2021 Observed Climate Trends

Alyssa Payne & Brian Schlottmann

22-Sep-21

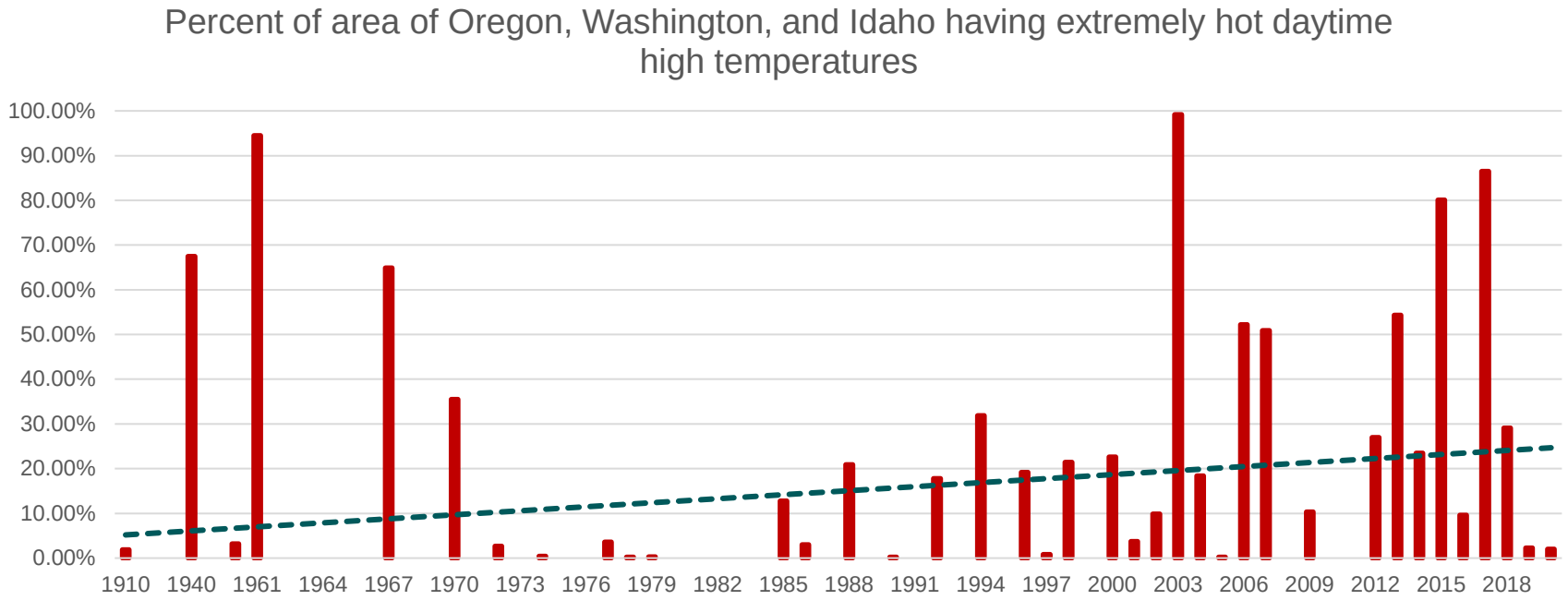
What are climate trends?

- Climate trends are indicators and variables that help us look at the impact of climate on our environment
- Climate indicators

Atmospheric composition	Weather and Climate
Oceans	Snow and Ice
Health and Society	Ecosystems

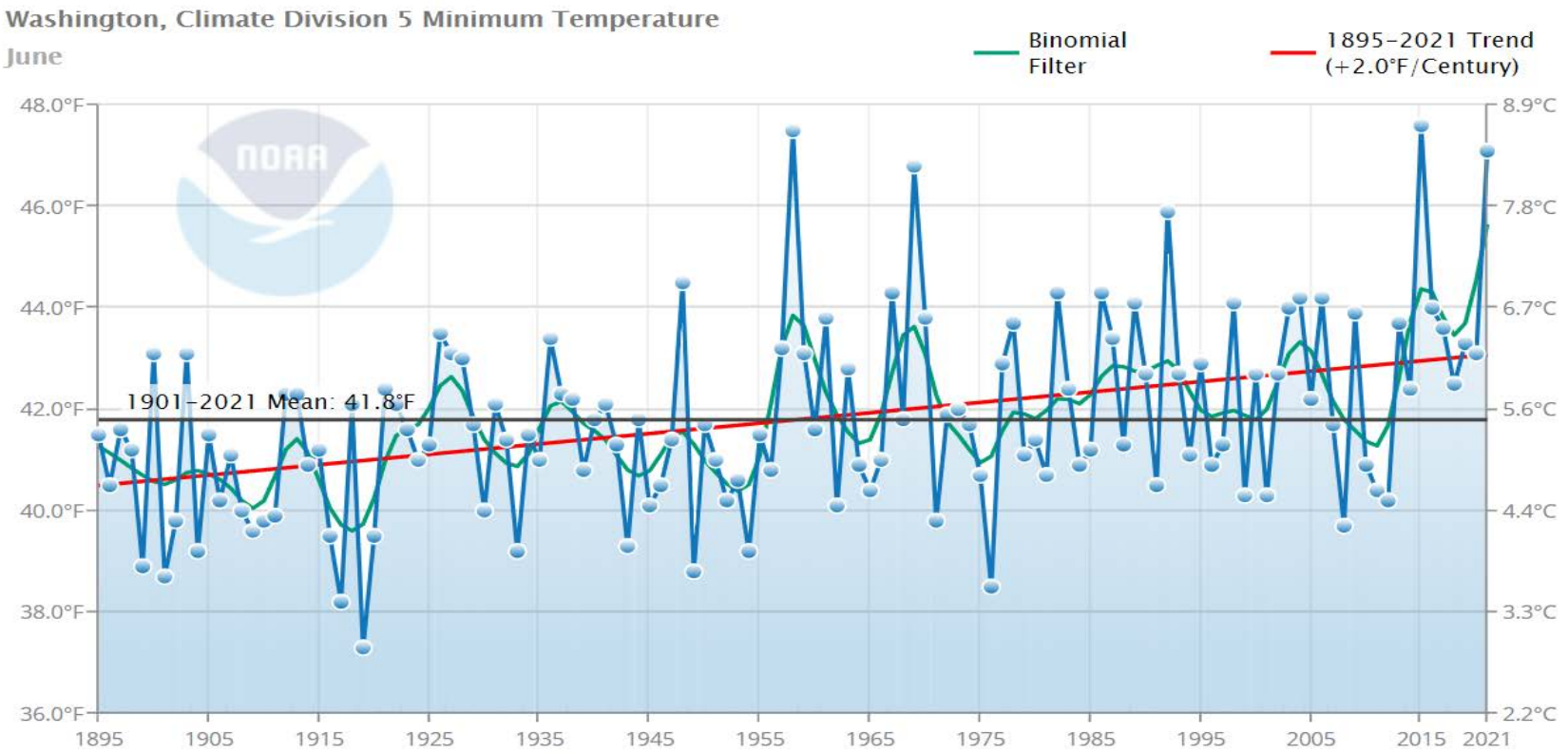
- Influential factors in climate variables
  - Natural (solar and volcanic) activity
  - Human activity

PNW Summertime extreme temperature events



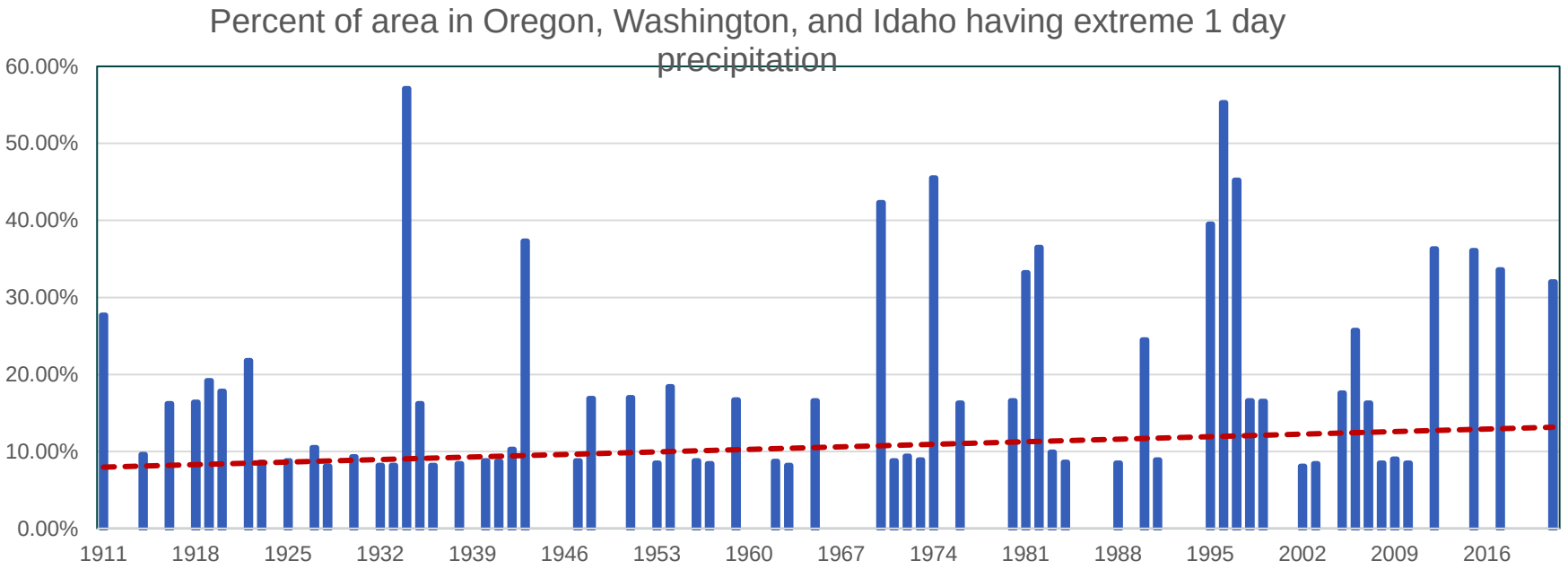
- Red bar shows the percent of the Northwest (Oregon, Washington, and Idaho) that have experienced extremely warm days.
- These are days where daytime high temperatures were in the top 10% of the historical record each summer since 1910

Climate in Clark County



- Overnight temperatures are increasing across Pacific Northwest
  - 2-degree Fahrenheit increase over last century

PNW Cold months (October – March) extreme rainfall events

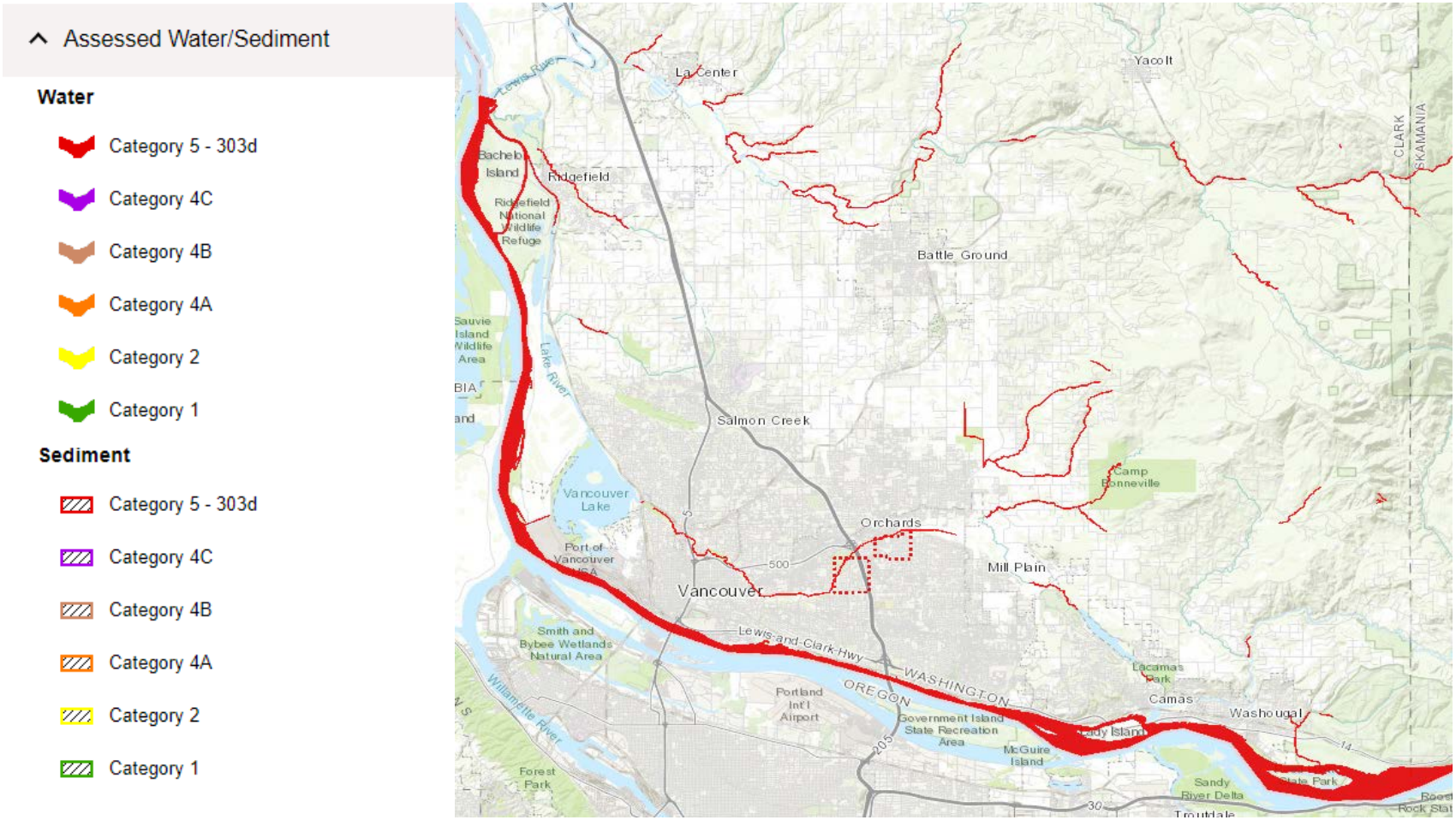


- Changes in rainfall
  - Increasing extreme precipitation events during the rainy season

Surface water changes we expect to see

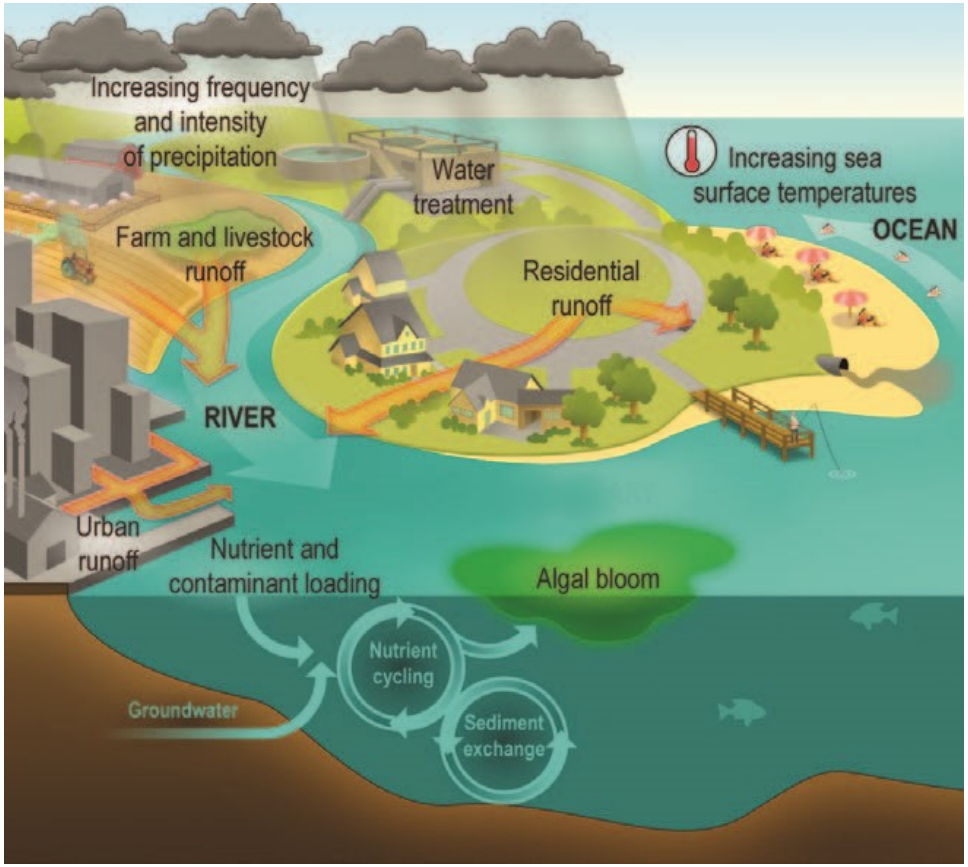
- Accelerated habitat drying
- Shifts from permanent to seasonal ponds, wetlands, bogs and marshes
- Reduced streamflow and or habitat suitability (dissolved oxygen, water temp)
- Changes in timing of rain events and magnitude
    - Steep drop offs in precipitation levels during summer months
    - Heavier precipitation in fall/winter months

Rivers and creeks with elevated temperatures



Surface water changes we expect to see

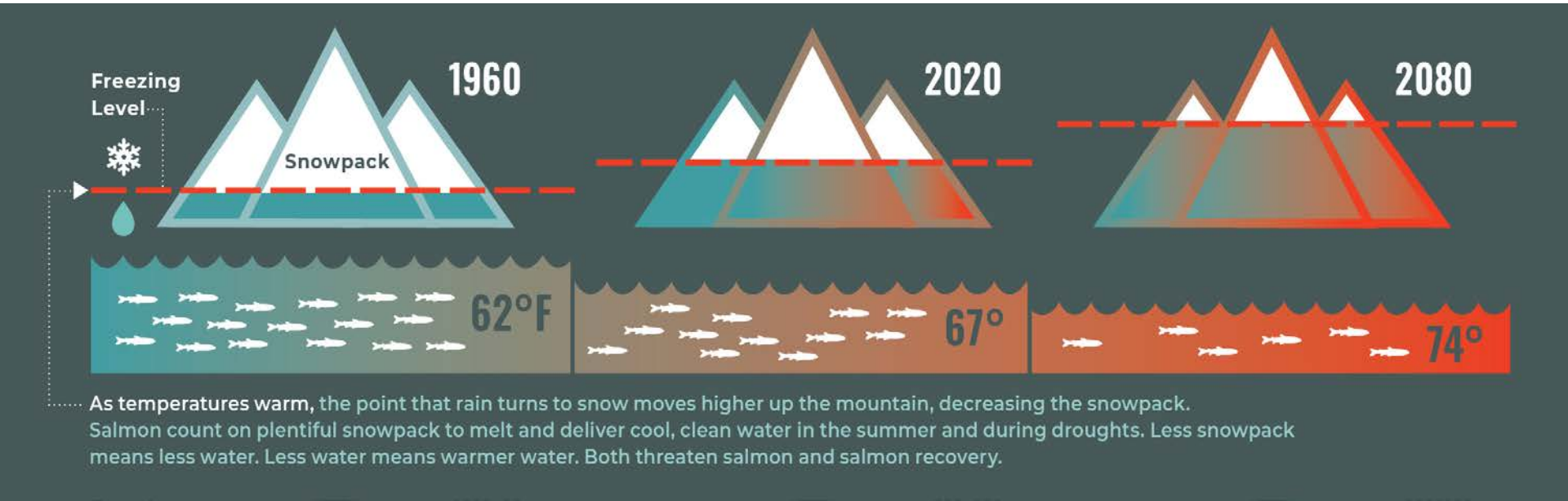
- More frequent and severe harmful algal blooms (HAB) events
- Algal blooms need warm water, sunlight, and nutrients (nitrogen and phosphorus)
  - Increased nutrients and sedimentation (infilling) from human activity
  - Warming temperature driving warming water temperatures
  - Changes to frequency and intensity of rainfall



Source: U.S. EPA, The Impacts of Climate Change on Human Health in the United States, 2016

Changes we can expect to fish, wildlife and ecosystems

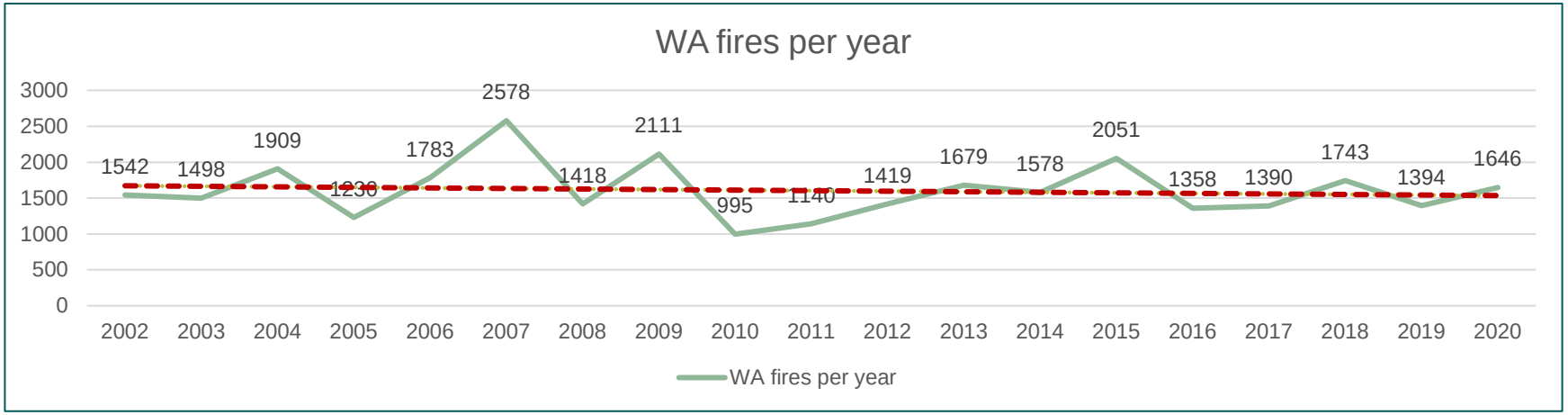
- Lower flows in rivers and streams may expose fish eggs, larvae and juveniles to warmer waters and toxic dissolved oxygen levels
- Increased physiological stress – altered spawning/growth rates
- Changes in competition/predation
- Changes in food resources
- Threats to livestock capacity from increased plant mortality, reduced vegetation cover, increased soil erosion.

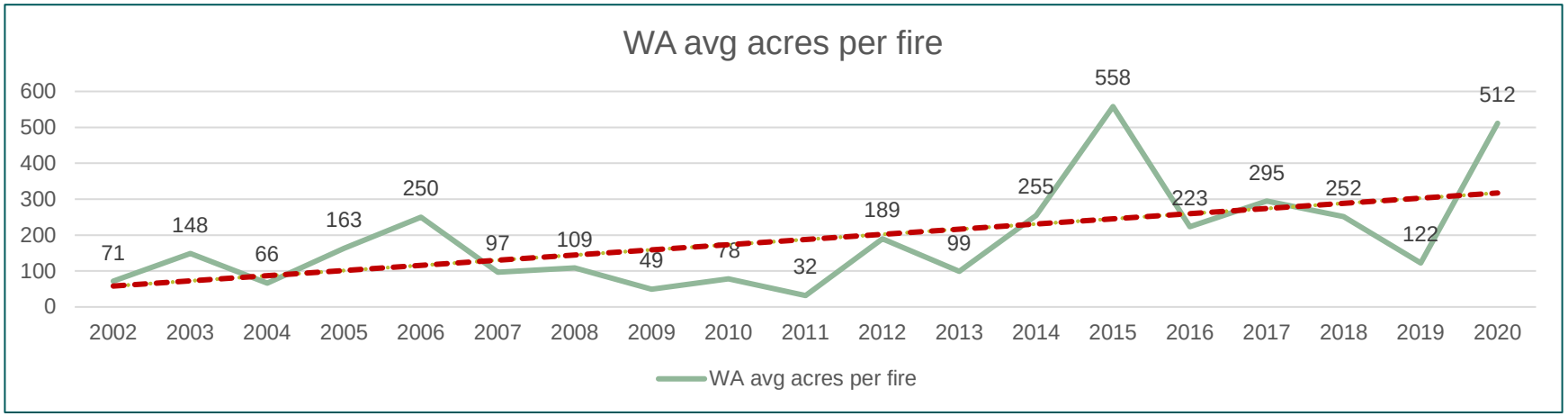


Ecological impacts

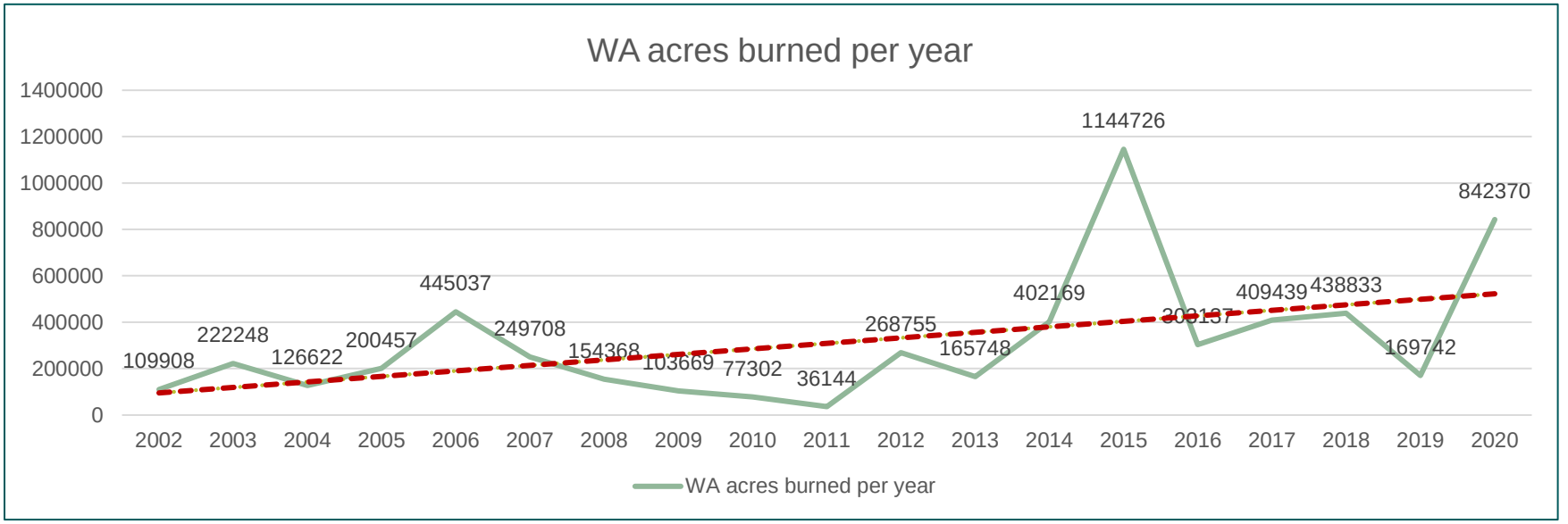
- Wetter winters and/or more intense storms
  - Potential to overwhelm conveyance and treatments/storage systems that were not designed for frequent large events
  - Increased flood events brings potential for property damage
  - Insufficient treatment and flow control leading to more environmental impacts from stormwater
- Increased need/cost for retrofits
  - Improve capacity and/or modify/replace facilities to deal with more extreme weather
- Plant survival/maintenance
  - Increased maintenance costs due to drier/warmer summers
  - May need to provide irrigation for existing systems that rely on healthy plants
- Wildfires are growing in size and intensity
  - Shifts in wind direction have caused recent hazardous air quality from wildfire smoke.
- Ground level Ozone increased on days of 90 degrees
  - Between 90 and 100 are prime ozone. Beyond 100, secondary biogenic aerosols increase
  - Projections on heat event days.

Current trends in wildfires





Average acres burned per fire



- Over the past two decades, the length of fire seasons has increased, and warm dry conditions have become more common in Pacific Northwest forests. – US Forest Service

Health Impacts Related to Climate

- Increased risk of injury, morbidity, disease and death due to more intense heat waves and fires

- Exacerbate asthma cases
  - Greenhouse gas emission increases ground level ozone which leads to more cases of asthma

- Allergen increases
  - With longer growing season there are more allergens in the air.
    - Everyone has some threshold to allergens
    - At some level everyone starts to suffer

- Increased risk of vector-borne disease
  - Lyme, West Nile Virus, Rocky Mountain spotted fever, Plague, Tularemia
  - Warming conditions create more favorable environment for fleas, ticks and mosquitos

Want to learn more?

Sites and reports used in the creation of this presentation

- Global:
  - 2021 International Panel on Climate Change report
- National
  - National Climate Assessment
  - U.S. Climate Extremes Index
- Regional:
  - U.S Fish and Wildlife report
  - U.S. Forest Service 2020 wildfire season
- Washington:
  - UW 2019 report on Ecological adaptations to climate change
  - UW 2020 report on climate change effects to cold water fish
  - Dept. of Natural Resources on climate change
  - Dept. of Natural Resources 2020 Wildfire Season report
  - EPA 2021 TMDL Columbia and Snake River
- Tribal and other local:
  - Cowlitz Tribe on responsible water management on the Columbia River
  - Tribal Connection: Trends in Stream Temperature in the Snake River
  - UW Northwest Climate Adaptation Science Center

Resources and tips to be a more environmentally conscious citizen can be found at:
What You Can Do - Climate Change :: Washington State Department of Health

Thank you!

Comments and questions

Clark County Public Health

1601 E. Fourth Plain Blvd • PO Box 9825

Vancouver, WA 98666-5000