

Avian Predation on Juvenile Salmonids in the Columbia River Estuary: New Developments in 2012

Oregon State University

Real Time Research, Inc.

USGS-Oregon Cooperative Fish &
Wildlife Research Unit



Acknowledgments

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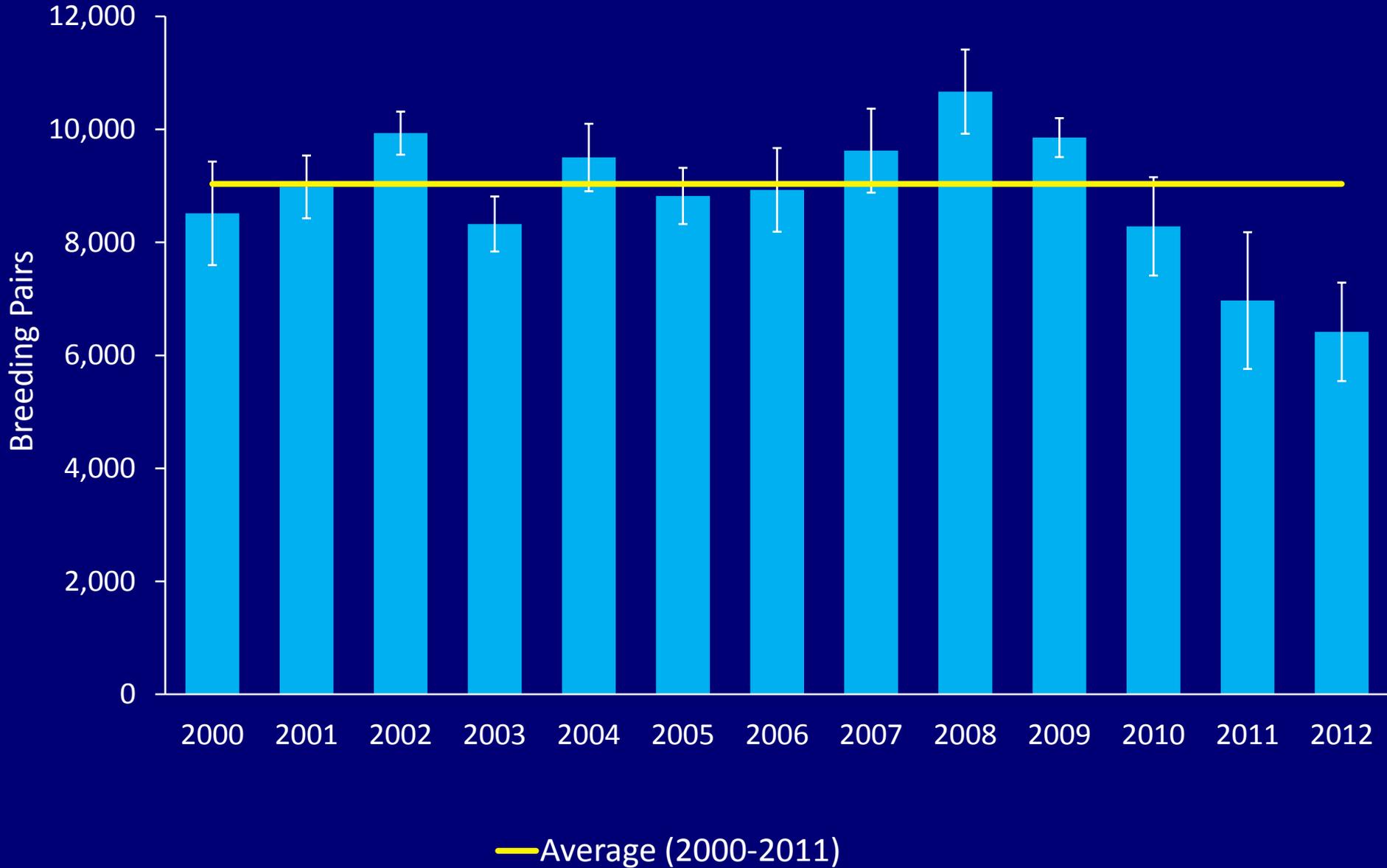
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Bonneville Power Administration

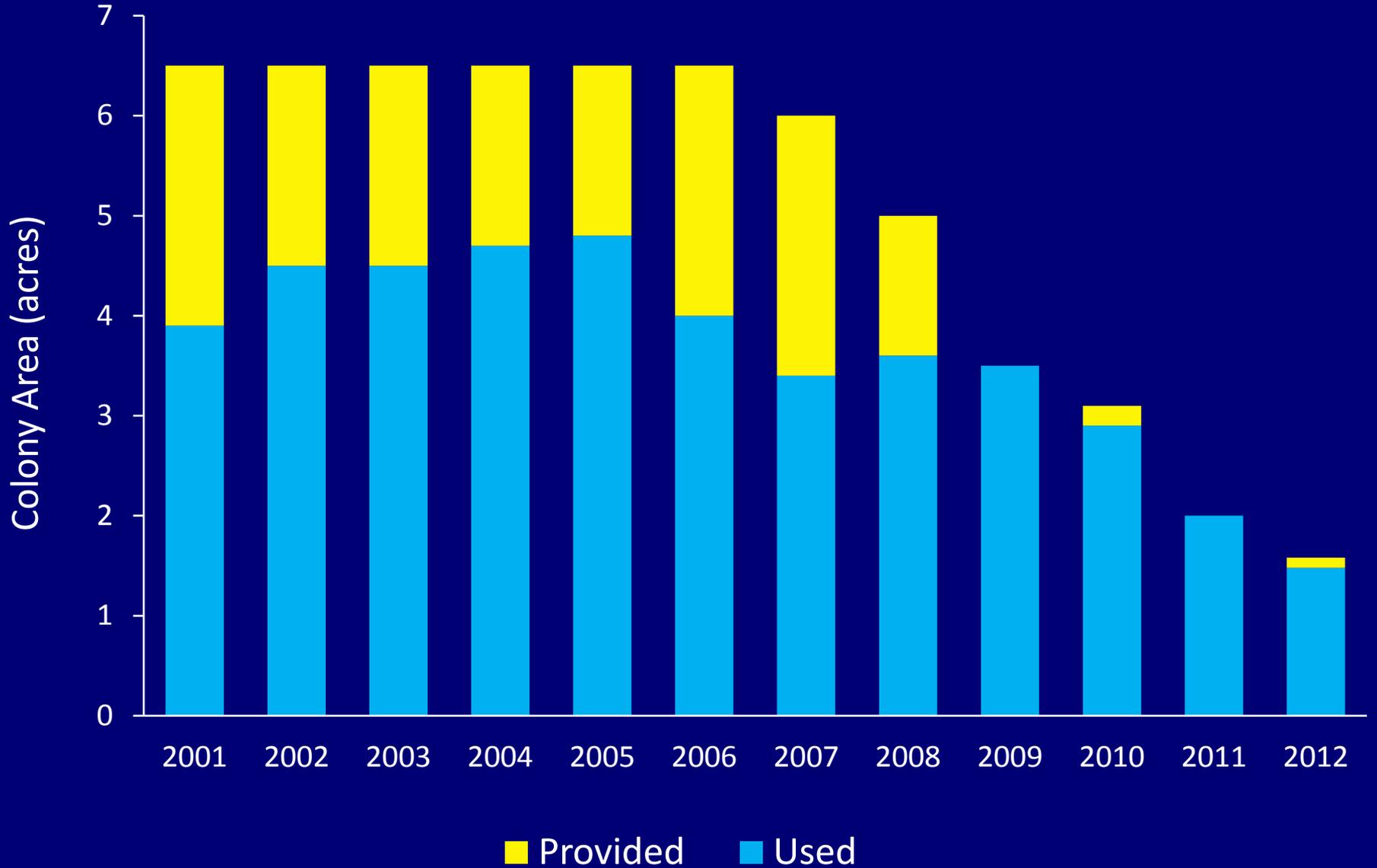
Caspian Tern Colony on East Sand Island
in the Columbia River Estuary



Caspian Terns - East Sand Island Colony Size



Caspian Terns – East Sand Island Colony Area Provided and Used

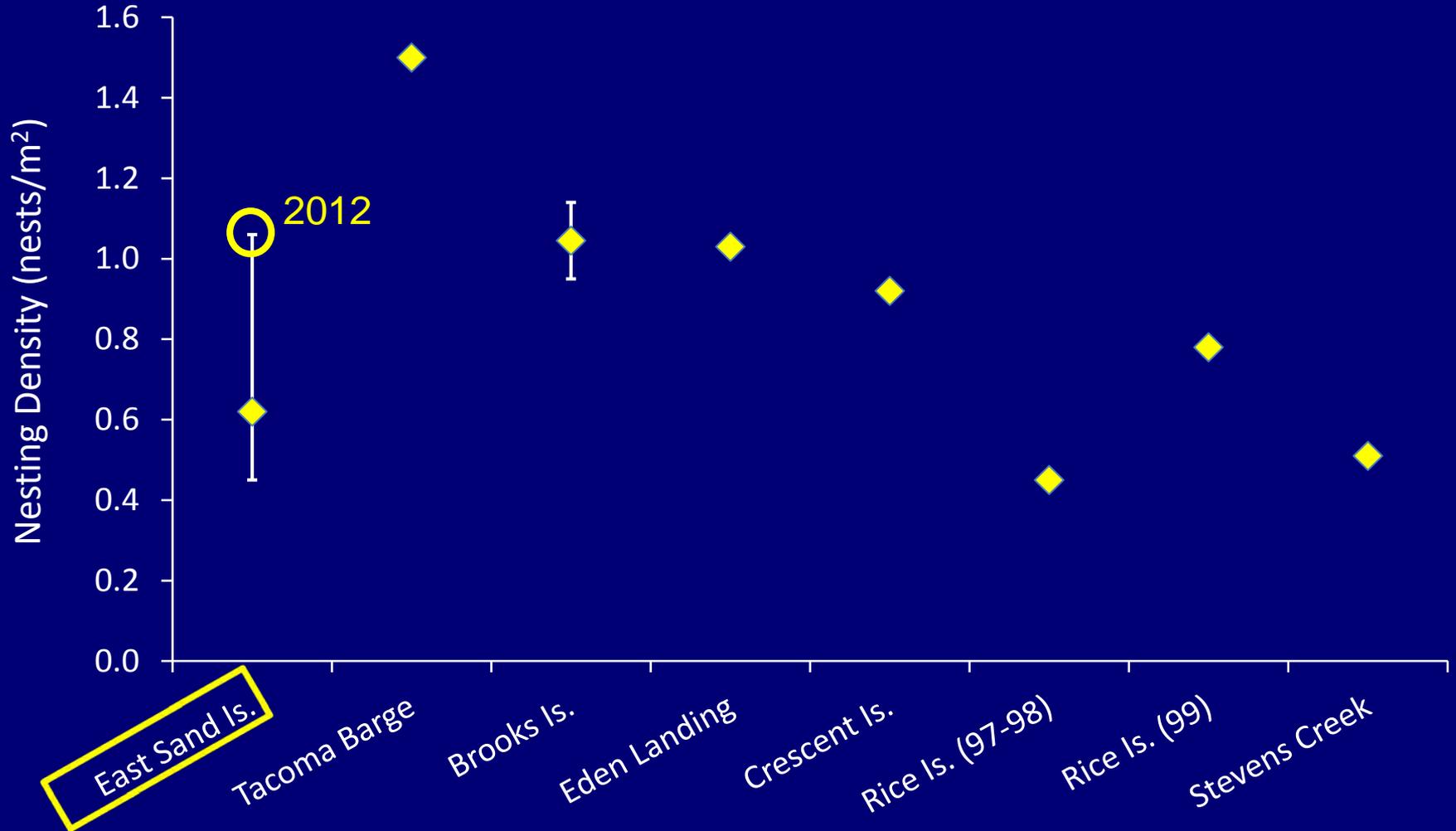


The “Push”



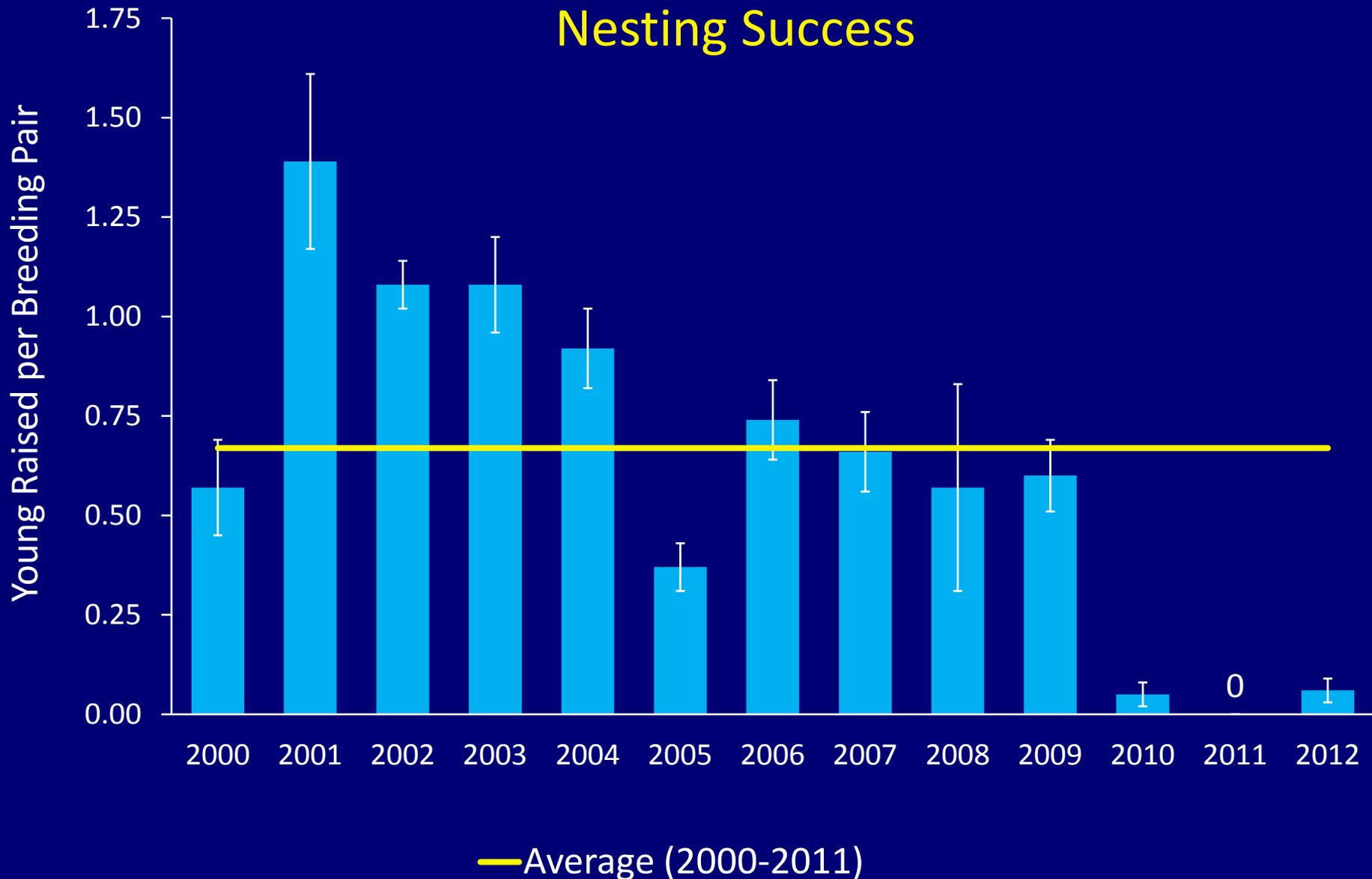
Limiting the access of Caspian Terns to suitable nesting habitat on East Sand Island

Caspian Tern Nesting Density

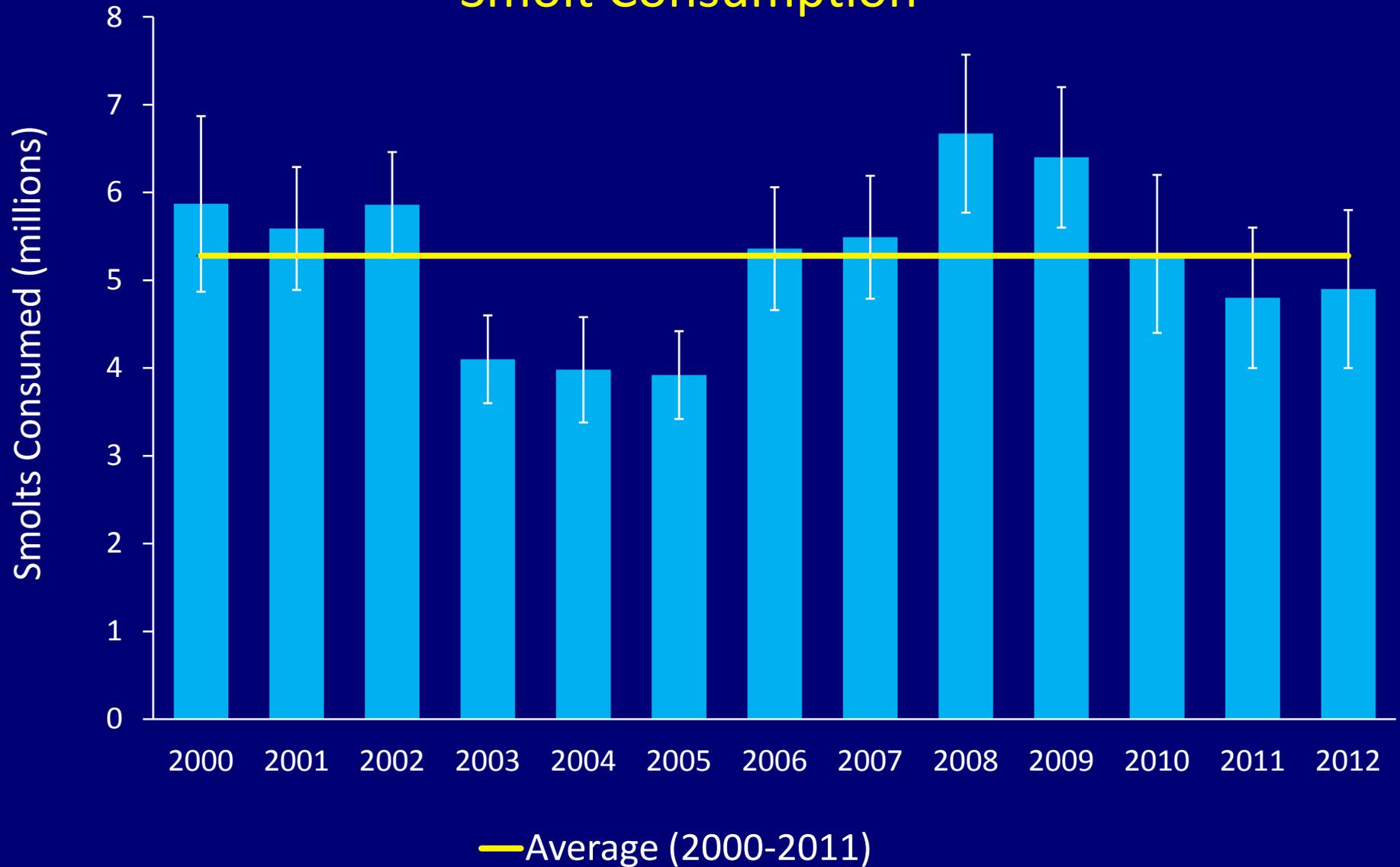


Caspian Terns – East Sand Island

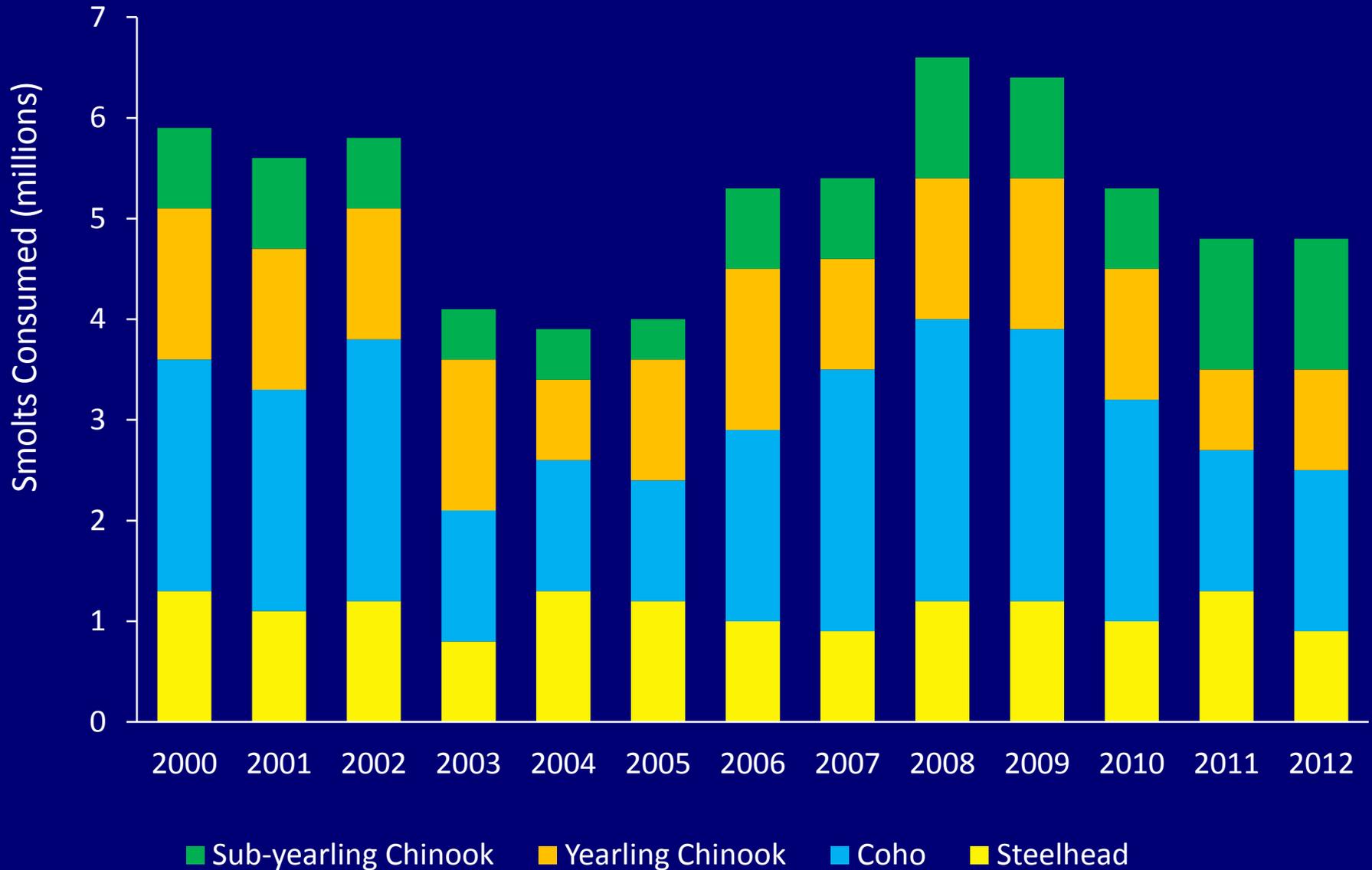
Nesting Success



Caspian Terns - East Sand Island Smolt Consumption



Caspian Terns - Smolt Consumption by Species on East Sand Island



The “Pull”

Malheur Lake Island, Malheur NWR



2012: 232 breeding pairs of Caspian terns in Year 1



Malheur Lake Island – over 190 Caspian terns fledged in Year 1

Alternative Caspian Tern Nesting Islands

2012 Results

Location	Size (acres)	Colony Size (breeding pairs)	Produced fledglings (limiting factor)
Malheur NWR, OR	1	232	Yes
Lower Klamath NWR, CA (Sheepy Lake)	0.8	212	Yes
Crump Lake, OR	1	115	Yes
Tule Lake NWR, CA	2	207	No (raccoon)
Summer Lake, OR (East Link)	0.5	10	No (unknown)
Summer Lake, OR (Gold Dike)	0.5	4	No (unknown)
Summer Lake, OR (Dutchy Lake)	0.5	0	No (no attraction)
Lower Klamath NWR, CA (Orems Unit)	1	0	No (low water)
Fern Ridge, OR	1	0	No (unknown)
TOTAL	8.3	780	

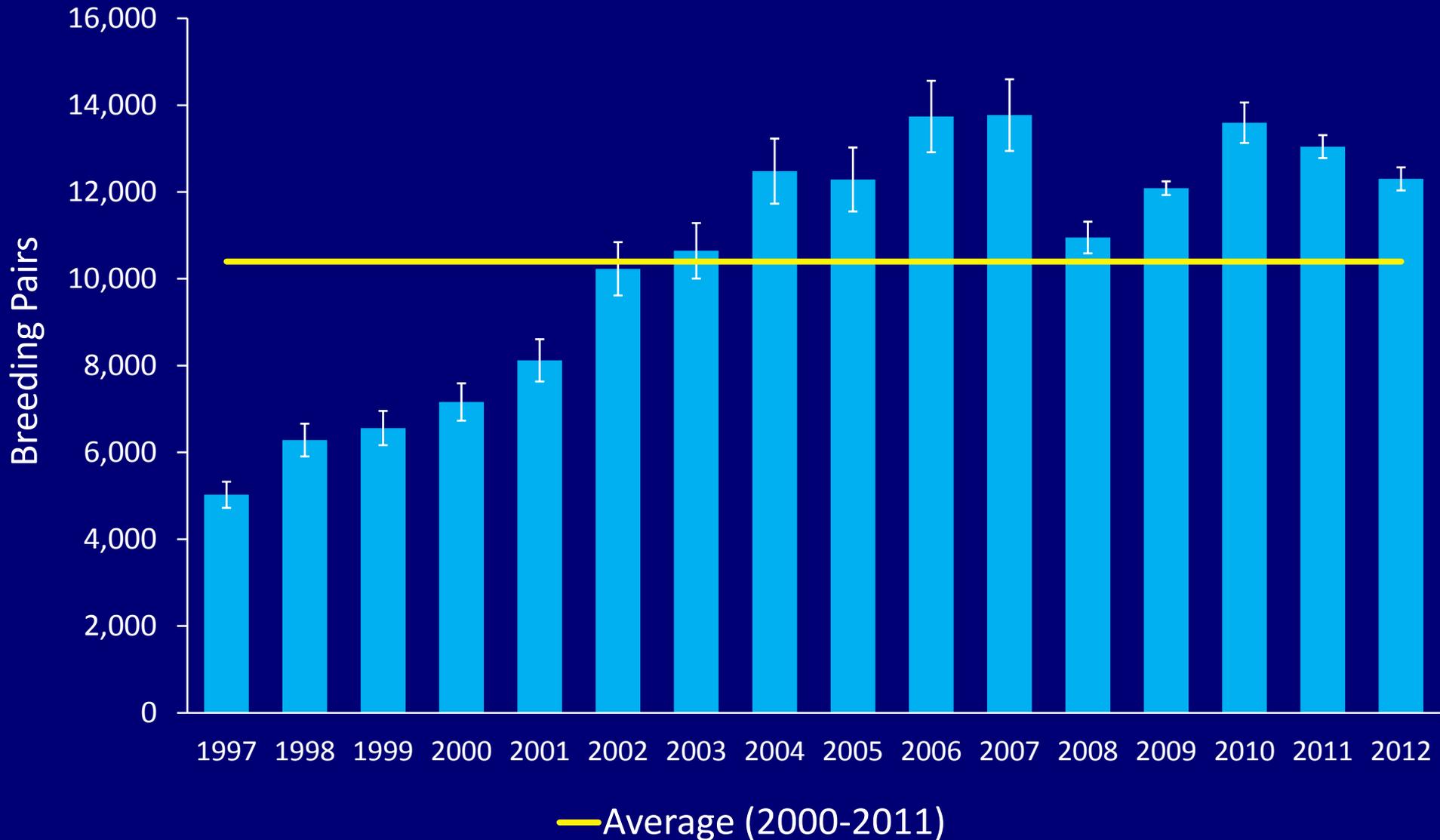


Number of Caspian terns banded on East Sand Island that were re-sighted at Corps-constructed islands in 2012

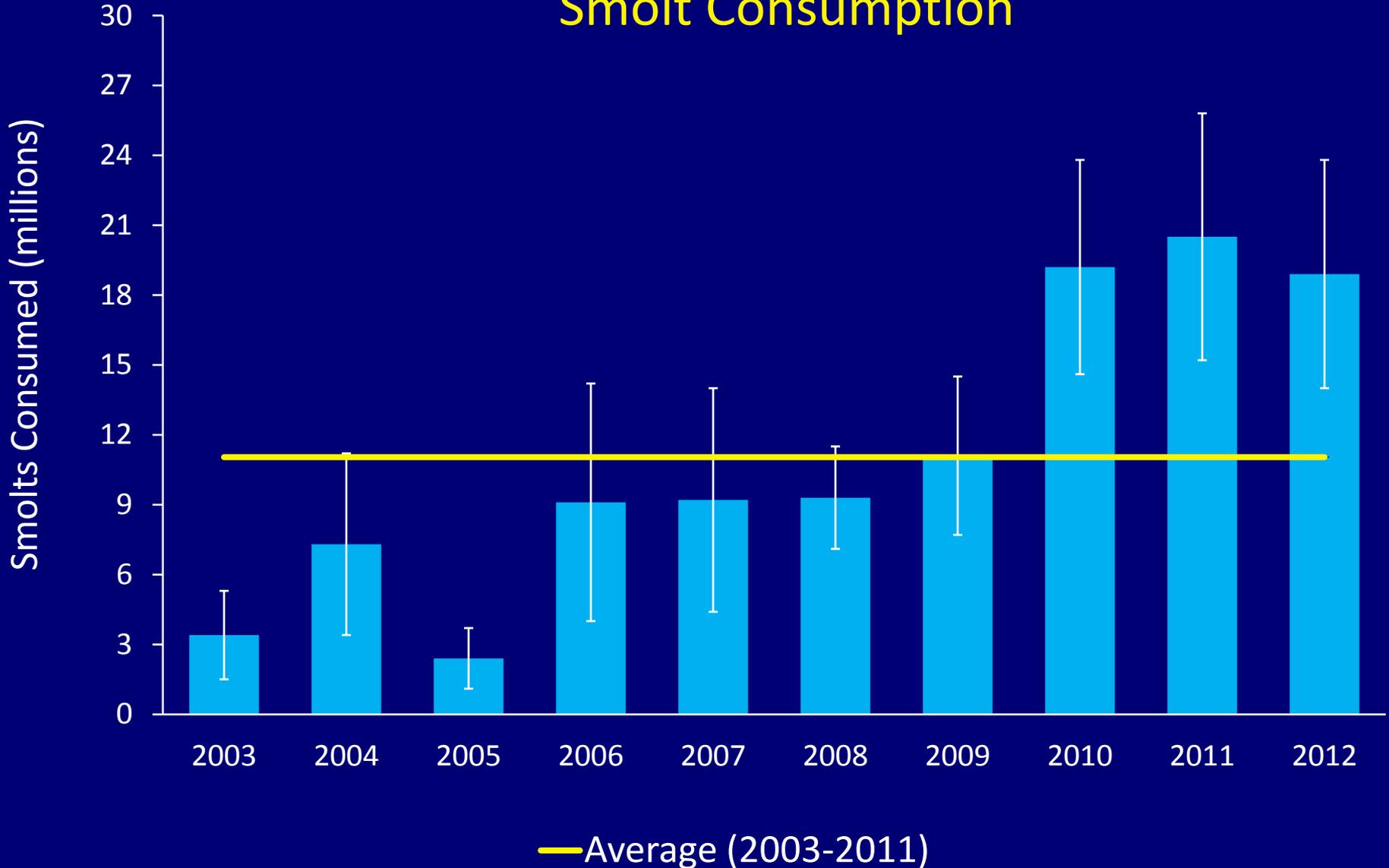
Double-crested Cormorant Colony on East Sand Island



Double-crested Cormorants - East Sand Island Colony Size

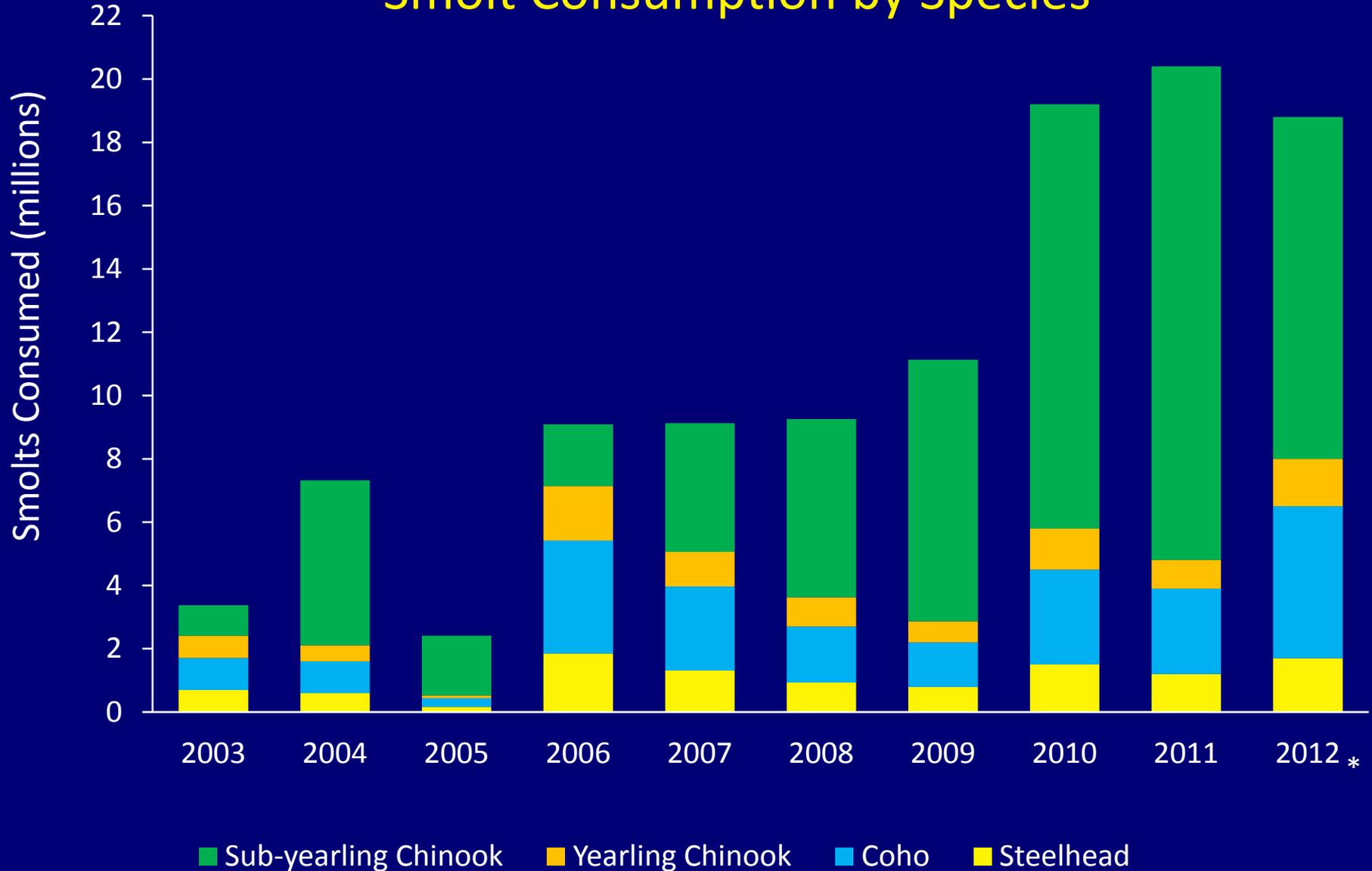


Double-crested Cormorants - East Sand Island Smolt Consumption



Double-crested Cormorants – East Sand Island

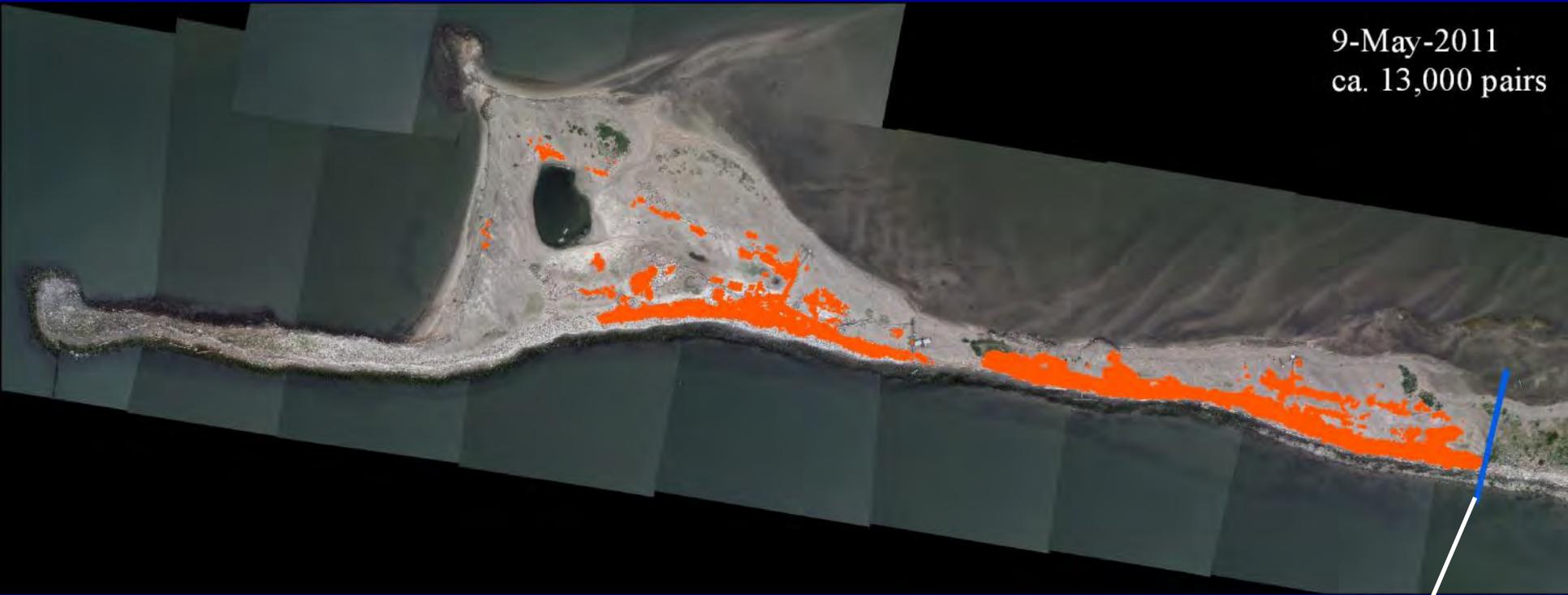
Smolt Consumption by Species



Cormorant Colony at west end of East Sand Island

2011 Nesting Season Pilot Study

9-May-2011
ca. 13,000 pairs



Privacy Fence 2011

Prevented nesting on 15% of former colony area



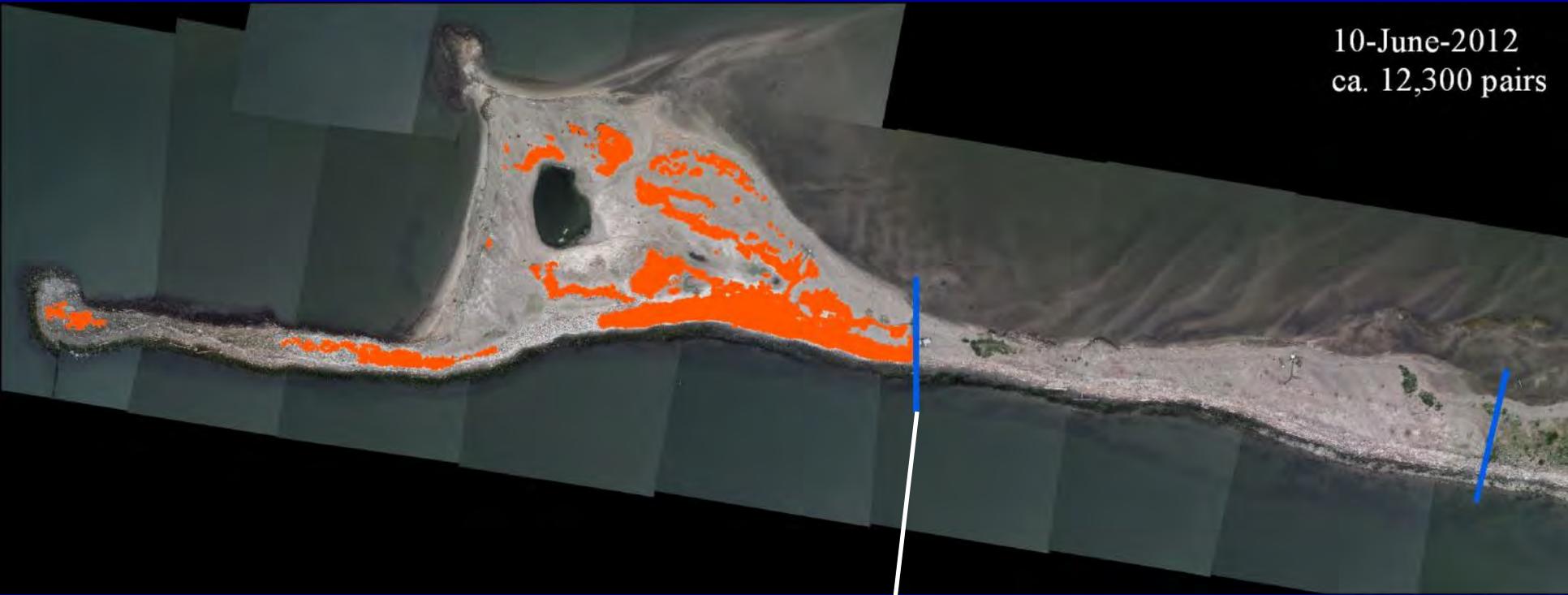
Privacy fence

The "Push"?

Cormorant Colony at west end of East Sand Island

2012 Nesting Season Pilot Study

10-June-2012
ca. 12,300 pairs



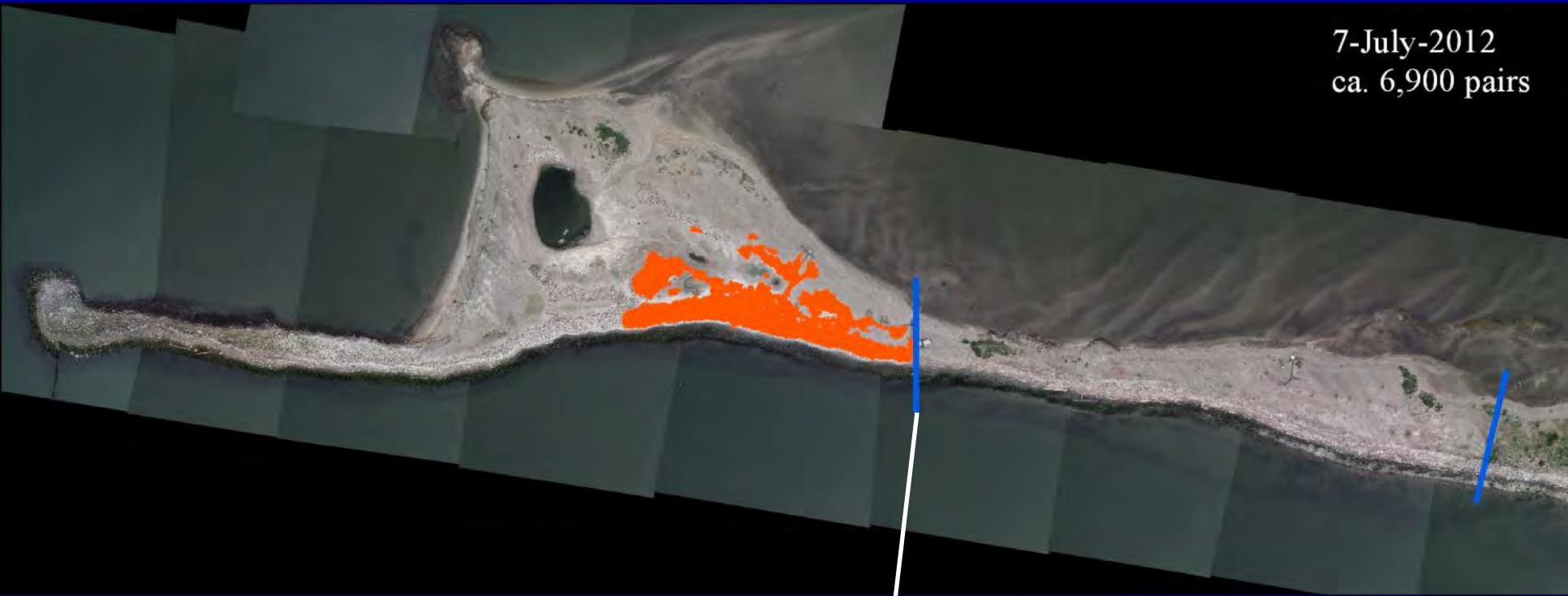
Privacy Fence 2012

Prevented nesting on 62% of former colony area

Cormorant Colony at west end of East Sand Island

2012 Nesting Season Pilot Study

7-July-2012
ca. 6,900 pairs



Privacy Fence 2012

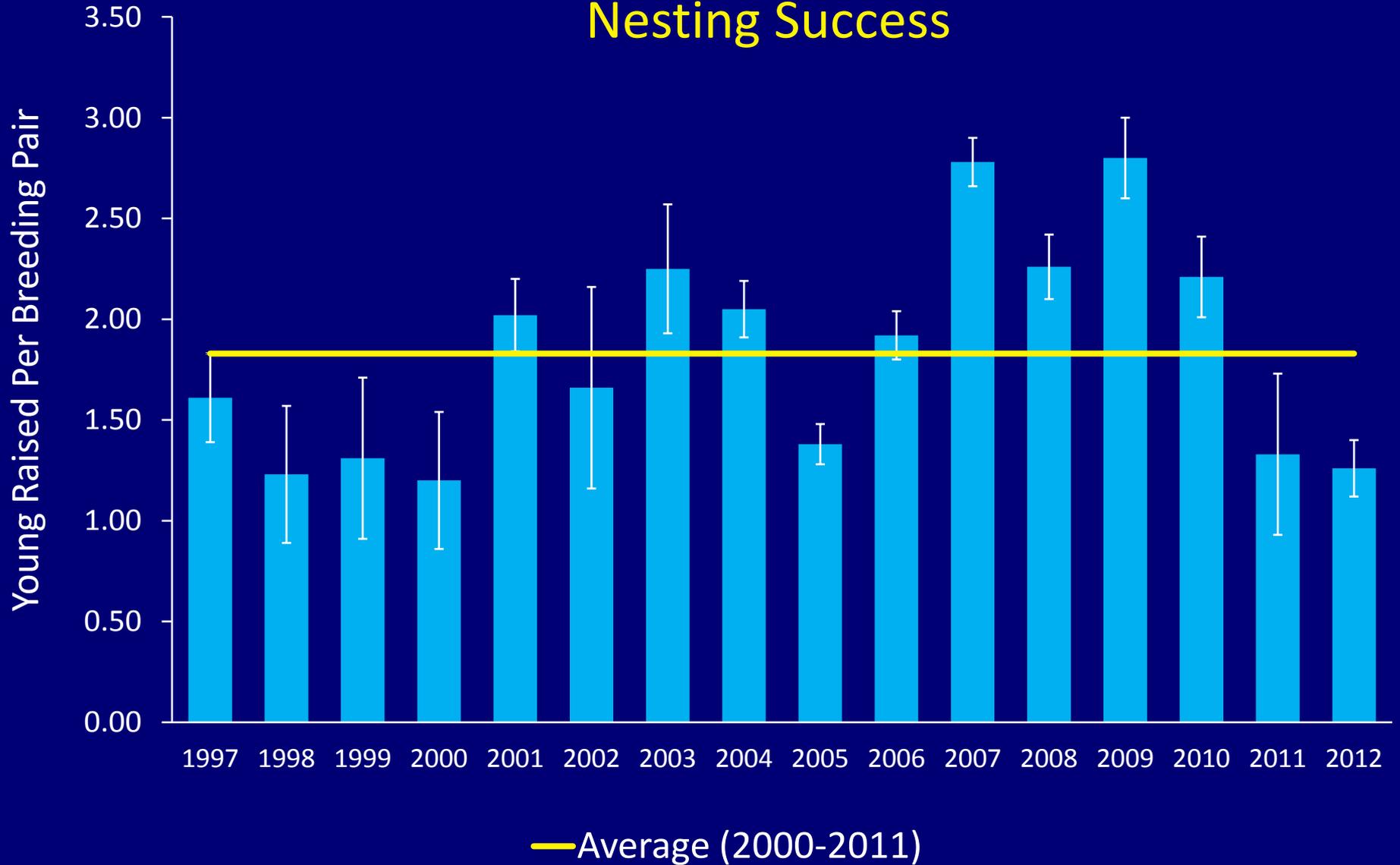
Prevented nesting on 62% of former colony area

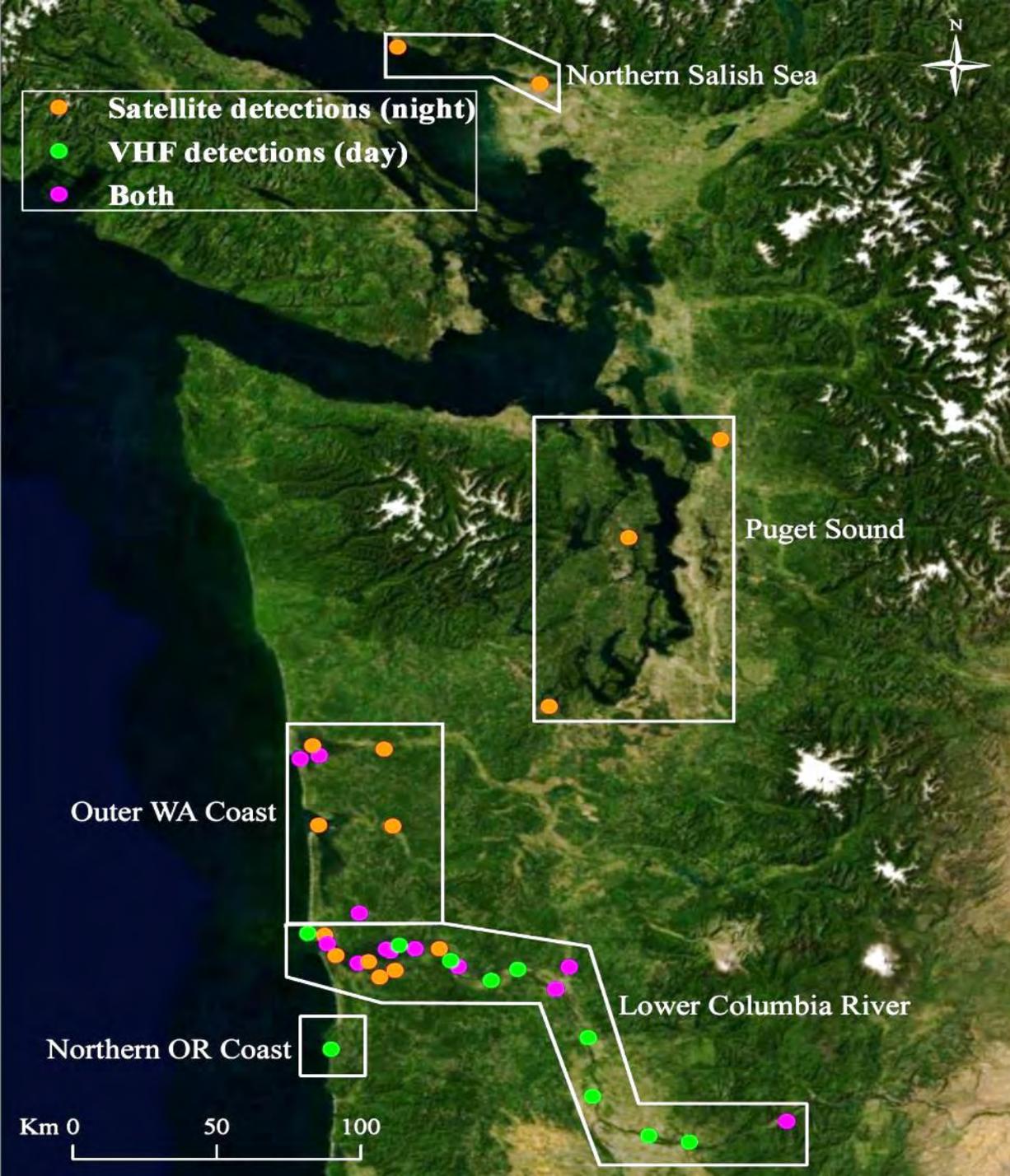


East Sand Island Cormorant Colony – combined predation by eagles and gulls

Double-crested Cormorants - East Sand Island

Nesting Success





Cormorant Tracking from East Sand Island

Dispersal of tagged cormorants was to five regions:

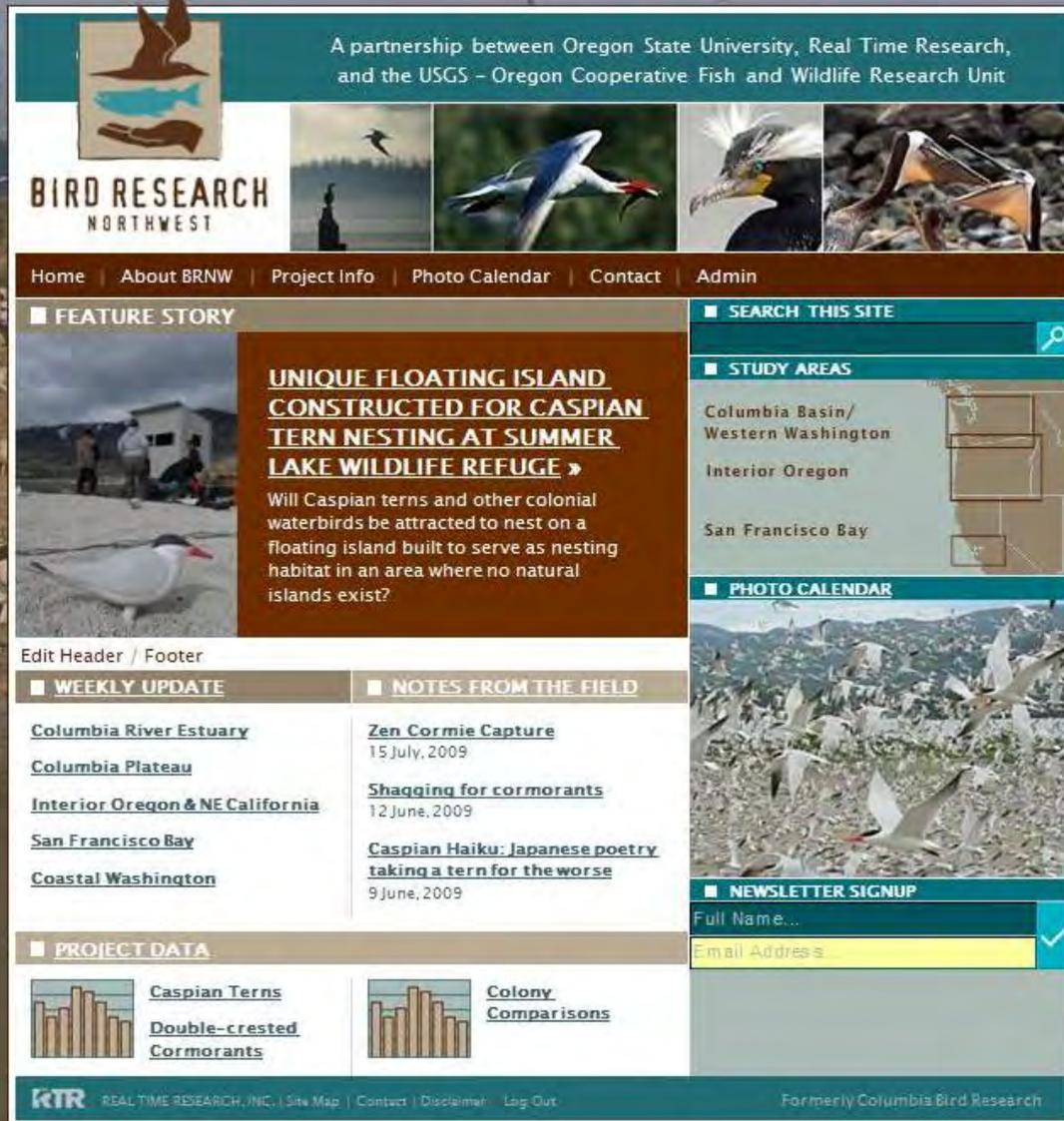
- Lower Columbia River
- Outer Washington Coast
- Puget Sound
- Northern Salish Sea
- Northern Oregon Coast

2012 Conclusions

- Combined losses of juvenile salmonids to predation by Caspian terns (ca. 4.9 million smolts) and double-crested cormorants (ca. 18.9 million smolts) in the Columbia River estuary were about 24 million fish (preliminary estimate)
- Total smolt losses to double-crested cormorants were about 4 times greater than smolt losses to Caspian terns
- Nesting habitat for Caspian terns on East Sand Island has been reduced by 68% from its former area; Caspian terns raised an average of only 0.06 young per breeding pair at the East Sand Island colony in 2012
- A Draft EIS for managing the East Sand Island cormorant colony is in preparation

Questions?





A partnership between Oregon State University, Real Time Research, and the USGS - Oregon Cooperative Fish and Wildlife Research Unit

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FEATURE STORY



UNIQUE FLOATING ISLAND CONSTRUCTED FOR CASPIAN TERN NESTING AT SUMMER LAKE WILDLIFE REFUGE >

Will Caspian terns and other colonial waterbirds be attracted to nest on a floating island built to serve as nesting habitat in an area where no natural islands exist?

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- San Francisco Bay

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NOTES FROM THE FIELD

- [Zen Cormie Capture](#)
15 July, 2009
- [Shagging for cormorants](#)
12 June, 2009
- [Caspian Haiku: Japanese poetry taking a tern for the worse](#)
9 June, 2009

PROJECT DATA

- [Caspian Terns](#)
- [Double-crested Cormorants](#)
- [Colony Comparisons](#)

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