C5 BERING SEA GREENLAND TURBOT LONGLINE POTS

SAM CUNNINGHAM & MASON SMITH, APRIL 2022

PURPOSE & NEED

- Mitigate killer whale depredation that has impacted the Greenland turbot hook-and-line (HAL) fishery – No directed fishing since 2020
- Provide opportunity for non-trawl vessels to revive participation in turbot – "Allow this fishery to resume"
- Potential for reduced unobserved mortality from depredation to benefit the turbot stock assessment
- "New entrants" using longline pots "could disrupt" HAL CP sector and A80 trawl sector (added in Oct. 2022)

ALTERNATIVES

Alternative 1: No Action (longline pot gear not authorized for Greenland turbot directed fishing)

Alternative 2: Authorize longline pot gear for directed fishing in Bering Sea – Any vessel with a BS/non-trawl LLP license

***Alternative 3:** Authorize longline pot gear for directed fishing in Bering Sea – Only vessels with "HAL CP Sector" LLP licenses

"HAL CP Sector" (679.2) = BSAI Pacific cod HAL CP = FLC

***Option:** Remove 9-inch maximum tunnel opening restriction when directed fishing for Greenland turbot in the BS

(Option can be selected with either Alt. 2 or Alt. 3)

NOTES ON ALTERNATIVES

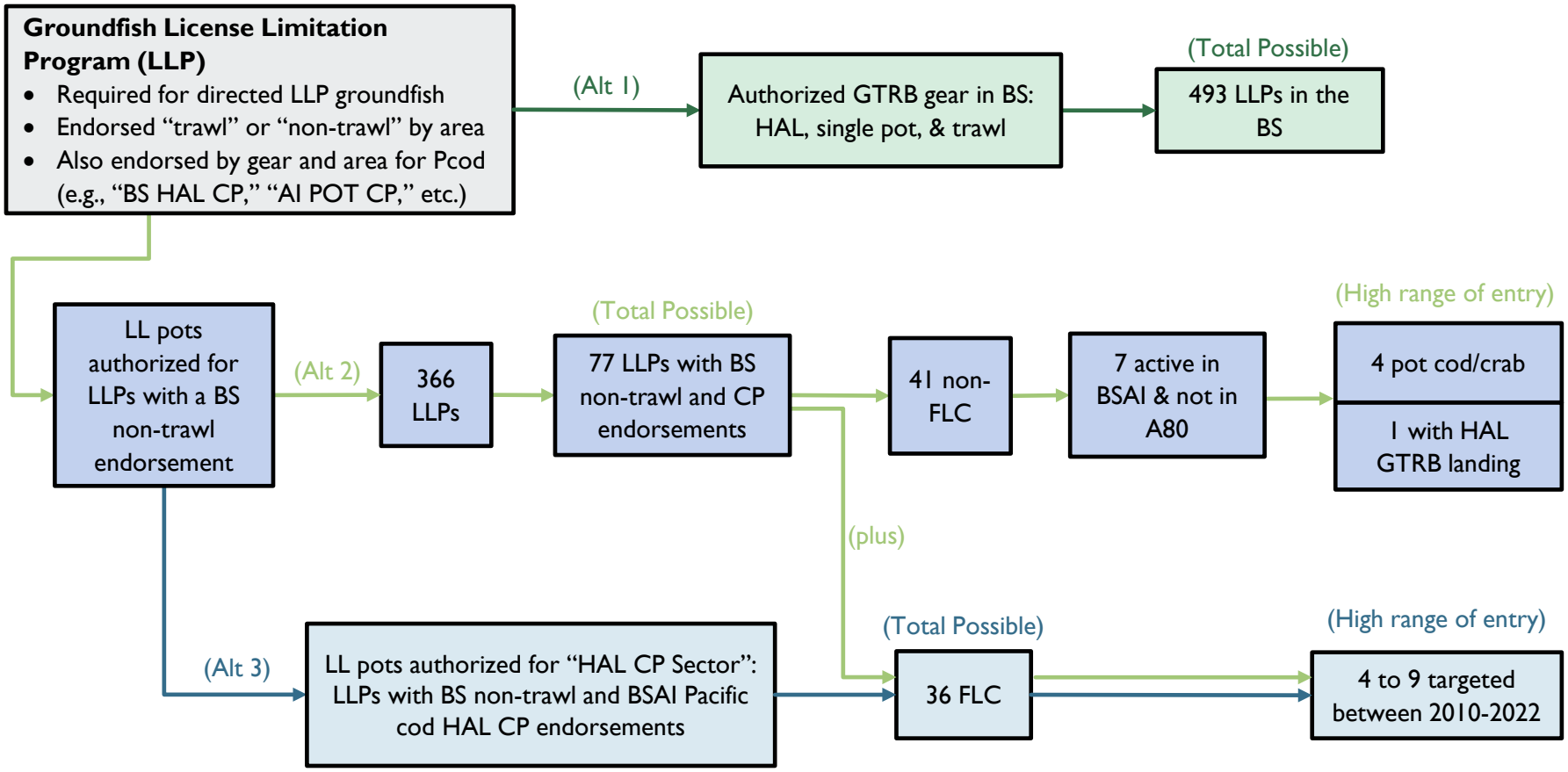
Directed fishing *(def.)*: Retention above the maximum retainable amount

Regulatory amendment: Add exception under 'Gear Limitations'. Non-turbot (and non-IFQ) species can be retained up to MRA (unfished sablefish IFQ onboard may need to be ≥ directed fishing amount to retain sablefish)

Retention and ICAs: Regulatory discards of non-turbot species (or retention up to MRA) accrue to incidental catch allowances. Level at which ICA needs to be set affects future TACs (e.g. PCod HAL/Pot). ICA for other flatfish targeted by trawl sector can affect timing of directed fishery closures for A80 targets (e.g. arrowtooth and Kamchatka flounders)

Pot limits: None in current regulation; none proposed

Ability to participate: Analysis focuses on CPs, but CVs also authorized under Alt. 2


Groundfish License Limitation Program (LLP)
• Required for directed LLP groundfish
• Endorsed "trawl" or "non-trawl" by area
• Also endorsed by gear and area for Pcod (e.g., "BS HAL CP," "AI POT CP," etc.)
(Alt 1)
Authorized GTRB gear in BS: HAL, single pot, & trawl
(Total Possible)
493 LLPs in the BS
LL pots authorized for LLPs with a BS non-trawl endorsement
(Alt 2)
366 LLPs
(Total Possible)
77 LLPs with BS non-trawl and CP endorsements
41 non-FLC
7 active in BSAI & not in A80
(High range of entry)
4 pot cod/crab
1 with HAL GTRB landing
(plus)
(Alt 3)
LL pots authorized for "HAL CP Sector": LLPs with BS non-trawl and BSAI Pacific cod HAL CP endorsements
(Total Possible)
36 FLC
(High range of entry)
4 to 9 targeted between 2010-2022

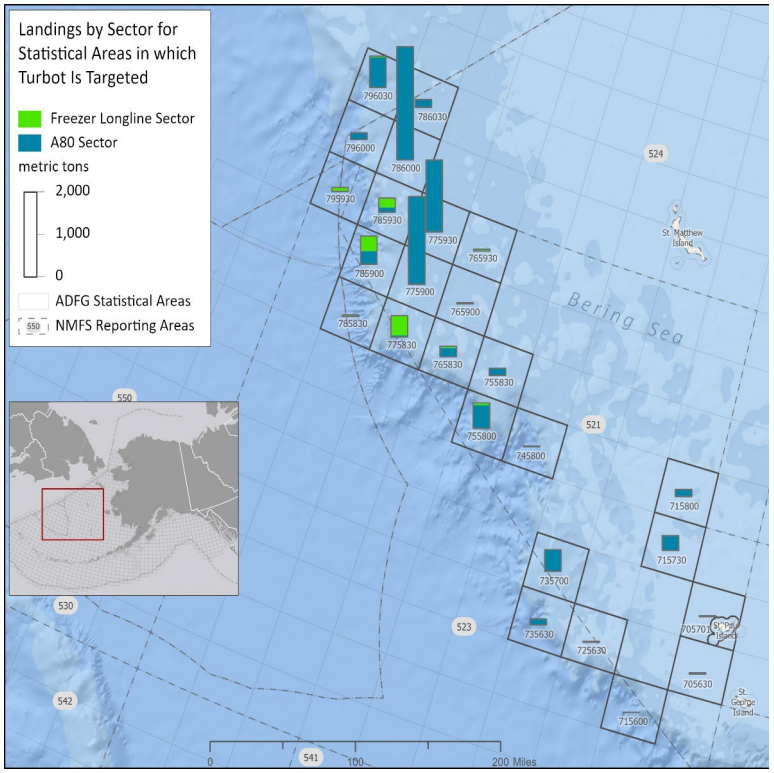
FISHERY DESCRIPTION SUMMARY

- Season: May 1 – Dec. 31 (non-CDQ); typically fished June-August
- FLC and A80 cooperatives have a voluntary, non-regulatory TAC sharing agreement for BS turbot
- Peak # vessels targeting turbot since 2013: HAL CP – 5; Trawl – 7
- Non-CDQ TAC utilization (all gear): 90%+ until 2016; 40-70% in 2017-19; <40% in 2020-22
- HAL CP is a cod-focused sector; GT accounts for ~10% of gross rev. for targeting vessels; CDQ ownership interest in LLPs and vessels
- Subset of A80 vessels that fish turbot make <10% gross rev.; also use directed turbot fishery to go deeper and avoid PCod & other bycatch

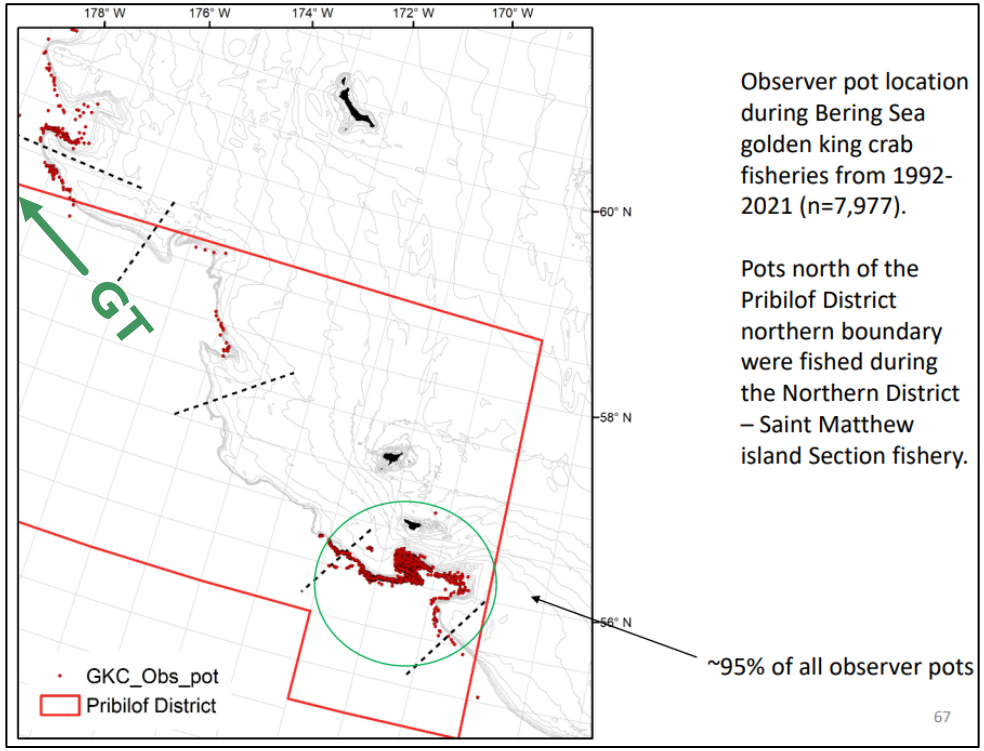
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BS Non-CDQ ITAC	*3,587*	*2,975*	*5,296*	*1,369*	*1,410*	*2,081*	*2,272*	*3,719*	*4,356*	*4,356*	*4,356*	*4,356*	*4,709*
Total Catch Retained	1,281	1,631	1,369	555	610	1,042	943	922	249	519	272	0.3	0.0
Retained in Target	1,177	1,503	1,293	548	600	1,032	889	815	166	474	221	0	0
% in Target	92%	92%	94%	99%	98%	99%	94%	88%	67%	91%	81%	0%	0%
#Vessels Retaining	23	17	16	11	12	9	11	16	17	12	13	4	0
#Vessels Targeting	9	8	7	3	3	3	5	4	3	3	4	0	0
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Total Catch Discarded	18	12	14	15	19	23	40	53	15	19	10	9	10
Discarded in Target	6	5	7	12	15	9	13	14	1	4	1	0	0
% in Target	32%	40%	54%	82%	82%	42%	33%	27%	8%	23%	7%	0%	0%

HAL CPs targeting/retaining BS turbot – Table 3-1, p. 42

FISHERY DESCRIPTION SUMMARY



Cumulative turbot target catch by gear, 2017-2021
Figure 3-1, p. 46



Location of observed pot hauls in BS Golden King Crab fishery: 1992-2021 (n=7,977)

EVIDENCE OF WHALE DEPREDATION

SURVEY EVIDENCE

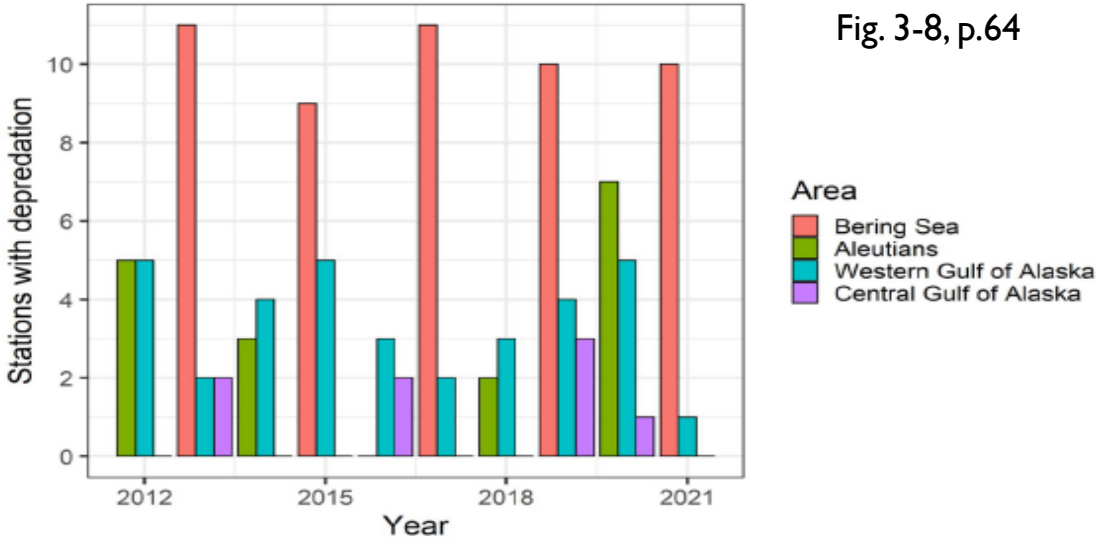
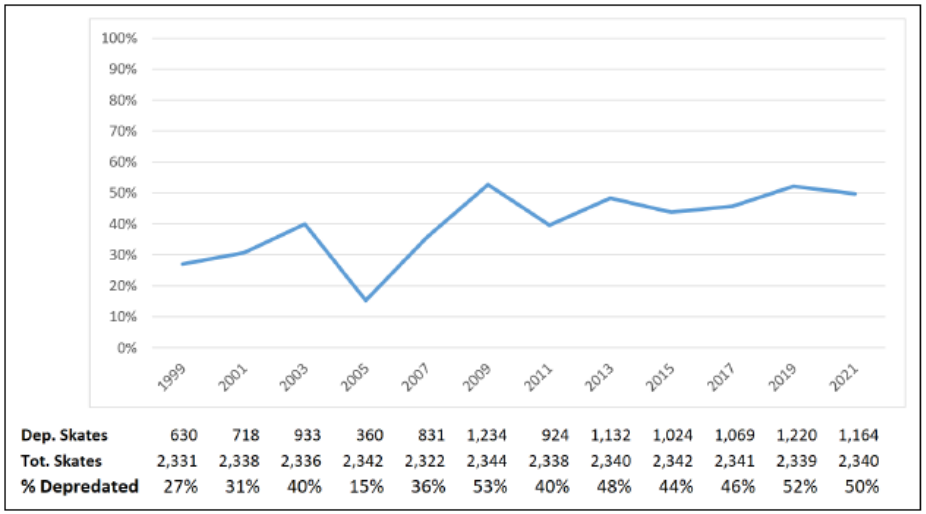


Fig. 3-8, p.64



Dep. Skates	630	718	933	360	831	1,234	924	1,132	1,024	1,069	1,220	1,164
Tot. Skates	2,331	2,338	2,336	2,342	2,322	2,344	2,338	2,340	2,342	2,341	2,339	2,340
% Depredated	27%	31%	40%	15%	36%	53%	40%	48%	44%	46%	52%	50%

Fig. 3-9, p.64

EVIDENCE OF WHALE DEPREDATION

FISHERY EVIDENCE

Table 3-11 Estimated frequency of killer whale depredation on Bering Sea hook-and-line CP hauls based on observer data, 2011 through 2022 (Source: NMFS FMA Division)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total hauls	13,264	14,219	14,144	16,192	15,029	13,636	12,203	9,008	7,083	5,548	4,461	5,968
% Total haul *gear* monitored for marine mammals	25.3	23.9	23.5	24.2	24.4	21.5	22.0	20.4	17.2	18.2	17.1	17.6
#hauls feeding on catch, on discards, and/or deterre	92	100	107	92	102	209	144	102	103	79	45	29
#hauls deterred	17	29	10	2	13	37	25	24	5	13	1	0
#hauls feeding on discards	8	16	5	2	6	7	1	1	3	0	0	6
#hauls feeding on catch	83	87	98	89	84	179	137	92	99	78	44	23
Estimated % hauls with ≥ 1 mammal interactions	**2.7**	**2.9**	**3.2**	**2.3**	**2.8**	**7.1**	**5.4**	**5.5**	**8.5**	**7.8**	**5.9**	**2.8**

Table 3-12 Number of instances that an observer noted a species as "depredated" by killer whales during Bering Sea & Aleutian Islands hook-and-line CP hauls, 2011 through 2022 (Source: NMFS FMA Division)

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	%
Greenland turbot	22	39	24	12	20	68	59	49	37	26			356	31%
Kamchatka/ATF/Gturbot (unident.)	42	24	15	18	19	65	39	21	27	13	3	1	287	25%
Halibut	12	14	50	44	44	23	36	3	2	21	11	11	271	24%
Sablefish	15	10	6	6	3	8	1	12		4	30	8	103	9%
Pacific cod	3	1	3	10	3	9	1	4	8	11		3	56	5%
Flatfish (unidentified)	5	8	6	3	6	2		1	20	3			54	5%
Unidentified	1				1	7		2	5				16	1%
Other	1			1			1						3	0%
Grand Total	**101**	**96**	**104**	**94**	**96**	**182**	**137**	**92**	**99**	**78**	**44**		**1,146**	

ENVIRONMENTAL ASSESSMENT SUMMARY

- Presumes restoration of fishery participation in the range of 4-9 non-trawl vessels (*could* be a combination of “historical” and “new”); low end of that range is more likely
- Timing of effort may spread out; reduced unobserved turbot mortality; increased TAC utilization relative to status quo (No Action)
- Fishing footprint: no change expected; no data for objective forecast
- Fishery remains constrained by existing regulations concerning location, timing, PSC, bycatch limits, and all other accountability measures
- Non-target spp.: reduced grenadier; some indications of flounders, sablefish, halibut, and Pcod; little indication of octopus and crab; escape rings and sock tunnels may be useful
- Decreased whale depredation; same or possibly fewer vertical lines; less concentrated fishing effort; unknown effect of “slinky” pots vs. other configs.
- Reduction in baited hooks may reduce marine mammal interactions and likely reduces seabird interactions

COMPARISON OF ALTERNATIVES (SEC. 4)

Alternative 1 (No Action)

- Zero near/medium-term outlook for non-trawl target fishery. Effort to restart HAL fishery would face high operating costs and low CPUE. This is either a loss relative to Purpose & Need or a loss relative to Action Alts.
- Previously, 3-5 cooperatively affiliated non-trawl CPs generating ~5% to 15% of annual gross revenues from BS Greenland turbot, and a fishery that – all else equal – was open, manageable, and not having negative external impacts on other gear sectors or other fisheries altogether
- Most economic/social impacts are localized to direct participants. Impacts more “marginal” than eliminating vessels from the fleet. Assessed in the setting of general contraction in the HAL CP Sector fleet (~17-19 vessels).
- Potential for ongoing “stranded” turbot TAC within the non-trawl component of the FLC/A80 agreement
- Lack of fishery-dependent scientific data… or presence of unobserved/unaccounted mortality due to depredation
- Indirect benefit to A80 turbot participants, but other non-regulatory constraints on turbot TAC utilization remain in place

COMPARISON OF ALTERNATIVES (4.3)

Alternatives 2 & 3

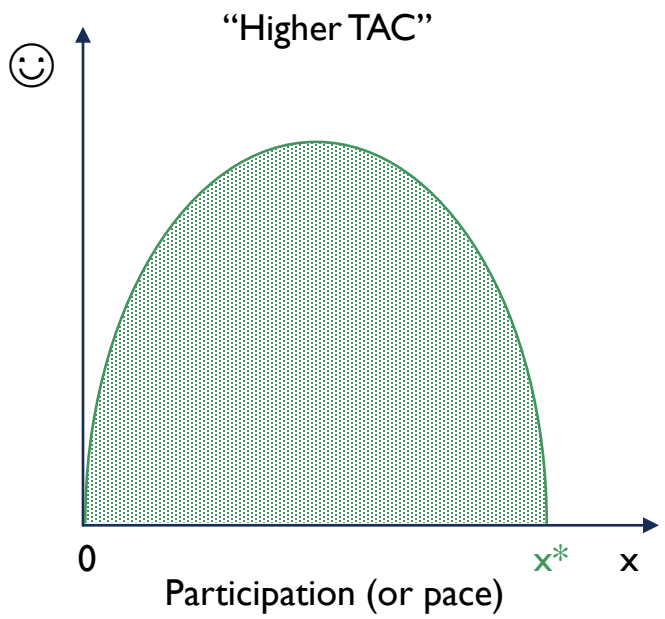
- Assuming gear effectiveness, Alts & Option are a clear benefit to non-trawl stakeholders
- How far that benefit extends throughout the realm of potential participants may depend on:
  - Whether GT remains a CP fishery (Alt. 2), and opportunity in turbot fishery relative to other fisheries for which BS non-trawl vessels are licensed
  - Whether participation is de facto limited to the HAL CP Sector (Alt. 3)
  - TAC… and TAC as it relates to expected effort (RE: inseason mgmt.) and the status of non-regulatory voluntary co-management agreements
  - CPUE, markets, and operating costs

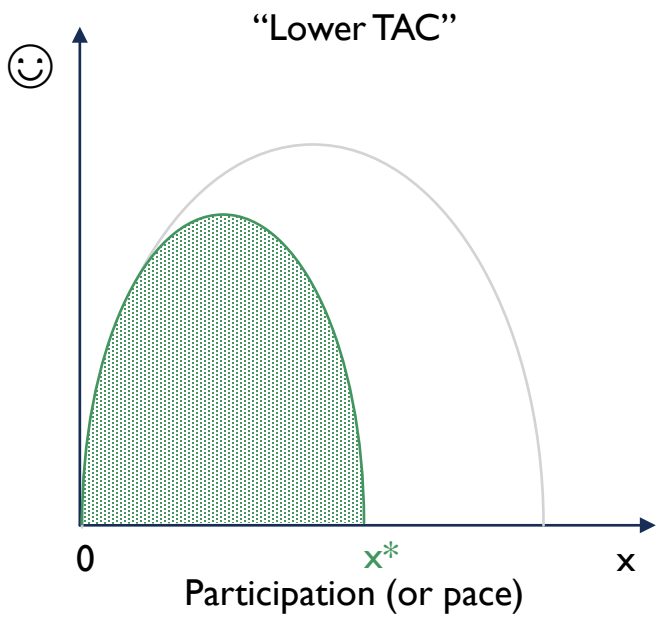
- Authorizing a gear type that could restart the non-trawl component *may be no better or worse than Alt. 1* if the fishery does not open (or does not remain open)… The conditions under which that ends up being the case are dynamic from year to year.

Group _____	Cares about…
HAL CP Sector…	Whale mitigation. Is the fishery open?
Other non-trawl…	Whale mitigation. Is the fishery open? Opportunity.
A80 trawl…	Is the fishery open?

COMPARISON OF ALTERNATIVES (4.3)

Alternatives 2 & 3





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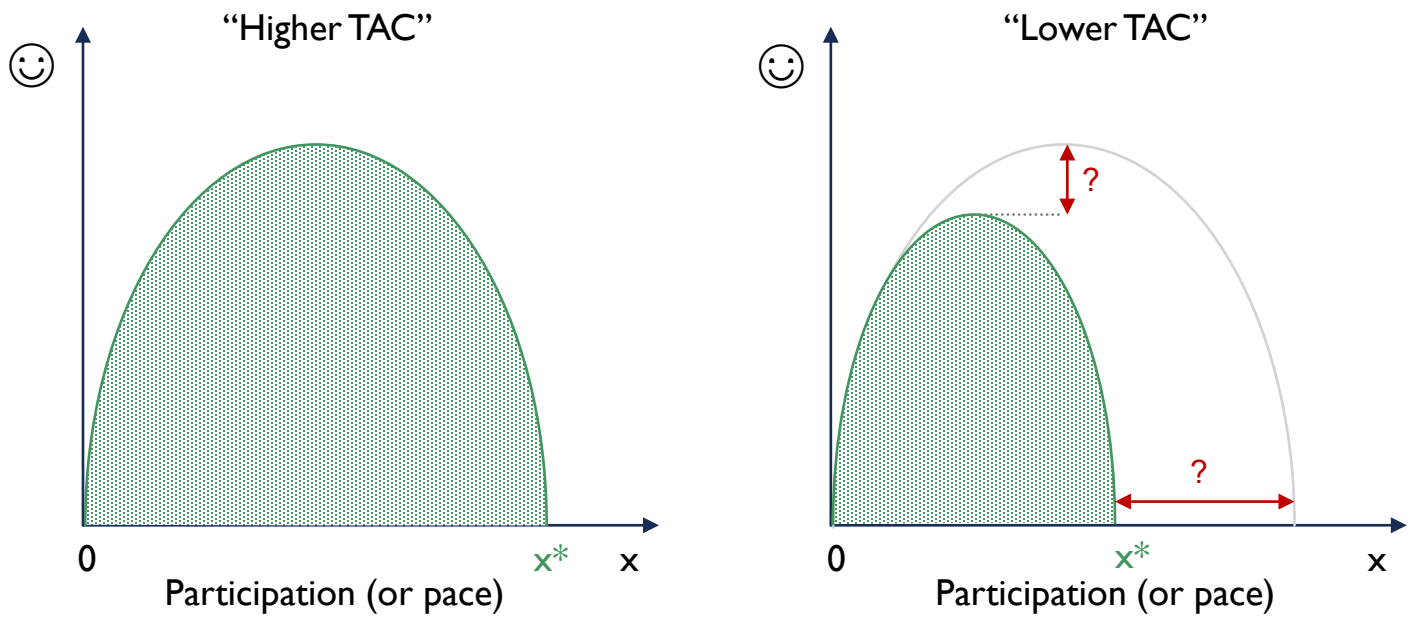
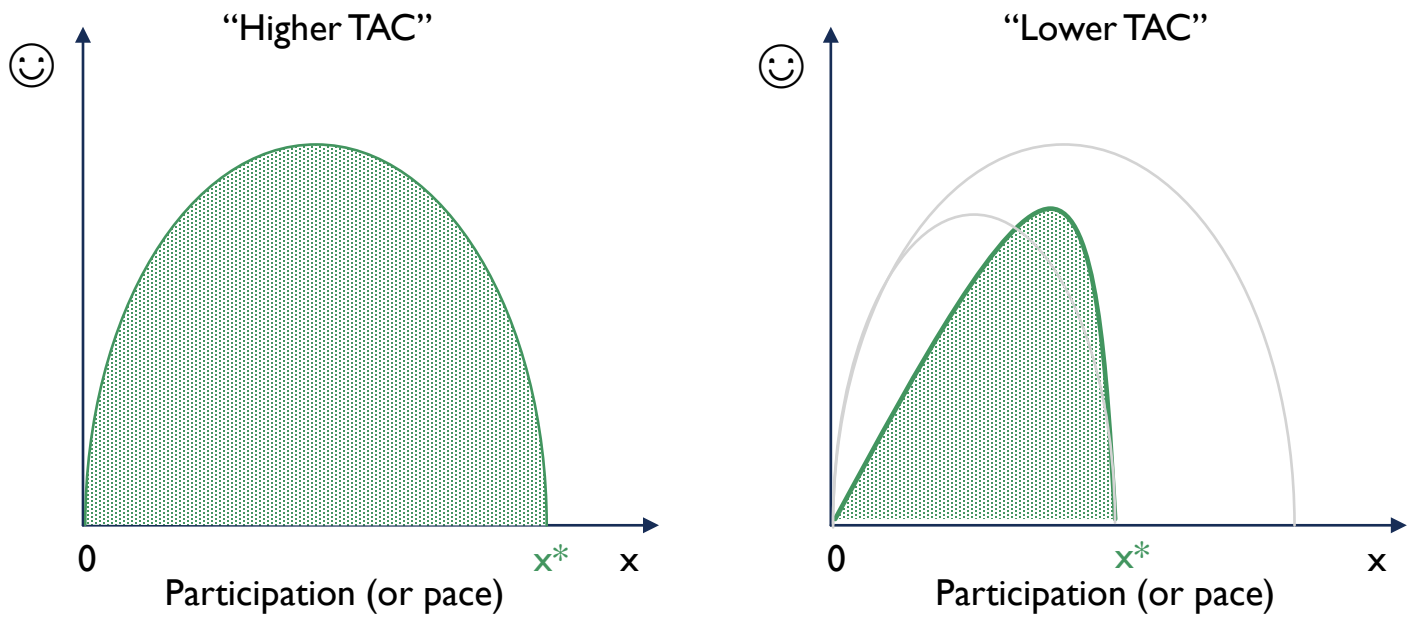


- What is the relationship between ΔTAC and ☺ ?
- What is the relationship between ΔTAC and x* ?
- What is the shape of the relationship between x* and ☺ ? What factors other than ΔTAC are important?

COMPARISON OF ALTERNATIVES (4.3)

Alternatives 2 & 3



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COMPARISON OF ALTERNATIVES (4.3)

Alternatives 2 & 3

- What affects "**x**"? – How many participate
  - Alt. 2 versus Alt. 3
  - TAC
  - Intra-cooperative or intra-business relationships between vessels
  - Synergies or complementarities between fisheries – e.g., timing, gear, monitoring
- What affects "**x***"? – When the number of participants becomes a mgmt. issue
  - TAC
  - Expected effort (no pre-registration)
  - Monitored inseason effort (also affected by timeliness and accuracy of catch reporting)
  - Stability of co-management plans (fleet groups + NMFS)

COMPARISON OF ALTERNATIVES (4.3)

Alternatives 2 & 3

- Time/Location of fishing
  - Participants' options not constrained by regulation
  - Operational flexibility when not planning around whale avoidance; might fish prior to fall weather
  - Optimal timing for GT LLPot fishing is not known; no analysis of potential grounds preemption
  - Historical participants have intra/inter-cooperative relationships; other vessels (Alt. 2) would need to be incorporated into spatial self-management routines within the fleet
- Effects on trawl sector
  - Directed fishing closure for turbot affects retention in Kamchatka/arrowtooth targets and flexibility to target turbot in deeper water (RE: avoidance of PCod or other non-target species)
  - Turbot ICA is set prior to annual TAC agreement; uncertainty about the amount of non-trawl effort in a given year might → higher ICA, which affects the amount of TAC to be shared
    - Catch in Turbot/arrowtooth/Kamchatka targets → DFA; Catch in YFS/sole targets → ICA
  - A80/"FLC" agreement (**Alt. 2**): effect driven by combination of TAC and "independent" interest
    - A80/FLC could…
    1. Do nothing; hope TAC is sufficient
    2. Negotiate a "buffer" within the agreement; redistribute that buffer at a certain point
    3. Bring "independents" into the agreement
    4. Dissolve the agreement
    5. Do nothing; rely on NMFS inseason reallocations from non-specified reserve late in the year

COMPARISON OF ALTERNATIVES (4.3)

Alternatives 2 & 3

- **OPTION**: Tunnel opening restriction
  - Presumed a straight-forward benefit to participants; insufficient data to compare size between turbot HAL samples and western BS cod/sablefish pot samples
  - Likely provides the greatest benefit to vessels fishing deeper off the shelf, which is an incentive that already existed because of where the larger turbot are found…

    → Option, alone, is not likely to determine where non-trawl vessels fish
  - Few historical or likely non-trawl participants have history of IFQ fishing, so incentives to co-target halibut are not a primary consideration
  - Generally understood that larger turbot are found deeper than most halibut.
- Stock assessment
  - Improved precision in the assessment and less need to account for unobserved depredation mortality could benefit direct participants in the fishery by reducing management buffers, potentially allowing for more available harvest; could reduce likelihood of directed fishery closure
  - Stock assessment experts cannot fully analyze the benefit without gaining a better understanding of the selectivity of longline pot gear compared to HAL gear

MONITORING, MGMT & ENFORCEMENT

- CP vessels in BSAI are typically in the “full coverage category”
  - Under each alternative, vessels would adhere to existing requirements
- Not expected to alter aspects of management:
  - Location, timing, PSC, bycatch and accountability measures
- Current regulations at § 679.24 prohibit directed fishing of Greenland turbot using longline pot gear
  - Alternatives would require reg. change to allow an exemption for longline pot gear while directed fishing for Greenland turbot in the BS, and to allow retention of other species (up to the MRA)
  - Option 1: would require a change to regulations at §679.2 to allow for an exemption to the maximum tunnel opening
- No enforcement concerns for gear type or removing the 9-inch tunnel opening requirement
- NOAA Enforcement supports for consistency between fisheries

Questions?