



Oregon Dept. of Fish and Wildlife North Santiam Update with Elise Kelley

Winter Steelhead Run

- Stronger run than in past few years
- More than 5,000 winter steelhead had crossed Willamette Falls by mid-April

2017 and 2018 Sea Surface Temperatures

- Signs were indicating a gradual reverting to historical averages

Ocean Conditions for Salmon Growth and Survival

| Ecosystem Indicators | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| PDO (Sum Dec-March) | 19 | 6 | 3 | 13 | 7 | 21 | 12 | 17 | 14 | 9 | 5 | 1 | 16 | 4 | 2 | 8 | 10 | 22 | 20 | 18 | 11 | 15 |
| PDO (Sum May-Sept) | 10 | 4 | 6 | 5 | 11 | 17 | 16 | 18 | 12 | 14 | 2 | 9 | 7 | 3 | 1 | 8 | 20 | 22 | 21 | 15 | 13 | 19 |
| ONI (Average Jan-June) | 21 | 1 | 1 | 7 | 14 | 16 | 15 | 17 | 9 | 12 | 3 | 11 | 18 | 4 | 6 | 8 | 10 | 19 | 22 | 13 | 5 | 20 |
| SST NDBC buoys (°C; May-Sept) | 17 | 6 | 8 | 4 | 5 | 11 | 22 | 12 | 2 | 14 | 1 | 10 | 3 | 7 | 9 | 16 | 20 | 19 | 18 | 13 | 15 | 21 |
| Upper 20 m T (°C; Nov-Mar) | 21 | 11 | 8 | 10 | 6 | 15 | 16 | 13 | 12 | 5 | 1 | 9 | 18 | 4 | 3 | 7 | 2 | 22 | 20 | 19 | 14 | 17 |
| Upper 20 m T (°C; May-Sept) | 16 | 11 | 13 | 4 | 1 | 3 | 22 | 19 | 8 | 10 | 2 | 5 | 17 | 7 | 6 | 18 | 20 | 9 | 14 | 12 | 15 | 21 |
| Deep temperature (°C; May-Sept) | 22 | 6 | 8 | 4 | 1 | 10 | 12 | 16 | 11 | 5 | 2 | 7 | 14 | 9 | 3 | 15 | 21 | 19 | 13 | 18 | 20 | 17 |
| Deep salinity (May-Sept) | 21 | 3 | 11 | 4 | 5 | 18 | 19 | 12 | 7 | 1 | 2 | 16 | 20 | 15 | 14 | 13 | 22 | 17 | 9 | 8 | 6 | 10 |
| Copepod richness anom. (no. species; May-Sept) | 20 | 2 | 1 | 7 | 6 | 15 | 14 | 19 | 16 | 10 | 8 | 9 | 18 | 4 | 5 | 3 | 11 | 21 | 22 | 17 | 13 | 12 |
| N. copepod biomass anom. (mg C m ⁻³ ; May-Sept) | 20 | 15 | 11 | 12 | 4 | 17 | 14 | 21 | 16 | 13 | 7 | 10 | 9 | 1 | 3 | 5 | 6 | 18 | 22 | 19 | 8 | 2 |
| S. copepod biomass anom. (mg C m ⁻³ ; May-Sept) | 22 | 2 | 5 | 4 | 3 | 15 | 16 | 21 | 14 | 10 | 1 | 7 | 17 | 9 | 8 | 6 | 11 | 19 | 20 | 18 | 13 | 12 |
| Biological transition (day of year) | 19 | 11 | 6 | 7 | 8 | 15 | 12 | 20 | 14 | 3 | 1 | 2 | 17 | 4 | 9 | 5 | 10 | 21 | 21 | 18 | 13 | 15 |
| Nearshore Ichthyoplankton Log(mg C 1,000m ⁻³ ; Jan-Mar) | 17 | 4 | 11 | 6 | 1 | 21 | 22 | 16 | 8 | 18 | 3 | 13 | 2 | 7 | 5 | 10 | 19 | 14 | 15 | 12 | 9 | 20 |
| Nearshore & offshore Ichthyoplankton community index (PCOaxis 1 scores; Jan-Mar) | 11 | 6 | 5 | 9 | 8 | 13 | 16 | 20 | 1 | 14 | 3 | 12 | 15 | 4 | 2 | 7 | 10 | 18 | 21 | 22 | 17 | 19 |
| Chinook salmon juvenile catches (no. km ⁻¹ ; June) | 20 | 4 | 5 | 17 | 8 | 12 | 18 | 21 | 13 | 11 | 1 | 6 | 7 | 16 | 2 | 3 | 10 | 14 | 19 | 22 | 15 | 9 |
| Coho salmon juvenile catches (no. km ⁻¹ ; June) | 20 | 8 | 14 | 6 | 7 | 3 | 17 | 21 | 18 | 4 | 5 | 10 | 11 | 16 | 19 | 1 | 13 | 9 | 15 | 22 | 2 | 12 |
| Mean of ranks | 18.5 | 6.3 | 7.3 | 7.4 | 5.9 | 13.9 | 16.4 | 17.7 | 10.9 | 9.6 | 2.9 | 8.6 | 13.1 | 7.1 | 6.1 | 8.3 | 13.4 | 17.7 | 18.3 | 16.6 | 11.8 | 15.1 |
| Rank of the mean rank | 22 | 4 | 6 | 7 | 2 | 15 | 17 | 19 | 11 | 10 | 1 | 9 | 13 | 5 | 3 | 8 | 14 | 19 | 21 | 18 | 12 | 16 |
| <i>Ecosystem Indicators not included in the mean of ranks or statistical analyses</i> | | | | | | | | | | | | | | | | | | | | | | |
| Physical Spring Trans. UI based (day of year) | 3 | 7 | 21 | 18 | 4 | 13 | 16 | 22 | 13 | 1 | 6 | 2 | 8 | 11 | 19 | 9 | 20 | 10 | 5 | 17 | 11 | 13 |
| Physical Spring Trans. Hydrographic (day of year) | 21 | 3 | 13 | 8 | 5 | 12 | 15 | 22 | 6 | 9 | 1 | 9 | 19 | 3 | 11 | 2 | 17 | 7 | 18 | 20 | 15 | 14 |
| Upwelling Anomaly (April-May) | 11 | 3 | 18 | 7 | 10 | 15 | 14 | 22 | 11 | 5 | 8 | 9 | 16 | 18 | 16 | 13 | 20 | 1 | 2 | 21 | 6 | 4 |
| Length of Upwelling Season UI based (days) | 6 | 2 | 20 | 13 | 1 | 15 | 11 | 22 | 5 | 3 | 9 | 3 | 17 | 19 | 17 | 16 | 21 | 12 | 8 | 14 | 7 | 10 |
| Copepod Community Index (MDS axis 1 scores; May-Sept) | 21 | 3 | 5 | 8 | 2 | 16 | 14 | 20 | 17 | 10 | 1 | 7 | 13 | 9 | 6 | 4 | 11 | 19 | 22 | 18 | 12 | 15 |

- Pacific ocean looked to be improving last year then flipped back to poorer conditions
- Subsurface temperatures were higher than average indicating heat being stored in the ocean

ODFW - North Santiam

Willamette River 2020

Adult Spring Chinook Forecast: 40,750

Willamette River 2019

Adult Spring Chinook Forecast: 40,200

Chinook started crossing Willamette Falls in good numbers in mid-April