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Age and Growth Program Update

Age and Growth Program, National Marine
Fisheries Service, Alaska Fisheries Science Center,
Seattle, WA, USA

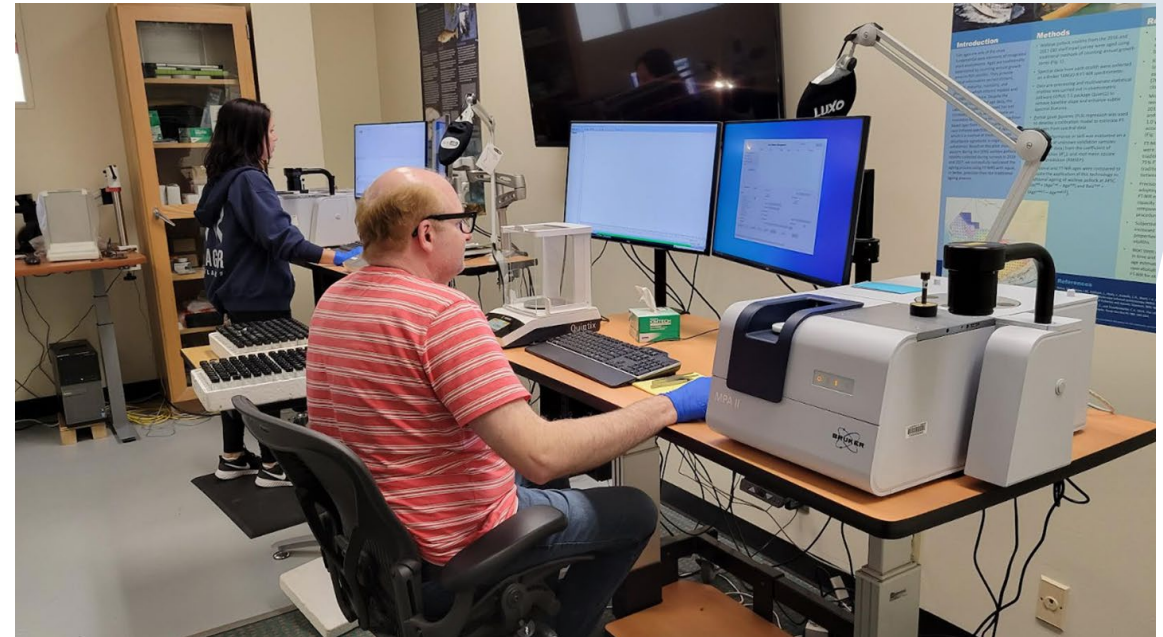
Program Structure

- Research and Production Ageing Teams

- Tom Helser- Program Manager
- Derek Chamberlin- Production Ageing Supervisor
- Research- 6 staff
- Production Ageing- 7 staff

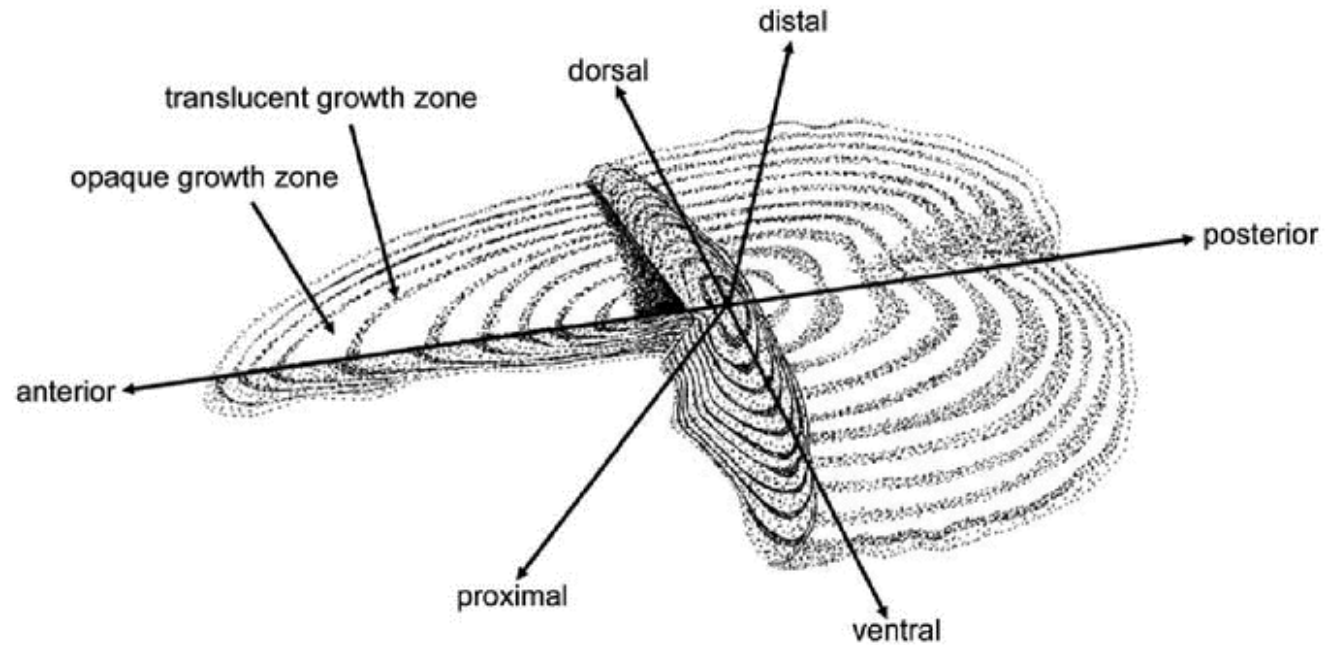
- Recent Program Changes

- 2023 Retirements
 - Delsa Anderl- production ageing supervisor
 - Craig Kastle- age validation
- 2024 Retirement
 - Charlie Piston- production ageing
- 2023 Additions/Changes
 - Derek Chamberlin- production ageing supervisor
 - Jason Conner- 50% production ageing, 50% research
 - Sandi Neidetcher- moved from A&G research team to 50% production ageing



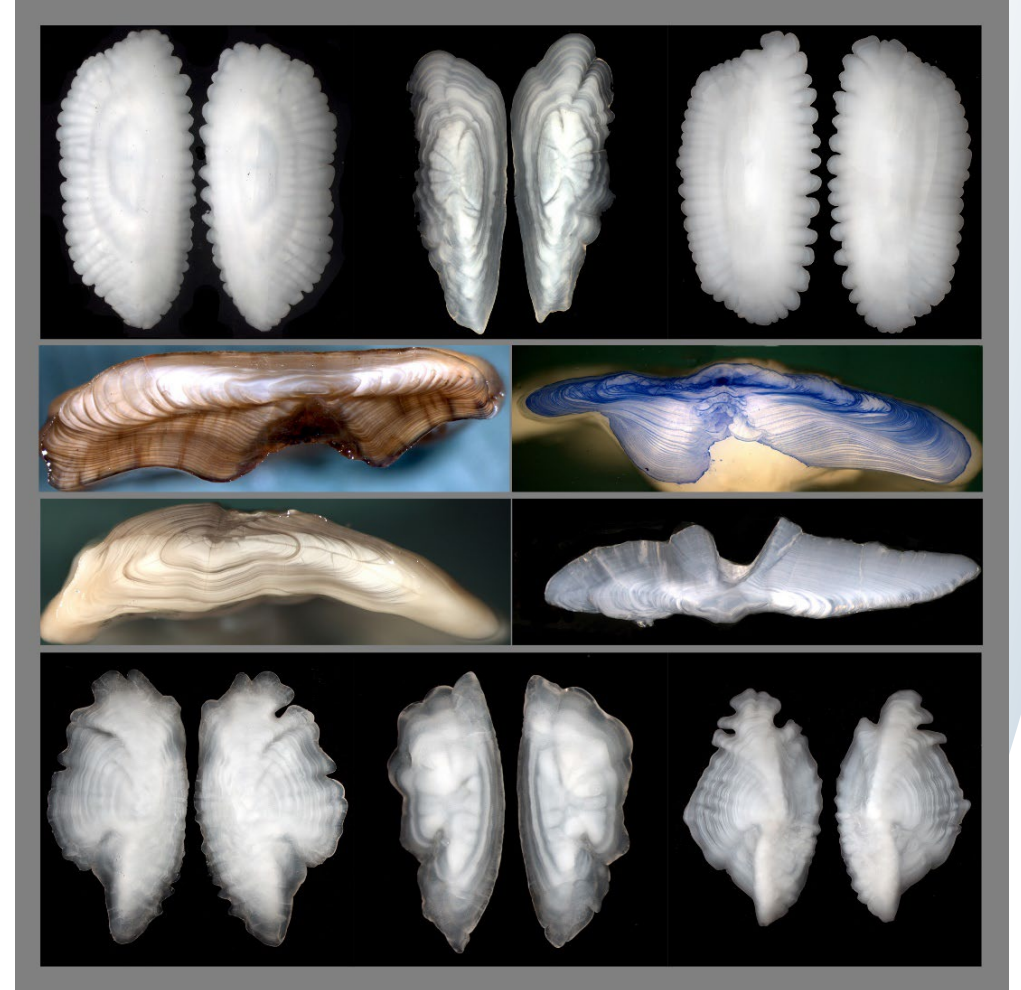
Traditional Microscopic Ageing

- Otoliths
- Processing
 - Break and burn
 - Break and bake
 - Whole otolith
- QA/QC
 - 20% double reads
 - Discrepancy resolution

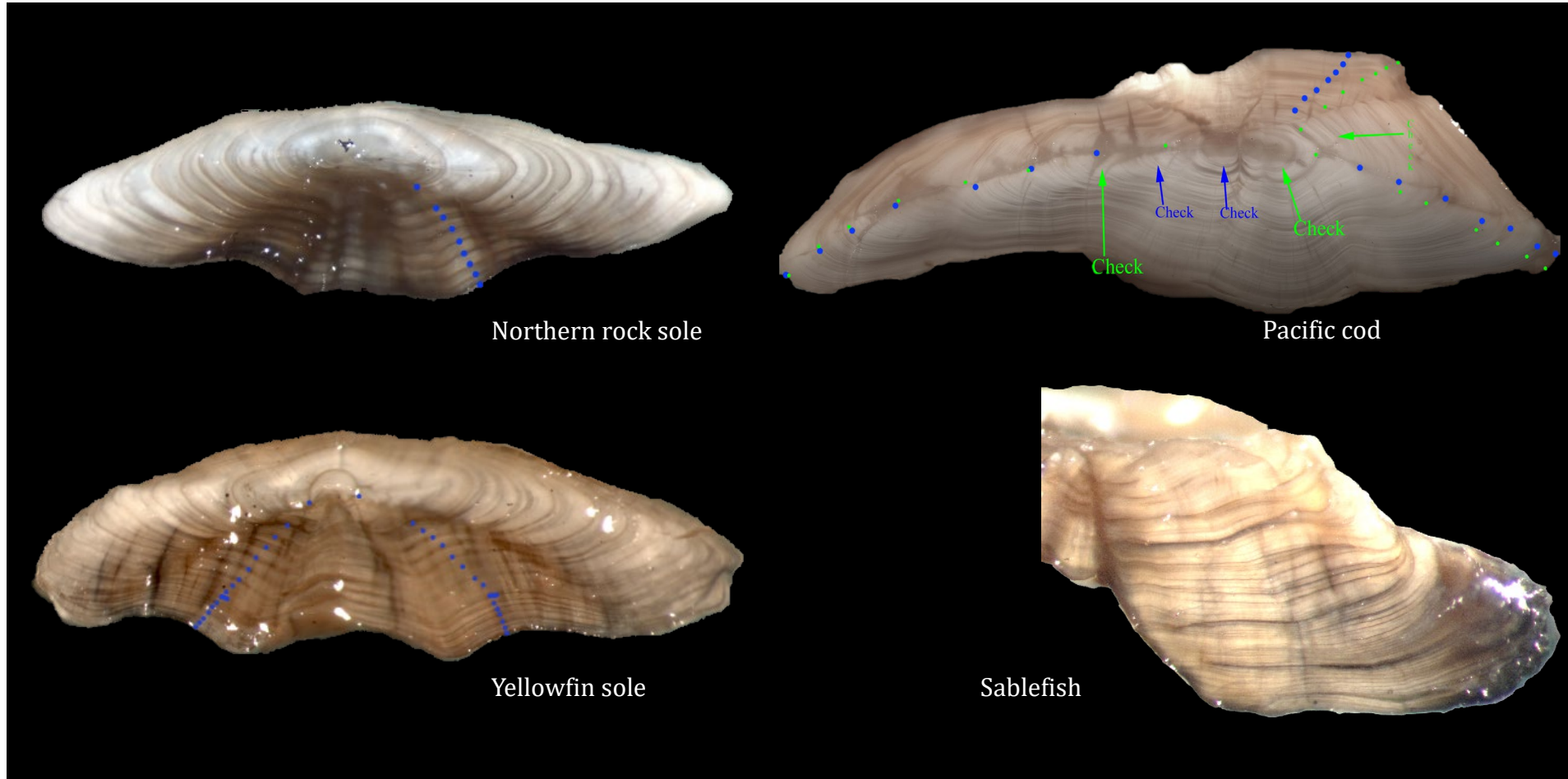


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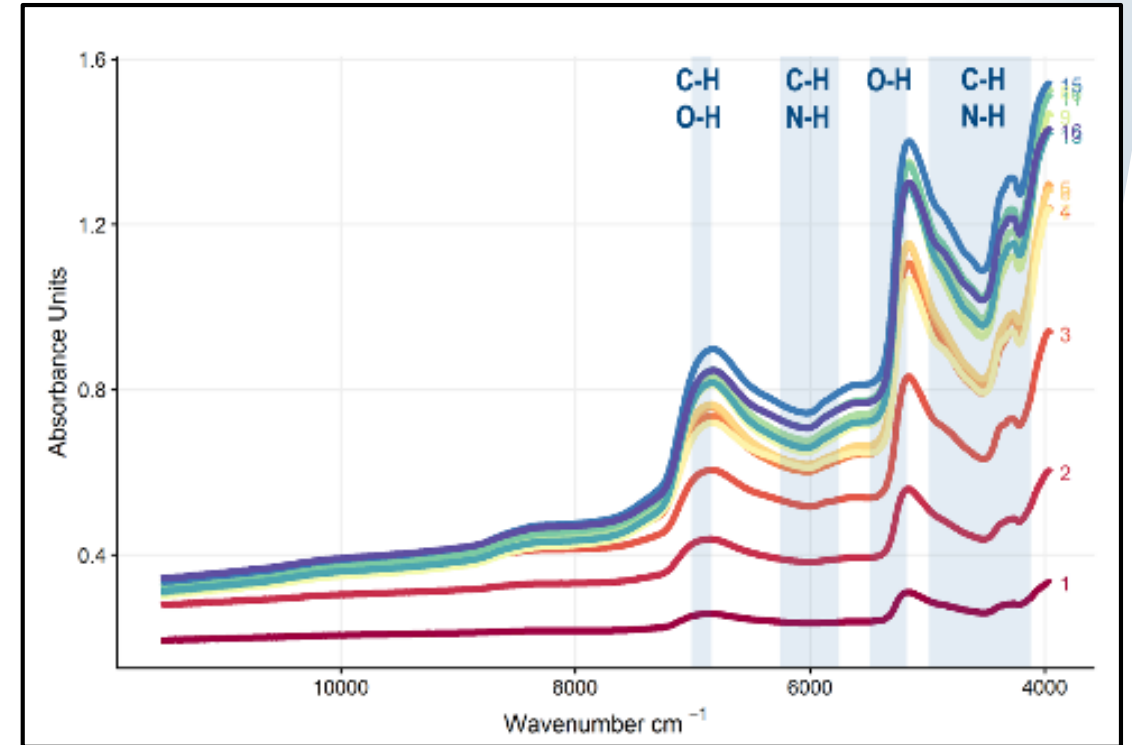
Spectrum of Readability



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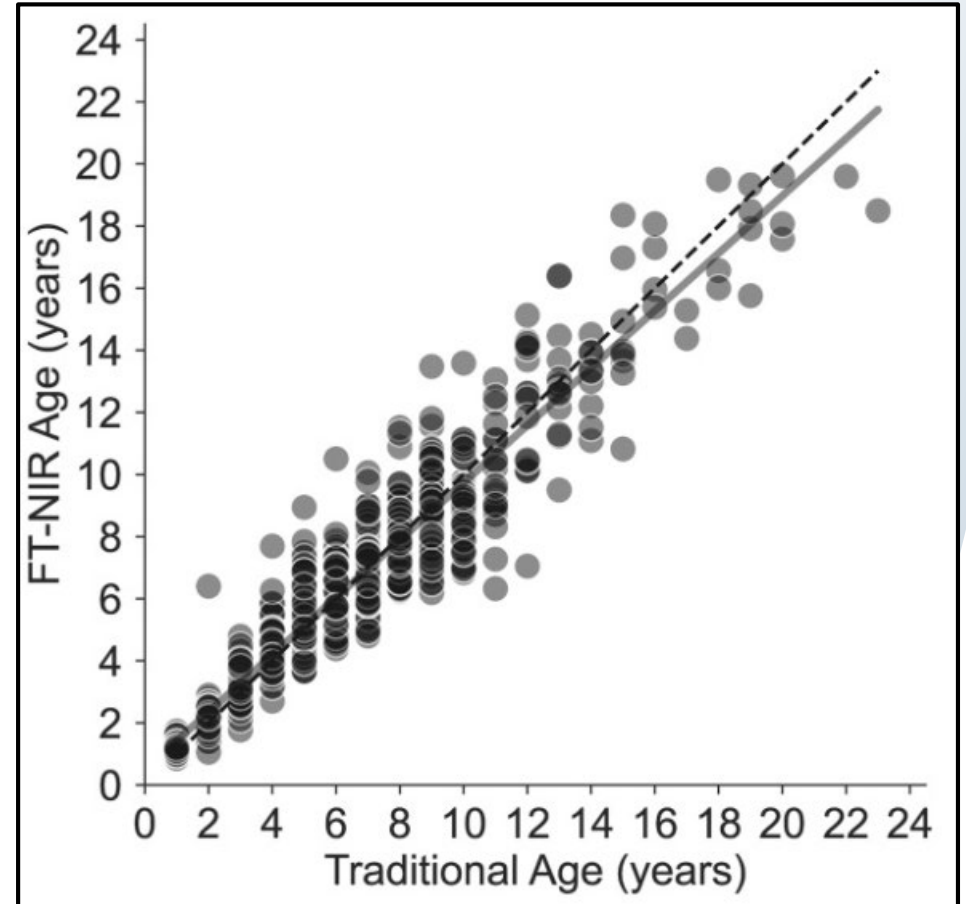
Fourier Transform Near-Infrared Spectroscopy

- Measures sample light absorption
- Convolutional Neural Network Models
 - $R^2 = 0.92$
 - RMSE = 0.91 y
- ~50 samples per hour

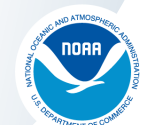


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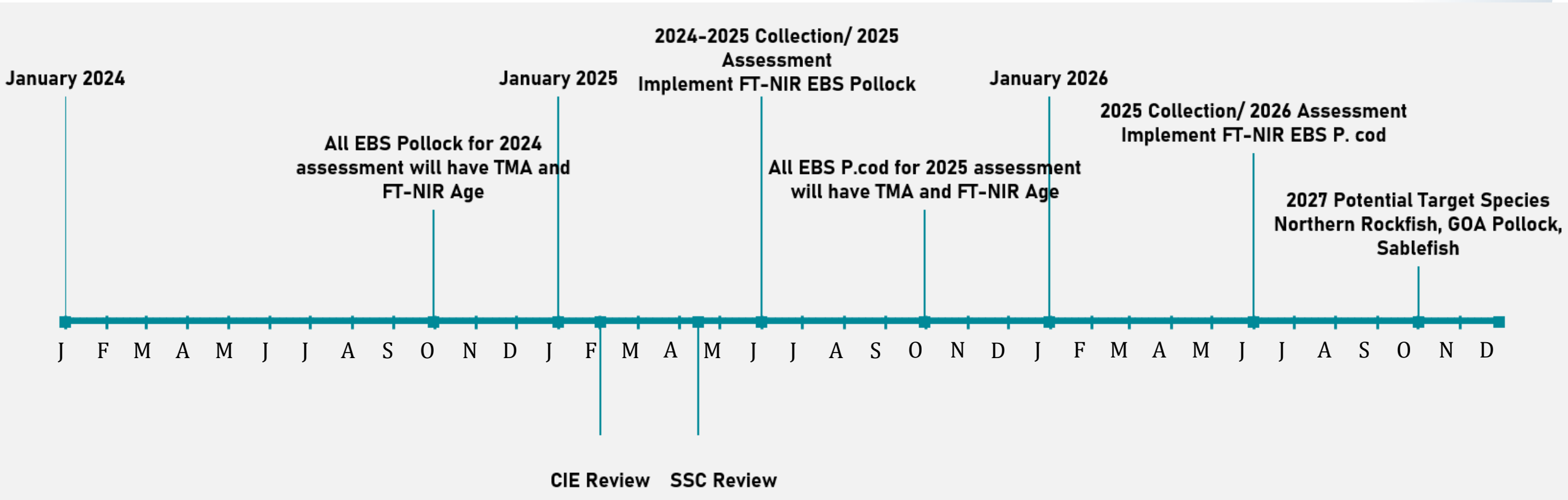


Benson et al., 2023

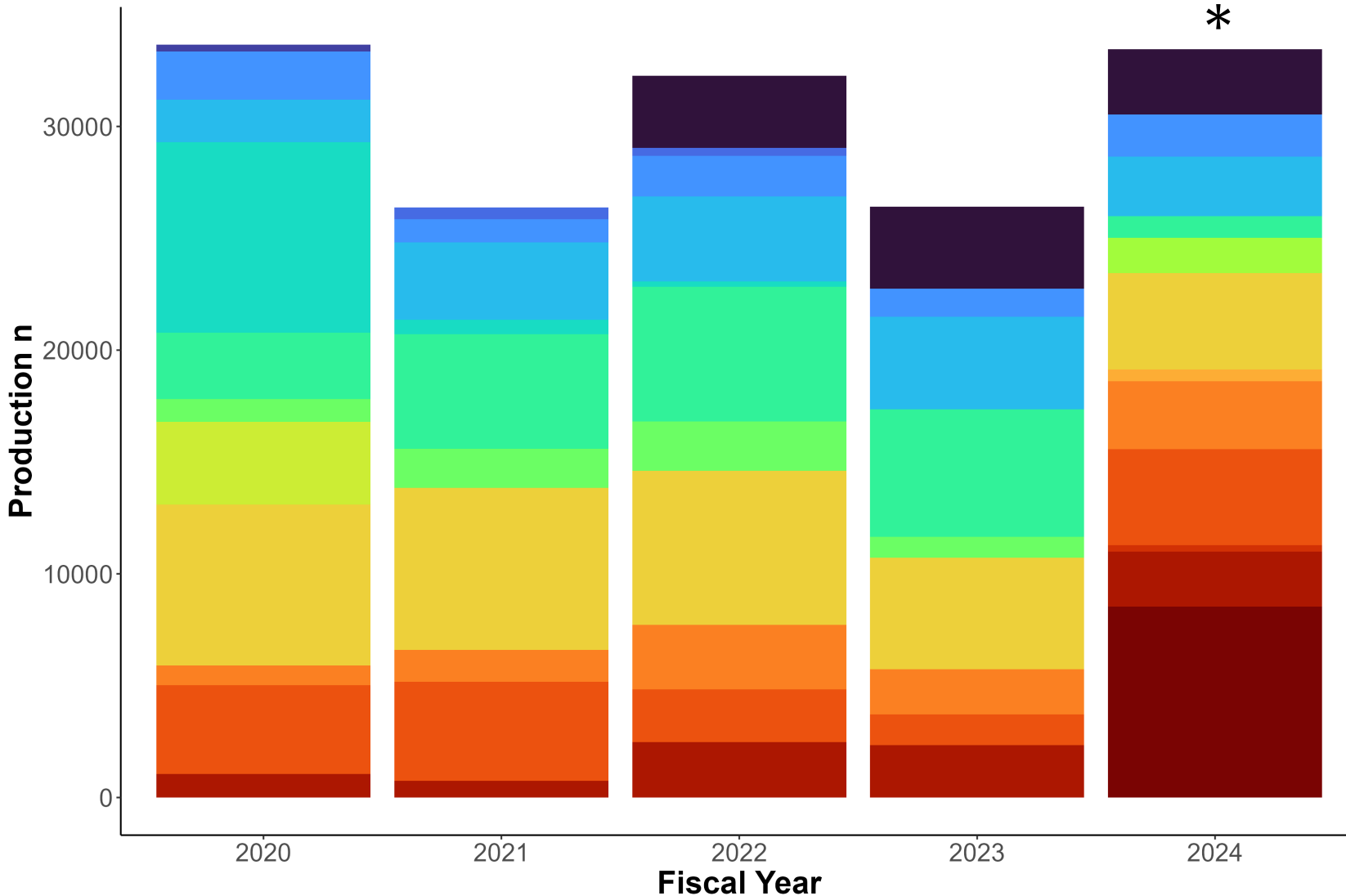


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FT-NIR Timeline

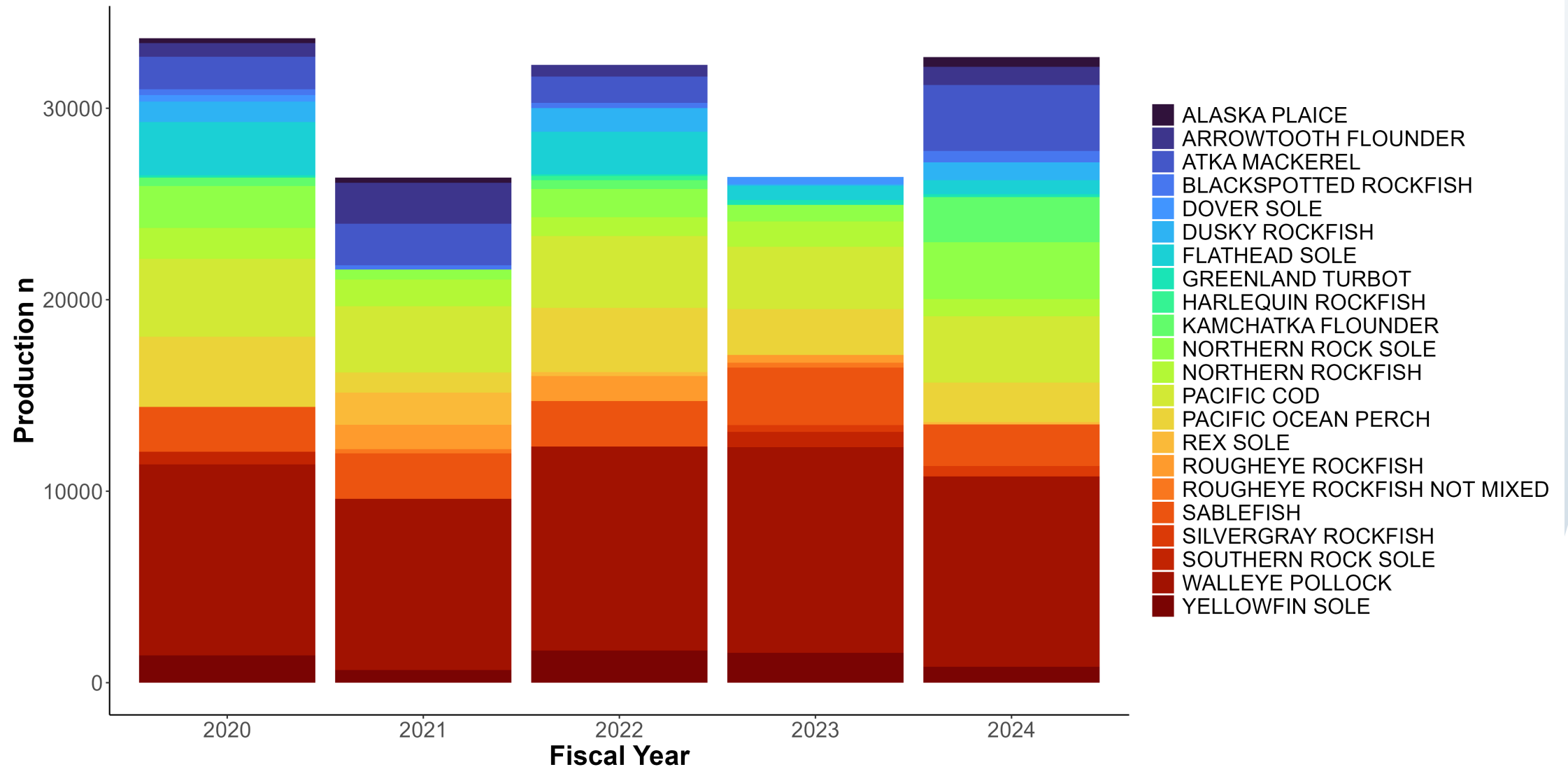


Historical Production Capacity



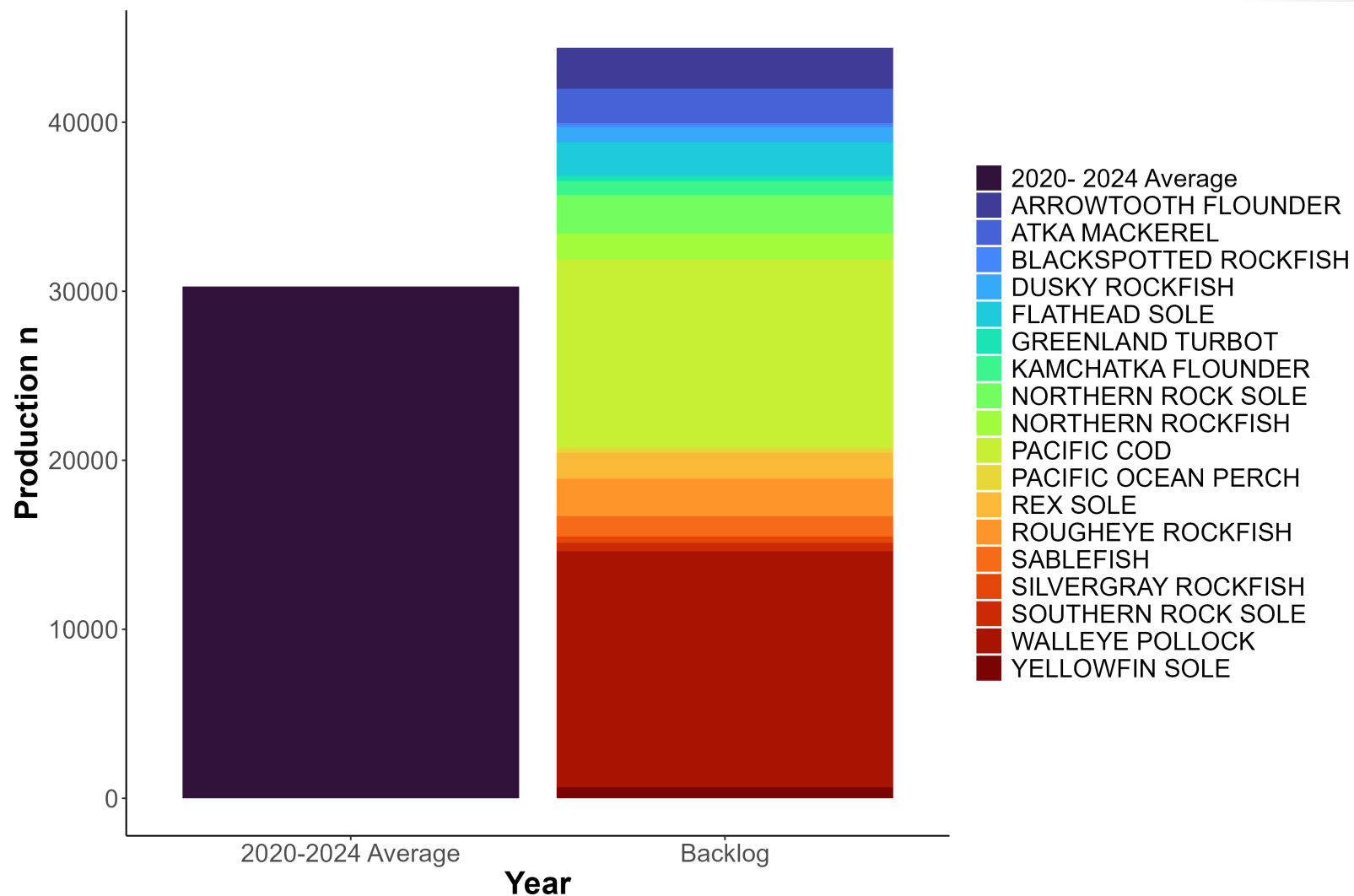
* 2024 includes approximately 8,500 ages that we anticipate releasing between 9/10/24 and 9/30/24.

Historical Production by Species



Backlog

- FY 2024 requests exceeded historical capacity by approximately 40%.
- Collaboration between assessment teams and A&G to prioritize requests was critical.



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Assessment Frequency

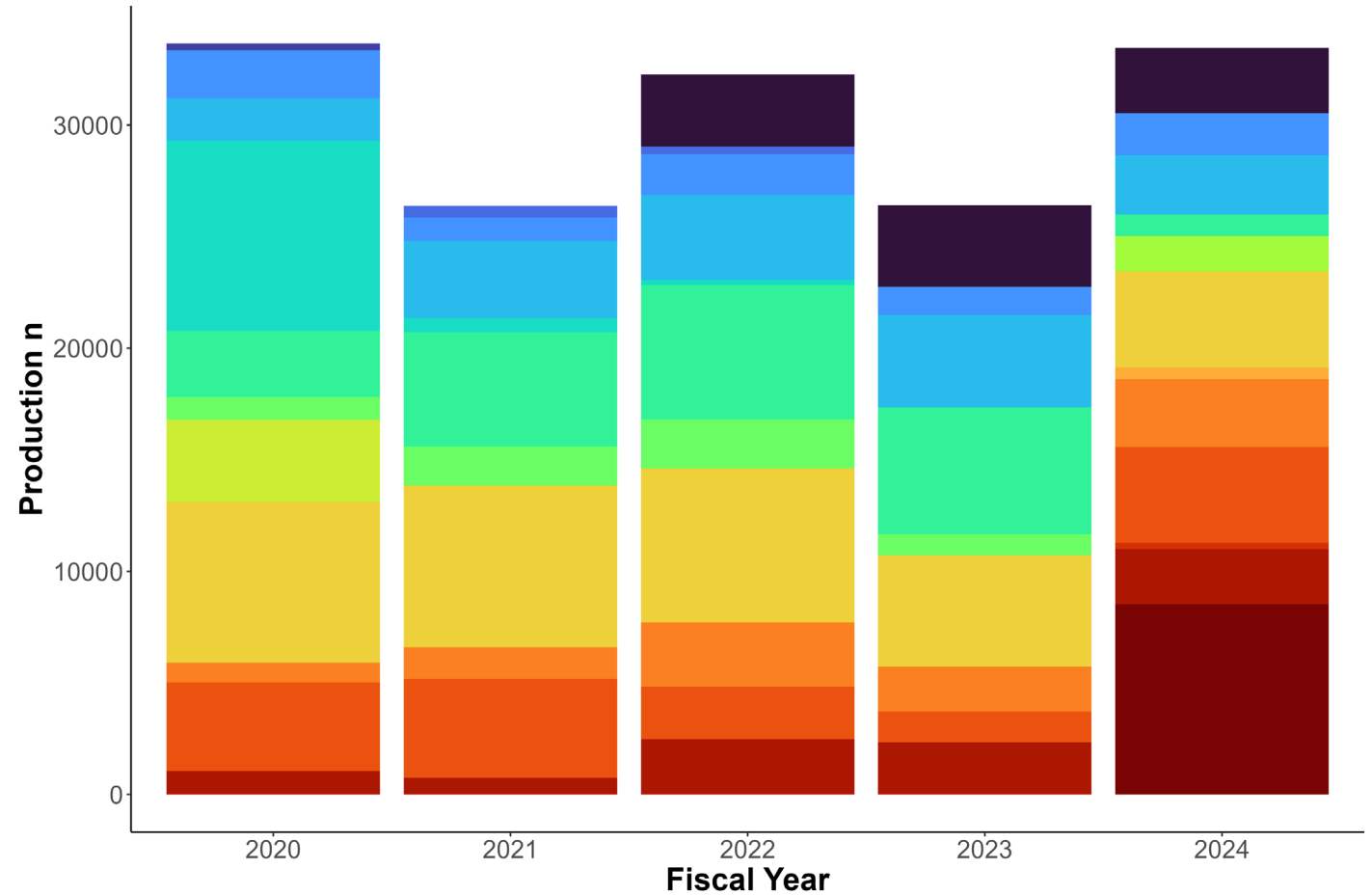
- Reduced frequency does not reduce ageing demand

Assessment	Tier	Former frequency	New frequency
Eastern Bering Sea pollock	1	1	1
Aleutian Islands pollock	3	2	2
Eastern Bering Sea Pacific cod	3	1	1
Aleutian Islands Pacific cod	5	1	1
Sablefish	3	1	1
Yellowfin sole	1	1	1
Greenland turbot	3	2	2
Kamchatka flounder	3	2	2
Northern rock sole	1	2	2
Flathead sole	3	2	4
Alaska plaice	3	2	4
Pacific ocean perch	3	2	2
Rougeye & blackspotted rockfish	3	2	2
Atka mackerel	3	1	2



Projected Capacity

- FY 2025 ~ 30,000 samples
- FY 2026 and beyond
 - Retirements
 - FT-NIR
 - Currently projecting flat capacity



Age and Growth Team

- Kathrin Bayer
- Irina Benson
- John Brogan
- Derek Chamberlin
- Andrew Chin
- Jason Conner
- Chris Gburski
- Esther Goldstein
- Tom Helser
- Brenna Hsieh
- Beth Matta
- Sandi Neidetcher
- Julie Pearce
- Jon Short
- Kali Stone
- Todd TenBrink

