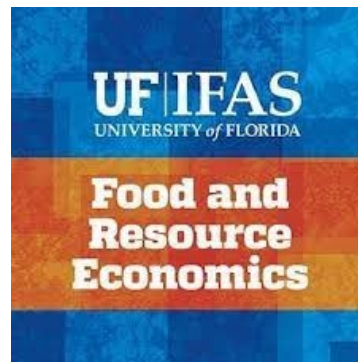


Adaptive Catch Shares

Gulf Council Meeting • Baton Rouge, LA • January 31, 2023

Andrew Ropicki, University of Florida/Florida Sea Grant



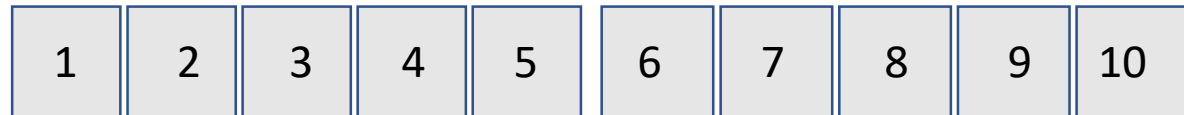
Adaptive Catch Shares

- Designed to address frequently raised issues with catch share programs:
 - Barriers to new entrants
 - One-time free distribution of shares based on catch history during a single review period
 - Absentee ownership
- Cyclically reallocates shares to the participants harvesting fish
- At the end of each cycle a pre-determined portion of shares are reclaimed from each account and redistributed among accounts based on their proportion of landings

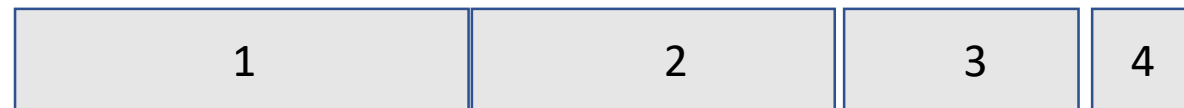
System Design Considerations

Cycle lengths

- Short vs. long



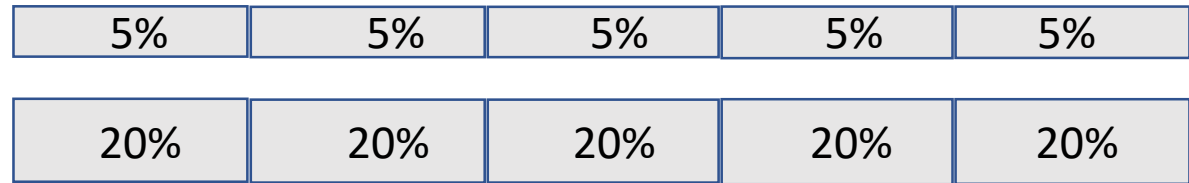
- Constant vs. changing



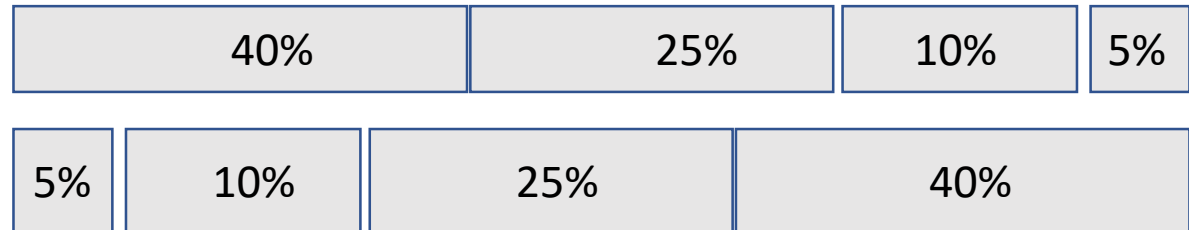
System Design Considerations

- Reclamation proportion

- Small vs. large

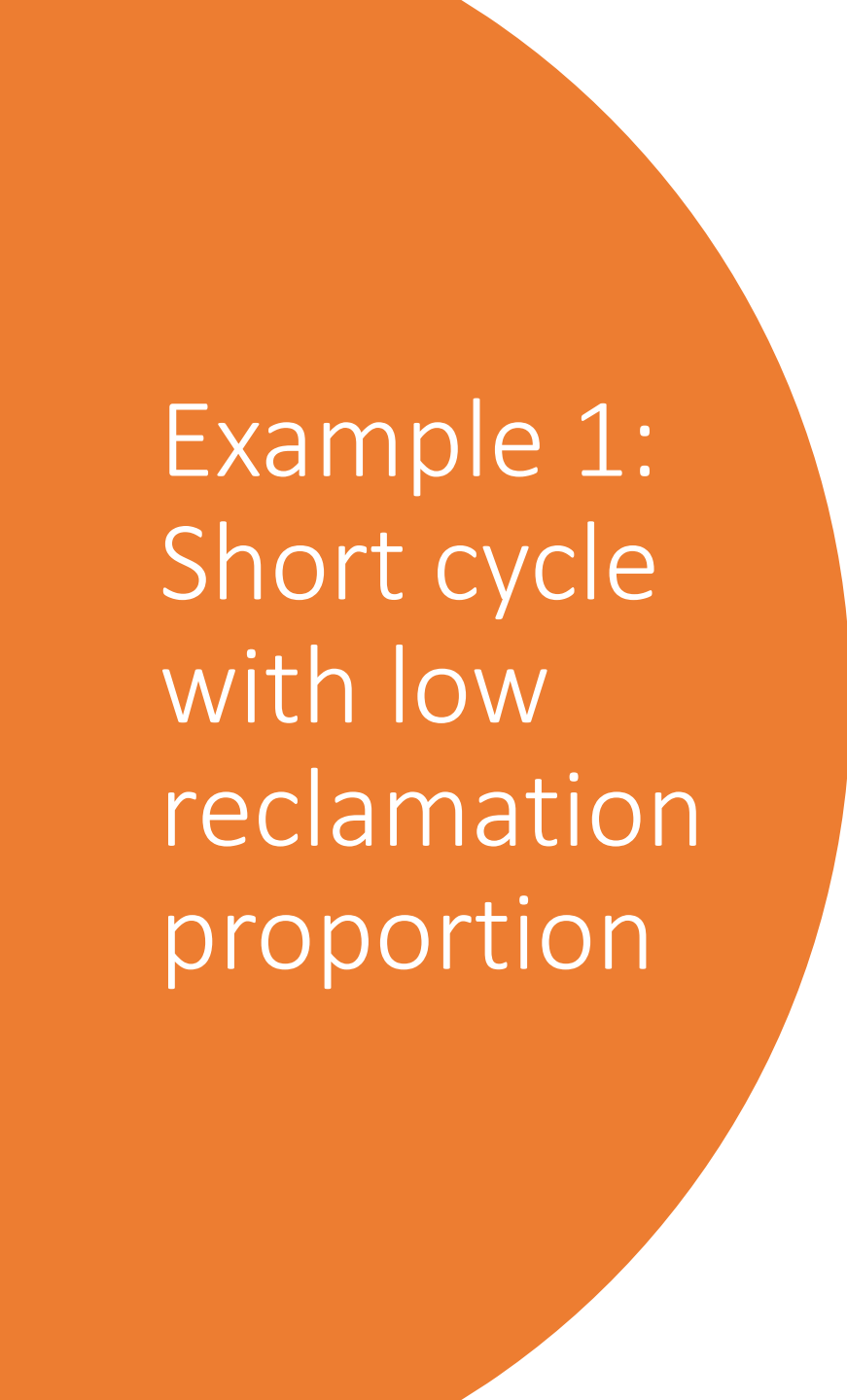


- Constant vs. changing




- Harvest rules for multiyear cycles

- Years to consider (e.g., best years or all years)
 - % of landings vs. # of lbs. landed
 - How to deal with changes in commercial quota
- System design determines how quota markets (share and allocation) will change



Example 1:
Short cycle
with low
reclamation
proportion

- One year cycle
 - 2% reclamation proportion
 - 5 fishers with varying levels of ownership and catch
 - Denominated in share pounds for easy interpretation
- 

Example 1

Participant	Beginning Shares Ownership	Year 1 Landings	Year 1 Reclamation	Year 1 Redistribution	Year 2 Shares	Year 2 Landings	Year 2 Reclamation	Year 2 Redistribution	Year 3 Shares
Fisher 1	50,000	30,000	1,000	600	49,600	50,000	992	1,053	49,661
Fisher 2	20,000	20,000	400	400	20,000	20,000	400	421	20,021
Fisher 3	20,000	0	400	0	19,600	0	392	0	19,208
Fisher 4	10,000	21,640	200	433	10,233	5,000	205	105	10,133
Fisher 5	0	28,360	0	567	567	20,000	11	421	977
Total	100,000	100,000	2,000	2,000	100,000	95,000	2,000	2,000	100,000

Fisherman 1 Year 1 Outcome

- Fisherman 1 started with 50,000 lbs. of share (50% of the total quota)
- 1,000 lbs. of share was reclaimed (2% of 50,000 lbs.)
- Had 30% of total landings so was redistributed 600 lbs. This is 30% of the total redistributed (30% of 2,000 lbs.)
- $50,000 - 1,000 + 600 = 49,600$ lbs. for year 2.

Fisherman 2 Year 1 Outcome

- Fisherman 2 started with 20,000 lbs. of share (20% of the total quota)
- 400 lbs. of share was reclaimed (2% of 20,000 lbs.)
- He had 20% of total landings so was redistributed 400 lbs. This is 20% of the total redistributed (20% of 2,000 lbs.)
- $20,000 - 400 + 400 = 20,000$ lbs. for year 2.

Fisherman 3 Year 1 Outcome

- Fisherman 3 started with 20,000 lbs. of share (20% of the total quota)
- 400 lbs. of share was reclaimed (2% of the 20,000 lbs.)
- Had no landings and as such was not redistributed any share.
- $20,000 - 400 + 0 = 19,600$ lbs. for year 2.

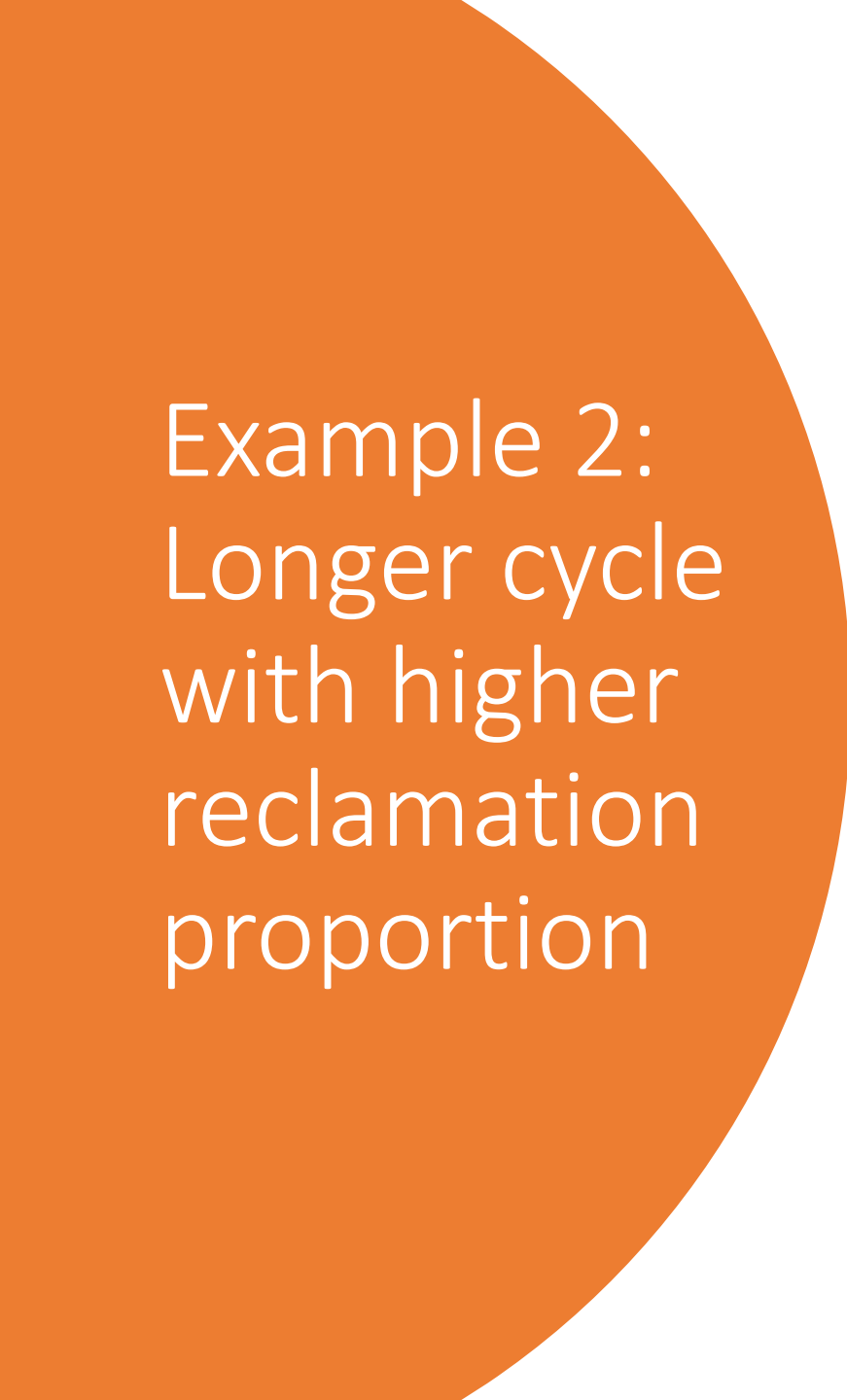
Fisherman 4 Year 1 Outcome

- Fisherman 4 started with 10,000 lbs. of share (10% of the total quota)
- 200 lbs. of share was reclaimed (2% of the 10,000 lbs.)
- Had 21.64% of total landings so was redistributed 433 lbs. of the total redistributed share.
- $10,000 - 200 + 433 = 10,233$ lbs. for year 2.


Fisherman 5 Year 1 Outcome

- Fisherman 5 started with 0 lbs. of share (0% of the total quota)
- Does not have any share to be reclaimed (completely allocation dependent)
- Had 28.36% of total landings so was redistributed 567 lbs. of the total redistributed share.
- $0 - 0 + 567 = 567$ lbs. for year 2.





Example 2:
Longer cycle
with higher
reclamation
proportion

- Five-year cycle
 - 25% reclamation proportion
 - 5 fishers with varying levels of ownership and catch
 - Denominated in share pounds for easy interpretation
- 

Example 2

Participant	Beginning Share Ownership	Year 1 Landings	Year 2 Landing	Year 3 Landings	Year 4 Landings	Year 5 Landings	Total Pounds Landed	Proportional Landings	Reclamation	Redistributed	Year 6 Share Ownership
Fisherman 1	50,000	30,000	35,000	40,000	35,000	25,000	165,000	34.02%	12,500	8,505	46,005
Fisherman 2	20,000	20,000	20,000	20,000	20,000	20,000	100,000	20.62%	5,000	5,155	20,155
Fisherman 3	20,000	0	0	0	0	0	0	0.00%	5,000	0	15,000
Fisherman 4	10,000	25,000	22,500	20,000	20,000	22,500	110,000	22.68%	2,500	5,670	13,170
Fisherman 5	0	25,000	22,500	20,000	20,000	22,500	110,000	22.68%	0	5,670	5,670
Total	100,000	100,000	100,000	100,000	95,000	90,000	485,000	100%	25,000	25,000	100,000

Example 2 Cont'd.

Participant	Initial Ownership	Reclamation	5 Year Landings	Proportional Landings	Redistribution	Year 6 Share Ownership
Fisherman 1	50,000	$50,000 * .25 = 12,500$	165,000	$165,000/485,000 = 34.02\%$	$34.02\% * 25,000 = 8,505$	$50,000 - 12,500 + 8,505 = 46,005$
Fisherman 2	20,000	$20,000 * .25 = 5,000$	100,000	$100,000/485,000 = 20.62\%$	$20.62\% * 25,000 = 5,155$	$20,000 - 5,000 + 5,155 = 20,155$
Fisherman 3	20,000	$20,000 * .25 = 5,000$	0	$0/485,000 = 0\%$	$0\% * 25,000 = 0$	$20,000 - 5,000 + 0 = 15,000$
Fisherman 4	10,000	$10,000 * .25 = 2,500$	110,000	$110,000/485,000 = 22.68\%$	$22.68\% * 25,000 = 5,670$	$10,000 - 2,500 + 5,670 = 13,170$
Fisherman 5	0	$0 * .25 = 0$	110,000	$110,000/485,000 = 22.68\%$	$22.68\% * 25,000 = 5,670$	$0 - 0 + 5,670 = 5,670$
Total	100,000	25,000	485,000	100%	25,000	100,000

Potential Impacts on Quota Markets



Selling allocation becomes less attractive (at a given allocation price)



Buying allocation (and harvesting) becomes more attractive (at a given allocation price)



Share ownership by non-fishers becomes less attractive and the allocation market may become “thinner” (at least initially)



Potential to increase share ownership and harvest consolidation

Investor Return Example

- An investor should be indifferent between an annual cycle adaptive catch share system and a traditional catch share system if the allocation price increases by an amount equal to the reclamation rate multiplied by the market share price
- Pre-Adaptive Catch Shares:
 - Market Share Price - \$25/lb, Market Allocation Price \$2.00/lb, Investor owns 100 lbs.
 - Assumes no change in quota or prices
- $Return = \frac{(Share\ Value_{EOY} - Share\ Value_{BOY}) + Allocation\ Income}{Share\ Value_{BOY}} = \frac{\$200}{\$2,500} = 8\%$
- With Adaptive Catch Shares:
 - Market Share Price = \$25/lb, Market Allocation Price \$2.25/lb, Reclamation Rate – 1%
- $Return = \frac{(Share\ Value_{EOY} - Share\ Value_{BOY}) + Allocation\ Income}{Share\ Value_{BOY}} = \frac{(\$2,475 - \$2,500) + \$225}{\$2,500} = 8\%$

Ownership Change Rate – Annual Cycle

- Example for an investor starting with 10,000 lbs. of share and an allocation dependent fisher that lands 10,000 lbs. of fish per year

Year	1% Reclamation Rate		2% Reclamation Rate		3% Reclamation Rate	
	Investor	Allocation Dependent Fisher	Investor	Allocation Dependent Fisher	Investor	Allocation Dependent Fisher
1	10,000	0	10,000	0	10,000	0
2	9,900	100	9,800	200	9,700	300
3	9,801	199	9,604	396	9,409	591
4	9,703	297	9,412	588	9,127	873
5	9,606	394	9,224	776	8,853	1,147
6	9,510	490	9,039	961	8,587	1,413
7	9,415	585	8,858	1,142	8,330	1,670
8	9,321	679	8,681	1,319	8,080	1,920
9	9,227	773	8,508	1,492	7,837	2,163
10	9,135	865	8,337	1,663	7,602	2,398
11	9,044	956	8,171	1,829	7,374	2,626

Ownership Change Rate – Five Year Cycle

- Example for an investor starting with 10,000 lbs. of share and an allocation dependent fisher that lands 10,000 lbs. of fish per year

Year	15% Reclamation Rate		25% Reclamation Rate		40% Reclamation Rate	
	Investor	Allocation Dependent Fisher	Investor	Allocation Dependent Fisher	Investor	Allocation Dependent Fisher
1	10,000	0	10,000	0	10,000	0
2	10,000	0	10,000	0	10,000	0
3	10,000	0	10,000	0	10,000	0
4	10,000	0	10,000	0	10,000	0
5	10,000	0	10,000	0	10,000	0
6	8,500	1,500	7,500	2,500	6,000	4,000
7	8,500	1,500	7,500	2,500	6,000	4,000
8	8,500	1,500	7,500	2,500	6,000	4,000
9	8,500	1,500	7,500	2,500	6,000	4,000
10	8,500	1,500	7,500	2,500	6,000	4,000
11	7,225	2,775	5,625	4,375	3,600	6,400

Concluding Remarks on Adaptive Catch Shares



Adaptive catch shares would lead to changes in share and allocation markets



Potential avenue for allocation dependent fishers to acquire share



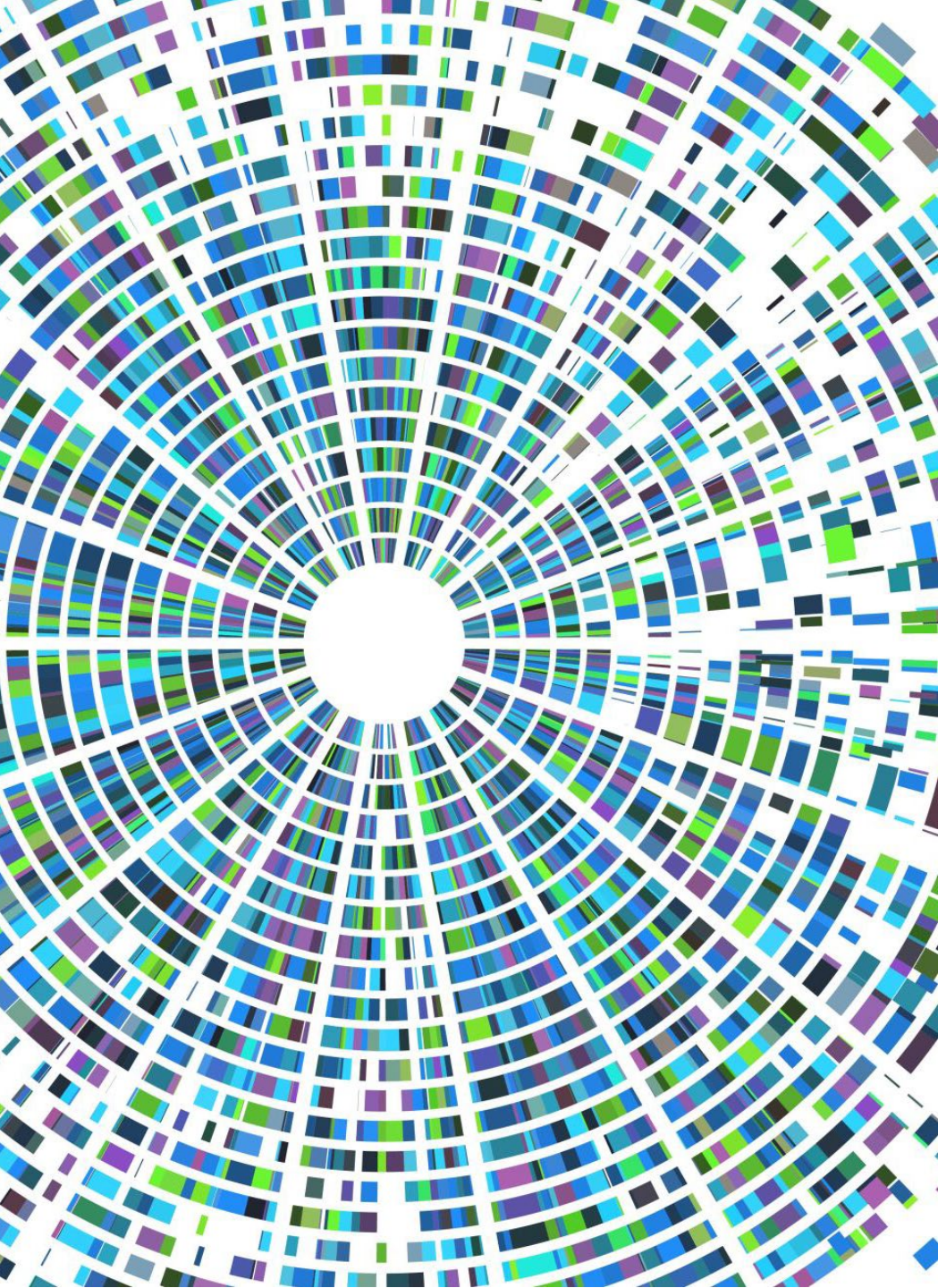
Could lead to quota and harvest consolidation



Program design details would significantly impact outcomes for participants

Gulf of Mexico IFQ Pricing Surveys and Reports

- UF/Florida Sea Grant effort employs industry focused survey to provide timely information on share, allocation, and ex-vessel prices
- Surveys are emailed to IFQ participants quarterly and reports on recent price trends are released the following month
- All data is reported anonymously
- Two reports were completed in 2022 and the first 2023 survey is currently outstanding (please sign up and take it by Feb 15th!)
- We need more industry members to take the surveys. Those interested can sign up to receive surveys by email at the [FSG Website](#) and look at past reports.



Questions/Comments

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