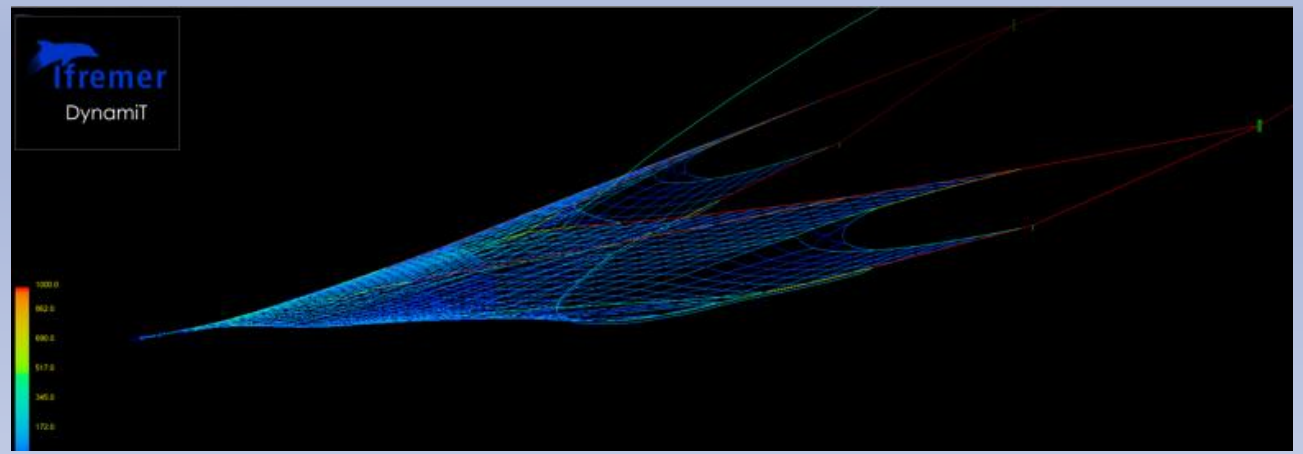
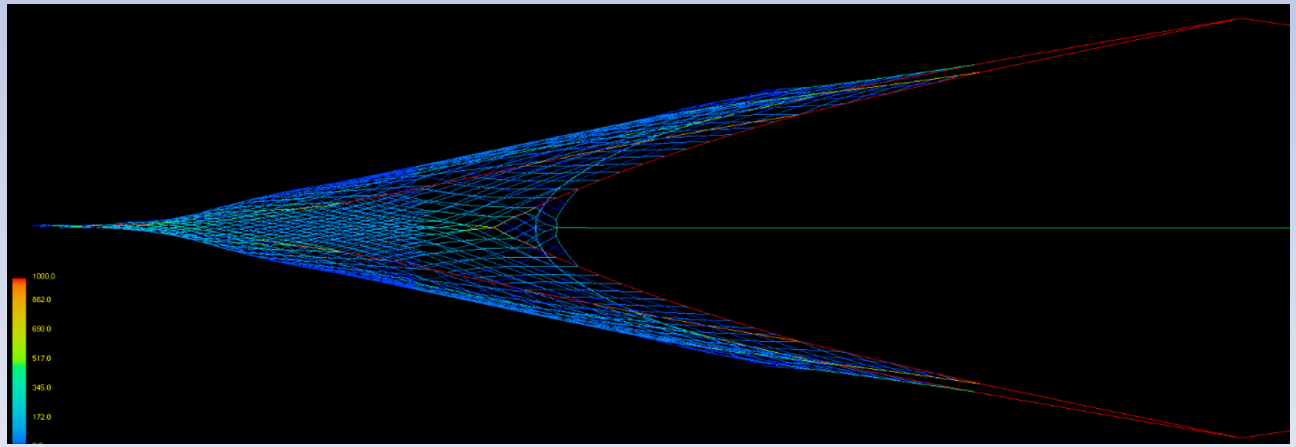


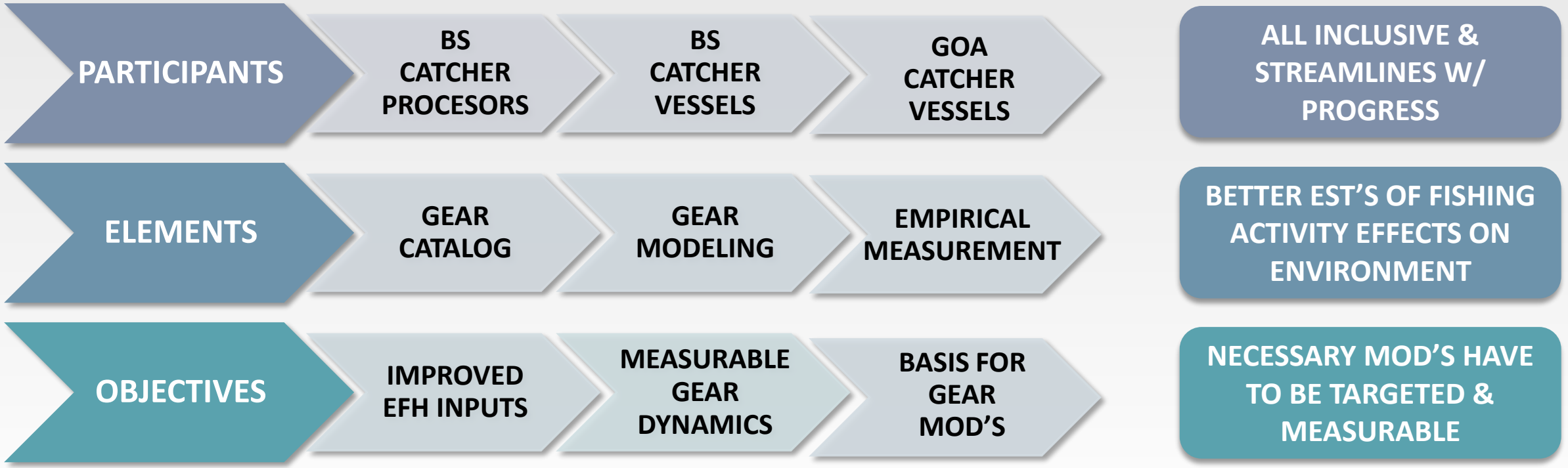


Gear Innovation Initiative

JUNE 2025 UPDATE

INTRODUCTION

The Gear Innovation Initiative is an effort to better understand pelagic trawl gear interactions w/ benthic habitat, potential unobserved mortality on crab, and enforceability of bottom contact characteristics of pelagic trawl gear.



SUPPORTING HABITAT MANAGEMENT

ESSENTIAL FISH HABITAT

SPECIES DISTRIBUTION MODELS (Component 1)

FISHING EFFECTS MODEL (Component 2)

FISHING EFFECTS 'DETERMINATIONS' & POTENTIAL COUNCIL ACTIONS

Each FMP must evaluate & minimize adverse effects to extent practicable through EFH & 5-year Review Process

IF Fishing Activity → Adverse EFH effects = More than minimal & Not temporary → Council MUST take action

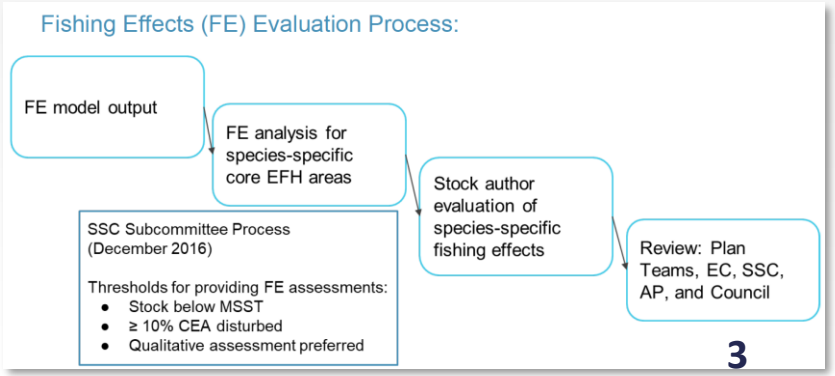
FISHING EFFECTS MODEL: Accounts for fishing activities & habitat designations, subject to layers of review

GEAR PARAMETER TABLE: Estimates from 2017 industry survey, never empirically measured

Gear Innovation Initiative → Verifiable Gear Parameters → Improved Fishing Effects Determinations

MODEL COMPONENTS:

- Fishing Effort
- Gear Parameters
- Habitat Categorizations
- Susceptibility & Recovery Rates



DIRECTED APPROACH & RESPONSE

***FEB 2024 MOTION*: No further action due to negative impacts on Chinook salmon, chum salmon, halibut, & other PSC spp.**

- Use in-season data & ongoing research to dev. framework agreements for all sectors w/ measurable objectives for eval.
- Regular updates on ongoing collaborative research
- Discussion paper to incentivize pelagic trawl gear innovation w/ following objectives:

  - minimizing bycatch to the extent practicable
  - minimizing the impacts of pelagic trawl gear on sensitive benthic habitat and unobserved mortality of stocks that rely on such habitat
  - improving or maintaining fishing efficiency
  - flexibility for trawl gear innovation within the constraints of other objectives (e.g., adapting to new technologies)

***2023-2027 EFH RESEARCH PRIORITIES*: Recommendations per EFH Analysts, Stock Authors, SSC, & Ecosystem Committee**

- Improve EFH information for spp & life stages id'd as needing further research during '23 review & other FMP species that were not updated in 2023 (salmon & scallops)
- Improve understanding of nearshore and forage spp distribution & habitat use and develop assoc. SDM's and maps
- Improve the Fishing Effects assessment
  - Improve the Fishing Effects Model and/or develop & implement new methods

ELEMENTS & OBJECTIVES

ELEMENT 1	**GEAR CATALOG : Collect specifications for gear components, perform QC to ensure cross sector consistency.**
	FISHING PRACTICES PROFILES : Skipper interview to inform event level estimates & develop gear deployment scenarios for Element 2.
ELEMENT 2	**MODEL SIMULATIONS : Develop numeric gear simulations to reflect updated gear parameters and generate improved estimates of adjusted contact.**
	HAUL LOGS : Event level records of actual trawl geometry & forces to compare w/ simulations to refine & contrast.
ELEMENT 3	**SENSOR EVALUATION: Assessment of ZebraTech tilt sensors in flume tank for optimal placement in field study. Next step in model simulation validation & refinement.**
	GROUND TRUTHING: Empirically measure seafloor contact under normal fishing conditions, testing a range of trawl nets. Final step in model simulation validation & refinement .

BSAI CATCHER PROCESSORS

- ***12 VESSELS***
- ***84 IND. TRAWLS ; 15 DESIGNS***
- ***20 DOORS ; 12 DESIGNS***

CURRENT PROGRESS:

Element 1: Catalog Gear
1(a) Gear catalog complete
1(b) Fishing Practice Profiles complete

Element 2: Model Simulations
5 net plans are fully operational in DynamiT Software

Element 3: Empirical Measurements
3(a) Haul Logs: CPs have started the haul log data collection from A season hauls.

NEXT STEPS:

Element 3(a): Fleet-wide haul log data collection

Element 3(b): Sensor evaluation planning process has begun and scheduled for Fall 2025 in flume tank at Memorial University

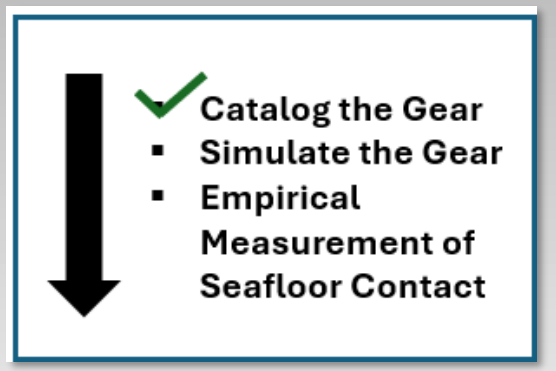
LESSONS LEARNED:

- Coupling of 3(a) 'Haul Logs' with 1(b) 'Fishing Practices Profiles' led to valuable refinements in CP fleet models and will provide efficiencies for CV fleet

BSAI CATCHER VESSELS

- ***73 VESSELS***
- ***130 IND. TRAWLS ; 67 DESIGNS***
- ***68 DOORS ; 73 DESIGNS***

CURRENT PROGRESS:



Element 1: Catalog Gear
1(a) Draft gear catalog complete
1(b) Fishing Practice Profiles in development

Element 3: Empirical Measurements
3(a) Haul Logs: some CVs have started the haul log data collection from A season hauls.

NEXT STEPS:

Element 1(a): QA/QC gear catalog

Element 1(b): Fishing Practice Profile collection

Element 2: Meet regularly w/ FAST Lab staff to complete the data set necessary for simulations

Element 3(a): Fleet-wide haul log data collection

LESSONS LEARNED:

- Lessons learned from CPs have led to the refinement of the gear catalog, data collection processes, Fishing Practice Profiles, and Haul Logs
- Magnitude of CV data compared to CP data results in longer duration of data collection.

GOA CATCHER VESSELS

- ***51 VESSELS***
- ***80 IND. TRAWLS ; 46 DESIGNS***
- ***70 DOORS ; 38 DESIGNS***

CURRENT PROGRESS:

Element 1: Catalog Gear
1(a) Initial inventory of trawls being used is complete

NEXT STEPS:

Element 1(a): QA/QC gear catalog

Element 1(b): Fishing Practice Profile collection

Element 2: Meet regularly w/ FAST Lab staff to complete the data set necessary for simulations

Element 3(a): Fleet-wide haul log data collection

LESSONS LEARNED:

- Lessons learned from CPs have led to the refinement of the gear catalog, data collection processes, Fishing Practice Profiles, and Haul Logs
- Magnitude of CV data compared to CP data results in longer duration of data collection.

TARGET TIMELINE

- Funding for the CP sector secured through June 2026
- Funding for the CV sector secured through YE 2025

Year	Sector	Project Element	Details	Funding Secured	Status
Q2 2024	CVs	Project Planning	APU Project was expanded to include pollock trawl CV's in the Central & Western GOA. UCB, MTC, AGDB, AWTA, & PFC are coordinating collaboratively as "CV's" for the project.	n/a	
Q3 2024	CVs	Element 1	Element 1 funding has been secured for BSAI/GOA CV's. Contact information for the BSAI and CV fleets is provided. Work began to determind an appropriate vessel subsampling approach given there are 126 CV's in the BSAI and GOA combined. By the end of August gear cataloging begins.	Y	Complete
	CPs	Element 1b	CPs complete Fishing Practices Profiles	Y	Complete
	CVs	Element 1a	CV gear cataloging begins	Y	Complete
Q4 2024	CPs	Element 2	CPs underway with Element 2, conducting smulations based on Element 1	Y	Complete
	CVs	Element 1a	CVs continue gear cataloging; targeting completion towards end of quarter so refinements may begin	Y	Ongoing
Q1 - Q2 2025	CPs	Element 3	Design seabed contact field study based on Element 1 and 2 results. Will include determining number of tilt sensors or other technology needed, placement on the gear, number of vessels and nets to be sampled. Fishing seasons, fishing conditions, etc.	Y	Tilt sensor performance under review - FISP Proj. Final Report.
	CVs	Element 1b	CVs begin Fishing Practices Profiles in Q1 and continue through Q2	Y	Underway
		Element 2	Gear simulations will begin in Q2, simultaneously while the survey is being completed. CV fleet may be stratified by vessel size/horespower based on information from gear catalog and fishing practices survey to determind which gears should be simulated.	Y	Will complete Fishing Practice Profiles and Season *A&B) Haul logs sampling first.
	CPs	Element 3	Empirically measure seafloor contact under normal fishing conditions, test a range of trawl nets on CP vessels. If needed, an EFP will be developed for the September EFP cycle.	Y	A Season haul logs sampling complete. B Season prep underway.
Q3 - Q4 2025	CVs	Element 2	CVs continue simulations in order to accurately represent the vessel diversity of the CV fleet.	Y	Will complete Fishing Practice Profiles and Season *A&B) Haul logs sampling first.
		Element 3	In Q4, the CVs will begin Element 3 to design a seabed contact field study based on the simulations that have already been completed in Element 2. The study will be similar to the CP study design (including elements of NPFMC motion) but tailored for any differences in vessel size/horsepower based on what was learned in Elements 1 and 2.	Y	Tilt sensor performance under review - FISP Proj. Final Report.

RE-CAP & NEXT STEPS

Accomplishments:

CP Fleet successfully relayed 'Lessons Learned' to CV fleet allowing for refinements & efficiencies

- Funding has been sourced through June 2026 for CP's and YE 2025 for CV's
- CV fleet may consider subsample of model simulations to refine focus w/o degrading data quality

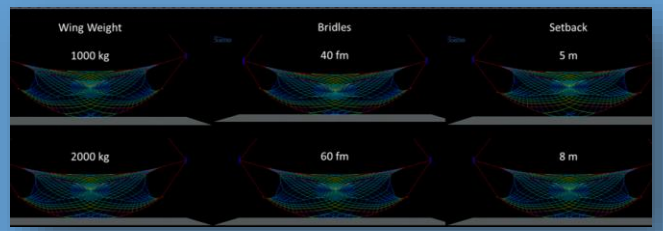
Element 3 Field Study:

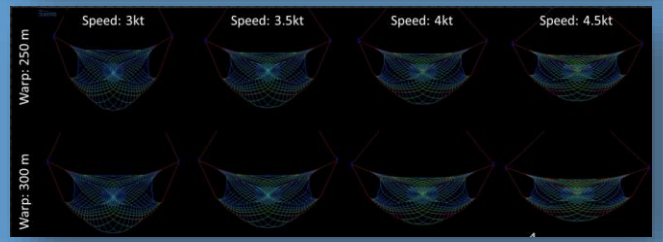
Pairing Haul Log data with model simulations was initial step in field study.

- B Season 2025: Sensor Evaluation planning has begun, w/ ZebraTech research results soon available. Flume tank work will aid in sensor deployment strategy
- A Season 2026: Ground truth & refine model simulations with sensor deployment in actual fishing scenarios

Year End Deliverables:

- Updated gear tables to incorporate into upcoming EFH 5-year Review
- Initial evaluation of more precise tilt-sensors for use in research capacity





EXAMPLE

Vessel Name			
A Season			
Trawl in use: ☐ Swan 1056 ☐ Egersund 1512 ☑ Swan 1280 ☐ Other:			
Doors in use: ☑ Thyboron type 22 VK ☐ Other:			
Rigging:			
Bridle length: 35 fathoms/meters/feet			
Setback length: 15 fathoms/meters/feet			
Wing Weights per side: 2000 lbs/kg			
Haul Information:			
Haul Number: (Match to logbook #) 120		Date: 03/04/25	
Start of haul	Start time: 1230	Start Lat/Lon (dd.dddd): 54.4300 N 167.0977 W	
	Bottom Depth: 48 fathoms	Vessel Speed: 3.5 knots	Main wire payout: 90 fathoms
	Headrope Height: 38 fathoms	Door Spread: 95 fathoms	
	Vertical Opening: 10 fathoms	Fishing circle width **IF AVAILABLE**: 75 fathoms	
	Seastate: 5 (on Beaufort Scale)	Notes:	
	Tension on winches **IF AVAILABLE**: 10100 kgf	towing into/with/cross current	
In tow entry	Time of entry: 1300		
	Bottom Depth: 50 fathoms	Vessel Speed: 3.4 knots	Main wire payout: 93 fathoms
	Headrope Height: 39 fathoms	Door Spread: 93 fathoms	
	Vertical Opening: 11 fathoms	Fishing circle width **IF AVAILABLE**: 73 fathoms	
	Seastate: 4	Notes:	
	Tension on winches **IF AVAILABLE**: 10120 kgf		

CONTRIBUTORS

PELAGIC TRAWL GEAR INDUSTRY WORKING GROUP

Julie Bonney	Alaska Groundfish Data Bank
Chelsae Radell	Alaska Groundfish Data Bank
Shelby Bacus	Alaska Groundfish Data Bank
Austin Estabrooks	At-Sea Processors Association
Caitlin Yeager	At-Sea Processors Association
Patrick O'Donnell	Alaska Whitefish Trawlers Association
Rebecca Skinner	Alaska Whitefish Trawlers Association
Heather Munro Mann	Midwater Trawlers Cooperative
Ben Ley	Peninsula Fishermen's Coalition
Andrea Keikkala	United Catcher Boats
Susie Zagorski	United Catcher Boats