Oregon Pinnipeds: Status, Trends, & Management

Robin Brown
Oregon Department of Fish and Wildlife
Marine Mammal Program
Acknowledgments

• NOAA Fisheries
• National Marine Mammal Laboratory
• Washington Department of Fish and Wildlife
• Pacific States Marine Fisheries Commission
• U.S. Army Corps of Engineers
• Columbia River Inter-Tribal Fish Commission
• Northwest Power and Conservation Council
• Bonneville Power Administration
## South Jetty, Columbia River

- **California sea lion (CSL)**
- **Steller sea lion (SSL)**
- **Harbor seal**

_Note: The image shows a group of sea lions and seals on rocks near South Jetty, Columbia River._
Harbor seals

- Widely distributed North Atlantic and North Pacific.
- Five west coast U.S. stocks
- OR/WA coast stock:
  - Population stabilized 1990s but may have recently increased
  - 1999 estimate: ~25,000 seals (~10,000 in Oregon)
  - 2014 estimate pending

Source: U.S. Pacific Marine Mammal Stock Assessments, 2013 (NOAA-TM-NMFS-SWFSC-532); ODFW; WDFW
Steller sea lions

• U.S. stocks (2): Western, Eastern
• Eastern stock:
  – ~63,000-78,000 sea lions
  – Growth rate: 3%-5% per year
  – Delisted as "threatened" under ESA in 2013
• OR/WA population:
  – ~7,900 total (~1,500 pups)

Source: Alaska Marine Mammal Stock Assessments, 2013 (NOAA-TM-NMFS-AFSC-277); ODFW
• Columbia River – typical/recent single-day spring counts
  – South Jetty: ~100
  – Phoca Rock/Bonneville Dam: ~40
  – Willamette Falls: ~2

• Observed predation Bonneville Dam, 2005-2014
  – Salmonids: ~8,000
  – White sturgeon: >12,000

Source: ODFW; WDFW; USACE
California sea lions

• Five stocks (4 in Mexico)
• U.S. stock
  – ~300,000 sea lions
  – Growth rate: 5% per year (except El Nino years)
• Pacific Northwest
  – Seasonal migrants (fall, winter, spring)
  – Nearly all sub-adult and adult males

California sea lions

- Columbia River – “typical/recent” single-day spring counts
  - South Jetty: ~50
  - East Mooring Basin: ~250 (pre-2013)
  - Bonneville Dam: ~25
  - The Dalles: ~3
  - Willamette Falls: ~20

Source: ODFW; WDFW; USACE
Historic/prehistoric occurrence of pinnipeds in the lower Columbia River

- Archaeological evidence shows harbor seals present in lower Columbia River up to 10,000 years ago; no similar evidence for other pinnipeds.
- Harbor seals observed to Celilo Falls during 19th (e.g., Lewis & Clark) and early 20th centuries.
- Steller sea lion observations at river-km 70 in 1814 & river-km 150 in 1930s.
- No history of CSLs in river.

Source: Lyman et al. 2002, Northwestern Naturalist
Recent history

• 1970s
  – Marine Mammal Protection Act (MMPA) of 1972

• 1980s
  – CSLs begin occurring regularly in the lower Columbia River

• 1990s
  – CSLs start occurring regularly at Willamette Falls
  – CSL branding program starts in Astoria 1997
  – ESA listings of Columbia River salmonids

Source: ODFW, WDFW
Recent history

- 2000s
  - CSLs occurring regularly at Bonneville Dam 2001
  - Monitoring at dam starts 2002
  - SSLs occurring regularly at Bonneville Dam 2006
  - Commission directs agency to apply for MMPA Section 120 removal authority 2006 (with WDFW and IDFG)
  - Section 120 authority granted 2008
  - CSL & SSL begin increasing at Willamette Falls

Source: USACE, ODFW, WDFW
Telemetry locations from sea lions tagged in Columbia R.
Harbor seals
>6000 on Desdemona Sands, 2/11/2015
Photo credit: S. Jeffries, WDFW
California sea lions
>1500 at East Mooring Basin, Astoria, 2/11/2015
Photo credit: S. Jeffries, WDFW
"Normal" pattern of CSL occurrence, East Mooring Basin, Astoria

Spring peak, southward migration

Breeding season (Channel Isl.)

Fall peak, northward migration

Winter low

Source: ODFW, unpublished data
CSL counts, Astoria, fall 2004 – spring 2014

Source: ODFW, unpublished data
California and Steller sea lions
Several 'pods' of 100-200 each, RM 24 to RM 68, 2/20/2015
Photo credit: S. Jeffries, WDFW
Figure 4. Mean daily Chinook consumption by CSL and mean daily Chinook passage at Bonneville Dam by date, 2002-2014.

Source: USACE, Pinniped 2014 Final Report
- Maximum USACE-observed consumption:
  - 12 salmon/day
  - 198 salmon/season
- Prey requirements at dam based on energetics model: 3 salmon/day
- Observed predation at Bonneville Dam, 2002-2014: 40,000+ salmonids

Source: USACE, ODFW
Figure 13. Mean, standard deviation, and maximum daily estimated number of CSL and SSL present at Bonneville Dam between January 1 and May 31, 2002 to 2014.

Source: USACE, Pinniped 2014 Final Report
### California sea lion removals

<table>
<thead>
<tr>
<th>Year</th>
<th>Captivity</th>
<th>Accidental mortality</th>
<th>Euthanized</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>6</td>
<td>5</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>2009</td>
<td>4</td>
<td></td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>2011*</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
<td></td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>2013</td>
<td>2</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>5</td>
<td>55</td>
<td>73</td>
</tr>
</tbody>
</table>

*On-going litigation suspends removal program

Source: ODFW, WDFW
Willamette Falls
Willamette Falls

• Monitoring: 1995-2003, 2009-2013, 2014-
• Hazing by ODFW: 2010, 2012-2013
• 2014 results (March-May)
  – At least 27 CSLs, 2 SSLs, 1 HS
  – 14 CSLs seen previous years at WF or Bonneville
  – 5 CSLs on removal list
  – 3,700 (+/- 400) salmonids killed
  – 13% (+/- 3%) of listed winter steelhead
  – 8% (+/- 2%) of listed spring Chinook

Source: Willamette Falls 2014 Field Report
Willamette Falls

• 2015 preliminary results (February-April)
  – At least 33 CSLs, 3 SSLs
  – Majority seen previous years at WF or Bonneville
  – Four on removal list
  – Estimated salmonid predation thus far: ~3000
  – Preparations for trapping & marking in 2016
2015 and beyond

• Astoria
  – Continue sea lion marking project
  – Key to understanding affects of growing sea lion numbers on salmonids, other fish resources

• Columbia River
  – Monitor pinniped abundance, distribution, and foraging habits
2015 and beyond

• Bonneville Dam
  – Continue predator removals 2015 and 2016
  – Request 5-year extension of NMFS LOA – 2021
  – Evaluate need for Steller sea lion management

• Willamette Falls
  – Continue monitoring of predation 2015, 2016...
  – Evaluate predation affects on T&E salmonids
Questions?