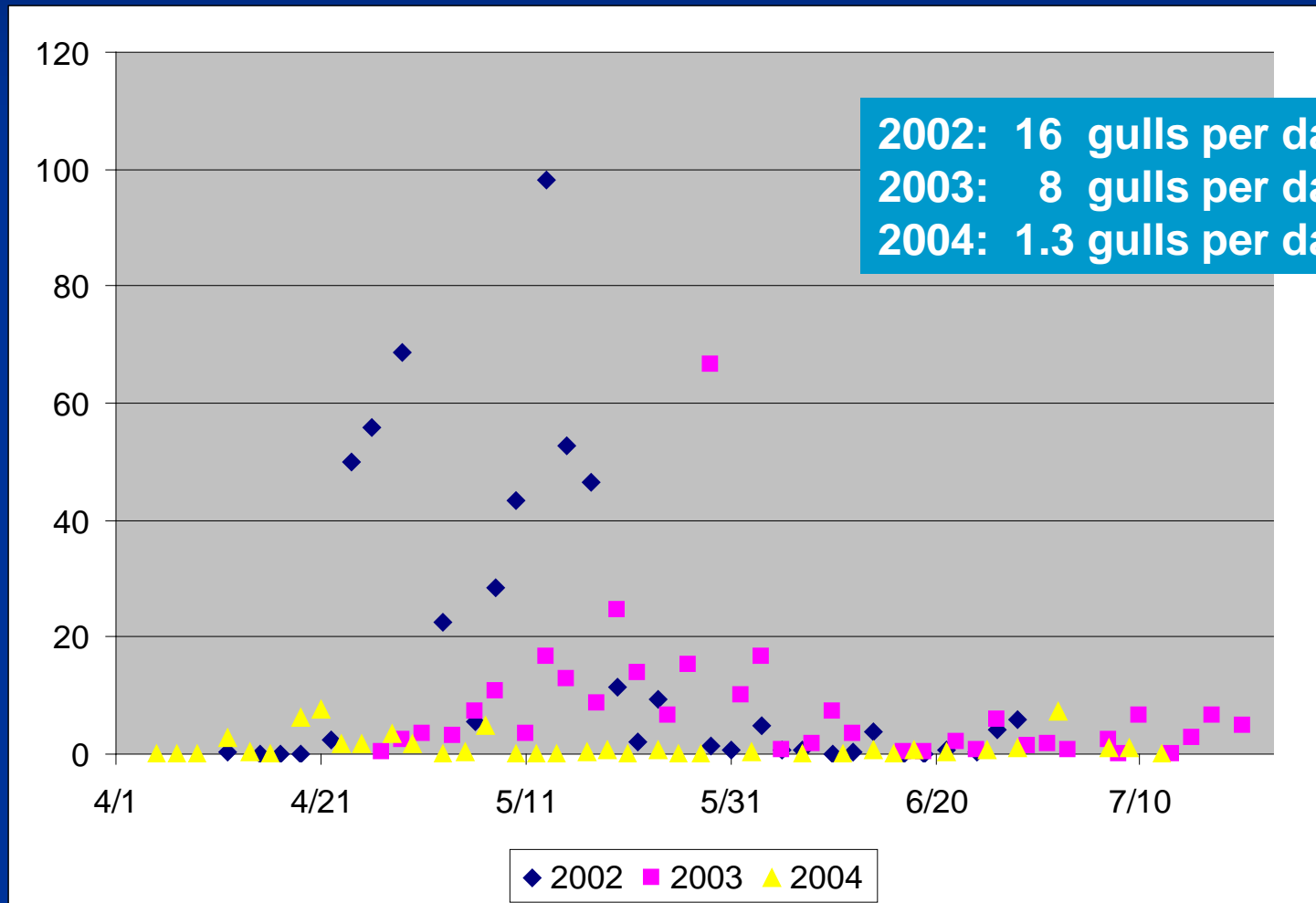
Chandler outlet pipe



Results - Hotspots



Average Daily Gull Abundances— Chandler 2002-2004



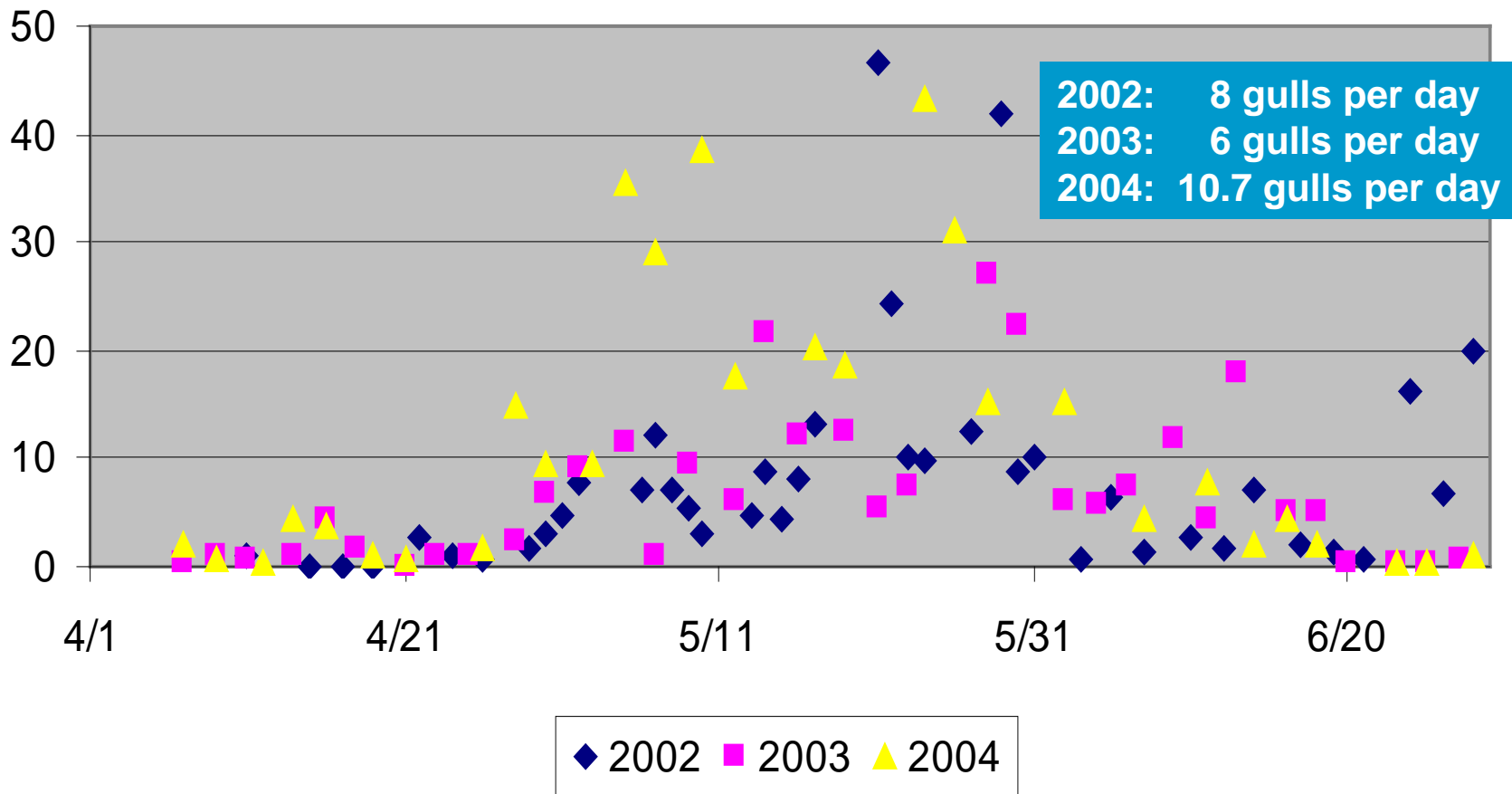
Results - Hotspots



Horn Rapids

Results - Hotspots

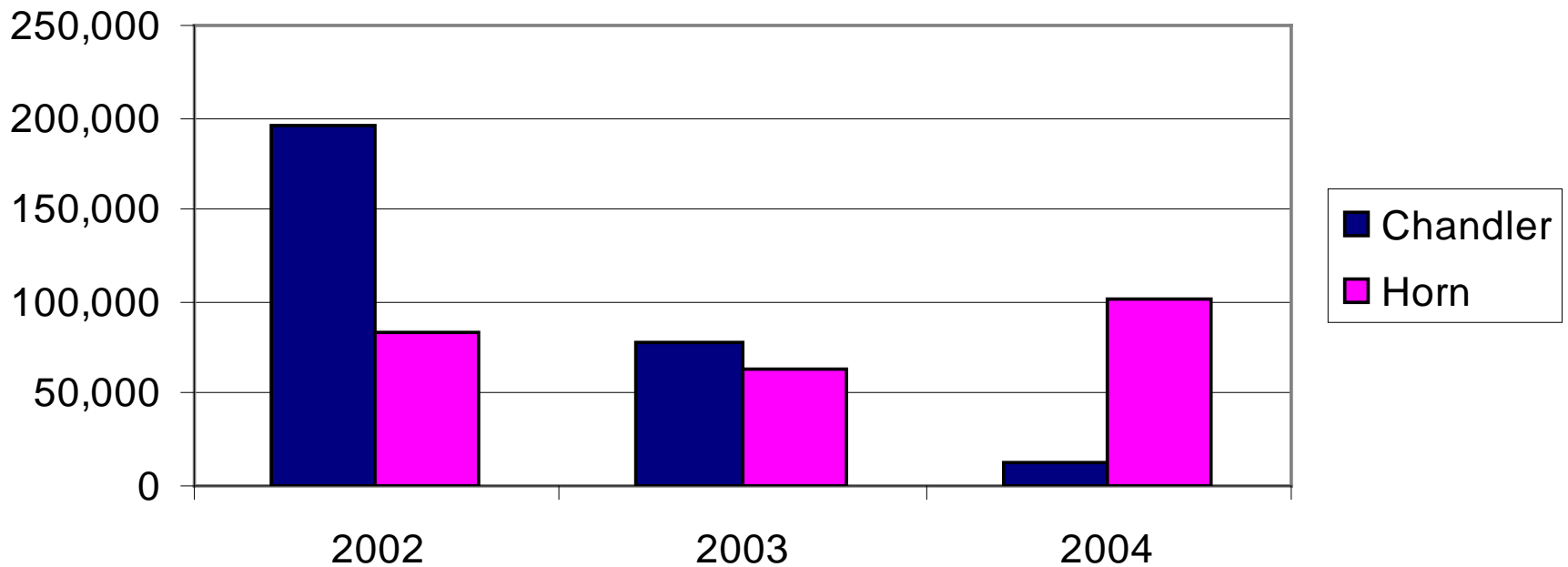
Average Daily Gull Abundances – Horn Rapids 2002-2004



Results - Hotspots

Smolts Consumed by Gulls:

Smolts Consumed



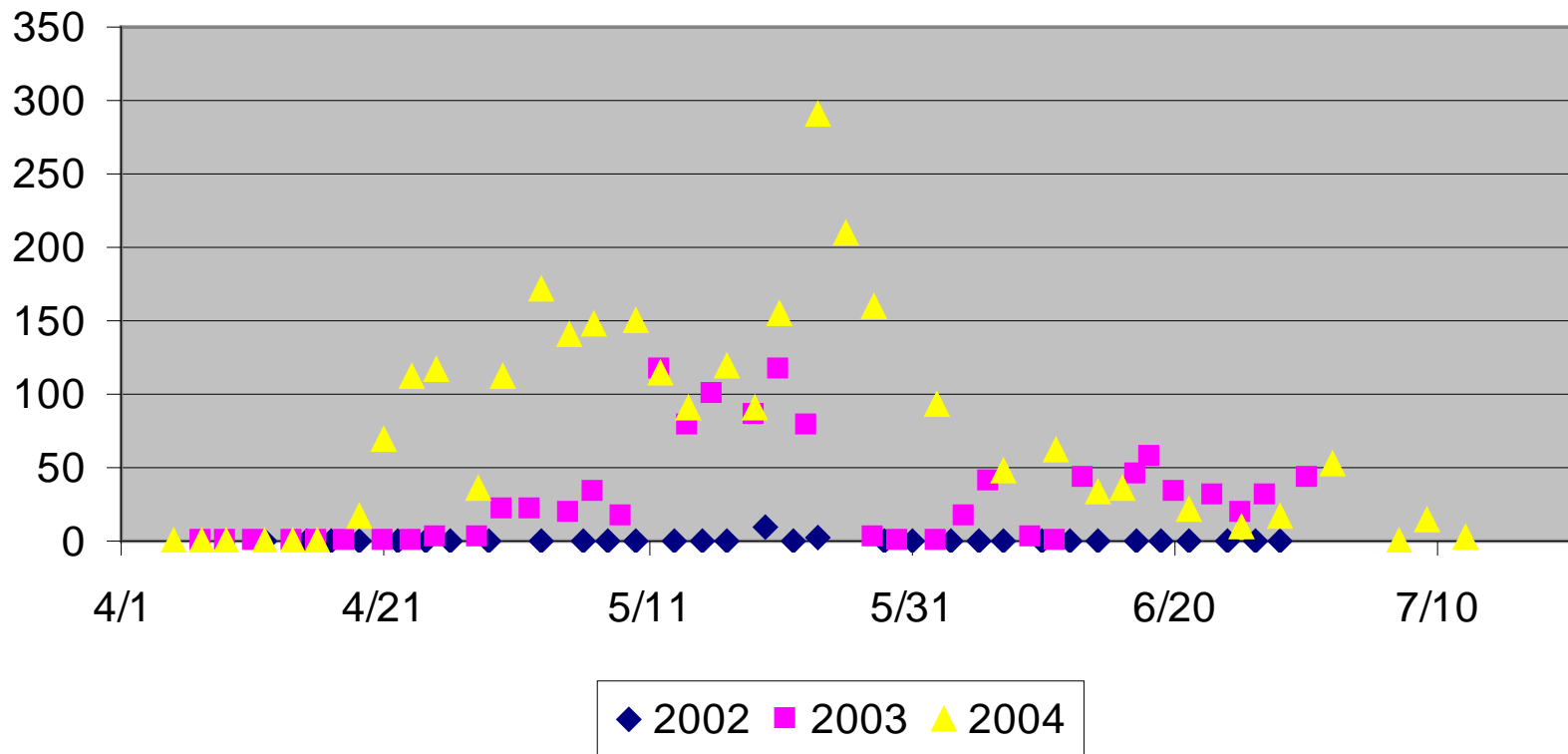
Results - Hotspots

American White Pelicans



Chandler Juvenile Fish Facility 2003

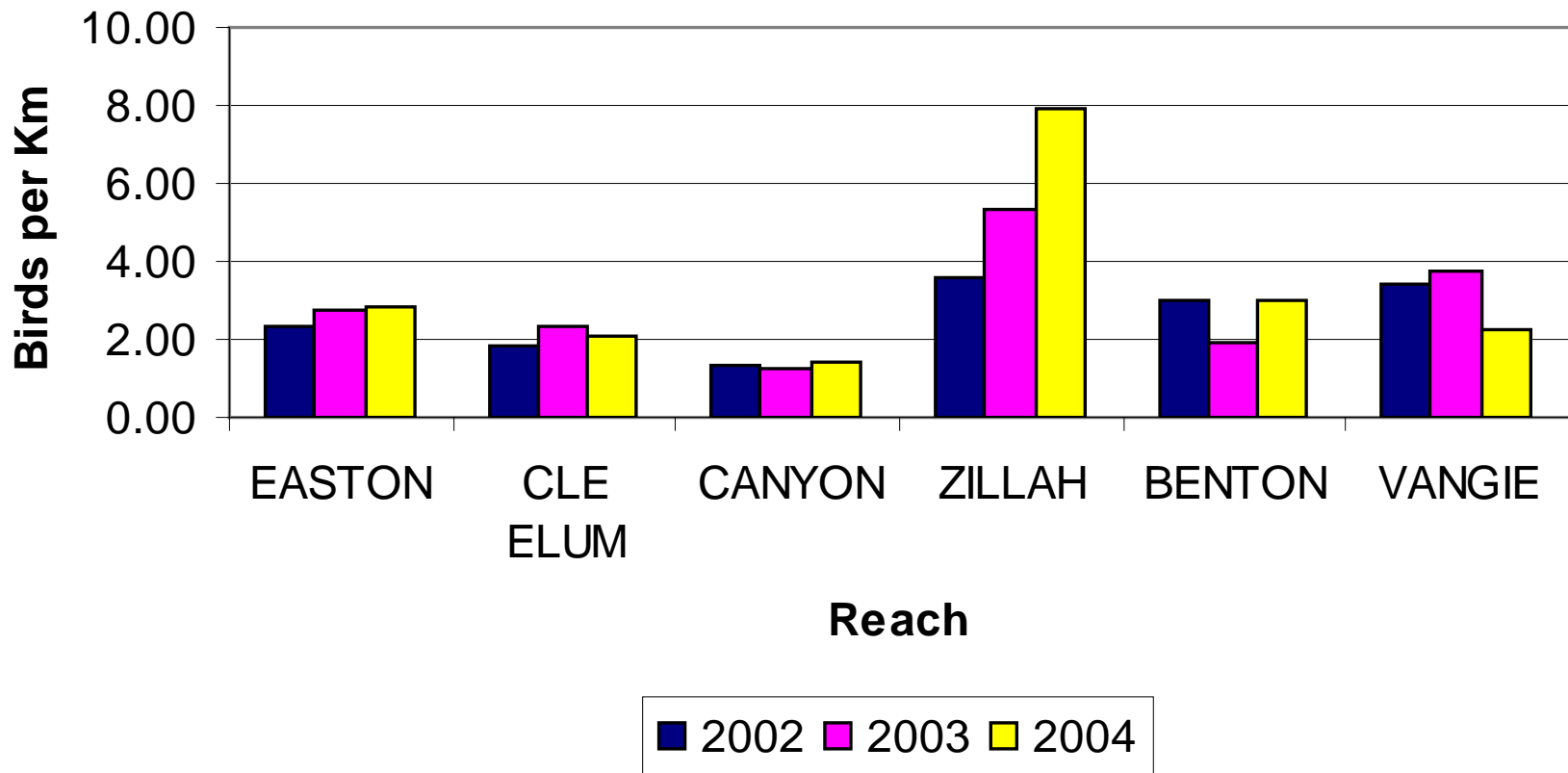
Results - Hotspots



Mean Daily American White Pelicans – Chandler

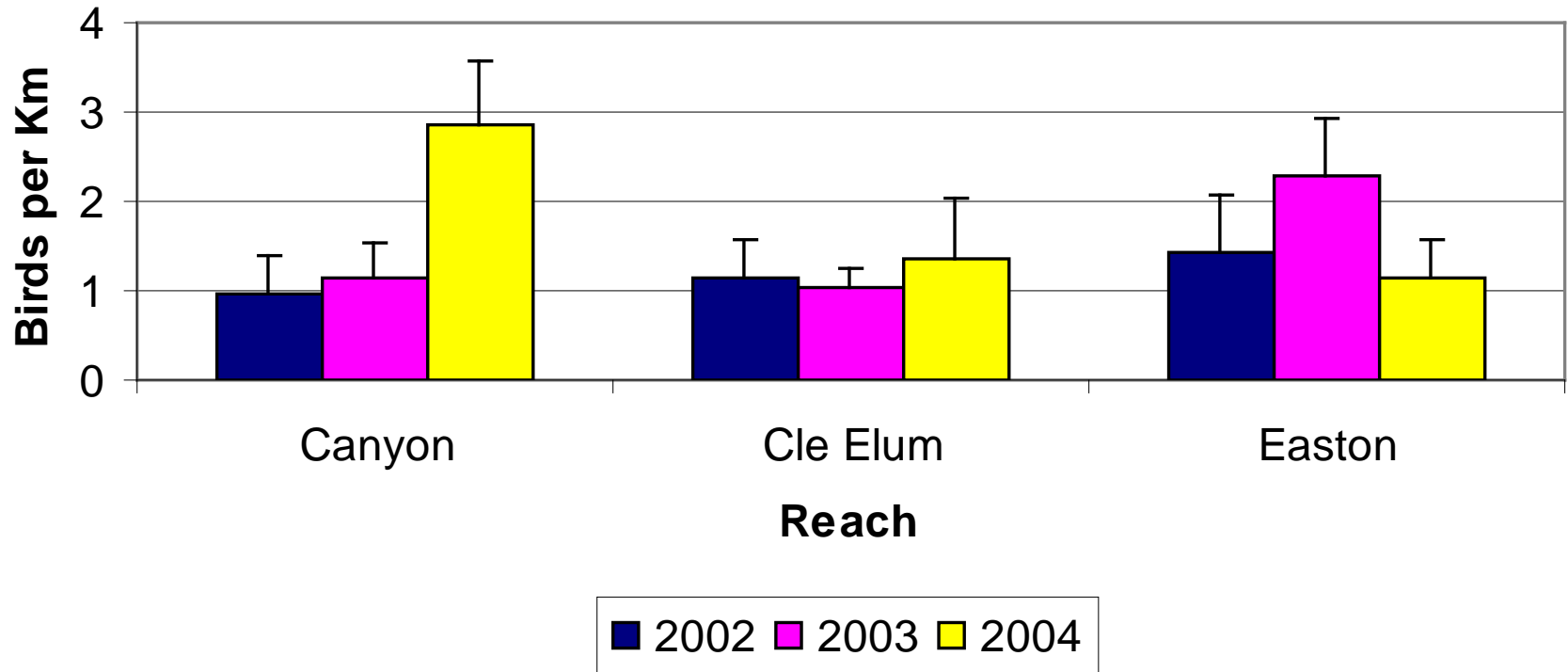
Results – River Reaches

2002-2004 Birds Per Km Spring



Results – River Reaches

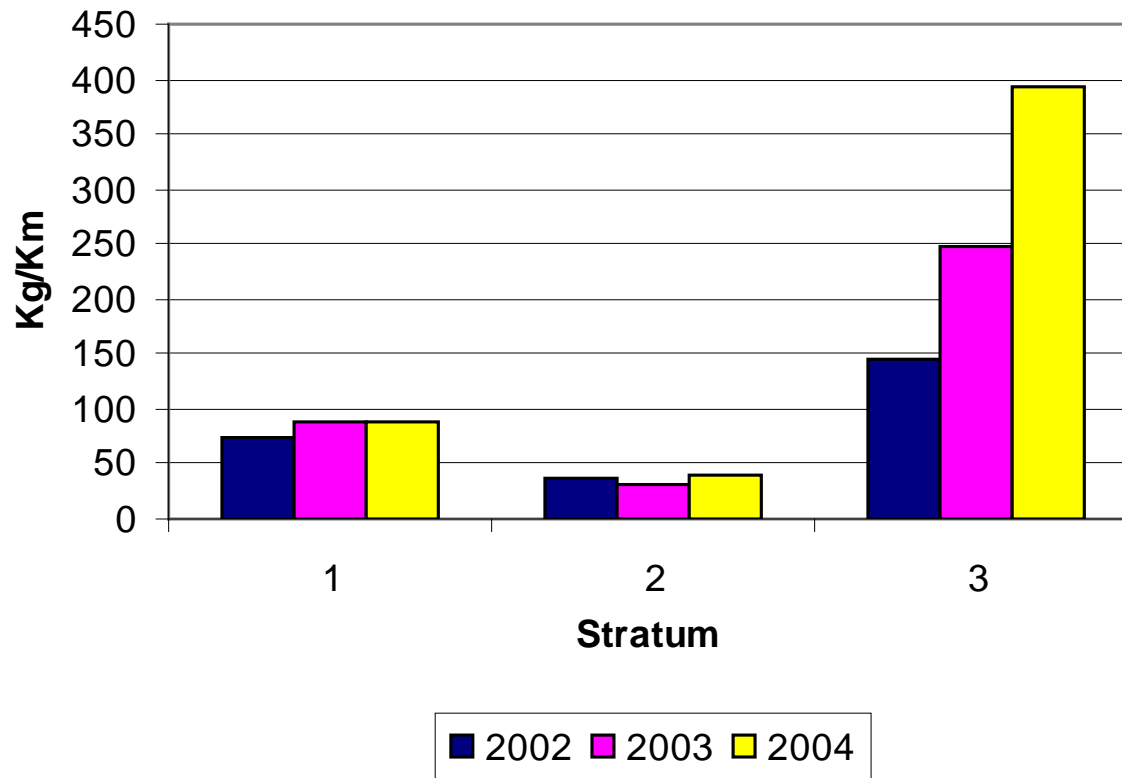
2002-2004 Birds Per Km Summer



Results – River Reaches



River Reaches Spring

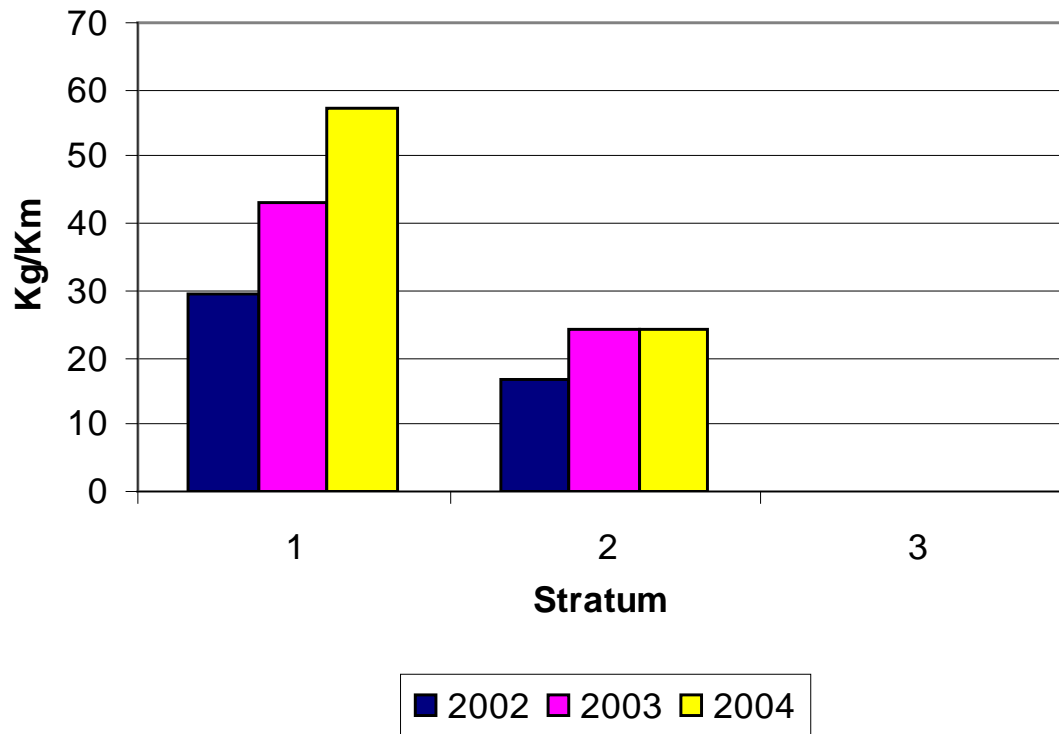


Kg all Fish per Km - Spring

Results – River Reaches



River Reaches Summer



Kg all Fish per Km - Summer

Results Acclimation Sites: 2002-2004

Not a significant source of piscivorous birds

- **Spring Chinook Sites: Mostly Belted Kingfisher**

- **Coho Sites: Mostly Common Mergansers**

Aerial Surveys:

- lower half of the river
- Surveyed for AWPE
- Most AWPE located in the middle of survey area
- Many AWPE resting in backwaters off of the main stem Yakima
- Surveys extended to include Badger Island



Badger Island

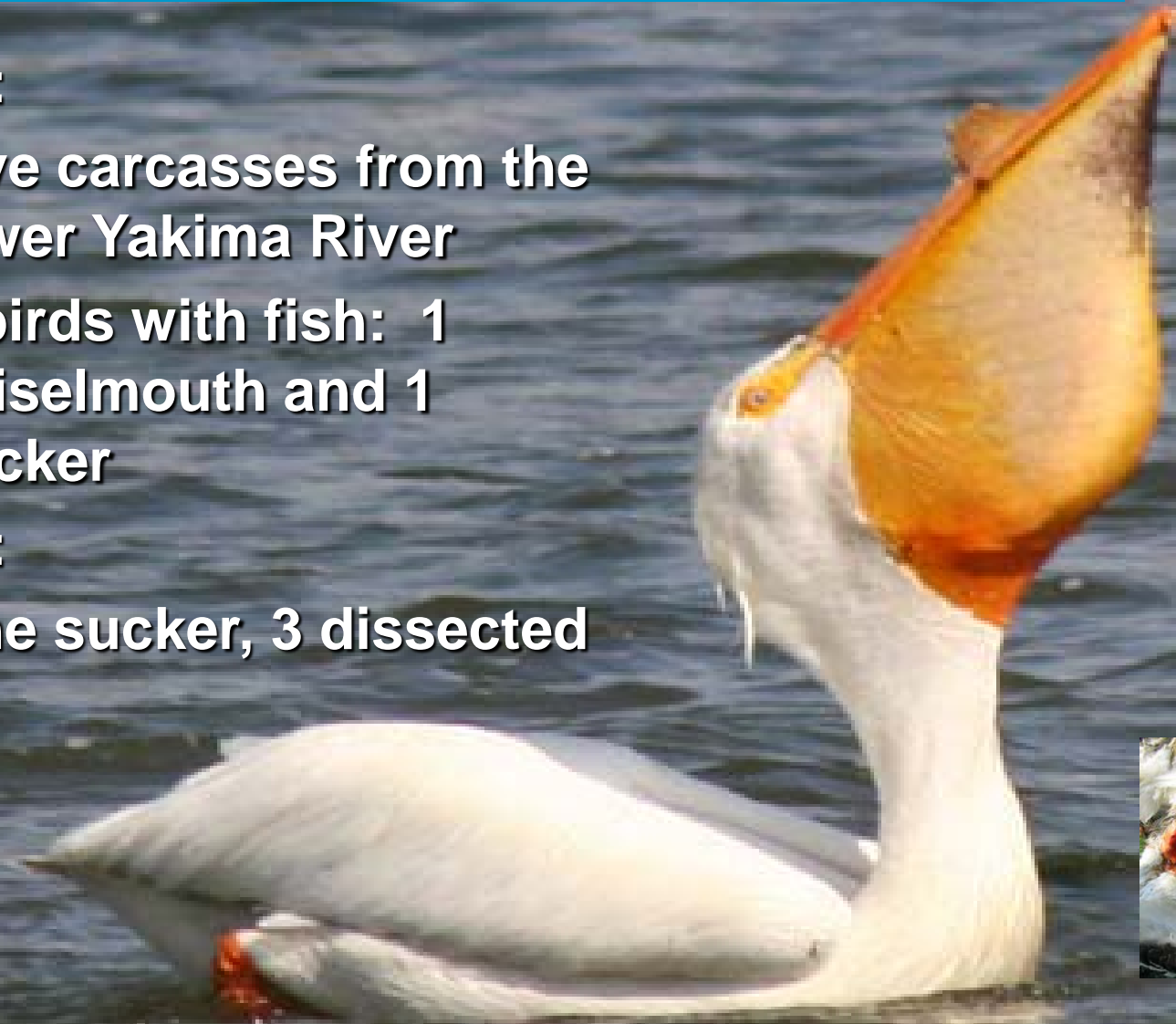
AWPE Carcass Recoveries:

2004:

- Five carcasses from the lower Yakima River
- 2 birds with fish: 1 chiselmouth and 1 sucker

2005:

- One sucker, 3 dissected



Chiselmouth inside AWPE

Conclusions—Hotspots

- Major decrease in the consumption of smolts by gulls at Chandler in the last 3 years
- Major increase in AWPE at Chandler in the last 3 years
- No major changes in consumption of smolts at Horn Rapids over the last 3 years, 2002-2004

Conclusions—River Reaches

- **Mergansers – Consistently been the major consumer in upper and middle river**
- **Gulls- no longer the major consumer in the lower river**
- **AWPE – Increased in the lower river over the last 3 years; has lead major increase in consumption of all fish**

2005 Current Monitoring Activities

- Acclimation Sites: Winter
- Hotspots: April – June
- River Reaches: April – Aug.
- Aerial flights: monthly



- Stomach content Analysis: AWPE and gulls
- Trapping American White Pelicans



AWPE Carcass recovery Satus Wildlife Area



AWPE Carcass recovery Satus Wildlife Area

Trapping and Tagging AWPEs



Chandler May 2005



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