Losses of Juvenile Salmonids in the Columbia River Estuary from Caspian Terns and Double Crested Cormorants

Future of our Salmon Technical Workshop-Day 1

Juvenile Fish Passage – March 18, 2014

Difficulties In Passage and Juvenile Mortality

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The Problem

• Listed and non-listed juvenile anadromous salmonids are being eaten by the tens of millions by piscivorous water birds which are protected by the Migratory Bird Act

• Avian predation in the estuary has resulted in the loss of more than 80 million juvenile anadromous salmonids in the past four years!

• These losses are attributable to just two species; Caspian terns and double crested cormorants
The Players...

Predators & Prey

- [Image of a bird, possibly a tern, with a black head and white body.]
- [Image of a fish with a silver and blue coloration.]
- [Image of a large, black bird with a long beak, possibly a cormorant.]
- [Image of a fish with a green and white coloration, swimming in water.]
Caspian Terns Colony at East Sand Island
Columbia River River Estuary 2012
Smolt Consumption by Caspian Terns

Average (2000-2012)
The Caspian Tern Saga....

• Prior to 1984 Caspian Terns (CT’s) did not nest in the Estuary
• In 1983, Corps added dredge spoils to East Sand Island (ESI) and CT’s nested there in 1984
• By 1985, vegetation had covered ESI and the CT’s moved upriver to Rice Island and over the next 13 years the colony grew and ate millions of smolts/2x-3x the rate at ESI
• In 1999/2000 terns were moved back to a managed ESI... population continues to grow as does the impacts on salmonids continue to increase
• Corps attempts to limit nesting on Rice, but was legally challenged by a number of bird protection groups and lost
• ROD from USFWS & Corps issued separately in 2006
Caspian tern Colony Size at East Sand Island

Breeding Pairs

Colony Size

Average (2000-2012)
the Saga continues....

• In 2008 the Caspian Tern Management Plan (CTMP) implementation began, with the focus on alternative habitat construction

• By 2012, with over 8 acres of alternative available, the main site was down to 1.58 acres, but the numbers of nesting terns still numbered over 7,000 pairs, double the number called for the CTMP...

• An EA to reduce the colony acreage to 1.08 acres was rejected due to the drought in the offsite locations

• A new location may solve this problem...Don Edwards NWR in San Francisco Bay
Don Edwards NWR
Double Crested Cormorant
Double Crested Cormorants

- First noted nesting the estuary in 1980 on pilings and other artificial structures
- Moved on Rice and East Sand Island in 1987
- Population expanded rapidly in the early to mid 1990’s to over 7,000 pairs, and then doubled in 10 years
- In 2013 an estimated 15,000+ nesting pairs reared an average of 1.92 fledglings per pair, ~60,000 cormorants by summer of 2013
That’s a lotta Cormorants!

East Sand Island Double-crested Cormorant Colony Size

Breeding Pairs

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Eating lots of Salmon...Too Many Salmon!

Average (2004-2012) = 12,700 Breeding Pairs, CV = 7%
Among causalities are listed Stocks...
Listed Steelhead are of Particular Concern - Annual Predation Rate on Steelhead by DPS averaged from 2007-2012 across 2007-2012, with range in annual values.
Natural Forces at Work
What is being done?

• Several years of research has yielded the conclusion that the various levels of pressure on nesting cormorants to get them to relocate has been unsuccessful.

• Their nesting habitats are too plastic to “move” them like Caspian terns.

• An EIS process was initiated in 2013, with a draft to be released in June 2014, and the final completed in the fall of 2014.

• Alternatives may include lethal control as one measure to get the ESI population reduced.
Summary

• Avian predation is a significant problem upwards of 20% of the entire outmigration is consumed annually

• Prospects for rapid resolution mixed

• Competing mandates from federal agencies

• Litigation is a potential long-term delay