Maine Climate Council

Coastal and Marine Working Group Meeting

Co-Chairs:

Carl Wilson, Department of Marine Resources

Curt Brown, Ready Seafood Company

GOVERNOR'S OFFICE OF
Policy Innovation and the Future

MAINE DEPARTMENT OF
Environmental Protection

March 19, 2023

Welcome

- If you are a working group member:
  - please rename yourselves and add *asterisk in front of your name
- If you are a member of the public and / or interested state staff
  - please rename yourselves to include “public participant”
- Everyone’s voices are valuable
  - We will take working group member comments / questions first
  - Public participants, please add your comments and questions to the chat and we will make time to get to them

Meeting Agenda

12:15 Welcome & Updates

Co-Chairs Carl Wilson (ME DMR) and Curt Brown (Ready Seafood)Laura Taylor Singer (Facilitator)

12:15 **"**Tools and approaches to implement climate adaptation in Maine's coastal and marine socio-ecological systems"
Dr. Michelle Staudinger (UMaine, Darling Marine Center)

12:45 SEA Maine Roadmap – Linking to CMWG Discussions
Co-chair Curt Brown

1:00-1:30 Lunch (Thank you Island Institute)

1:30 Overview of Subcommittee Work
Subcommittee co-chairs

2:10 Pulling the subcommittee ideas together
Co-chair Carl Wilson and Jes Waller (DMR)

3:10 Priority setting exercise

3:20 Outline for next steps of the Working Group and Public Comment Period

4:00 Adjourn

Tools and approaches to implement climate adaptation in Maine's coastal and marine socio-ecological systems

March 19, 2024

Maine Climate Council – Coastal and Marine Working Group

Michelle Staudinger

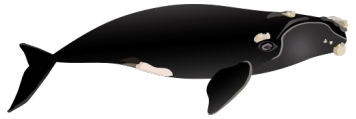
Associate Professor,

University of Maine, Darling Marine Center

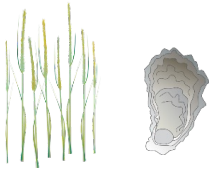
CMWG Strategies, subgroups -

- **Fisheries & Aquaculture**
- **Monitoring**

NE regional climate synthesis to inform State Wildlife Action Plans



Using natural infrastructure to increase coastal resilience to SLR and storms



Underutilized seafood species and evaluating their market potential in a changing climate

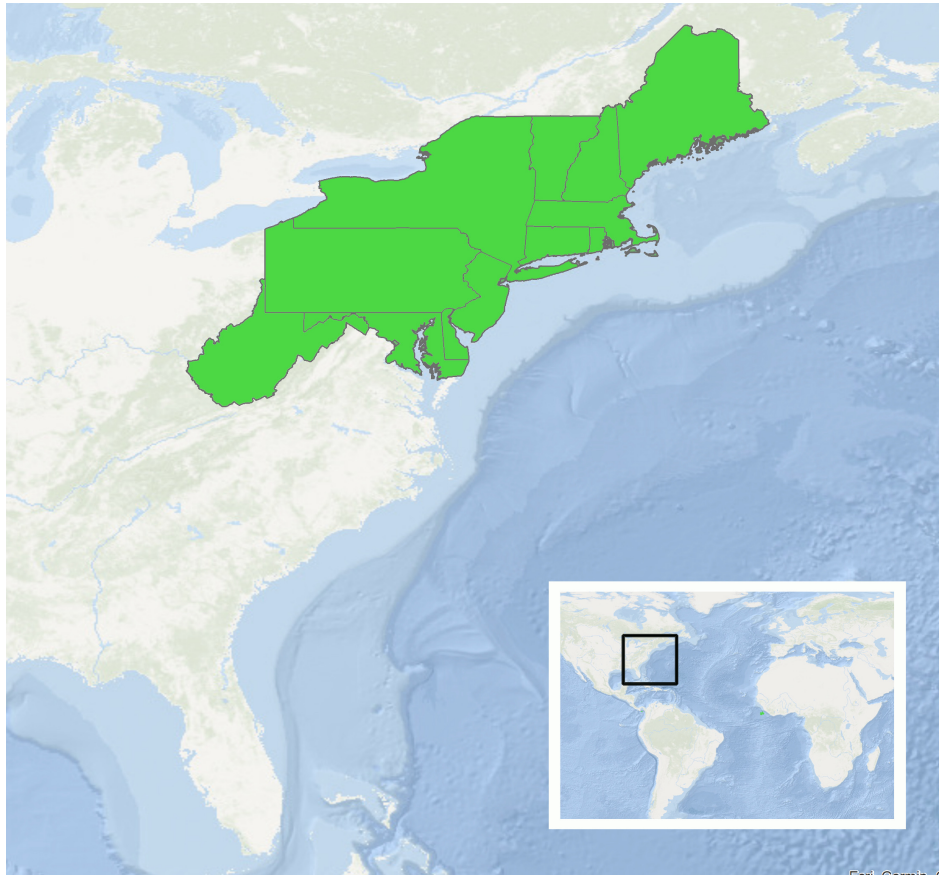
Links to CMWG updates to MWW Strategies

Conduct climate vulnerability assessments and develop strategies to monitor, protect, restore and manage Maine’s coastal and marine resources

State Wildlife Action Plans (SWAPs)

- Proactive, comprehensive wildlife conservation strategies that asses the health, challenges, and potential actions of each State
- Mandate by Congress to receive funding through Wildlife Conservation and Restoration, and State and Tribal Wildlife Grants (SWG) Programs
- Revised every 10 years (2015, 2025)
- Challenged to incorporate climate change into current revisions

NEAFWA Region



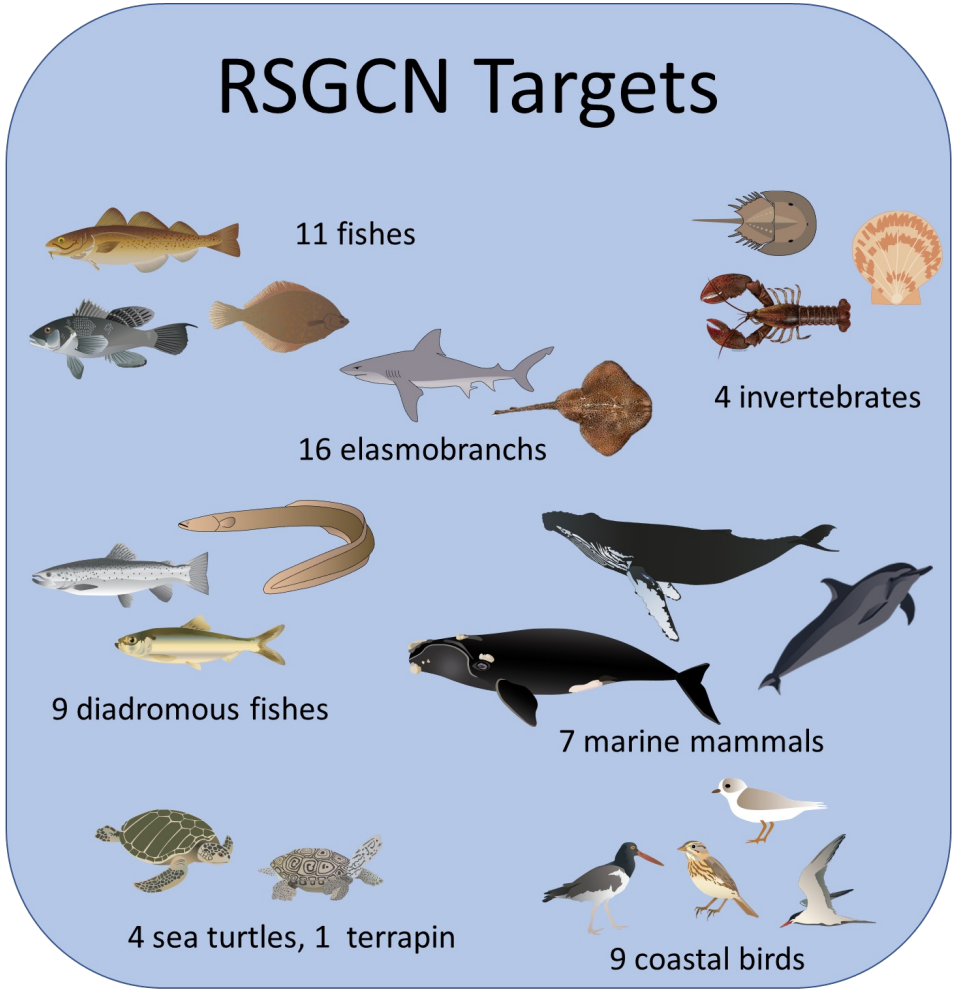
Regional Species of Greatest Conservation Need (RSGCN)

- Threats and actions support socioecological planning processes across local to regional scales

- RSGCN are characterized by needing:
  - High conservation attention
  - Prioritized investments
  - Communication
  - Proactive actions

- 418 NE RSGCN w/ ~60 marine and coastal species

including

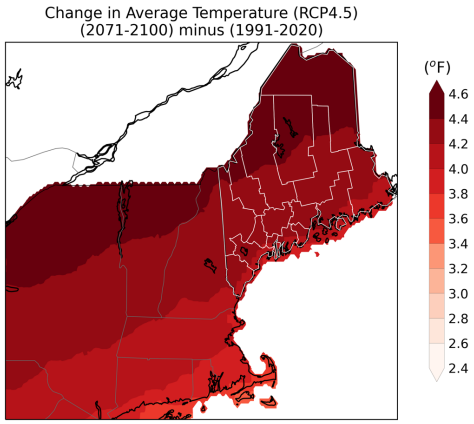


Barriers to Incorporating Climate Change

- Too much information, too little information, information at the wrong scale
- Lack of guidance, expertise, decision support
- Capacity – financial and personnel constraints
- Overwhelmed by uncertainty

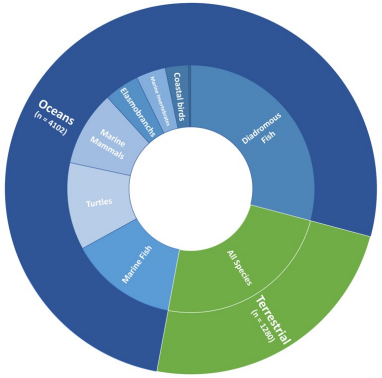
Northeast regional climate synthesis

Chapter 1



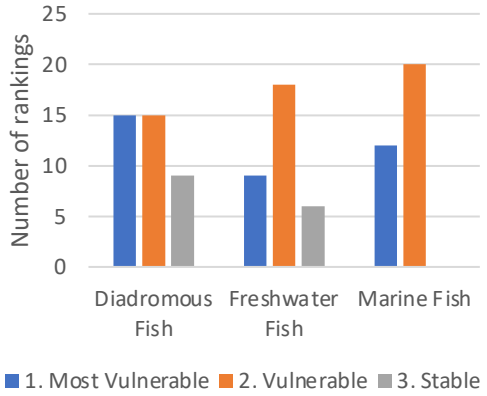
Understand how key drivers are changing and where the greatest change is occurring

Chapter 2



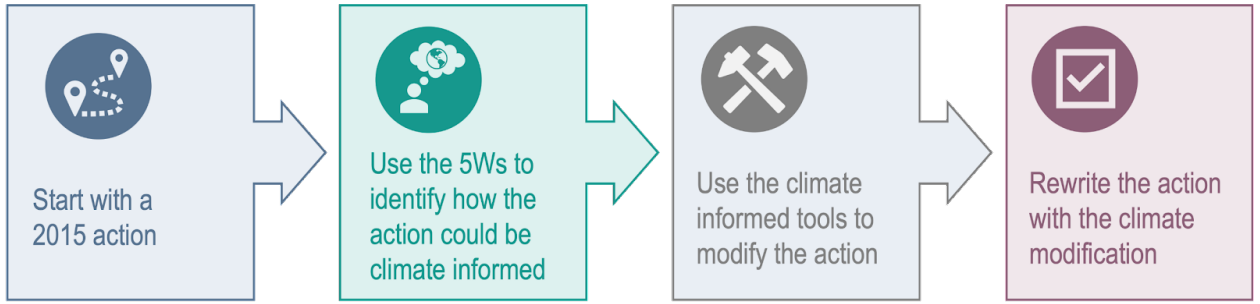
Review available information on species-specific responses to climate

Chapter 3



Determine if a CCVA has been conducted for RSGCN of interest; if yes, where, when, and under what conditions

Chapter 4



Revise an existing action or develop a new action using menus and other tools

Chapter 5

Explore case studies and find inspiration for implementation

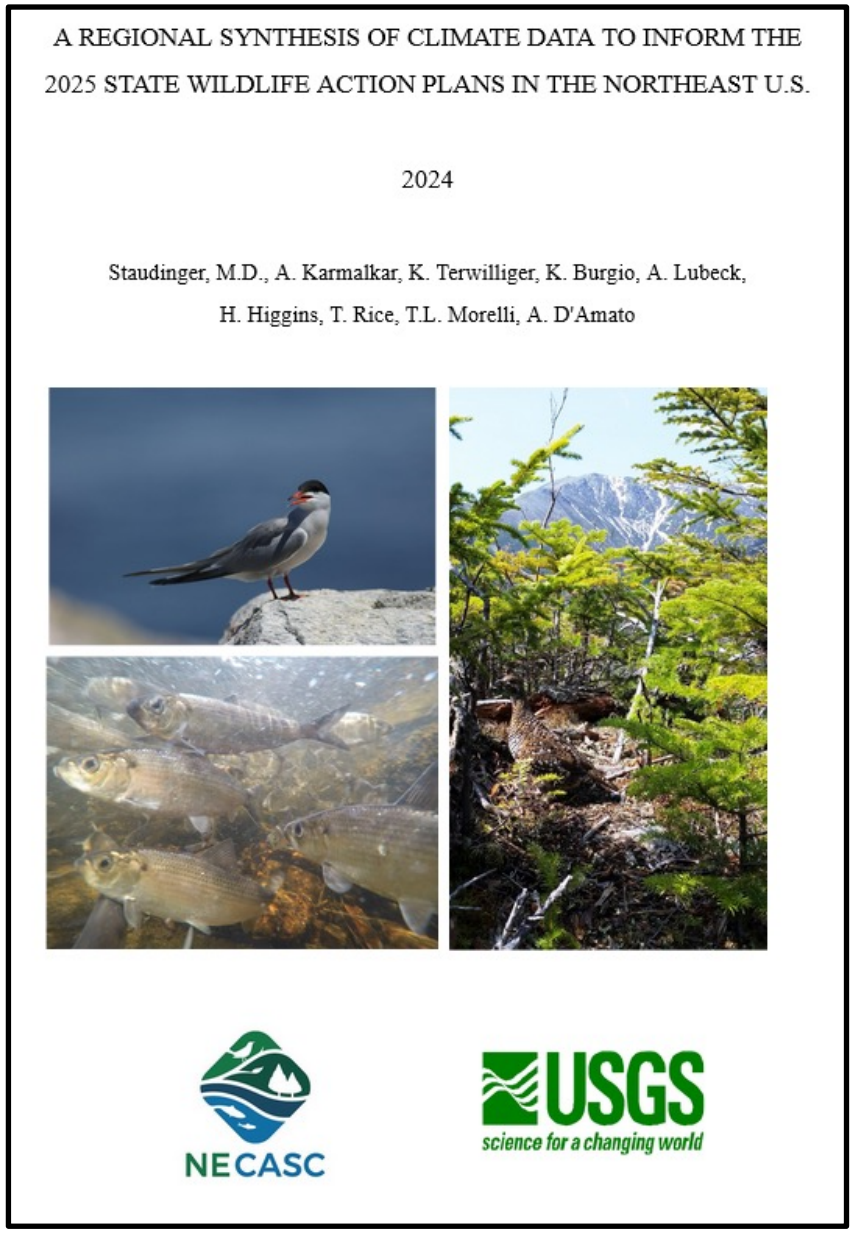
Opportunities to learn more

Anticipated Release date: late March 2024

Upcoming presentations:

NE CASC Webinar, **Wed. April 10th @ 4:00 PM ET**

NEAFWA special session, **Wed. April 24th, 8:00 AM-12:00 PM ET, Incorporating Climate Change into Northeastern SWAPs**



Links to CMWG updates to MWW Strategies

Prioritize actions that increase climate resilience and climate literacy

Using natural infrastructure to increase coastal resilience

Tidal marsh

Beaches & barrier islands

Biogenic reefs

Mangroves

- Information on natural infrastructure - green and “soft”-approaches to coastal management and restoration (vs grey/hard approaches)
- Ecosystem services and cost-benefit values to socio-ecological communities
- Case studies of implementation

Powell et al. 2018. Journal of Coastal Conservation

Benefits of natural infrastructure

provisioning (♦), regulating (○), cultural (□), supporting (●)

Adaptation Actions to Enhance Resilience to SLR and Storms	Ecological Benefits	Human Community Benefits
 Tidal flow restoration / salt marsh restoration	• Restores natural **functioning** • Increases **water filtration** • Helps **reduce marsh subsidence** • Improves **drainage** to minimize flooding • Supports native vegetation while **decreasing spread of invasive species** • Improves habitat **quality** for a diversity of marsh-dependent species • Moderates, restores natural **salinity**	○ Increases **flood storage capacity** ○ **Preserves natural storm defenses** ○ Improves **water quality** ○ Enhances climate mitigation through **blue carbon sequestration** and storage □ Supports **eco-tourism** through fishing, hunting and wildlife viewing • Provides **habitat** for recreational/commercial species

Powell et al. 2018. Journal of Coastal Conservation

Ecosystem service valuation

Habitat Type	Benefits	Valuation (monetary or non-monetary)
Biogenic Reefs	**Storm protection** services provided by coral reefs	**Reduce wave energy** by 97% over ~800 meters, or a 64% reduction in wave height
	**Cost-benefit ratio** of oyster reef services	Economic value from restored reefs btw **$5,500 and $99,000 per hectare per year;** restoration costs recovered in 2-14 years
	Recreational benefits	Marine reserves increase visitation by 43-80% (trips) and value/trip by 69%, with related management costs of only ~1-2%

Powell et al. 2018. Journal of Coastal Conservation

Links to CMWG updates to MWW Strategies

Increase the amount of food consumed in Maine from state food producers from 10% to 20% by 2025 and 30% by 2030 through local food system development and marketing

Building resilience with adaptive markets

STEP 1: Underutilized Species Evaluation Criteria

- Allowed to be landed
- Not overfished
- Not experiencing overfishing
- Population at or above target levels;
- ≤ 50% annual catch limit caught in last 3-5 years

Davis, Staudinger, Mills. 2023. Frontiers in Marine Science

Building resilience with adaptive markets

New England Fishery Management Council

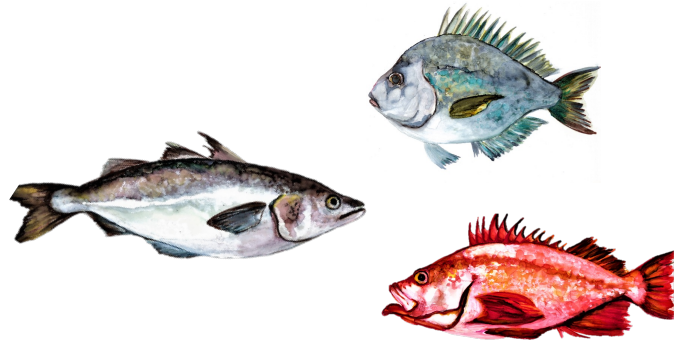
- Sea Scallops
- Atlantic Herring *
- Skates
- Atlantic Salmon
- **Northeast Multispecies**
  - Atlantic Cod
  - Haddock
  - Yellowtail Flounder
  - Pollock
  - American Plaice
  - Witch Flounder
  - White Hake
  - Windowpane Flounder
  - Winter Flounder *
  - Acadian Redfish
  - Atlantic Halibut
  - Atlantic Wolffish
  - Ocean Pout
- **Small-Mesh Multispecies**
  - Silver Hake
  - Red Hake
  - Offshore Hake

Jointly Managed

- Spiny Dogfish *
- Monkfish

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

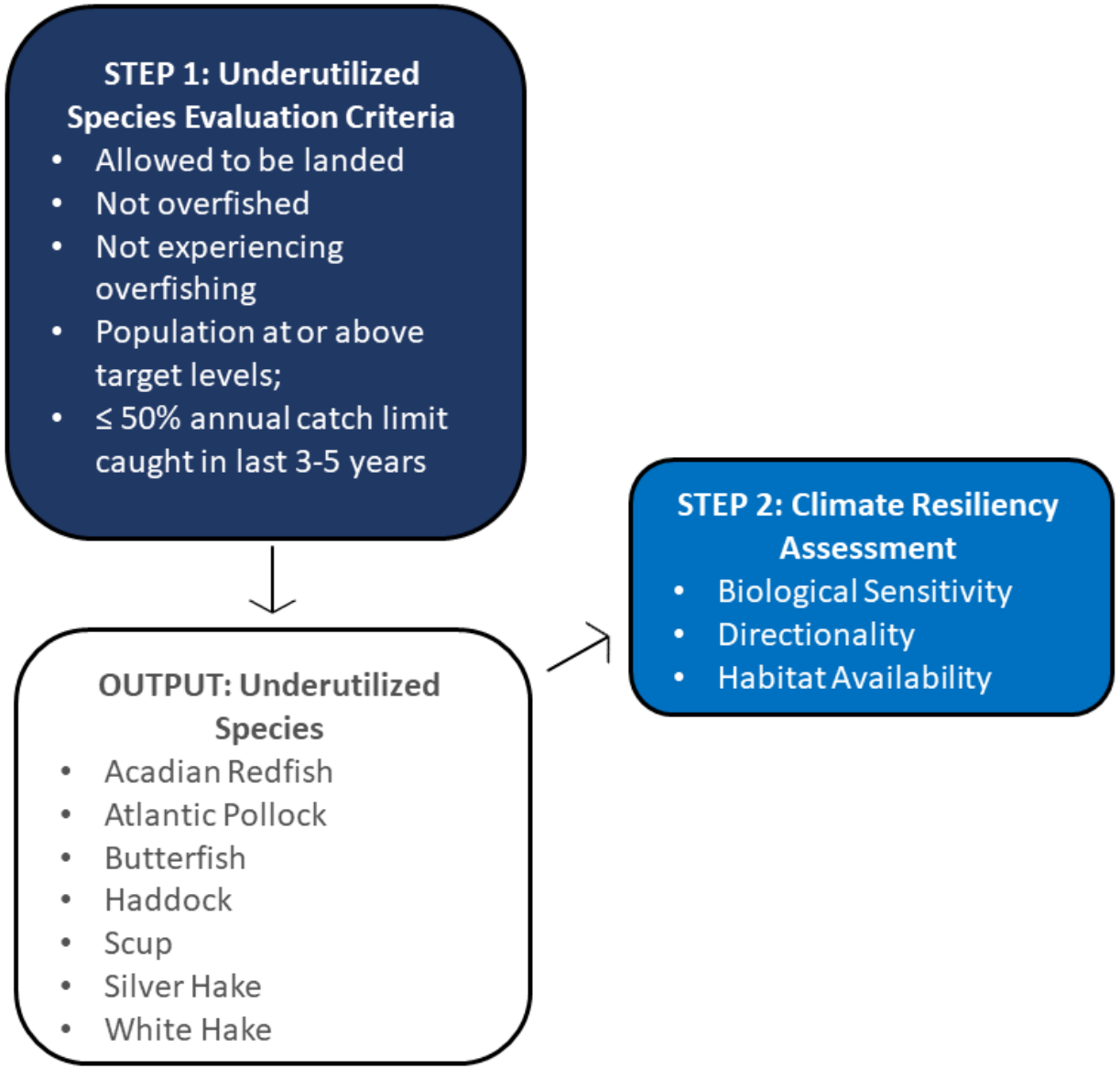
- Summer Flounder *
- Scup *
- Black Sea Bass *
- Bluefish *
- Atlantic Mackerel
- Illex Squid
- Longfin Squid
- Butterfish
- Golden Tilefish
- Blueline Tilefish



- Acadian redfish
- Atlantic pollock
- Butterfish
- Haddock (GB & GB-east stocks)
- Scup (only Winter II harvest season)
- Silver hake (Northern stock)
- White hake

Davis, Staudinger, Mills. 2023. Frontiers in Marine Science

Building resilience with adaptive markets



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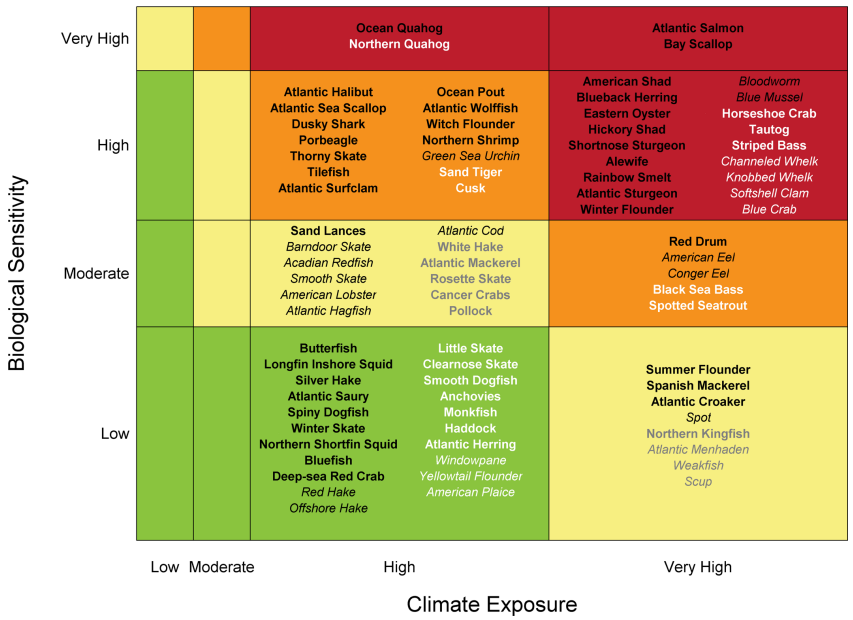
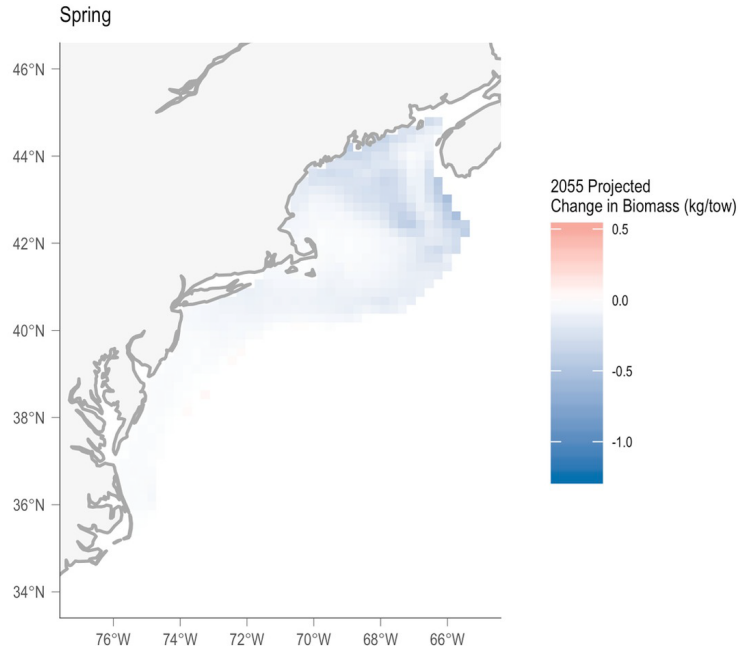
Resilience Indicators

Sensitivity and Directionality (exposure)



Hare et al. 2015. PLOS One

Habitat availability or Relative Biomass

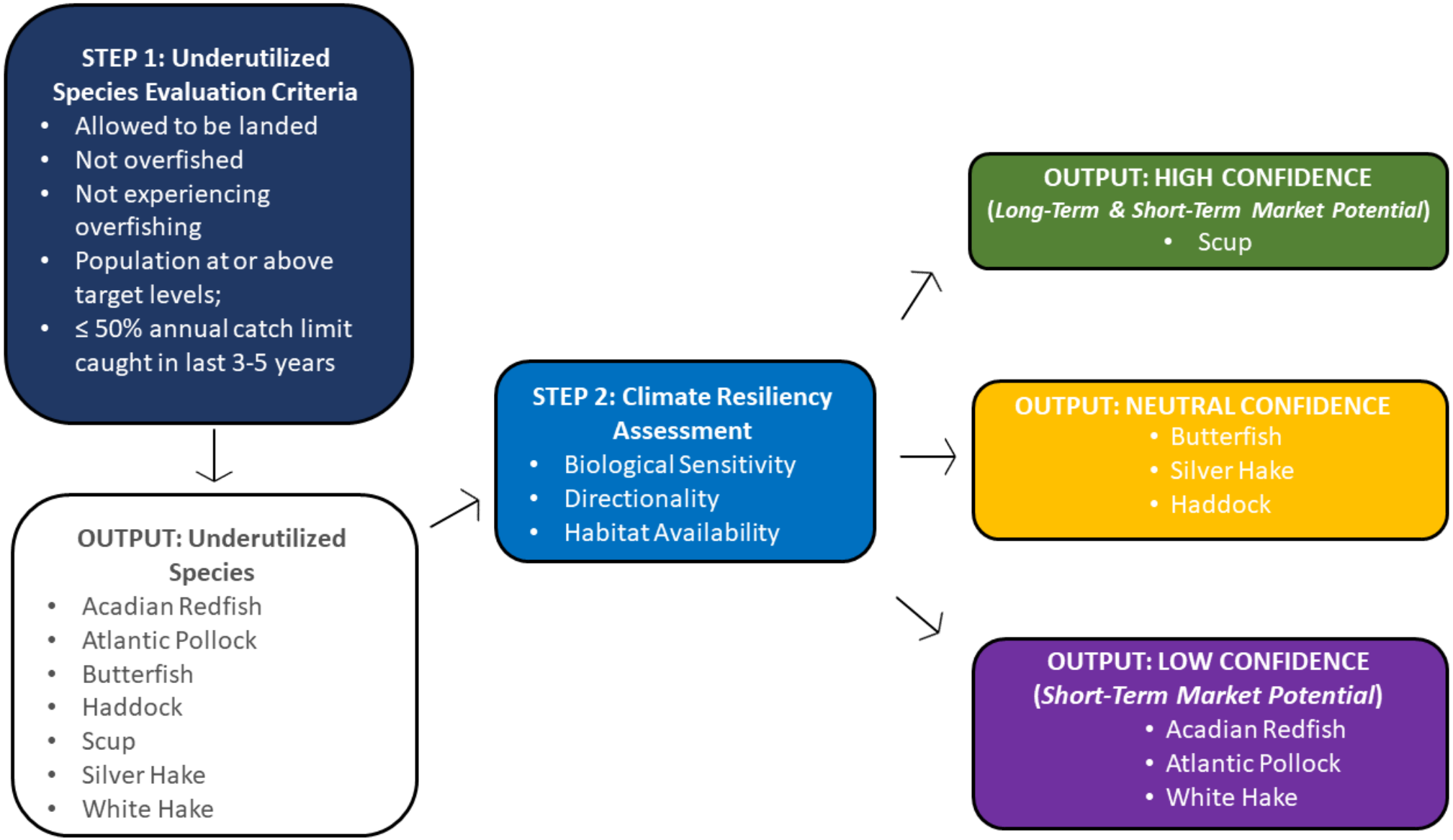


Kleisner et al. (2017); Allyn et al. (2020)

Final Weighted Resilience Score (W)	
0.67	High
0.33	Neutral
-0.25	Neutral
-0.33	Neutral
-0.67	Low
-0.67	Low
-0.67	Low

Davis et al. 2023. Frontiers in Marine Science

Building resilience with adaptive markets



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WHITE HAKE

OUR WICKED FISH.COM
Meet & Eat Your Local Seafood

UNDERUTILIZED STATUS

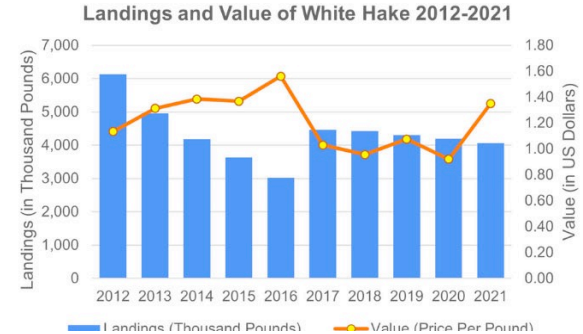
- >50% annual catch limit used in 3/5 yrs (2015-2019)
- Stock status was below target population level
- Overfished

2019 Evaluation | 2021 Evaluation | 2023 Evaluation

Qualified | Unqualified | TBD

LANDINGS & VALUE

- Data from 2012-2021
- 3,029,000 (2012) - 6,129,000 (2016) lbs
- Ex-vessel price = $0.92 / lb (2020) - $1.56 / lb in 2016



IN A CHANGING CLIMATE

High — Climate Exposure

High — Vulnerability to Distribution Shift

Most Sensitive Biological Attributes

- Population Growth Rate
- Spawning Cycle
- Stock Status

Observed Changes in Behavior

- Poleward Movements
- Shifted Into Deeper Water
- Decreased Abundance in Warming Water

EXPANDING MARKETS

Expanding market opportunities for white hake is not recommended at this time since the most recent stock assessment suggests that white hake are overfished and below target population level. Market opportunity recommendations for white hake could be reviewed again after the 2023 evaluation and after a new stock assessment is released.

Davis, Staudinger, Mills. 2023. Frontiers in Marine Science

2024 CMWG Subcommittees

- Fisheries/Aquaculture
  Ben Martens, Jes Waller
- Working Waterfronts/Infrastructure
  Nick Batista, Bill Needleman
- Monitoring
  Becca Peters, Ivy Frignoca
- Coastal & Marine Habitats/Blue Carbon
  Jeremy Gabrielson, Curtis Bohlen

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Fisheries and Aquaculture

1) Long-term data for industry 2) Ecosystem approaches
3) Evaluate policy and regulatory structures

- Adding these industries into existing MWW recommendations
- Assessing industry and resource vulnerabilities
- Focusing resilience and technical assistance in specific communities
- DMR to provide industry with pathways to fishery diversification
- Increase local seafood marketing, “30 by 30”

Monitoring Subgroup Recommendations

- Focused on updating Strategy E Recommendation 4 and associated actions

- Major themes:
  - Need funding and staff support to enhance and continue ongoing and new monitoring programs
    - Continue public/private collaborations
  - Need to identify data gaps and create new monitoring programs to fill those gaps.
    - Take into account where resources should be targeted to fill data gaps for priority populations.
  - Need coordinating hubs that can serve as a place to report, share, and exchange data at varying scales needed for decision making.

STRATEGY E Recommendation 4 – Enhance ongoing monitoring and data collection that provide baseline data to guide informed decision making, and create new monitoring programs to fill data gaps.	~~Establish a "coordinating hub" with state and non-state partners for key climate change research and monitoring work to facilitate statewide collaboration by 2024~~ Establish or enhance relevant coordinating hubs that provide sustainable, publicly available platforms for identifying, sharing, reporting, and exchanging data at the scales needed to make management, resilience, and policy decisions to address climate change in the coastal and marine ecosystems. ~~Create the framework and begin pilot for a coordinated, comprehensive monitoring system by 2024~~ Incorporate climate research and climate change-related technologies into Maine's research and development priorities such as those developed by the Maine Innovation Economy Advisory Board and the Maine Technology Institute Support state agencies and non-state partners ongoing and new long-term monitoring efforts and collaborations focused on characterizing changes to coastal and marine ecosystems due to climate change. Evaluate monitoring needs and capacity, and target resources to fill data gaps for priority populations.

Monitoring Subgroup Recommendations

- After Strategy E Recommendation 4 was updated we focused on Recommendation 1 and 3

- Major themes:
  - Need increased technology and lab support to analyze data and samples.
  - Need to identify and inventory coastal and marine habitats most vulnerable to climate change and then develop strategies to invest in these habitats.

STRATEGY E Recommendation 3 – Expand Outreach to Offer Information and Technical Assistance	• Expand Maine's analytical and technical services to increase its capacities to collect, process, and analyze samples and data to better understand the impacts of climate change. • ~~Launch the Coastal and Marine Information Exchange by 2024~~
STRATEGY E Recommendation 1 – Protect Natural and Working Lands and Waters, including coastal and marine habitats and waters	• Prioritize the identification, monitoring, and conservation of critical habitat areas to support land and water connectivity, ecosystem health, and resilience. • Identify and create an inventory of coastal and marine habitats most vulnerable to climate change by either using current habitat climate vulnerability assessments or by conducting a state specific coastal and marine habitat climate vulnerability assessment. • Develop strategies to invest in coastal and marine habitats through increased monitoring, policy, restoration, protection, and management. • Inventory, map, and track changes to working waterfronts and coastal access.

Discussion

- Are there any immediate concerns about how these strategies were combined?
- Are there any further suggestions for areas of overlap?
- Is there anything we've missed?
- Other thoughts?

Potential Themes

1. Supporting pathways to adaptation of Maine's fisheries, aquaculture and seafood industries. [This is mainly Strategy D and focus of F&A group]
2. Seeking opportunities to conserve and increase resilience of coastal and marine ecosystems. [Mostly Strategy E and monitoring, BCH group]
3. Investing in building healthy and resilient coastal communities and critical place-based infrastructure. [Strategy F and G – working waterfronts/communities]

Coastal and Marine Working Group Schedule

January 22

- Joint learning and updates from subcommittees

February 15

- Joint learning and updates from subcommittees

March 19

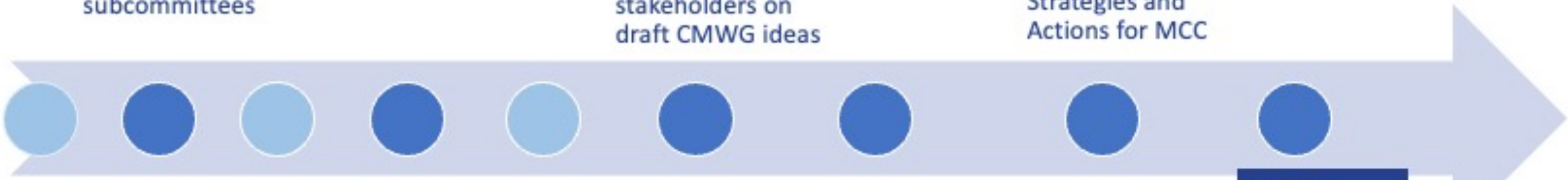
- Draft updates from subcommittees for discussion
- Discuss outreach to key stakeholders on draft CMWG ideas

April 23

- Incorporate outreach
- Discuss key priority issues

May 15

- Reflect on report from UMaine on engagement work and how to integrate
- Prioritize WG Strategies and Actions for MCC



June 18

- Working groups deliver mitigation and adaptation strategies to Maine Climate Council

Next Steps

- **April TBD -** Ad hoc discussion on lowering carbon footprint on the water: Email Laura by Friday (3/22) at **LSinger@cbi.org** if interested
- **Tuesday, April 23rd, 9:00am – 12:00pm**
  - Location: Darling Marine Center, Walpole
  - Breakout into groups to continue to address questions in template
  - Update from UMaine on engagement work (Tentative)
- **Wednesday, May 15th, 9:00am – 12:00pm**
  - **Location: TBD**

Google Drive for CMWG

- https://tinyurl.com/48arx8hc