

# Marine Bottomfish Communities in Hood Canal

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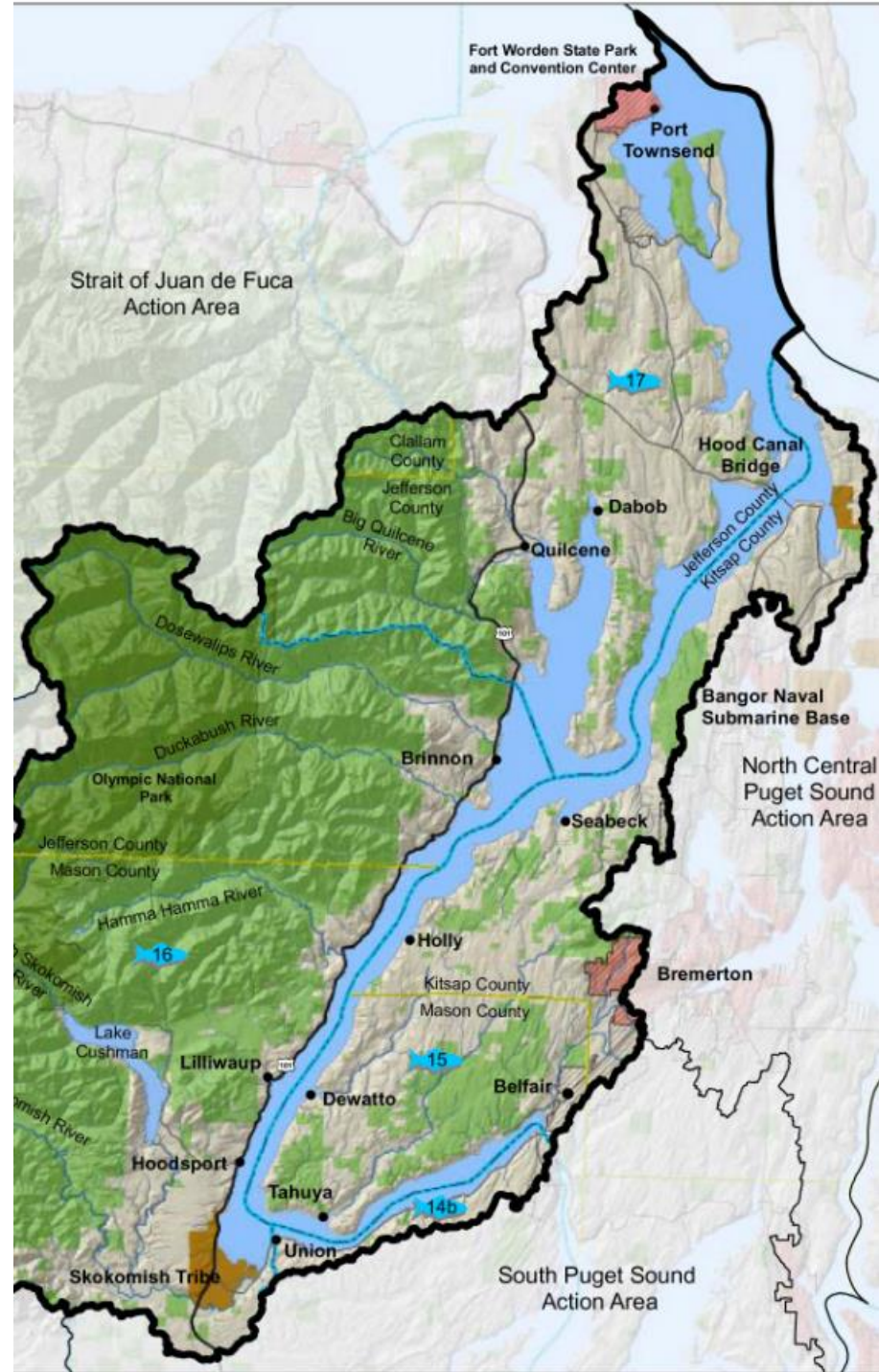


Seabeck Community Center, March 1st, 2024

# Hood Canal Features

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- Unique physical characteristics
- About 30-180 meters depth overall
- Shallow ‘sill’ to the north – limits tidal exchange and larval/egg circulation
- Shallow near the ‘great bend’
- Substrate varies, but largely mud/sand with scattered pockets of rock



# Low Circulation and Dissolved Oxygen Concerns

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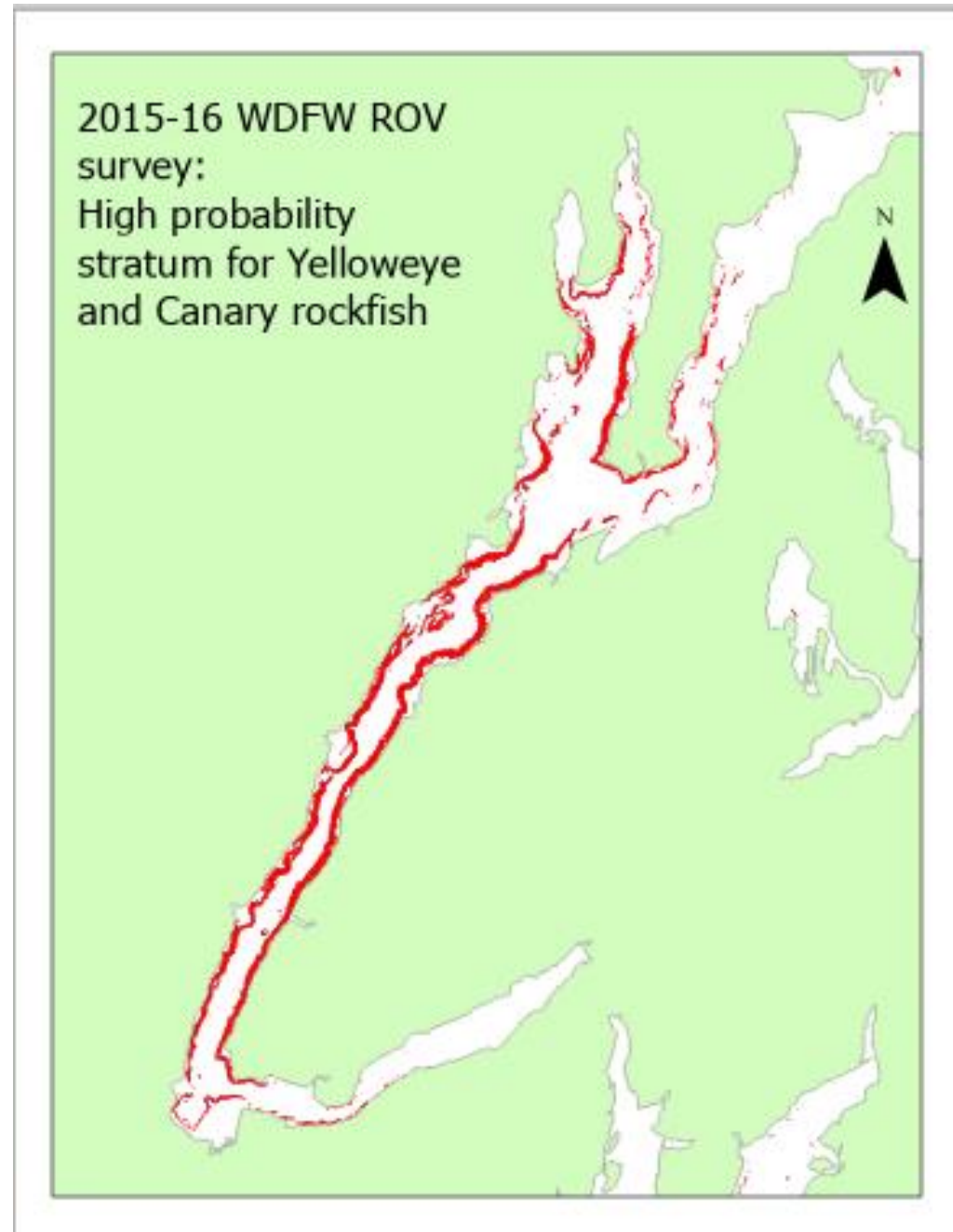
- “Sill” limits inflow of marine water
- Colder, saltier water spills over tidally and sinks – usually well oxygenated
- Surface water is warmer
- Mudstone/sandstone walls along basin margins provide some complex habitat but are not “true” rock



# Physical Habitat

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- Very little cobble/glacial till
- Mudstone/sandstone walls along basin margins provide some complex habitat but are not “true” rock
- Lots of mud, soft bottom



# WDFW Marine Fish Surveys in Hood Canal

# Sampling Marine Fish & Habitat: Diving

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10-100 ft \* All habitats \* All “big” fish, but focused on lingcod and rockfish



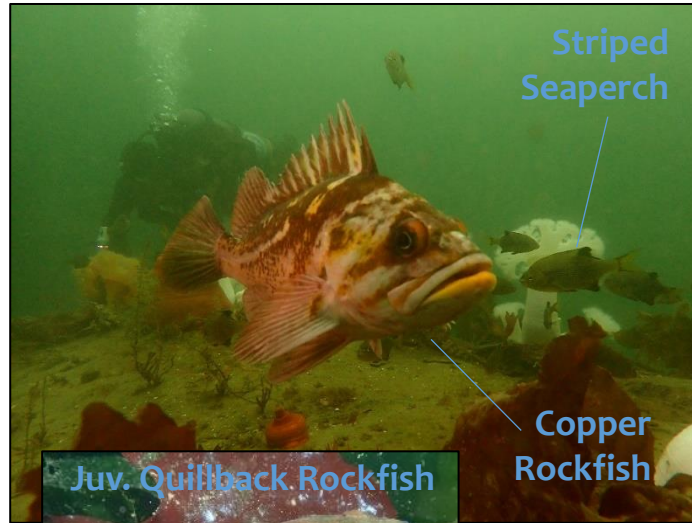
Wolf eel



Lingcod



Red Irish Lord



Striped Seaperch

Copper Rockfish



Juv. Quillback Rockfish



Juv. Yelloweye Rockfish

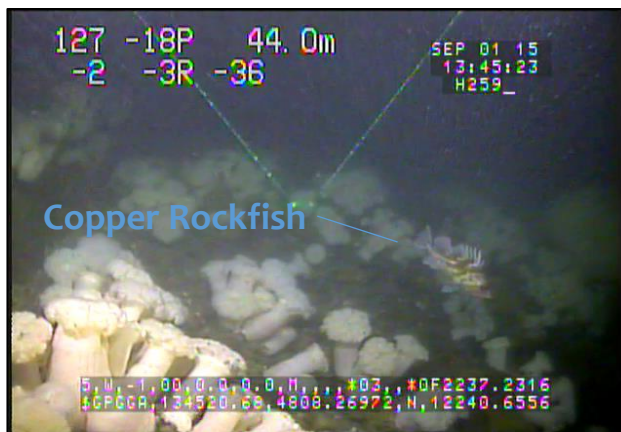


# Sampling Marine Fish & Habitat: ROV

30-1000 ft \* All habitats, focus on deep, rocky, complex \* All fish, focus on rockfish



Redstripe Rockfish



Copper Rockfish



Yelloweye Rockfish



Lingcod



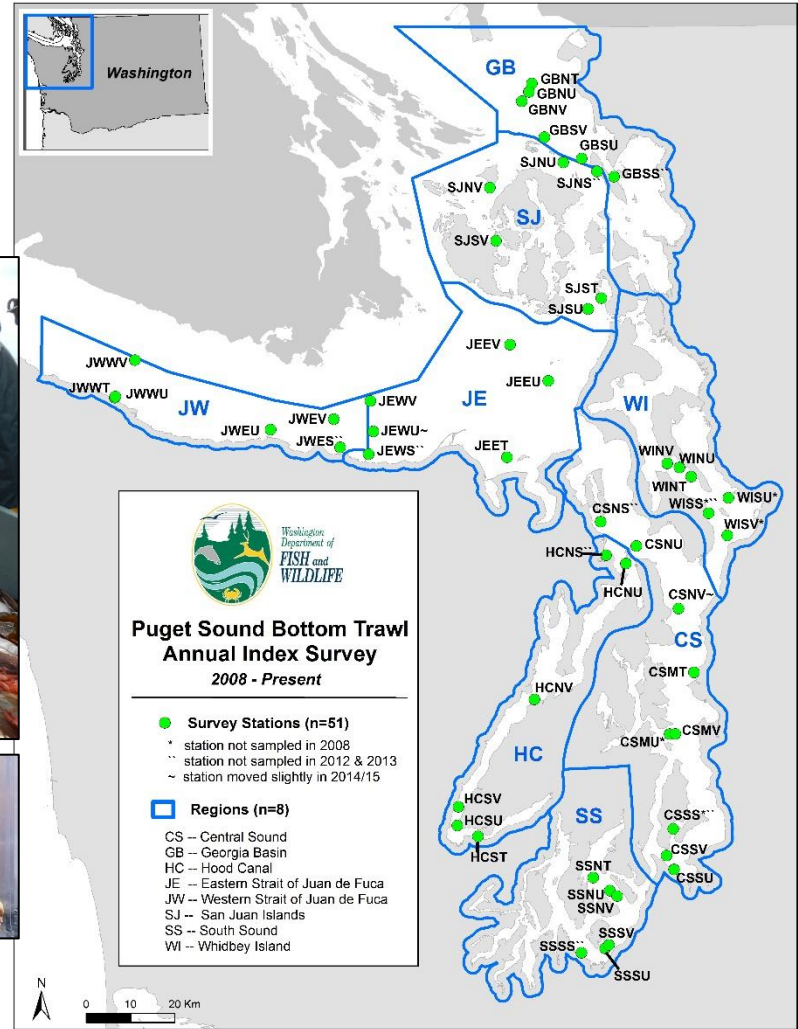
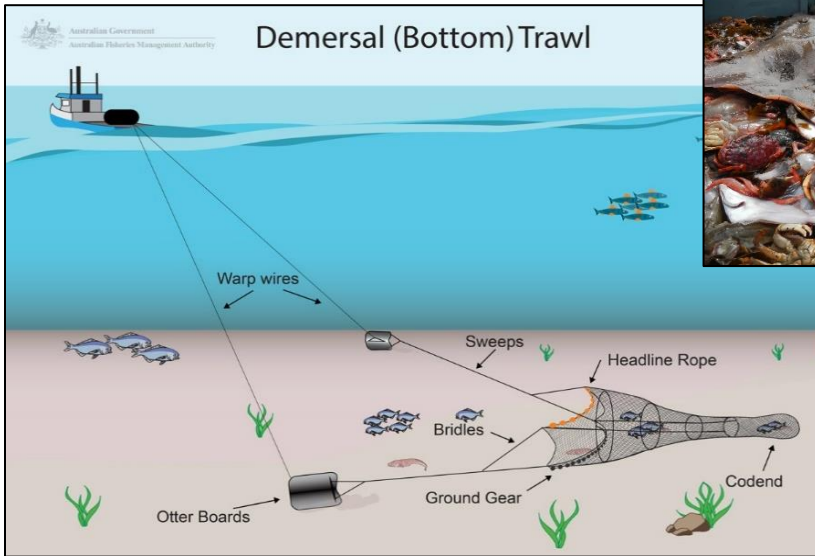
# Sampling Marine Fish & Habitat: ROV





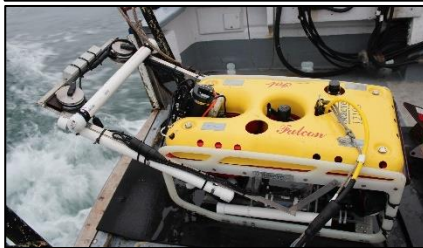
# Sampling Marine Fish & Habitat: Bottom Trawl

30-1000+ ft \* All habitats, but focused on deep, flat \* All fish on trawlable habitats



# Putting it all together...

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- **No single tool samples all species, let alone all life stages, across all seasons**
- Each method/tool has its own inherent selectivity & bias
- Organism behavior impacts selectivity/catchability
- Data from each survey used to develop relative indices of abundance for different species



# Hood Canal Marine Fish Species

# Hood Canal Marine Fish: Flatfish

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## English Sole

- Right-eyed
- $\leq 24$  in long
- Live 22+ years
- Sandy bottoms
- Common at all depths



## Rock Sole

- Right-eyed
- $\leq 24$  in long
- Live 26+ years
- Pebbly or sandy bottoms
- Most commonly 30-240 ft



# Hood Canal Marine Fish: Flatfish

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## Pacific Sanddab

- Left-eyed
- $\leq 16$  in long
- Live 9+ years
- Muddy or sandy bottoms
- Most commonly 120-240 ft



## Starry Flounder

- Right- OR Left-eyed
- $\leq 36$  in long
- Live 24+ years
- Sandy bottoms
- Most commonly 30-120 ft



## Slender Sole

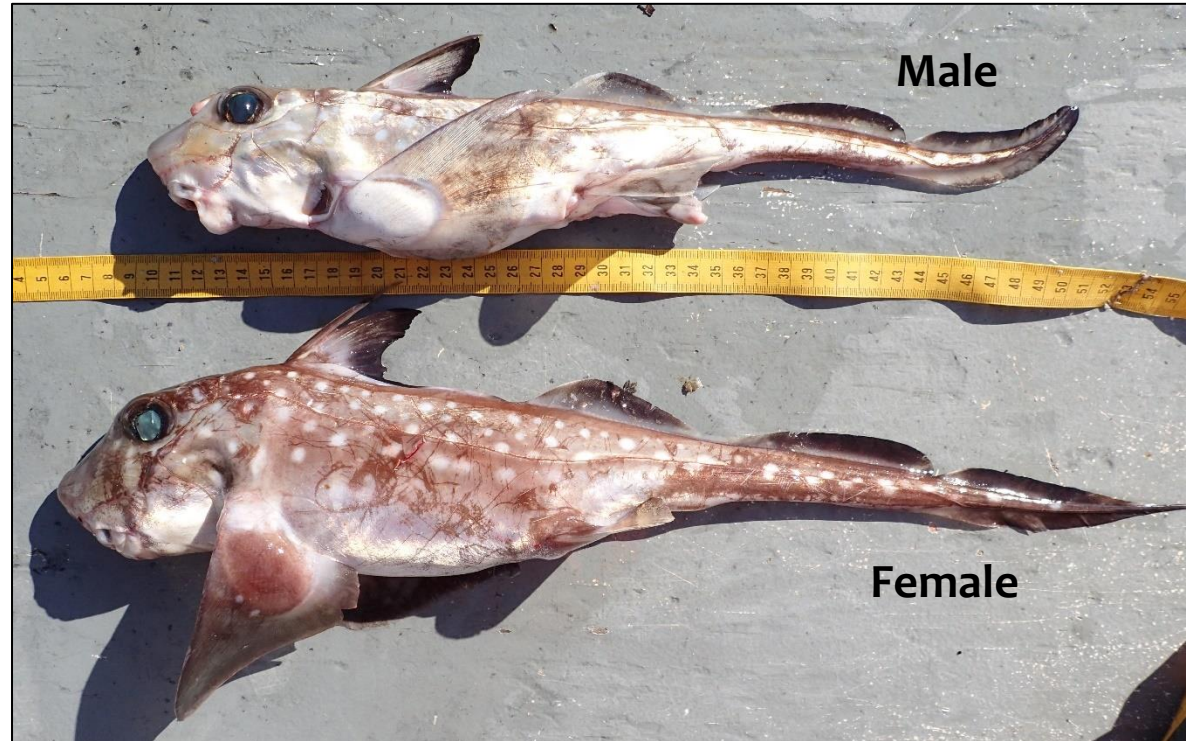
- Right-eyed
- $\leq 14$  in long
- Pebbly & mud bottoms
- Most commonly  $>120$  ft



# Hood Canal Marine Fish: Spotted Ratfish

## Spotted Ratfish

- Cartilaginous fish
- $\leq 24$  in long (M),  $\leq 38$  in (F)
- Mildly venomous dorsal spine
- Easy to sex
- Lay egg cases
- Live ? years
- All bottom types
- Most commonly  $>100$  ft

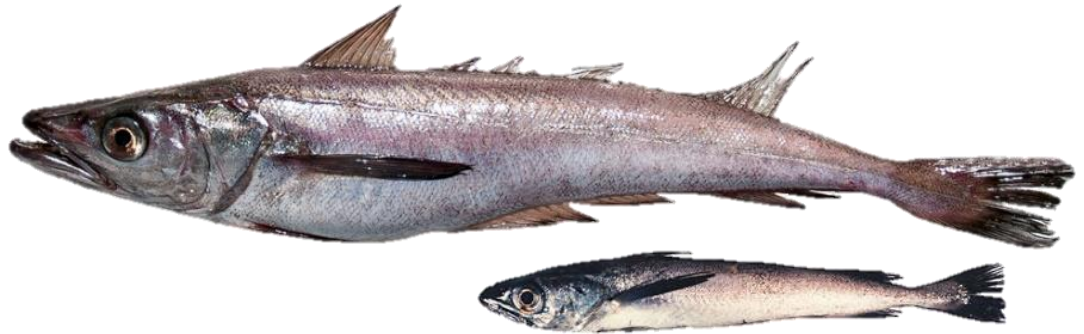


# Hood Canal Marine Fish: Codfish

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## Pacific Hake (Whiting)

- ≤ 36 in long
- Live 20+ years
- Near bottom or in water column
- Most commonly >240 ft



## Walleye Pollock

- ≤ 36 in long
- Live 10+ years
- Pebbly bottoms
- Most commonly >240 ft



## Pacific Tomcod

- ≤ 12 in long
- Mud/sand bottoms
- Most commonly 30-360 ft



# Hood Canal Marine Fish: Sharks & Skates

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## Longnose Skate

- ≤ 5 feet long
- Live 26+ years
- Mud/sand bottoms
- Most commonly >240 ft
- Lay egg cases



## Spiny Dogfish

- ≤ 5.25 feet long, live 100+ years
- All bottoms & midwater
- Most commonly >240 ft
- One of the longest gestation of any vertebrate: 18-24 months!
- Bear live young (2-11 pups)



## Big Skate

- ≤ 8 feet long
- Live 26+ years
- Mud/sand bottoms
- Most commonly >90 ft
- Lay egg cases



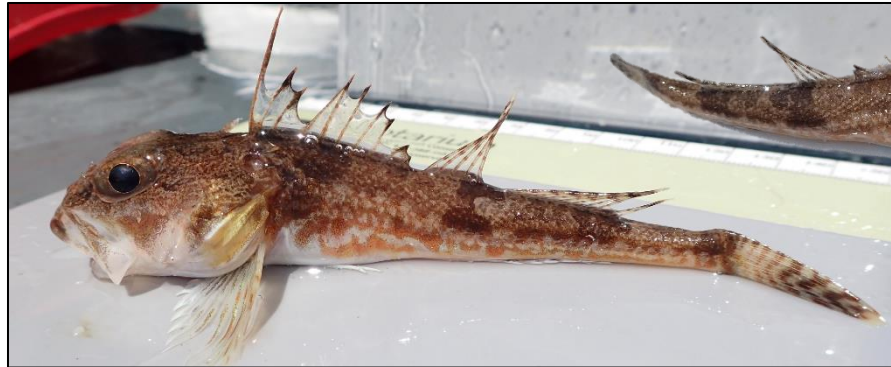


# Hood Canal Marine Fish: Sculpins & Poachers

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## Roughback Sculpin

- ≤ 9 in long
- Sandy bottoms
- Buries during day, feeds at night
- Most commonly 30-120 ft



## Sturgeon Poacher

- ≤ 12 in long
- Sandy/muddy bottoms
- Most commonly 120-240 ft



## Pacific Staghorn Sculpin

- “Bullhead”, commonly caught by kids in shallows
- ≤ 18 in long
- Sandy or pebbly bottoms
- Most commonly 120-240 ft



# Hood Canal Marine Fish: Other Fish

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## Blackbelly Eelpout

- $\leq 18$  in long
- Muddy/sandy bottoms
- Most commonly 120-360 ft



## Shiner Perch

- $\leq 8$  in long
- Midwater, near structures
- Most commonly  $<360$  ft



## Plainfin Midshipman

- $\leq 15$  in long
- Have photophores
- Sing during courtship
- Sandy or pebbly bottoms
- Most commonly  $<360$  ft



## Pacific Herring

- $\leq 9$  in long
- Midwater; beach spawning
- Most commonly  $<360$  ft



# Hood Canal Marine Fish: Rockfish

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## Most Common Rockfish

### Copper Rockfish

- ≤ 26 in long
- Live 50+ years
- High-relief rocky areas
- Most commonly 30-240 ft



### Quillback Rockfish

- ≤ 24 in long
- Live 95+ years
- High-relief rocky areas...  
or tires/crab pots on mud
- Most commonly >120 ft



### Yellowtail Rockfish

- ≤ 26 in long
- Live 64+ years
- Commonly schooling  
off-bottom
- Most commonly 120-240 ft



# Hood Canal Marine Fish: Rockfish

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## Other rockfish of note:

### Brown Rockfish

- ≤ 22 in long
- Live 34+ years
- High-relief rocky areas...  
or tires in the mud
- Most commonly <360 ft



### Yelloweye Rockfish

- ≤ 36 in long
- Live 120+ years
- High-relief, high complexity  
rocky areas
- Most commonly 300-600 ft

**THREATENED**

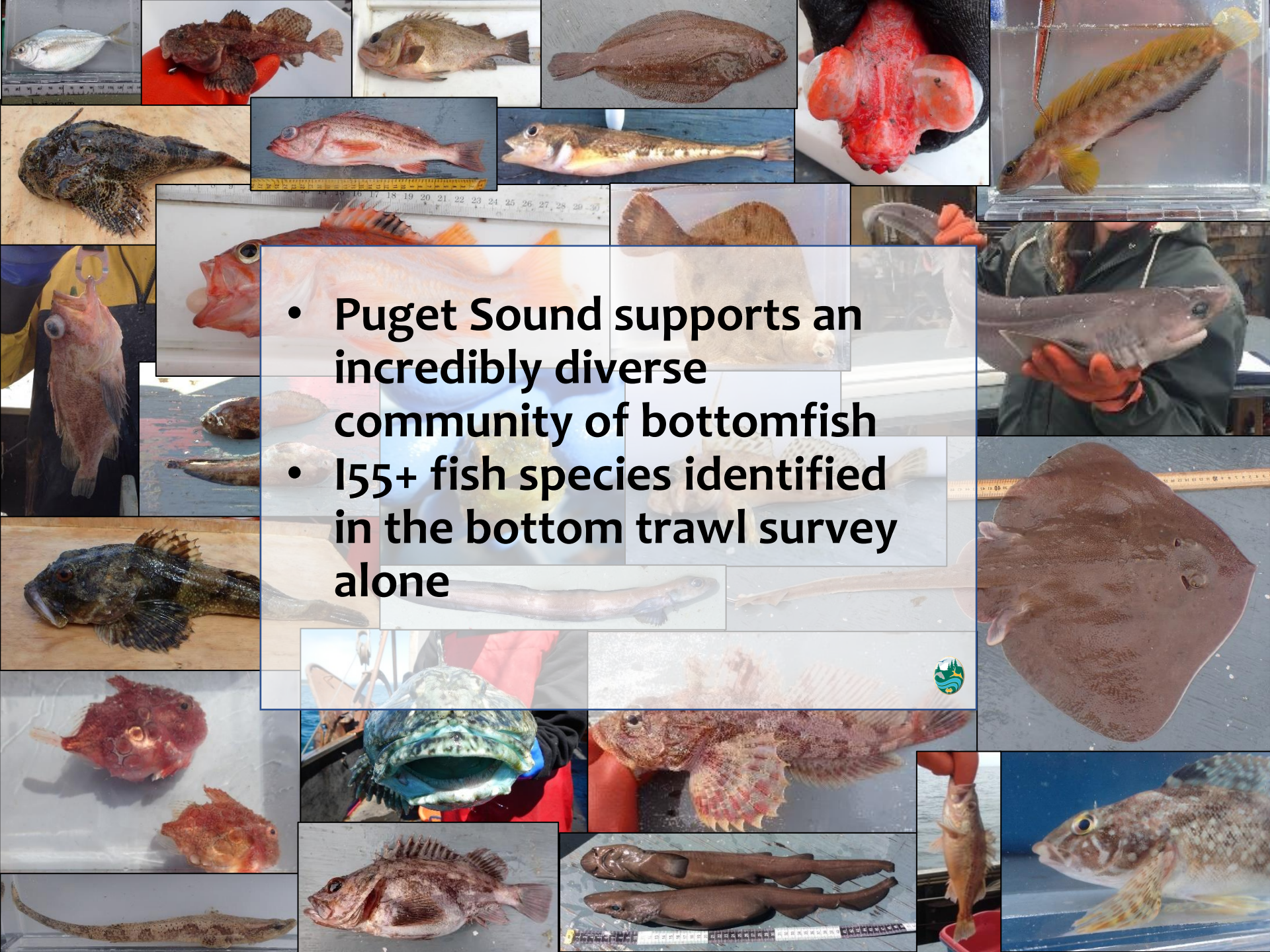


### Bocaccio

- ≤ 36 in long
- Live 50+ years
- High-relief rocky areas
- Most commonly >120 ft

**ENDANGERED**





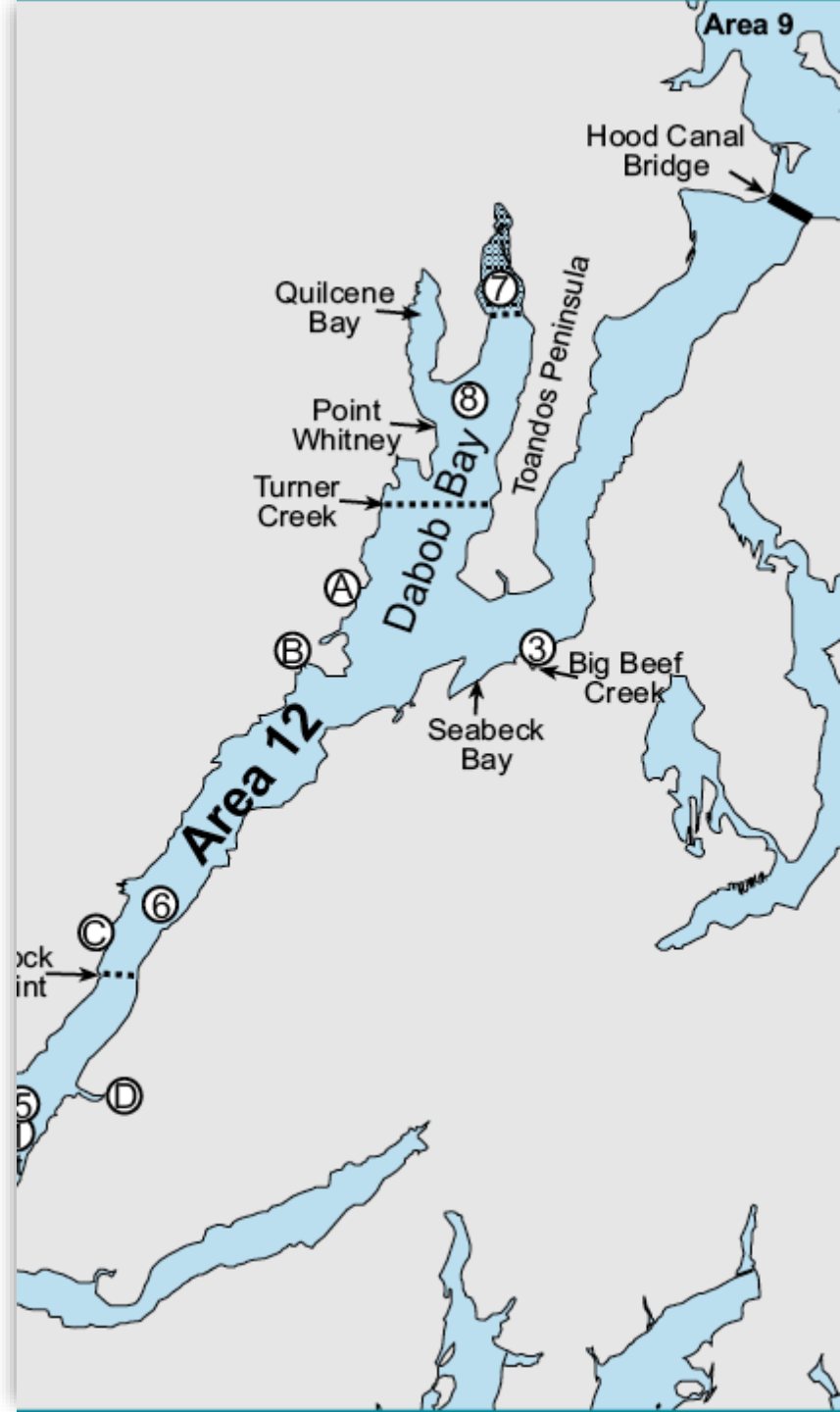
- Puget Sound supports an incredibly diverse community of bottomfish
- 155+ fish species identified in the bottom trawl survey alone



# Fisheries Management in Hood Canal

# Hood Canal: Current Marine Fish Regulations

- Marine Area 12 (Hood Canal) CLOSED to bottomfish and forage fish fishing
- Except:
  - Dabob Bay is open to harvest of flounders, sole, and sanddab
  - Shallower than 120'
  - Year-round
  - Daily harvest limit is 15 flatfish



# Primary Conservation Concerns

## Low dissolved oxygen

- Led to widespread fish kills in Hood Canal in 2005/2006
- Fisheries for bottomfish closed as a result in 2006
- Naturally susceptible to low DO; exacerbated by anthropogenic input

## Historical overfishing of certain species

- Led to the ESA-listing of Yelloweye, Bocaccio, and Canary Rockfish in 2010
- Slow growing, low reproduction, recovery expected to take decades
- Pacific Cod and Pacific Hake severely overfished; potentially extirpated in Hood Canal

## Climate change

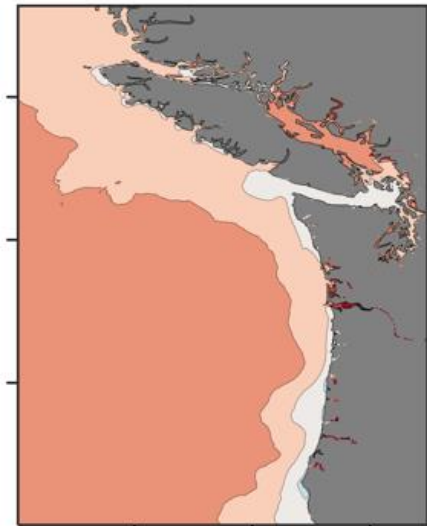
- Hood canal projected to become very warm with reduced dissolved oxygen



# Average Sea Surface Temperature Projections under status quo carbon emissions

**Years 2021-2040**

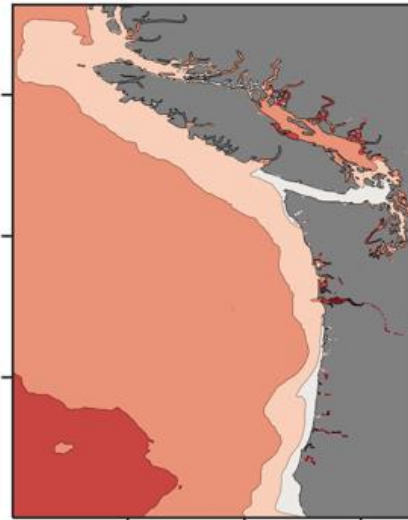
August



127.75°W 125.5°W 123.25°W

**Years 2041-2060**

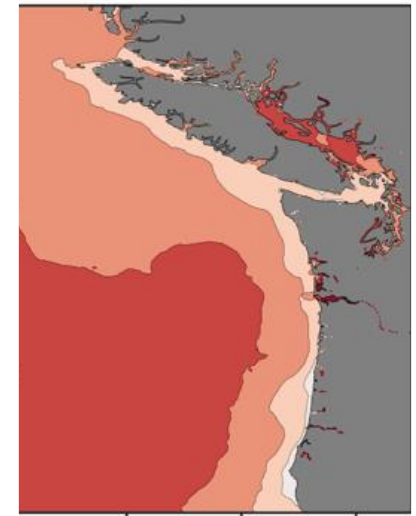
August



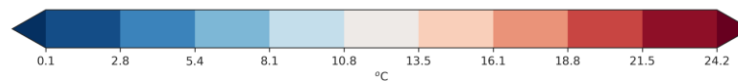
127.75°W 125.5°W 123.25°W

**Years 2080-2090**

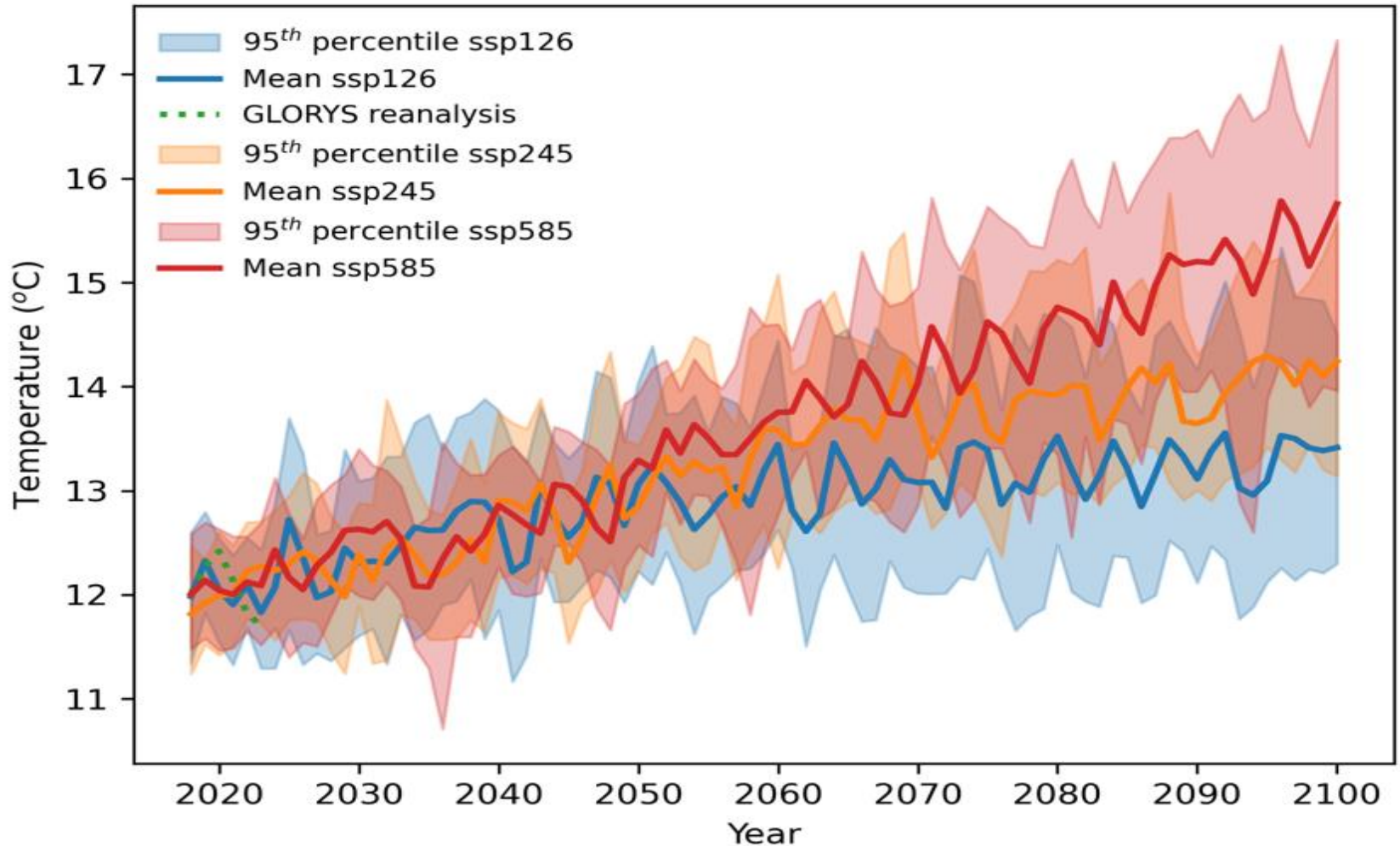
August



127.75°W 125.5°W 123.25°W



# Regional Sea Surface Temperature Projections: alternative carbon emission scenarios



# What can you do to support conservation in Hood Canal?



## Minimize nitrogen and phosphorus input

- Fix leaky septic systems
- Pick up dog waste
- Minimize fertilizer use



## Support carbon reduction initiatives



## Know and follow the current fishing regulations

Always have a fish descending device onboard for rockfish bycatch, where bottomfishing is allowed



# What about Rockfish Fishing?

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- **Retention in Puget Sound is prohibited**
- Rockfish caught deeper than 60 feet may suffer mild to extreme barotrauma
- Descending rockfish can save them
- Anglers are legally required to carry a descending device

## Send that fish... **DOWN!**

As fish are brought to the surface, gases in the swim bladder expand causing the stomach and eyes to bulge.

This is known as **barotrauma**.



Sending fish with barotrauma to their depth of capture recompresses them, improving short- and long-term survival.

There are several types of devices you can use to send them **DOWN**:



Depth  
Pressure Release

Inverted  
Hooks

Bottom  
Contact Release



Questions?

