

Relative abundance of the sunflower sea star (Pycnopodia helianthoides) in southern Puget Sound



### Taylor Frierson Subtidal Shellfish



Washington Department of FISH and WILDLIFE



### Sunflower sea star – fun facts

- Among the largest and fastest sea stars in the world!
- More abundant in shallower depths
- Generation time range of 27 to 37 years (~65 max)
- Habitat generalist on all bottom types
- Prey includes molluscs, echinoderms, and crustaceans
- Important ecological role as a predator





## Sunflower sea star – sad facts

- 2013-14 Sea Star Wasting Disease Outbreak
- Coincided with marine heat wave
- 80-100% declines in abundance
- Ranged from Baja CA to AK
- Impacted populations of >20 species
- Largest marine epidemic on record





• 2020 Critically Endangered with the IUCN Red List



• 2021 Petition to list under ESA with NOAA Fisheries



### Sunflower sea star – sad facts





### Sunflower sea star – sad facts

Smith et al. 2021

Across the mosaic, sea otter preference for healthy urchins indirectly enhances forest patch resistance to overgrazing.

Active foraging urchins in barrens are starved, but passive foraging urchins in forests are healthy. MAY

Released from predation pressure, purple sea urchins shift their behavior and transform the landscape to a patchy mosaic of barrens and remnant forests.

the urchin predator, Pycnopodia helianthoides

r Kendall-Bar 2020



700

5.0

4.0

3.0 2.0

1.0

12.5

10.0

5.0

2.5

0.07

0.06

0.05

Year

2000

2002

2004

0

0

Otter abundance (Monterey Region)

Kelp stipe density

Exposed urchin density

<sup>p</sup>ycnopodia density

per m<sup>2</sup>) 0.04 0.03 0.02 0.01

per m2) 7.5

(per m<sup>2</sup>)

2006

2008

2010

2012

2018

2016

2014

### Sunflower sea star – South Sound

% Occurance

#### WDFW dive surveys 2000 - 2022 9

- Geoduck and sea cucumber
- Different areas each year
- Depths: 15ft to 70ft
- Present on/near transect

#### WDFW trawl surveys 2008 - 2022

- Bottomfish + benthic community
- Same index sites each year
- Depths: 30ft to 600ft
- Density (n/hectare)







### **Sunflower sea star – Dive Surveys** 1984 - 2013 2018 - 2022



Department of Fish and Wildlife



### What's next?

- ESA petition decision to be announced soon...
  - What could ESA listing implications be for South Sound and WA?
- The Nature Conservancy Roadmap to Recovery for the sunflower sea star
- Captive rearing and/or translocations are being discussed
- WDFW assisting research to determine causative agent & genetic resistance
- WDFW will continue to monitor recovery in South Sound and rest of the State





# "We're all in this together!"



Department of Fish and Wildlife