Northwest Power and Conservation Council

March 29, 2012

MEMORANDUM

TO: Council Members

FROM: Jim Ruff – Manager, Mainstem Passage and River Operations

SUBJECT: Briefing and summary of U.S. Army Corps of Engineers' Columbia River Fish Mitigation Program funding, actions and accomplishments

At the April 11, 2012, Council meeting in Skamania, Washington, Rock Peters (Senior Fish Program Manager), Mike Langeslay (Columbia River Fish Mitigation Manager for the Portland District), and Derek Fryer (Fisheries Biologist and AFEP Coordinator for the Walla Walla District) of the U.S. Army Corps of Engineers (the Corps) will present a briefing on the Corps' Columbia River Fish Mitigation (CRFM) program. In particular, they will discuss: a) historic and planned CRFM program funding levels; b) recent and planned fish passage and research actions implemented under program; and c) the major recent accomplishments of the program.

Background

The Corps' Columbia River Fish Mitigation is an ongoing, Congressionally authorized program to develop, evaluate and implement juvenile and adult fish passage improvements and conduct associated research and monitoring at the Corps' eight mainstem Columbia/Snake River Federal Columbia River Power System (FCRPS) hydropower projects, in the Columbia River estuary, and at its Willamette River Basin projects. CRFM is a critical component of the Corps' implementation of Biological Opinions (BiOp) for Endangered Species Act (ESA) listed salmon and steelhead in the Columbia Basin.

Total estimated CRFM program cost and target completion date is based on the various requirements of the NOAA-National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service's (USFWS) 2008 BiOps issued for both the FCRPS (including actions from the September 2010 Supplemental BiOp) and the Willamette River Basin, as well as for the 2008 Columbia Basin Fish Accords. The target completion date for the CRFM program of 2023 covers the time period of the NMFS FCRPS BiOp and coincides with the end date of the NMFS' and USFWS' Willamette River Basin BiOps. Although the Corps' CRFM planning budget for FY 2013 is $98 million, which is about $30 million less than the FY 2012 CRFM budget, next year's planned work is expected to be fully implemented. However, the Corps' FY 2013 CRFM budget still needs to be approved by Congress.

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Since 2008, the Corps has completed many of the actions contained within the NMFS FCRPS BiOp. With the exception of improvements at Lower Granite Dam, all major juvenile fish passage improvements have been implemented at the Corps' eight mainstem Lower Snake and Columbia River dams. The Corps is currently evaluating the effectiveness of these passage improvements towards meeting the performance standards in the NMFS BiOp. Measures to reduce predation on ESA-listed salmonids by Caspian terns in the Columbia River estuary are nearly complete as well.

Columbia River Fish Mitigation Program

Status Update

Northwest Power and Conservation Council Briefing

April 11, 2012

US Army Corps of Engineers

BUILDING STRONG®

Columbia River Fish Mitigation Program

Discussion Items

- Columbia River Fish Mitigation Program
  - Purpose
  - Funding
- Individual project status; configuration actions completed since 2008
- BiOp juvenile dam passage survival performance standards and testing
- Juvenile fish transportation
- Avian predation

Columbia River Fish Mitigation Program

Purpose

- Gather scientific information to help inform fish passage configuration and operation decisions for Corps of Engineers–operated facilities in the Columbia River Basin
- Prioritize actions aimed at achieving juvenile dam survival performance standards specified in the NOAA 2010 Supplemental BiOp and Accords

Focus Areas

- **Juvenile fish dam passage and survival**
  - ✓Surface passage
  - ✓Spill improvements
  - ✓Bypass improvements
  - ✓Turbine upgrades
- **Juvenile fish transportation**
- **Avian predation**

Columbia River Fish Mitigation Program

Funding

- Cost
  - Thru FY 2011 (obligated) $1.59 B
  - FY 2012 allocation $128.4 M
  - FY 2013 PBUD $98.0 M
- Schedule
  - Complete FCRPS Actions by 2018
  - Complete Willamette Actions by 2023

Columbia River Fish Mitigation Program

Year	Total CRFM	FCRPS	Willamette[1]
2008	$82.1M	$81.4M	$681K
2009	$105.2M	$100.3M	$4.8M
2010	$87.6M	$77.0M	$10.5M
2011	$134.8M	$99.9M	$35.0M
2012 (allocated)	$128.4M	$85.7M	$42.7M
2013 (PBUD)	$98.0M	$59.2M	$38.8M

1 - CRFM has included Willamette BiOp actions since 2008

Bonneville Dam

- Fish passage improvements completed since 2008:
  - Developed new spill patterns (2008)
  - Completed guidance efficiency improvements at BII (2008)
  - Completed BI sluiceway improvements (2010)
  - Completed BI MGR turbine upgrade installation (2010)
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- First year of spring performance standard testing was completed in 2011; preliminary estimates for yearling Chinook were 95.7% and 97.6% for steelhead; summer testing in 2011 cancelled due to high flows
- Summer performance standard testing planned for 2012

The Dalles Dam

- Fish passage improvements completed since 2008:
  - Spill wall constructed between spillbays 8–9 (2010)
  - Installed enhanced avian deterrent wire array (2011)
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- Spring and summer performance standard testing completed in 2010 and 2011 (spring only; summer cancelled due to high flows) at 40% spill
  - Yearling Chinook: 96.4 and 97.2% dam survival, respectively
  - Steelhead: 95.3 and 99.2% dam survival, respectively
  - Subyearling Chinook: 2010 - 94.0% dam survival (summer performance standard test planned for 2012)
- Adult passage actions
  - Feasibility/potential installation of PIT detection system for adults (AMIP)

John Day Dam

- Fish passage improvements completed since 2008:
  - Added two spillway weirs (2008)
  - Added an extended-length spill deflector in spillbay 20 (2010)
  - Developed new spill pattern (2010)
  - Expanded avian deterrent wire array (2010)
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- First year of spring performance testing completed in 2011 at 30 and 40% spill levels
  - Yearling Chinook: 96.7 and 97.8% dam survival, respectively
  - Steelhead: 98.4 and 99.0% dam survival, respectively
- Summer performance standard testing cancelled in 2011 due to high flows; spring and summer performance standard testing planned for 2012 at both 30 and 40% spill levels
- Adult passage actions
  - North ladder count station entrance modifications planned for completion in 2013 (exit section completed in 2010)

McNary Dam

- Fish passage improvements completed since 2008:
  - Added two spillway weirs (2008)
  - Developed new spill pattern (2008)
  - Relocated juvenile bypass system outfall (2012)
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- First year of spring and summer performance standard testing planned for 2012

Ice Harbor and Lower Monumental Dams

Ice Harbor Dam

- No significant passage improvements have been completed since 2008
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- New turbine design installation planned for unit 2
- Single spill operation yet to be determined for performance standard testing

Lower Monumental Dam

- Fish passage improvements completed since 2008:
  - Added spillway weir (2008)
  - Developed new spill pattern (2008)
  - Relocated juvenile bypass system outfall (2012)
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- Spring and summer performance standard testing planned for 2012

Little Goose and Lower Granite Dams

Little Goose Dam

- Fish passage improvements completed since 2008:
  - Added spillway weir (2009)
  - Bypass outfall relocation (2009)
- No additional configuration actions are anticipated to achieve the juvenile dam passage survival performance standards
- Spring and summer performance standard testing planned in 2012

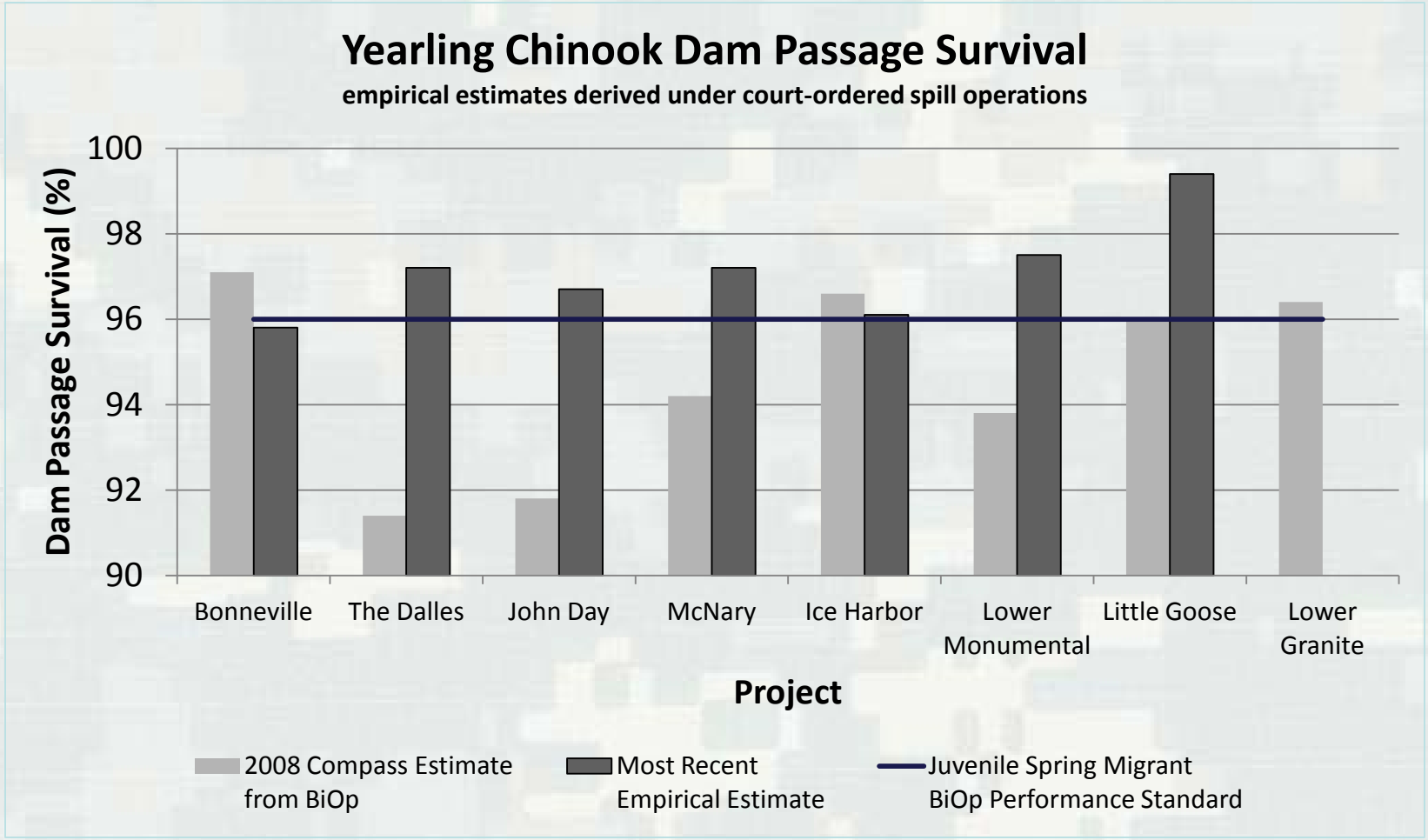
Lower Granite Dam

- Development of actions necessary to reach juvenile performance standards continue with a draft COP expected in April 2012
- Will conduct performance standard testing following the implementation of COP recommended actions

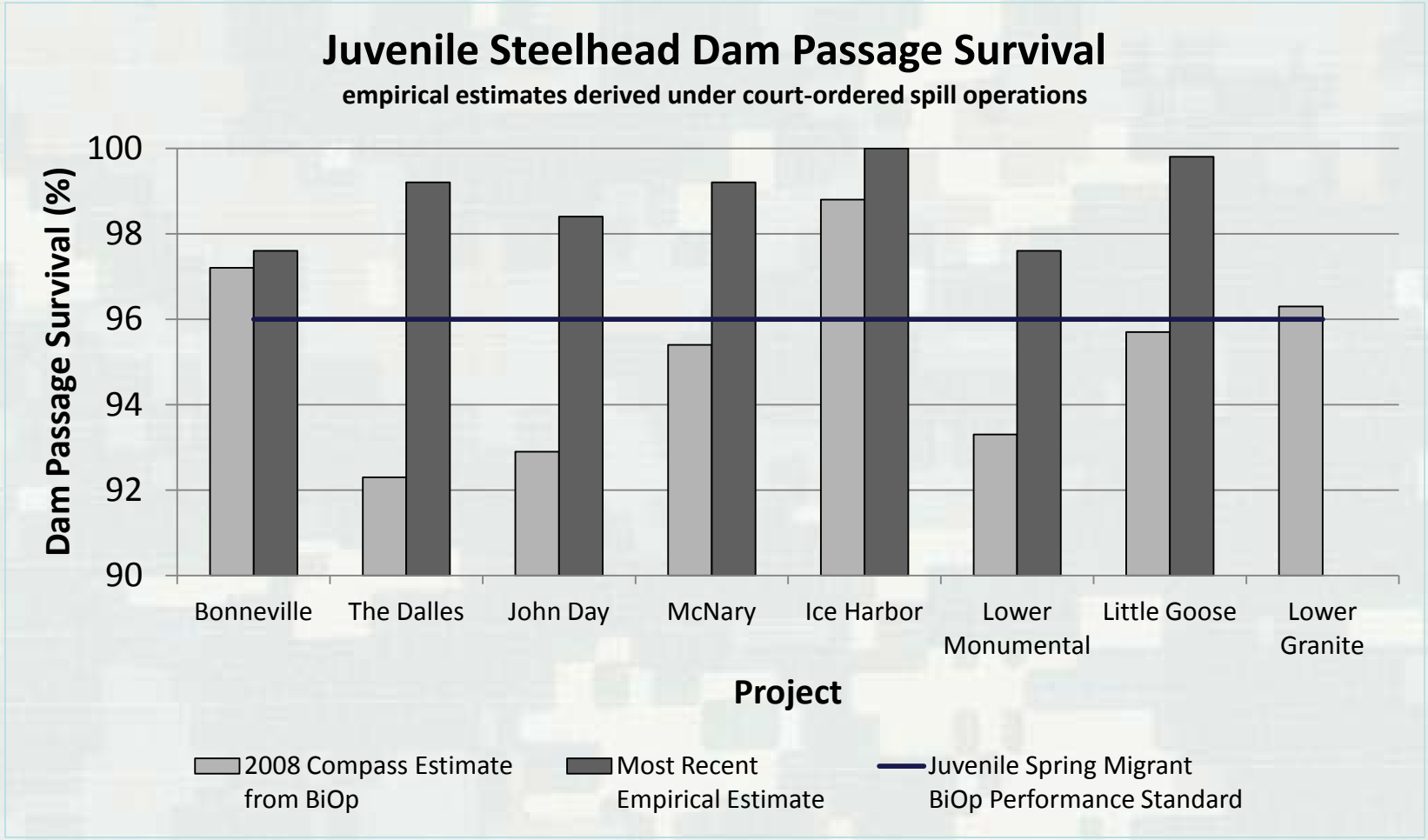
Juvenile Dam Passage Survival Performance Standard Testing

- AAs and NOAA have developed draft white paper outlining testing criteria for juvenile performance standard tests
- Formal performance standard testing began in 2010 at The Dalles Dam
- Further testing occurred in 2011 at Bonneville, The Dalles, and John Day during the spring
- Existing estimates of juvenile dam passage survival at many projects indicate survival of spring migrants is nearing or exceeding the performance standards specified in the BiOp (96% spring, 93% summer)
- Additional testing will occur as project operation and configuration actions are completed at each project
- Testing planned for 2012 at Little Goose, Lower Monumental, McNary, John Day, The Dalles, and Bonneville dams

Juvenile Performance Standard Summary



Juvenile Performance Standard Summary



Juvenile Fish Transporation

Seasonal Transport Evaluation

- Annual assessments of in-river vs. transport strategies are ongoing

Sockeye Evaluation

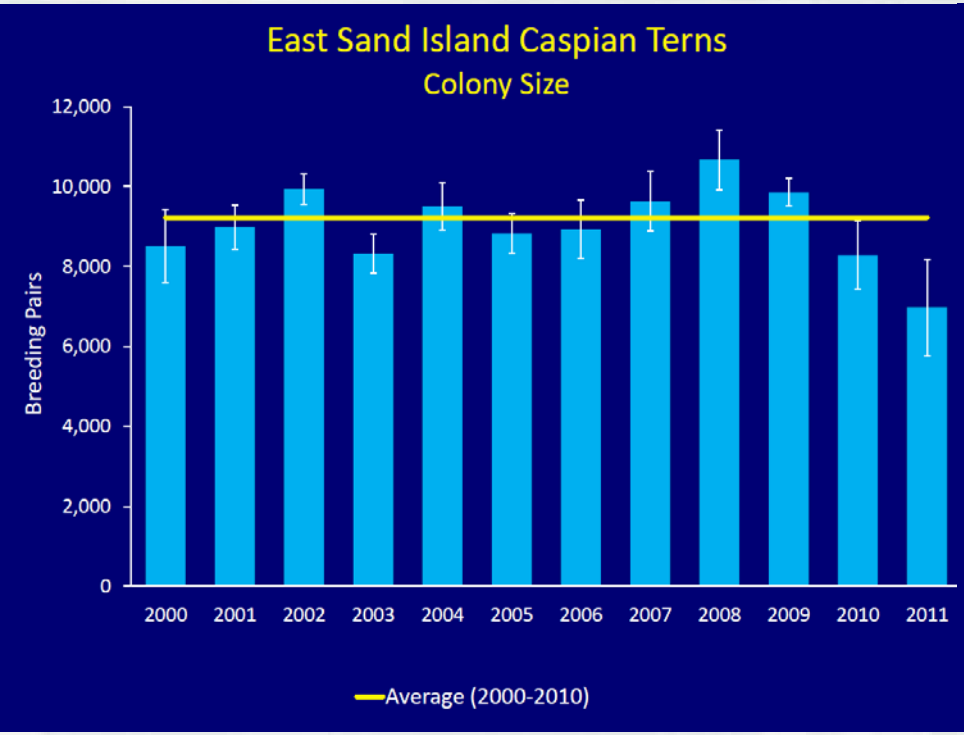
- ~62,000 sockeye PIT-tagged each year (2009–2011) Sawtooth and Oxbow Hatchery
- Final pilot year tagging in 2012
- Evaluate adult return data
- Develop more robust transportation evaluation if warranted

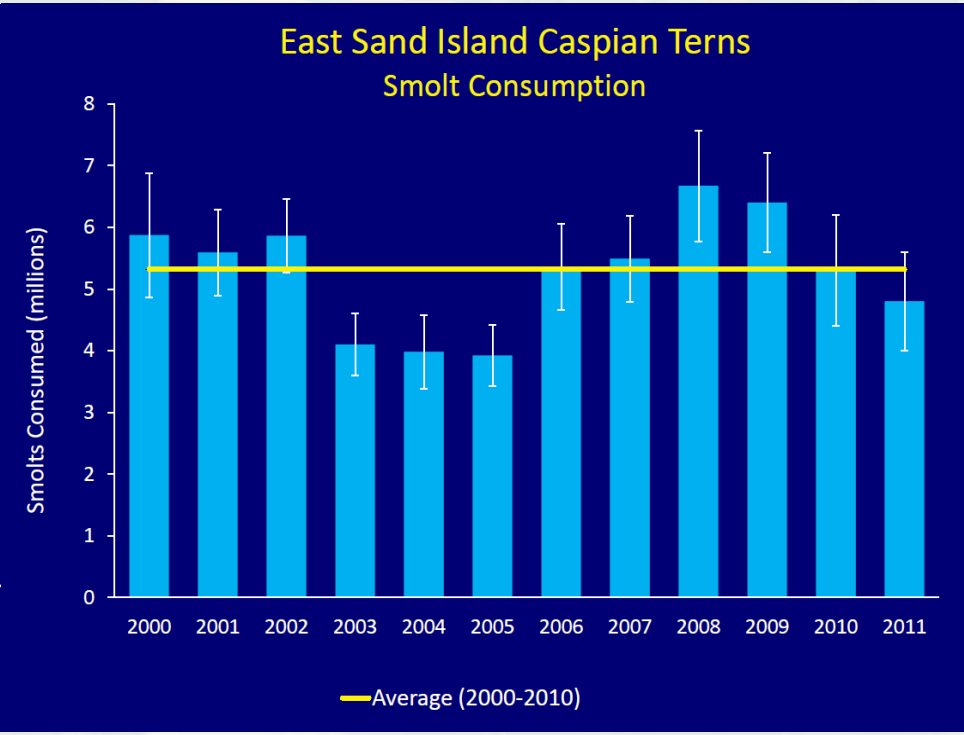
Fall Chinook Evaluation

- 2012 – Final tagging year
- Methods for analysis report – Draft expected June 2012, report will contain:
  - ►An evaluation of proposed methods for analyzing fall Chinook data
  - ►Holdover fish violate assumptions of CJS methodology
  - ►Initial T:I ratios from 2005 and 2006 releases
- Report for review and comment expected summer 2012

Avian Predation

Estuary Caspian Terns

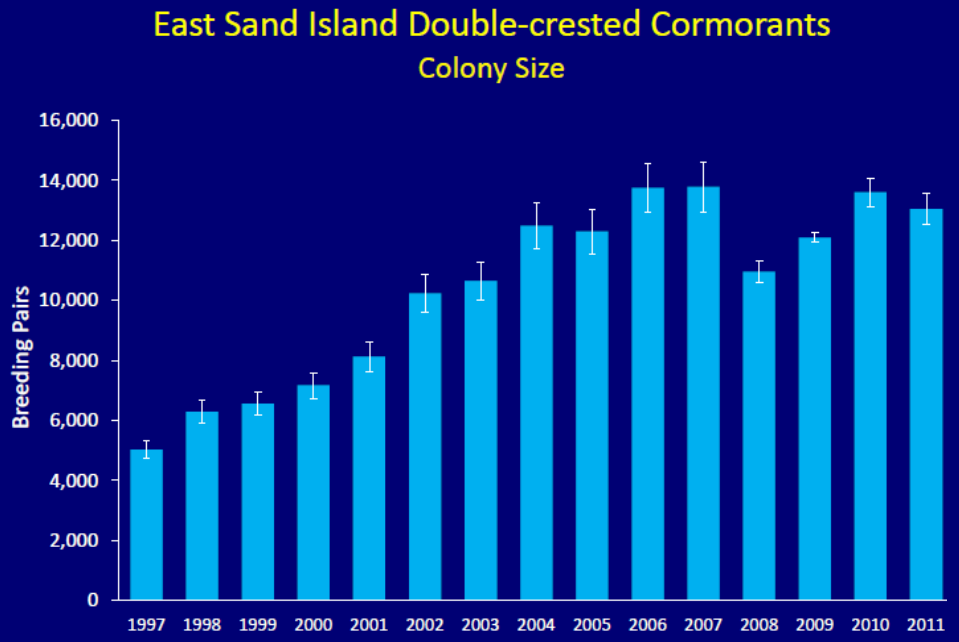


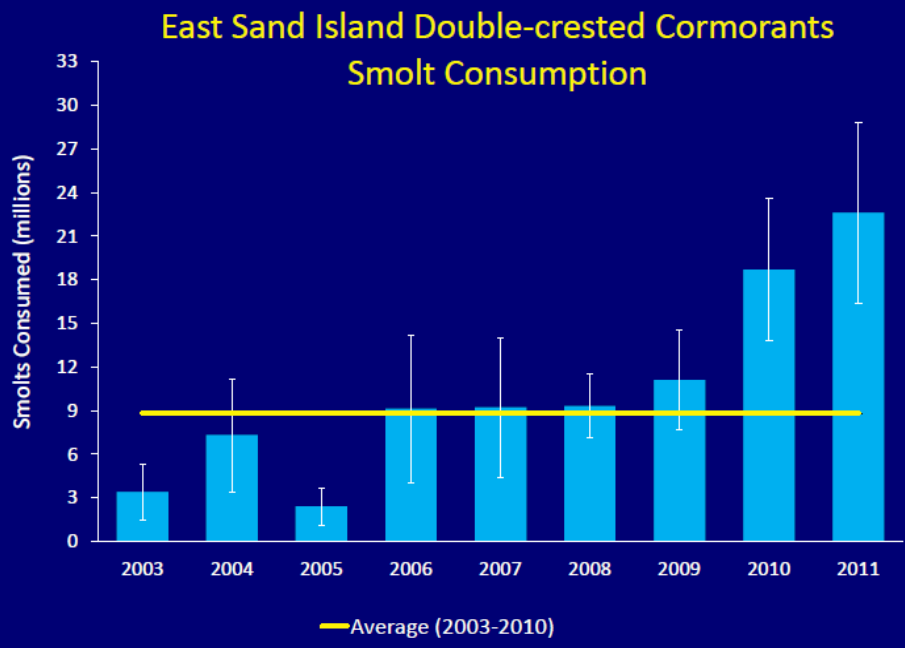


- 7000 pairs consumed 4.8M smolts in 2011
- Total nesting failure in 2011 (predation)
- Available nesting reduced from 6 acres to 2 acres

Avian Predation

Estuary Double-Crested Cormorants





- 13,000 pairs consumed 22.6M smolts
- Nesting dissuasion (fencing/disturbance) evaluations ongoing; 15% in 2011, 62% planned in 2012

Avian Predation

- Focus on long-term colony nesting habitat management
  - Three Avian Predation Management Plans
    - Estuary Caspian Terns EIS (2005)
    - Estuary Double-Crested Cormorants (draft 2012)
    - Inland Avian (draft 2012)
- Major dam specific actions completed/ongoing
  - Avian deterrent wire arrays
  - Hazing program
  - Improved egress conditions (outfall relocations, improved spill patterns)

Avian Predation

Caspian Terns – Estuary

- Reduced acreage at E. Sand Island to 1.5 acres (met acreage requirements in EIS)

Cormorants

- 62% exclusion test this year (EA)
- Continue to develop plan with working group
  - Management Plan/Draft EIS (fall 2012)

Inland Avian

- Management Plan/NEPA this year
  - Draft – September
  - Final – January 2013