



# ADF&G STATEWIDE ROCKFISH INITIATIVE

1  
by Rockfish Working Group



# OUTLINE

- Issue
- Workgroup
- Highlights
- Current research
- Stock Assessment
- Communication
- Future plans



# WHAT IS THE ISSUE?

Increased harvest of rockfish species

Decreased abundance of halibut and king salmon, increase pressure on other species

Rockfish life history makes them vulnerable to over harvest – many species can live more than 60 years

No overarching ADF&G rockfish management

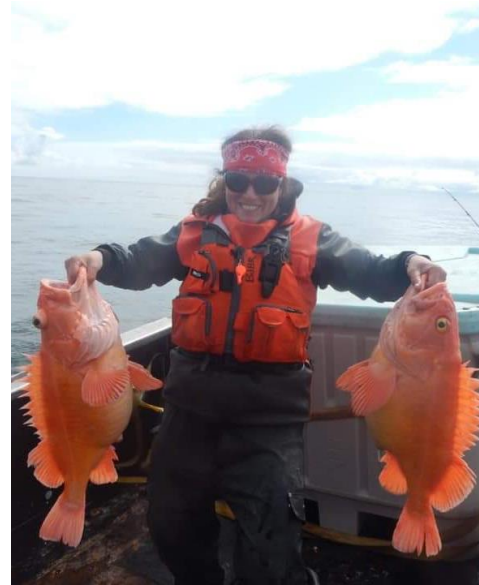
Rockfish declines in Pacific Northwest – WA, OR, BC



# LIFE HISTORY

## BLACK ROCKFISH

- ↔ **Range** – from California to Alaska
- ↔ **Habitat** – juveniles live in shallow nearshore eelgrass and adults school over high-relief rocky habitats, amid kelp beds
- ↔ **Movement** – small home ranges (.55 km<sup>2</sup>)
- ↔ **Max Age** – 57 years old in AK
- ↔ **Fecundity** – 600,000 to 2.8 mil eggs
- ↔ **Max length** – 27 in



## YELLOWEYE

- ↔ **Range** – California to Aleutian Islands, AK
- ↔ **Habitat** – primarily near bottom 11m to 549 m
- ↔ **Movement** – small home ranges, mostly solitary benthic dwellers, pelagic as juveniles
- ↔ **Max Age** – 121 yrs old
- ↔ **Fecundity** – 50,000 to 3 mil eggs (D. Arthur)
- ↔ **Max length** – 33 in, females are larger



# WORKGROUP

- ADF&G Statewide Rockfish Initiative – working group including both divisions, ~25 participants
- Identified black and yelloweye rockfish as species of concern for both divisions
- 10 meetings – 2 per year
- Develop overarching and consistent management – both divisions

**SOLUTION**





# WORKGROUP

- Subgroups formed to focus on specific tasks
  - Leadership Plan Team
  - Research and Assessment
  - Communications
  - Management and Research Summary Publication
  - Strategic Plan
  - Harvest reconstruction
  - Regional groups (Southcentral, Southeast, Kodiak)
- Developed a plan to fill information and data gaps
- Rockfish experts from OR, WA, BC met with us to share information about their history and methods
- FishPath computer program training for stock assessment options and Management Strategy Evaluation (MSE-lite) for management tools

# ADF&G Statewide Rockfish Initiative



## MISSION STATEMENT

- The department recognizes the unique life history characteristics of rockfish species that make them particularly vulnerable to overfishing, the current lack of stock status information for many black and yelloweye rockfish stocks, increasing fishing effort on black and yelloweye rockfishes throughout Alaska, and that multiple user groups harvest the same stocks of these species. The department intends to maintain sustainable black and yelloweye rockfish fisheries throughout the state by following, to the extent practicable, the standards developed through this effort to achieve these management priorities:
  - Manage all fisheries under an appropriate harvest level or harvest rate
  - Maintain optimum spawning populations
  - Maintain and sustain fishing opportunity through collaborative management between fishery divisions



**SOLUTION**

# KODIAK BLACK ROCKFISH

- Management
  - Joint management plan – Sport fish and Commercial fisheries
  - Commitment of both divisions to group
  - Commercial GHL for different districts
  - Sport harvest cap
- Fisheries
  - Commercial
    - Directed commercial black rockfish jig fishery
    - Bycatch of rockfish in commercial longline fisheries
  - Sport
    - Popular sport fishery for black rockfish





# SOUTHEAST YELLOWEYE

- Stock assessment generates harvest levels, includes federal waters
  - FMP with federal gov't
  - GHL is allocated between commercial, sport, and subsistence
- Sport
  - 2022 Regulatory changes
    - One DSR (quillback, china, canary, rosethorn, copper, and tiger) for residents only
    - One slope rockfish (roughey, shorttraker, thornyhead) for all anglers
    - Yelloweye closed
- Commercial
  - DSR directed fishery closed since January 2020 in all waters



**ALL ANGLERS: RETENTION OF YELLOWEYE IS PROHIBITED**



YELLOWEYE

**RESIDENT ANGLERS: BAG AND POSSESSION LIMIT IS ONE DEMERSAL SHELF ROCKFISH, EXCLUDING YELLOWEYE (NONRESIDENT ANGLERS—NO RETENTION)**



QUILLBACK



CANARY



CHINA



TIGER

Alaska Department of Fish and Game  
Division of Commercial Fisheries  
Sam Rabung, Director

Alaska Department of Fish and Game  
Doug Vincent-Lang, Commissioner

Sitka Area Office  
304 Lake St, Room 103  
Sitka, AK 99835

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**Advisory Announcement**  
For Immediate Release: December 30, 2021

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**2022 DEMERSAL SHELF ROCKFISH FISHERIES**

The directed demersal shelf rockfish (DSR) commercial fisheries in the Southeast Outside (SEO) Subdistrict, Northern Southeast Inside (NSEI) Subdistrict, and Southern Southeast Inside (SSEI) Subdistrict will be closed for the 2022 season (January 1 through December 31) and will remain closed to directed DSR fishing until further notice. The SEO area includes the East Yakutat (EYKT), Northern Southeast Outside (NSEO), Central Southeast Outside (CSO), and Southern Southeast Outside (SSEO) sections.

The personal use bottomfish fishery will be closed to the retention of DSR in all personal use waters for the 2022 season (Figure 1) and will remain closed until further notice (5 AAC 77.65). Personal use fishermen are encouraged to utilize rockfish deepwater release devices to decrease release mortality of DSR while bottomfish fishing for other species. More information on rockfish conservation and deepwater release devices can be found on the ADF&G website at: <https://www.adfg.alaska.gov/index.cfm?adfg=fishingSportFishingInfoRockfishConservation>

The subsistence bottomfish fishery remains open for retention of DSR, in areas defined in 5 AAC 01.716, except that bottomfish may not be taken for subsistence purposes in the waters off Cape Edgecumbe enclosed by a box defined as 56°55' N lat, 56°57' N lat, 135°54' W long, and 135°57' W long (5 AAC 01.725 (b)).

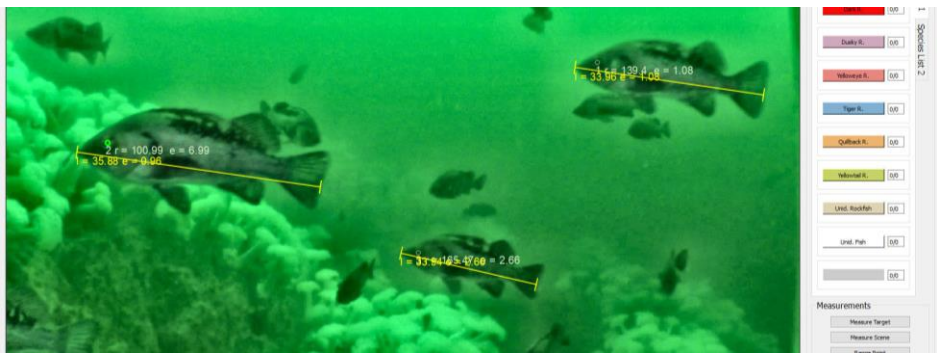
The DSR assemblage is comprised of 7 rockfish species including yelloweye, quillback, copper, rosethorn, canary, China, and tiger rockfish. Yelloweye rockfish comprise over 95% of the DSR commercial harvest and are the primary target compared to the six other DSR species. Despite conservative management over the last decade, yelloweye rockfish biomass in the Eastern Gulf of Alaska has declined approximately 60% since assessments began in 1994. Additionally, annual trends in biological data (length, weight, and age by sex) reveal truncation of older age classes, indicating reduced reproductive potential and increasing uncertainty for future recruitment of juveniles. DSR are particularly vulnerable to overexploitation and are slow to recover once fished below sustainable levels given their longevity, slow growth, late maturation, and high site-fidelity, with yelloweye rockfish reaching an estimated maximum age of 122 years and maturing at 18-22 years.

These stock health concerns warrant further management action to allow for rebuilding of DSR stocks and ensure sustainable rockfish fisheries in the future. Stock status will continue to be assessed annually through yelloweye rockfish stock assessment surveys, biological sampling of yelloweye bycatch, and monitoring bycatch of all DSR species retained in commercial groundfish and halibut fisheries, as mandated under full-retention requirements (5 AAC 28.171).

**Annette Island Reserve**  
Fishermen are reminded the Annette Island Reserve is a federally recognized Indian reservation in Alaska. The waters within 3,000 feet of Annette Island, Han Island, Hemlock Island, Spire Island, Walker Island, Lewis Island, and adjacent rocks and islets are designated within the fishing reserve. Fisheries within the reserve are managed by the Metlakatla Indian Community for authorized fisheries participants. Metlakatla residents are also reminded that waters beyond 3,000 feet of Annette Island, Han Island, Hemlock Island, Spire Island, Walker Island, Lewis Island, and adjacent rocks and islets are managed by the State of Alaska. Proper licensing, permitting, and reporting are required.

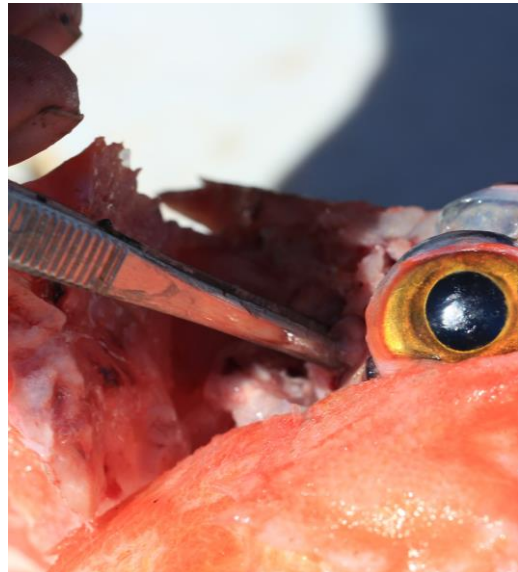
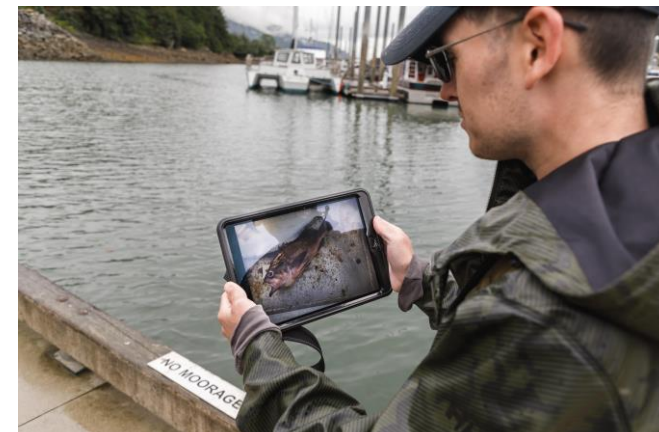
Under Alaska's Health Advisories 1, 2, 3, and 4, commercial fishing is an Essential Business and is part of Alaska's Essential Services and Critical Infrastructure. Commercial fishermen should ensure that all travel and other activities in support of DSR Fisheries Announcement

page 1 of 2  
December 30, 2021



# CURRENT RESEARCH

- Port sampling - commercial and sport fish
- Remotely operated vehicle (ROV) surveys/ density estimates (Southeast)
- Hydroacoustic surveys to develop abundance/ density estimates (Kodiak and Southcentral)
- Genetic analysis to determine population structure (PWS yelloweye)
- Maturity analysis
- Release survival study
- Develop regional stock assessment models for black and yelloweye rockfish



# PORT SAMPLING RESEARCH — SPORT AND COMMERCIAL



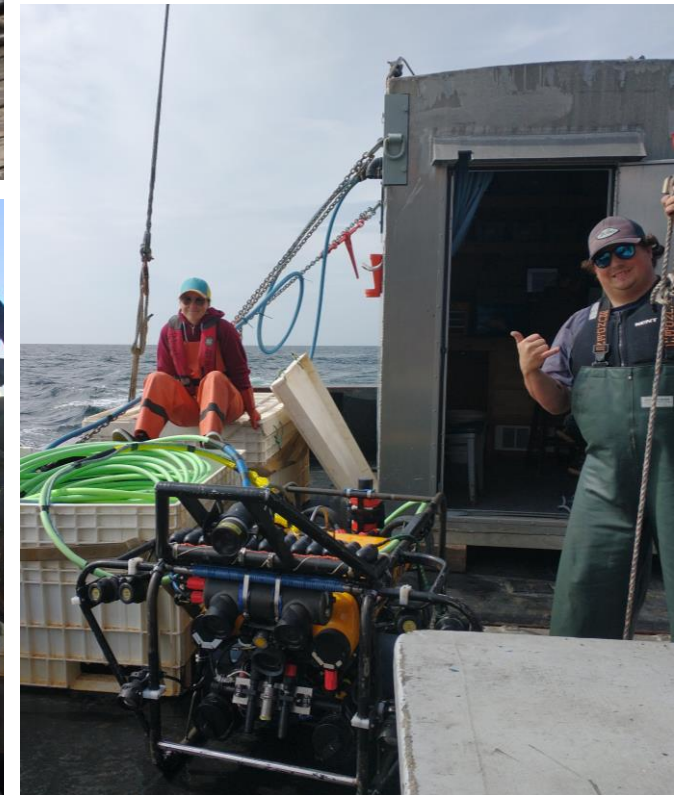
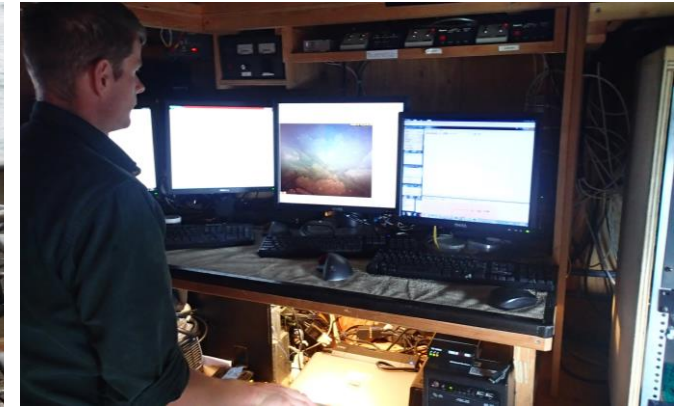
# SOUTHEAST REMOTELY OPERATED VEHICLE (ROV) SURVEY

Stock assessment survey for Yelloweye rockfish in 4 management areas in outside waters (EYKT, NSEO, CSEO, & SSEO) – rotates areas annually

Produces density estimates for stock assessment

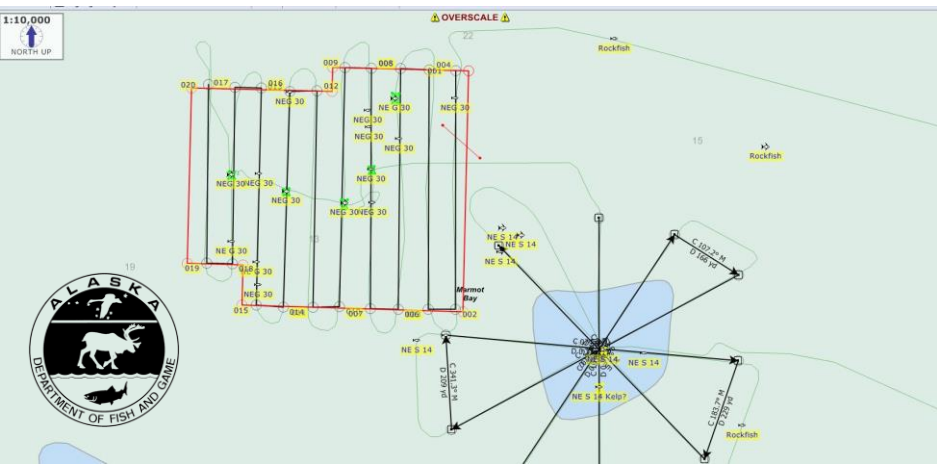
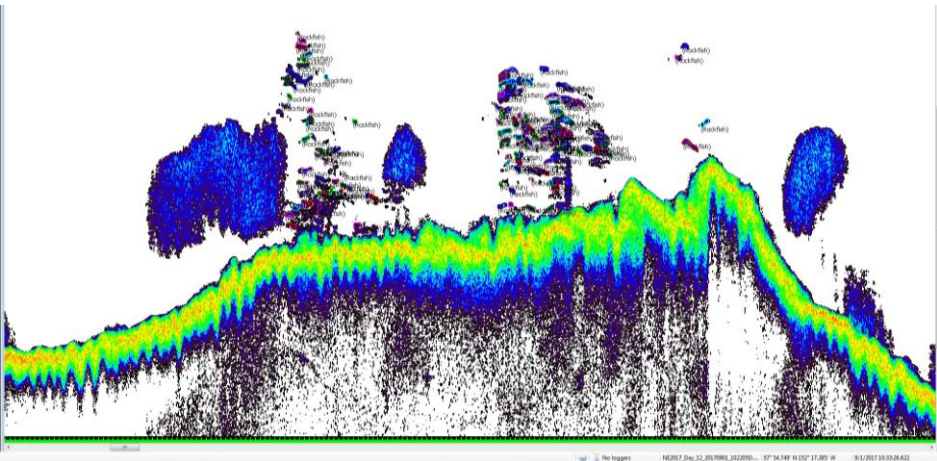
Use density and habitat area estimates to produce abundance estimates

Estimates presented to the Groundfish Plan Team and ultimately to North Pacific Fisheries Management Council for approval



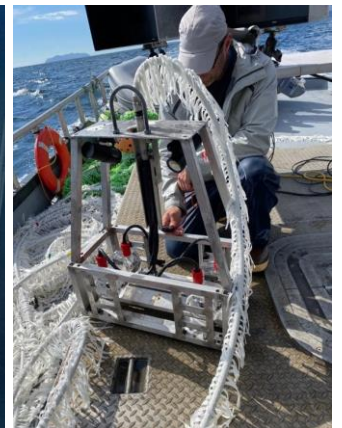
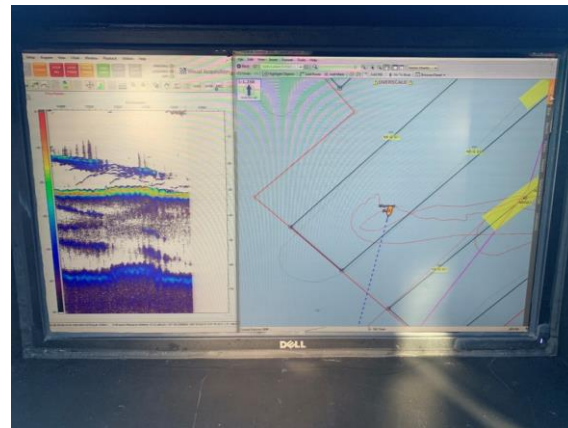
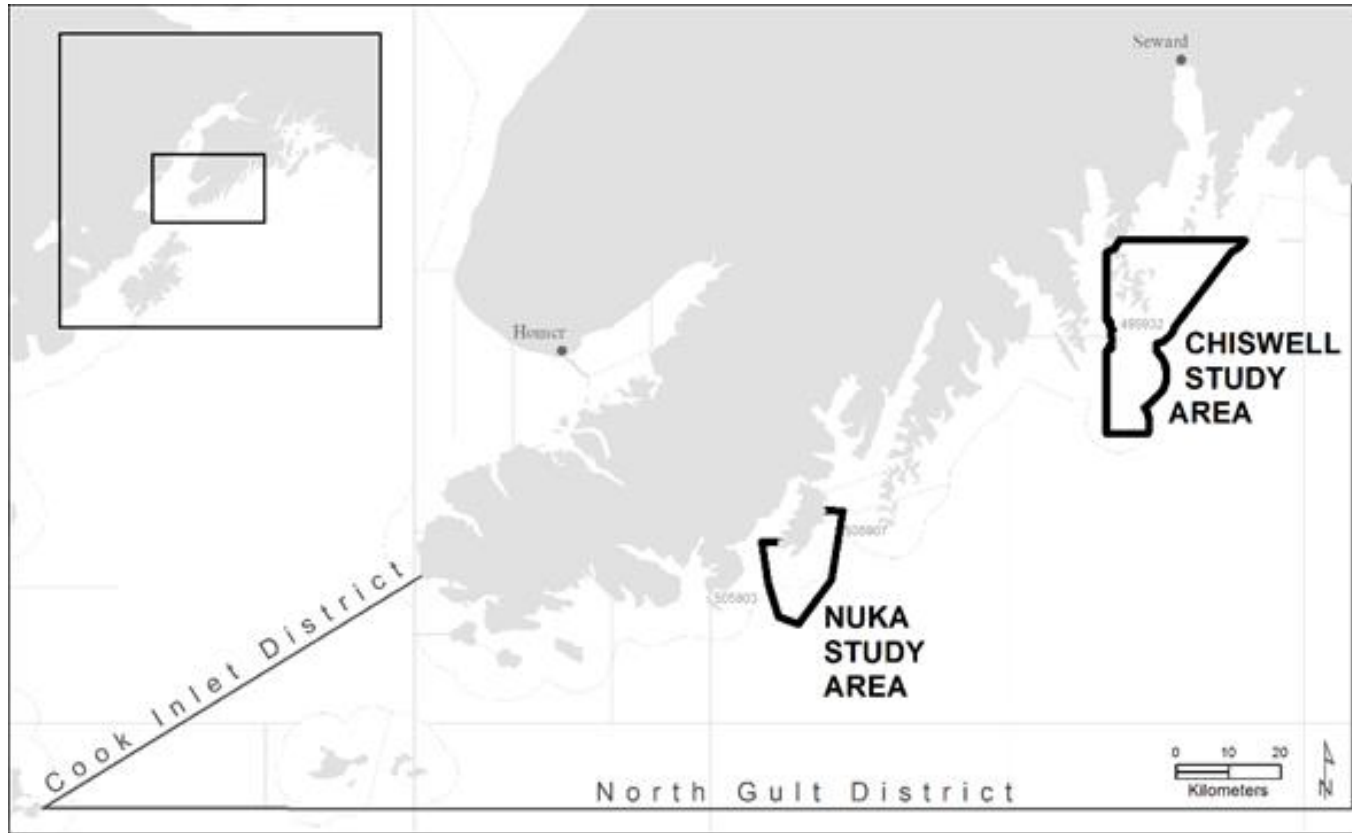


# KODIAK HYDROACOUSTIC SURVEY



- Split-beam hydroacoustic surveys generate rockfish abundance estimates
- Survey focused on commercially- and recreationally-important management districts
- Generates indexes of abundance for black rockfish by management district to inform setting harvest levels
- Underwater video camera data determines rockfish species composition for apportioning hydroacoustic counts
- Analysis of stereo camera images of black rockfish provides fishery-independent lengths for rockfish average weights and biomass estimates

# NORTH GULF DISTRICT BLACK ROCKFISH HYDROACOUSTIC SURVEY



Study Area	# Stations	Surveyed Area (km <sup>2</sup> )	High Harvest
Chiswell	35	6.92	Sport
Nuka	25	7.07	Commercial

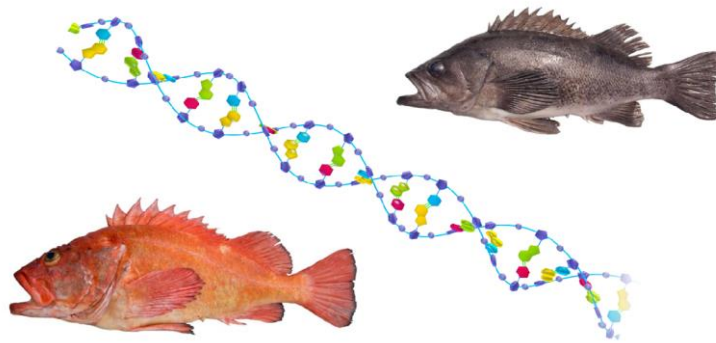
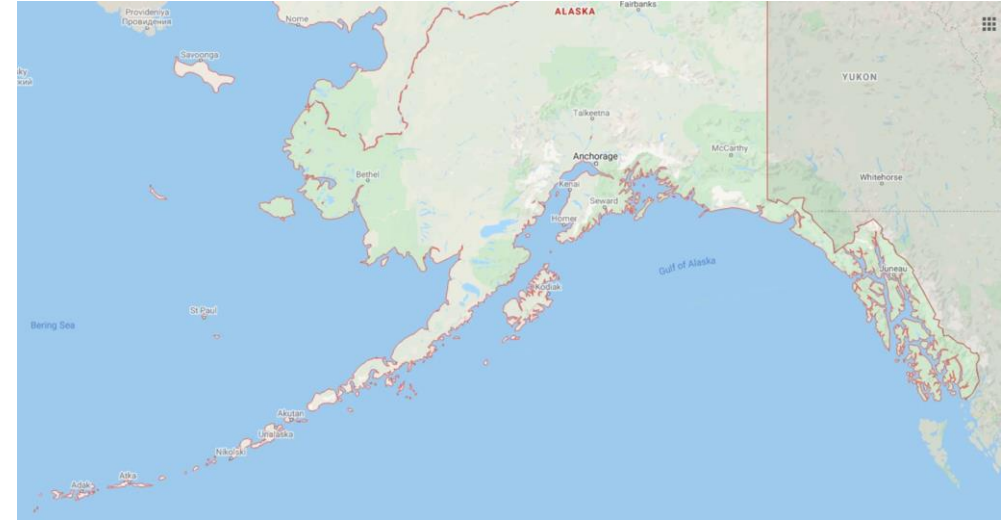


RESEARCH

# GENETIC POPULATION STRUCTURE OF BLACK AND YELLOWEYE ROCKFISH - INSIDE AND OUTSIDE AREAS

## Areas

- Southeast Alaska
- Prince William Sound-Northern Gulf of Alaska
- Western Gulf of Alaska



## Marker Development –RADseq

- Population Structure
- Species ID

## Population structure

- Calculate genetic differences among groups
- Visualize the relationships among groups
- Test for significance of these differences
- Results will guide stock assessment

RESEARCH





# MATURITY ANALYSIS - BIOLOGICAL SAMPLING AND PROCESSING

- **Biological**
  - Whole weight, gutted weight
  - Total length and fork length
  - Otoliths
  - Gonads: weight, macroscopic maturity, photographs
  - Liver weights
- **Histology**
  - Kodiak Lab
- **Age Reading**
  - Yelloweye Rockfish: ADU, Juneau
  - Black Rockfish: Homer (SF) and ADU (CF)
- **Fecundity**
  - Being analyzed

Information used to improve understanding of life history parameters that inform stock assessment and management decisions.

RESEARCH

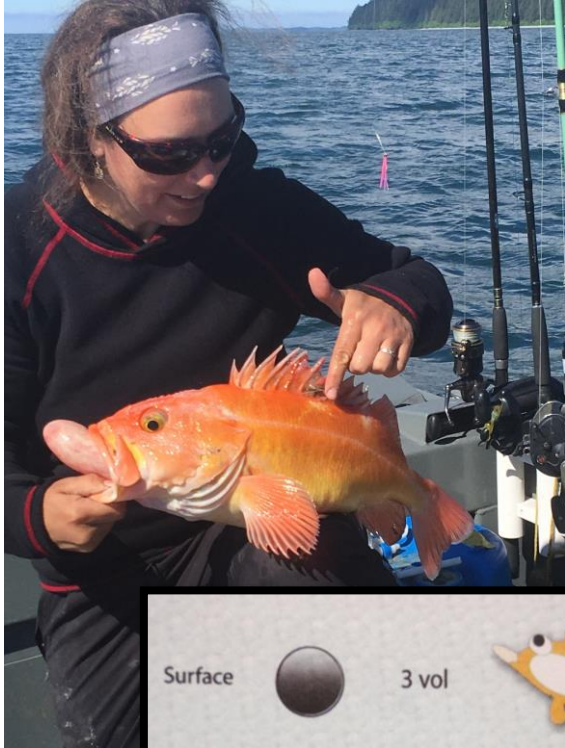




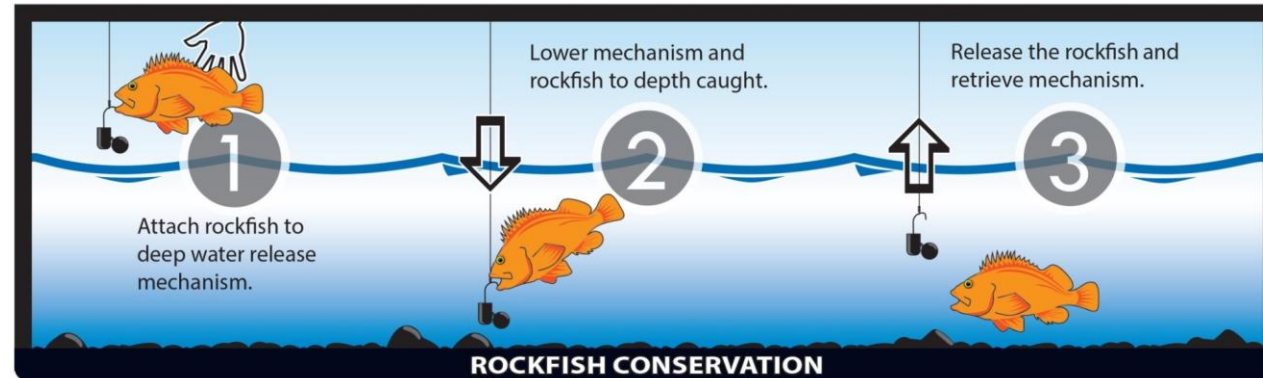
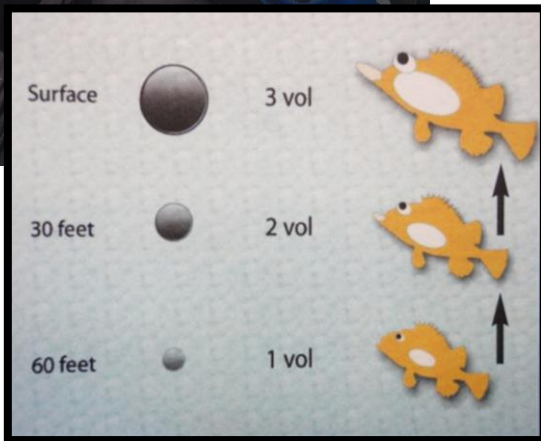
# FISHPATH

- **Mission: Setting Fisheries on the Path to Sustainability**
- The FishPath framework was developed during a Science for Nature and People Partnership (SNAPP) working group (2014-2016), drawing on the expertise of global experts from 8 countries and over 10 organizations.
- 2 tools: 1) Stock assessment and 2) MSE lite management
- Josh Nowlis and Jason Cope – contracted to help us with black and yelloweye rockfish stock assessment modeling using stock synthesis and MSE-lite.
- Initial 2-week workshop, office hours every month, MSE-lite training, answer questions from ADF&G staff, support for stock assessment working group in November 2022

# PWS ROCKFISH SURVIVAL STUDIES



- **Yelloweye Rockfish:**
  - Survival study – tagged fish – used deepwater release
    - Survival probability 98% when released back at the bottom
    - Surface release study – able submerge unassisted ~22%
  - Reproducing years after being released with a deepwater release device.
- **Other Rockfish Species**
  - dark, dusky, black, yellowtail, quillback, copper, silvergray
  - 2-day cage studies (simulating deepwater release): survival >84%
  - Surface release studies: submergence success ~45-95%





# OUTREACH AND PUBLIC INVOLVEMENT

Rockfish Community Engagement Workshop in April 2022

Deep water release information campaign

Facebook and Twitter

Deck of cards


Local informational meetings


Advisory Council Meetings

Board of Fisheries

Mgmt/Research Publication

Strategic plan

**K** 



**Yelloweye Rockfish**  
(*Sebastes ruberrimus*)

**ID:** Orange red to orange yellow coloration with black on fin edges. Bright yellow eye. Light band on lateral line.

**Max Size:** 91 cm / 36 in

**Max Age:** 118 years

**Age at Maturity:** 22 years

NON-PELAGIC DEMERSAL SHELF

Photo courtesy : Vicky Okimura (Washington Department of Fish and Wildlife)

**K**

**K** 



**Black Rockfish**  
(*Sebastes melanops*)

**ID:** Dark gray to black coloration with light gray molting across body and black mottling on dorsal fin. White to lightly colored belly.

**Max Size:** 69 cm / 27.6 in

**Max Age:** 50 years

**Age at Maturity:** 6–8 years

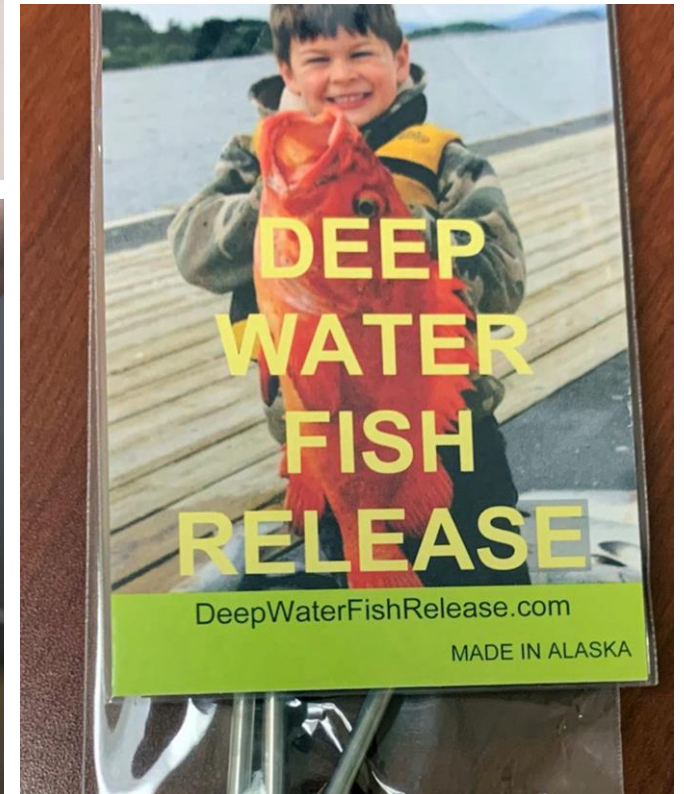
PELAGIC PELAGIC SHELF

Photo courtesy : Vicky Okimura (Washington Department of Fish and Wildlife)

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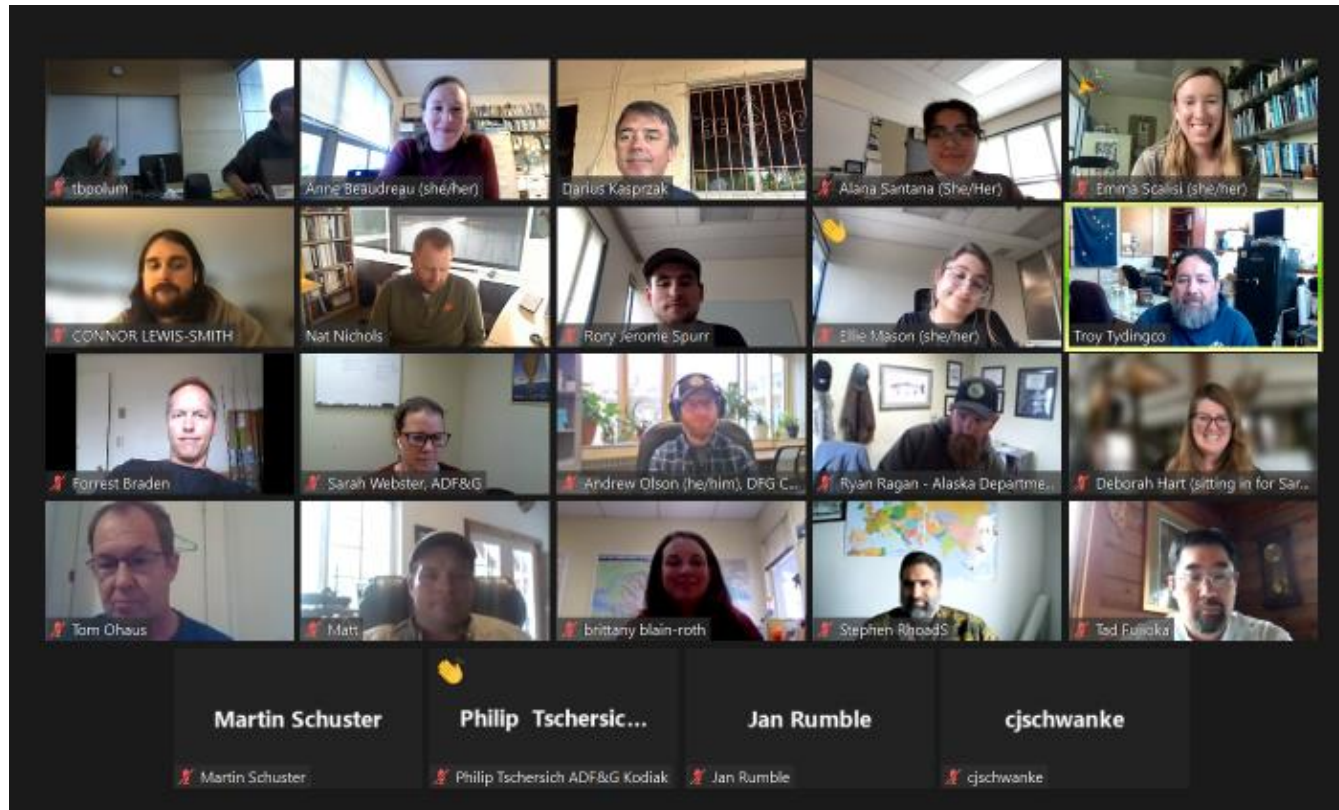
# DEEP WATER RELEASE

- Pamphlet
  - Devices
  - Methods
  - General information
  - Conservation by avoidance of unwanted rockfish
- Info on our website:  
<http://www.adfg.alaska.gov/index.cfm%3Fadfg%3DfishingSportFishingInfo.rockfishconservation>
- Beginning in 2020, all vessels sport fishing in the saltwaters of Alaska must have a functioning deepwater release mechanism (DRM) on board, and all rockfish not harvested must be released at depth of capture, or at a depth of 100 feet.



# COMMUNITY ENGAGEMENT WORKSHOP

- Virtual
- April 22, 2022
- 20 participants: fishers & agency staff; communities across the Gulf of Alaska





# ROCKFISH COMMUNITY ENGAGEMENT WORKSHOP GOALS

- Promote dialogue among ADF&G staff and fishers to engage diverse perspectives
- Strengthen channels of communication about rockfish education, research, and management
- Develop building blocks for statewide Community Engagement Plan for rockfish fisheries

# FUTURE PLANS

Stock assessment work session

In person

November 7-10

Small group ~ 8

Jason Cope attending

Plan for external review

MSE – Lite training

Management tool

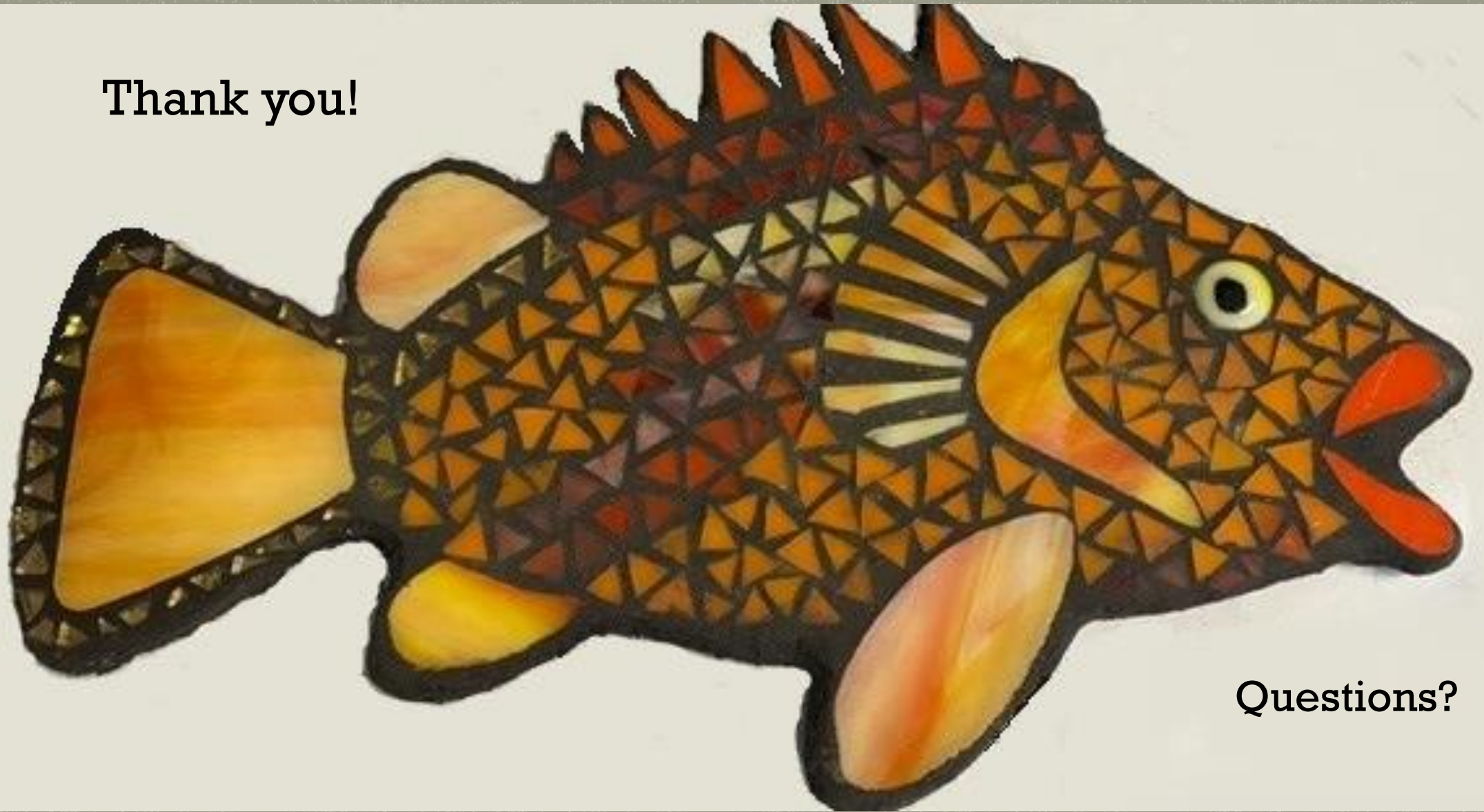
Stakeholders meeting summary

April meeting

Subcommittees work



**Thank you!**



**Questions?**