2017 Gulf of Alaska Recruitment Process Alliance (RPA) surveys

NOAA FISHERIES

Alaska Fisheries Science Center

RPA: Ecosystem Monitoring and Assessment, Pacific Marine Environmental Lab, Recruitment Processes, Recruitment, Energetics, & Coastal Assessment

Presenter: Ellen Yasumiishi, Lauren Rogers

September 12, 2017

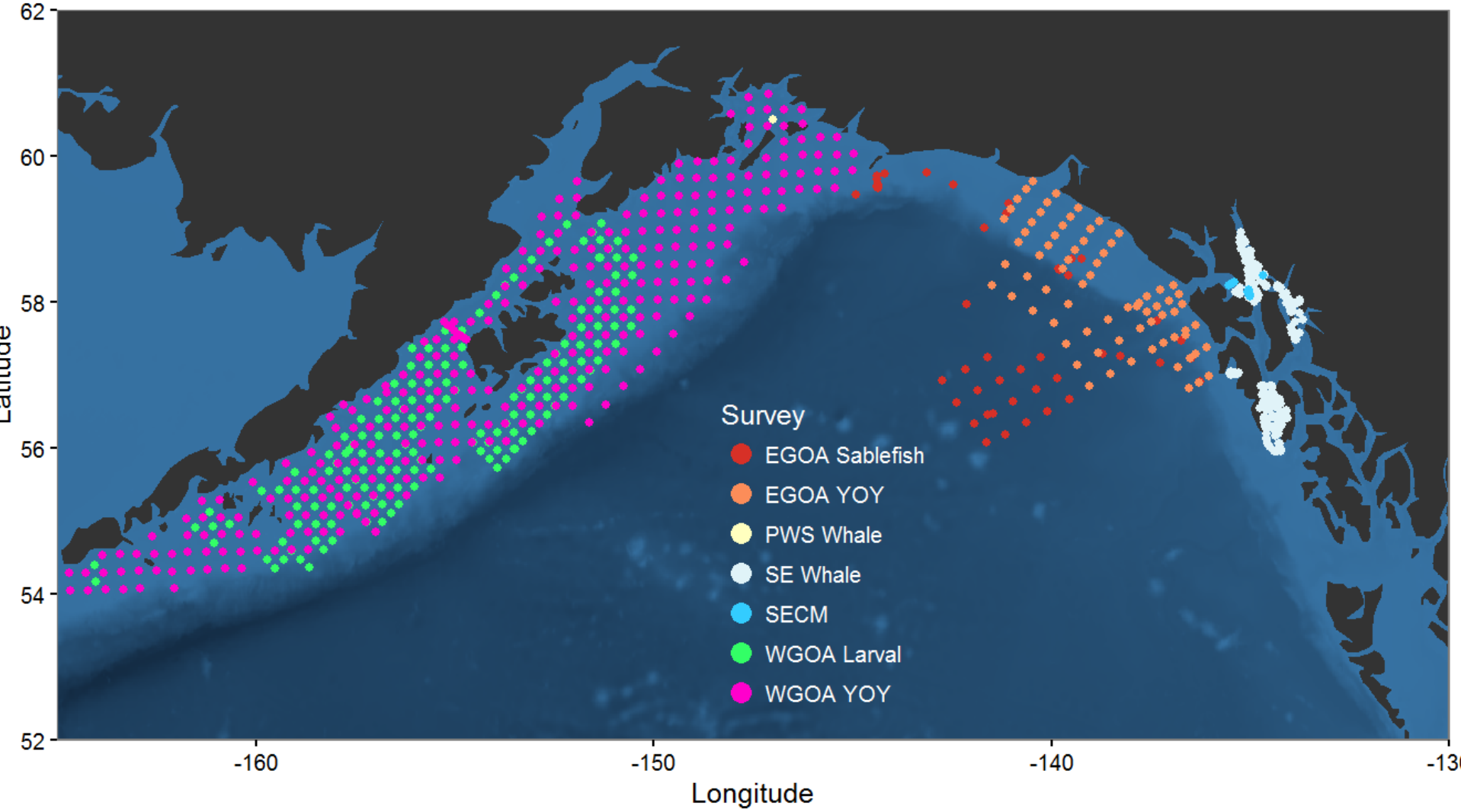
Goal & Objectives

Our ultimate goal: To provide current information on ecosystem conditions and recruitment processes.

Objectives today:

1. Let you know what, where, & when we collect information on physical and biological oceanography, zooplankton, jellyfish, and fish. Data are available.
2. Present rapid assessments from 2017 surveys.
3. Buy-in from you: What indicators are useful for you in stock assessments?

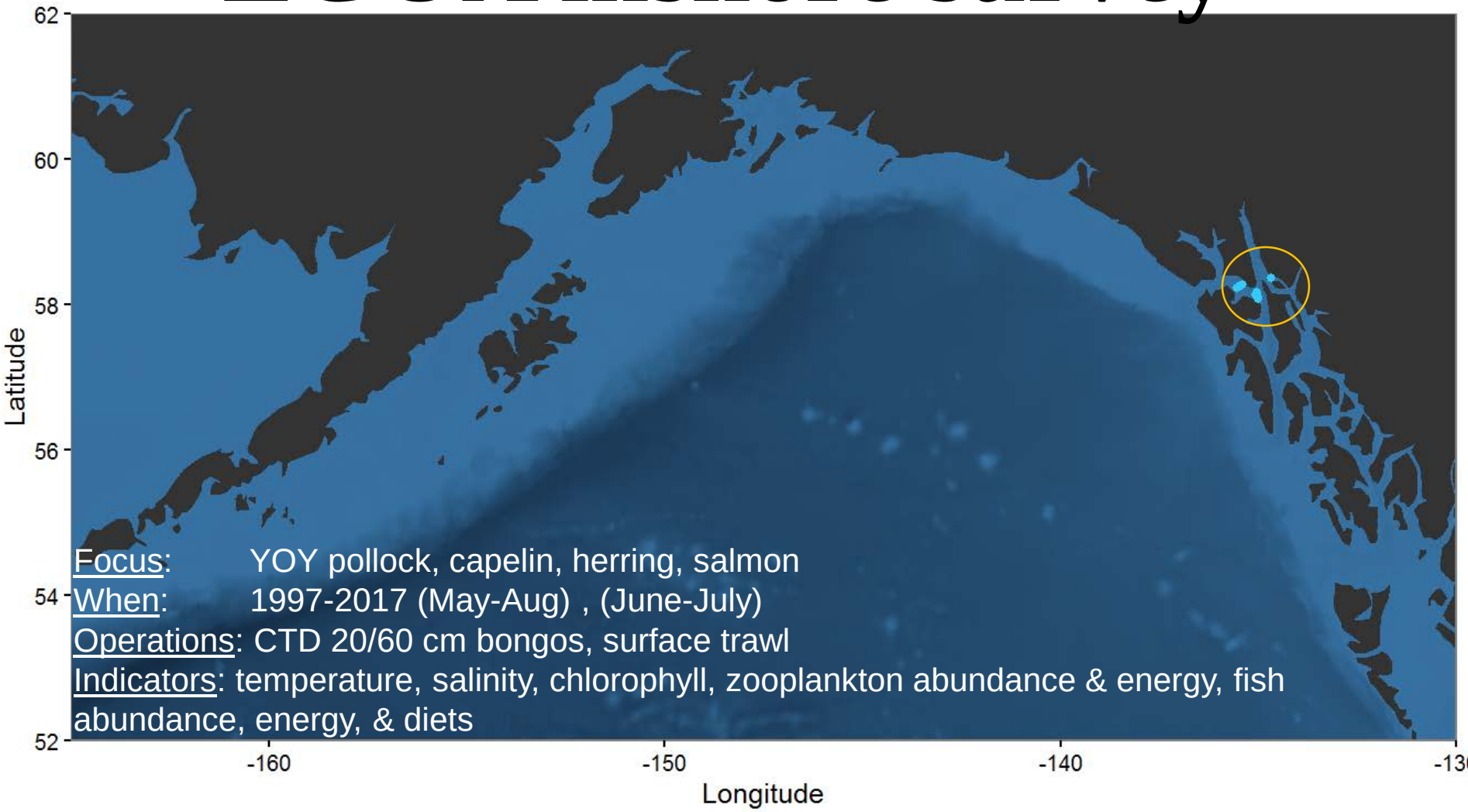
2017 GOA Ecosystem Surveys



Eastern Gulf of Alaska

Summer Inshore Survey (SECM)
1997-2017

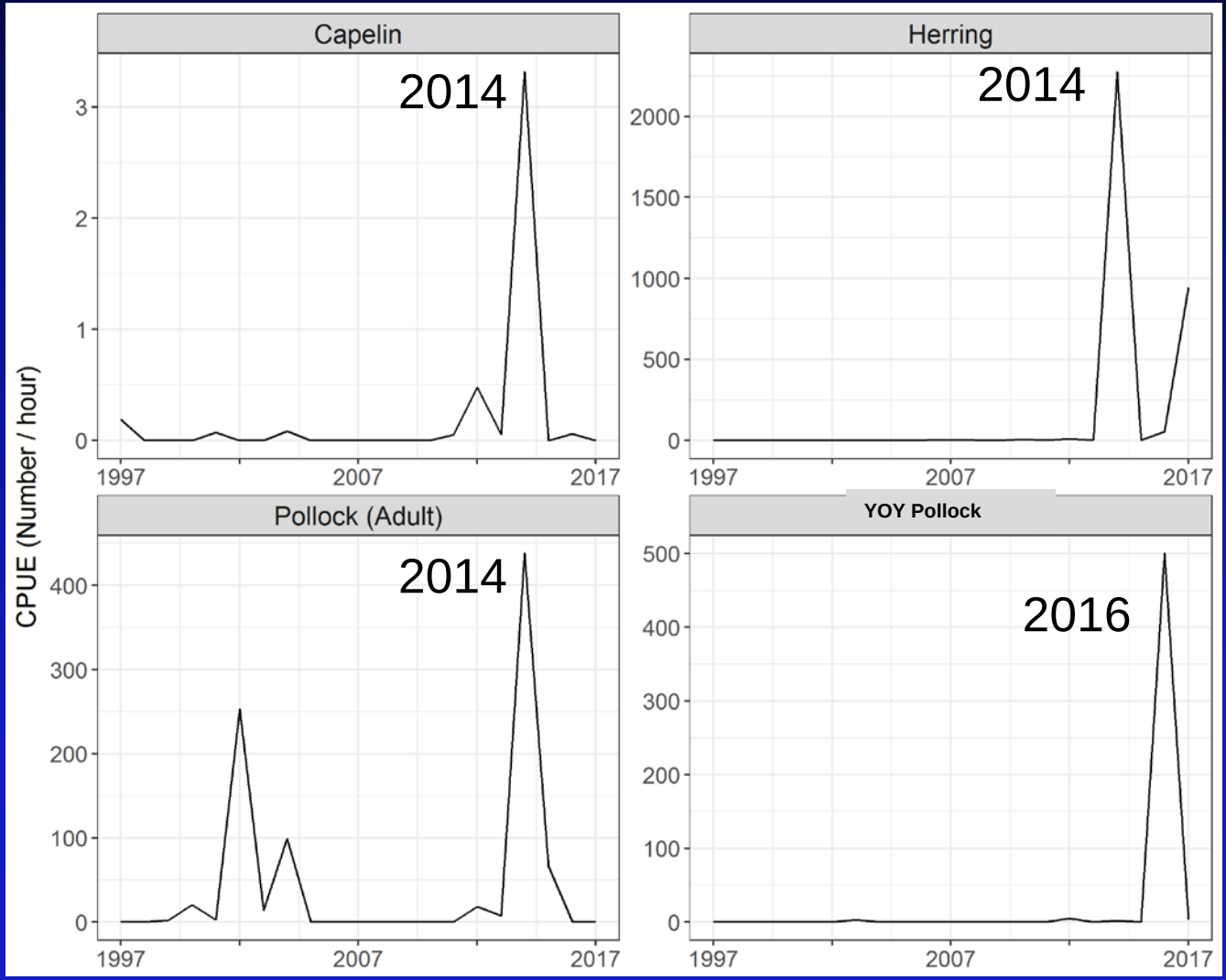
EGOA inshore survey



Focus: YOY pollock, capelin, herring, salmon
When: 1997-2017 (May-Aug) , (June-July)
Operations: CTD 20/60 cm bongos, surface trawl
Indicators: temperature, salinity, chlorophyll, zooplankton abundance & energy, fish abundance, energy, & diets

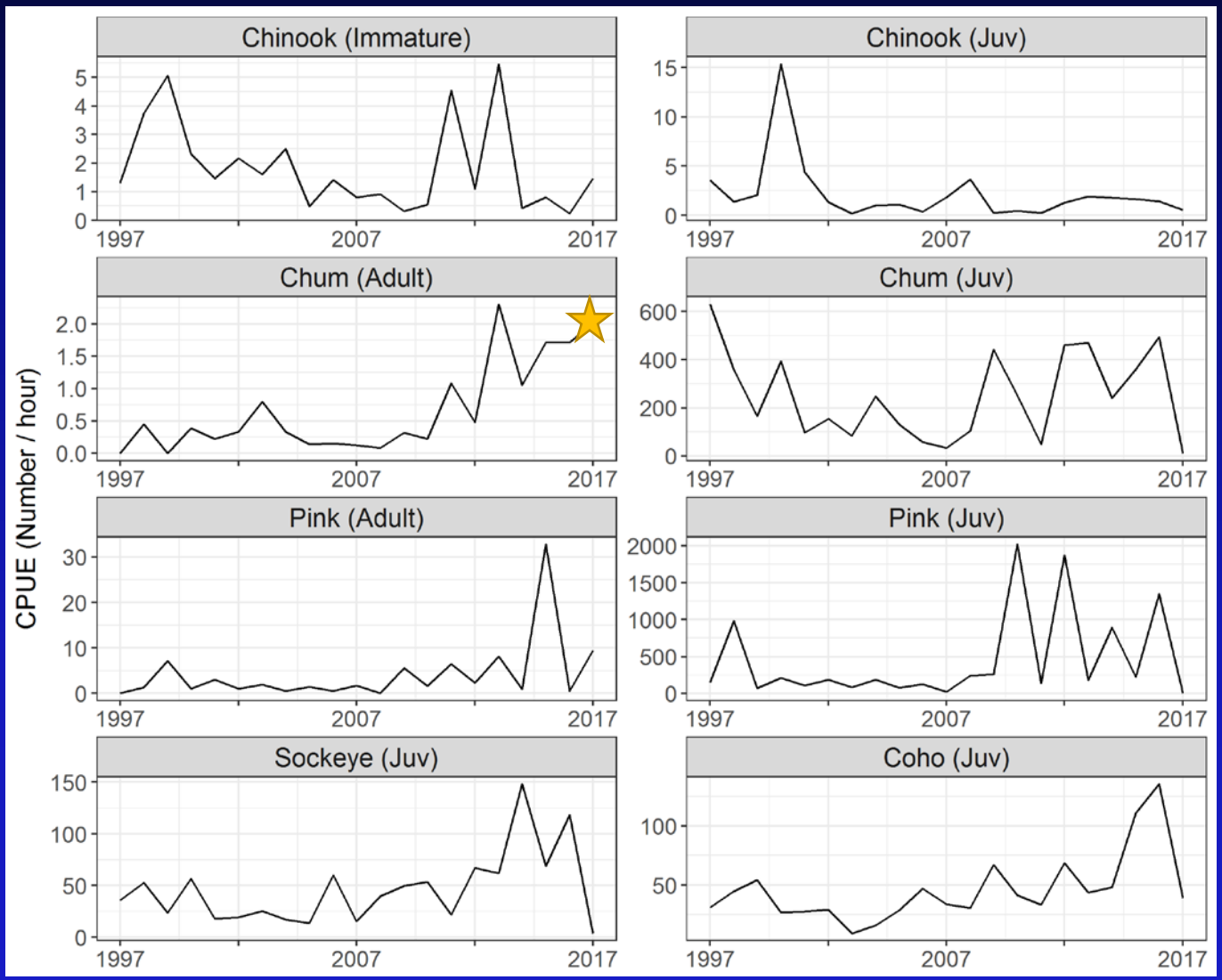
Gray / Murphy / Fergusson

Fish CPUE



Gray / Fergusson / Watson ESR 2017

Salmon CPUE



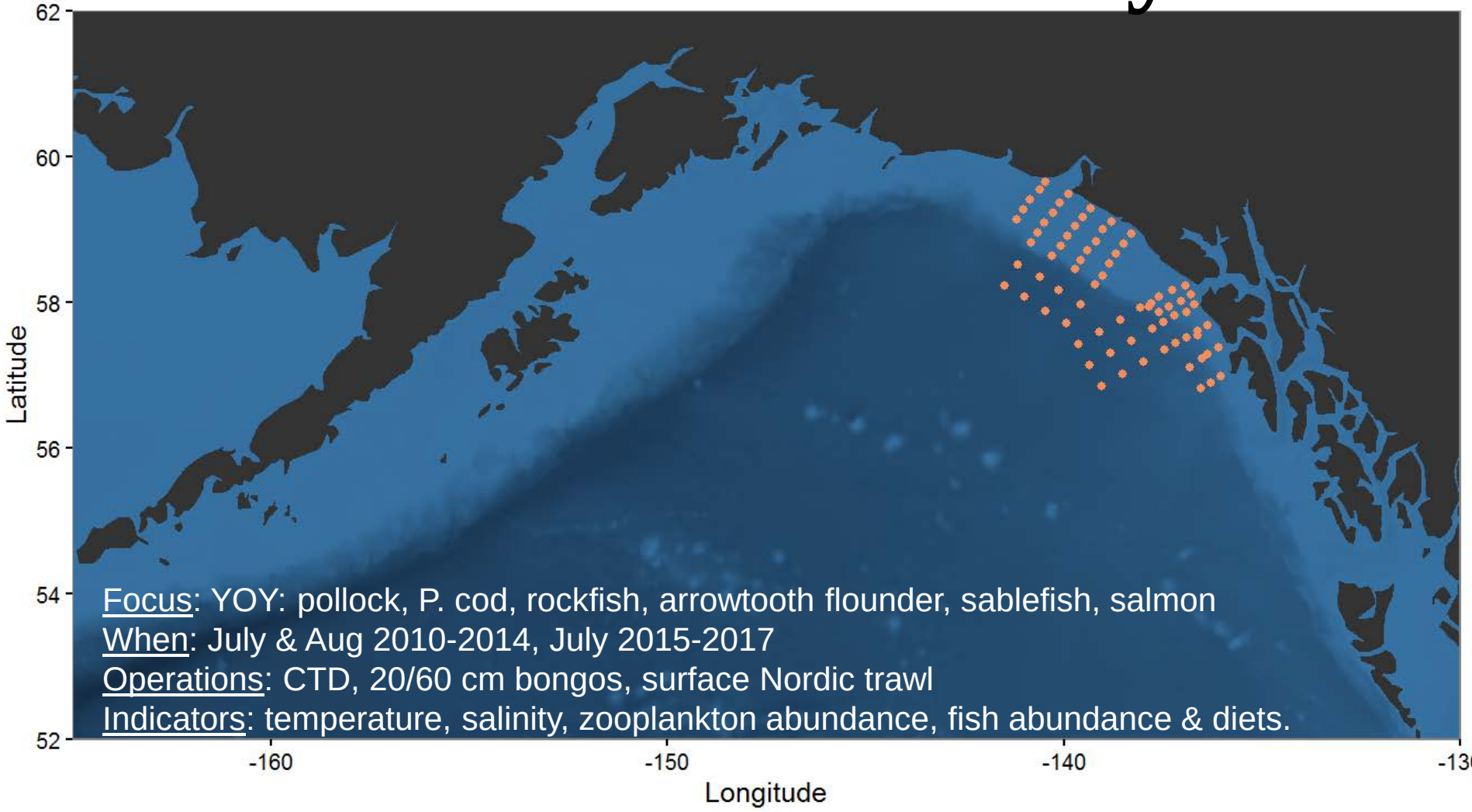
Gray / Murphy / Watson 2017 ESR

Eastern Gulf of Alaska

Summer YOY survey

2010-2017

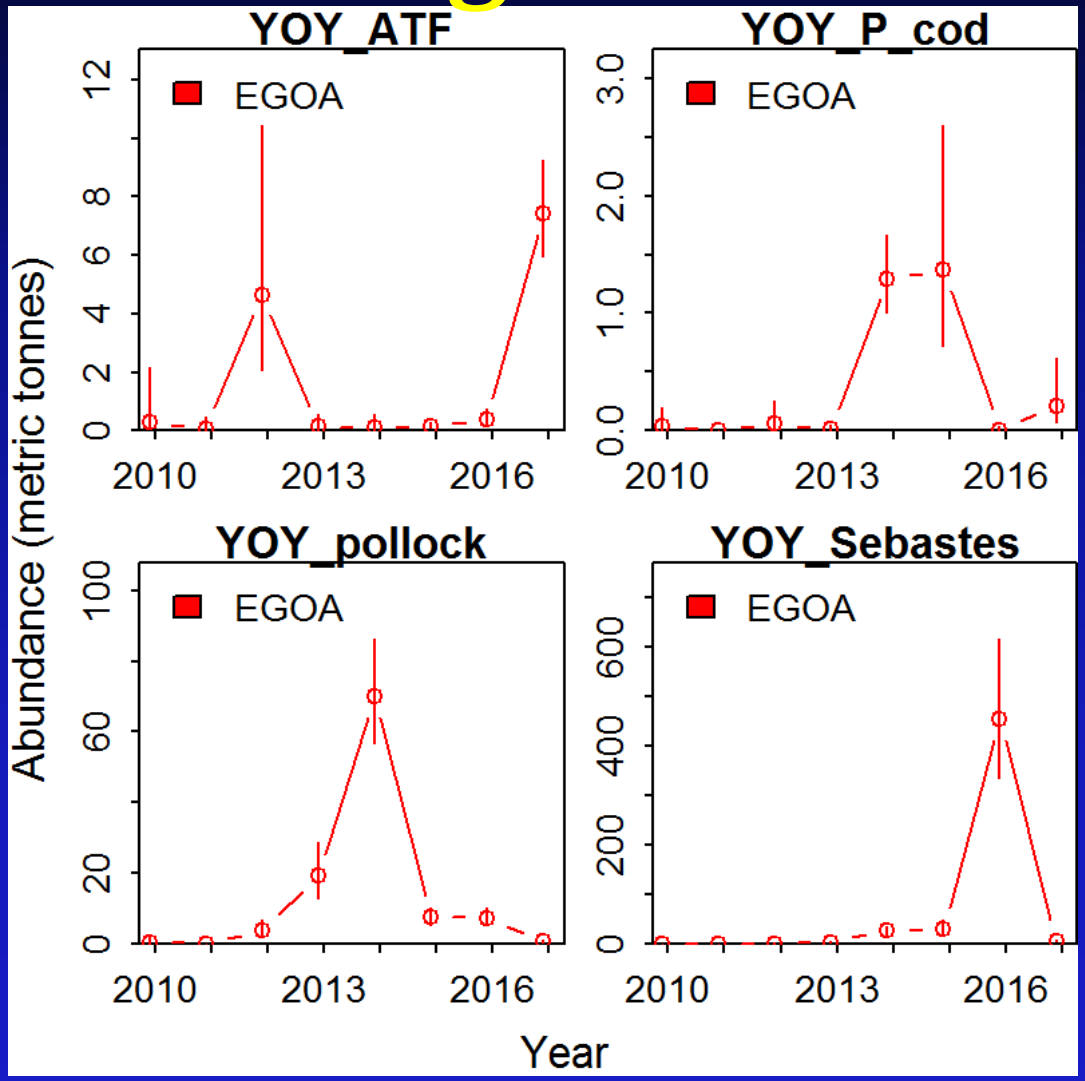
EGOA YOY survey



Focus: YOY: pollock, P. cod, rockfish, arrowtooth flounder, sablefish, salmon
When: July & Aug 2010-2014, July 2015-2017
Operations: CTD, 20/60 cm bongos, surface Nordic trawl
Indicators: temperature, salinity, zooplankton abundance, fish abundance & diets.

Contact : Farley, Moss, Strasburger

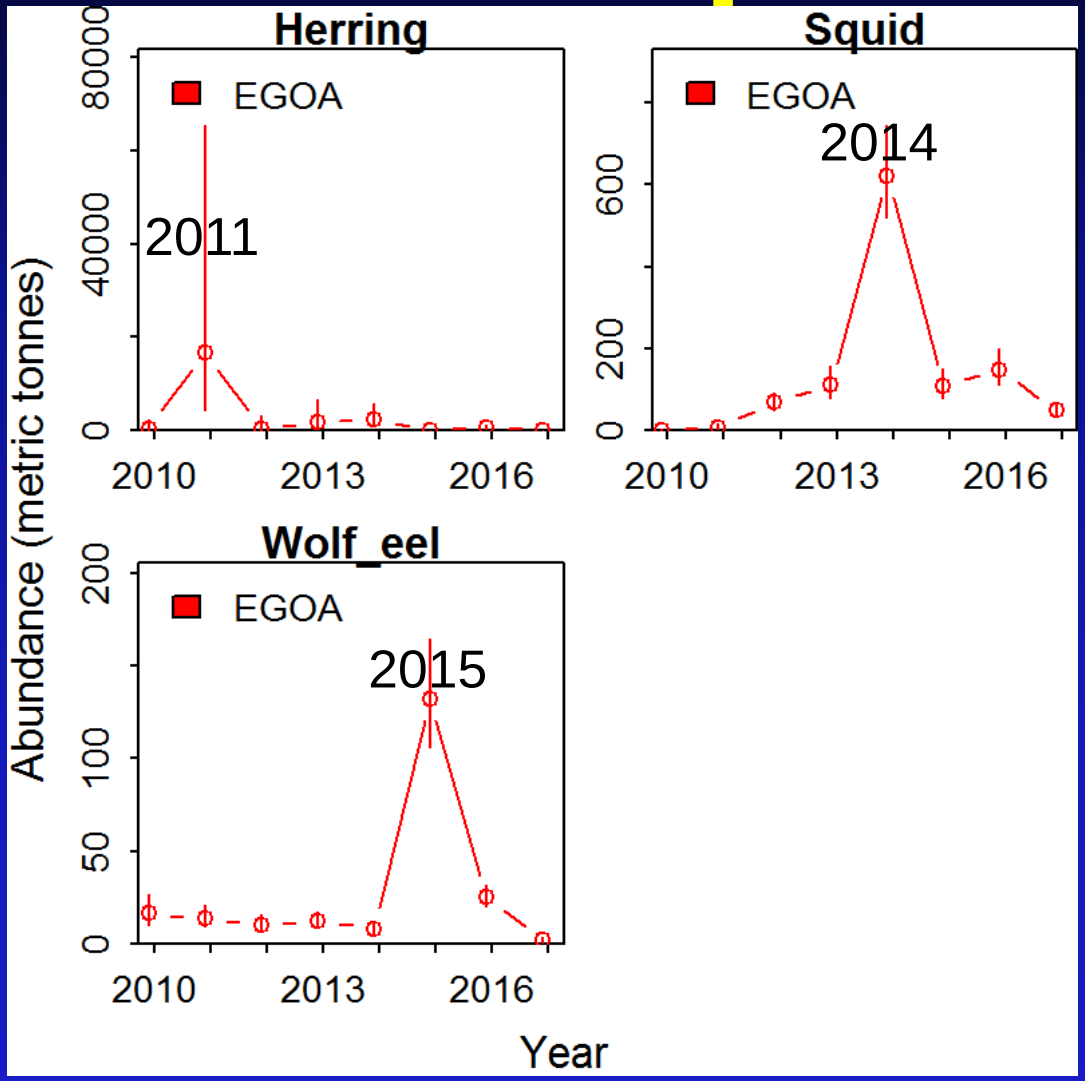
YOY groundfish abundance



- 2017 High YOY ATF
- 2014-2015 high P cod
- 2016 High YOY rockfish
- 2014 High YOY pollock

Contact : Farley, Moss, Strasburger, Yasumiishi ESR using VAST Thorson et al. 2015

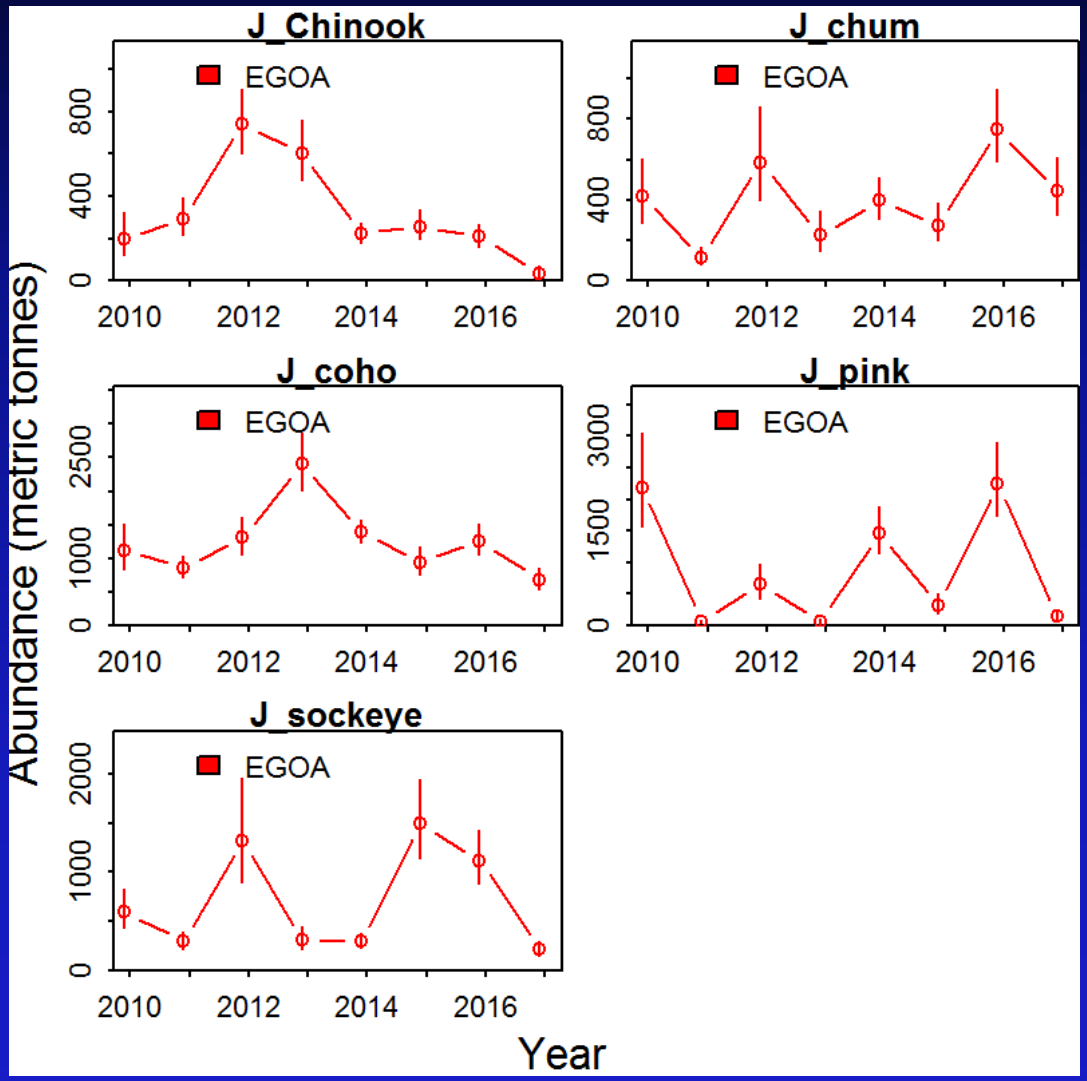
Fish & squid abundance



- Catches were low in 2017
- 2015 high wolf eel catches
- 2014 high squid catches
- 2011 high herring catches

Contact : Farley, Moss, Strasburger, Yasumiishi ESR using VAST Thorson et al. 2015

Juvenile salmon abundance



- Catches were low in 2017
- 2017 above average j chum salmon catches

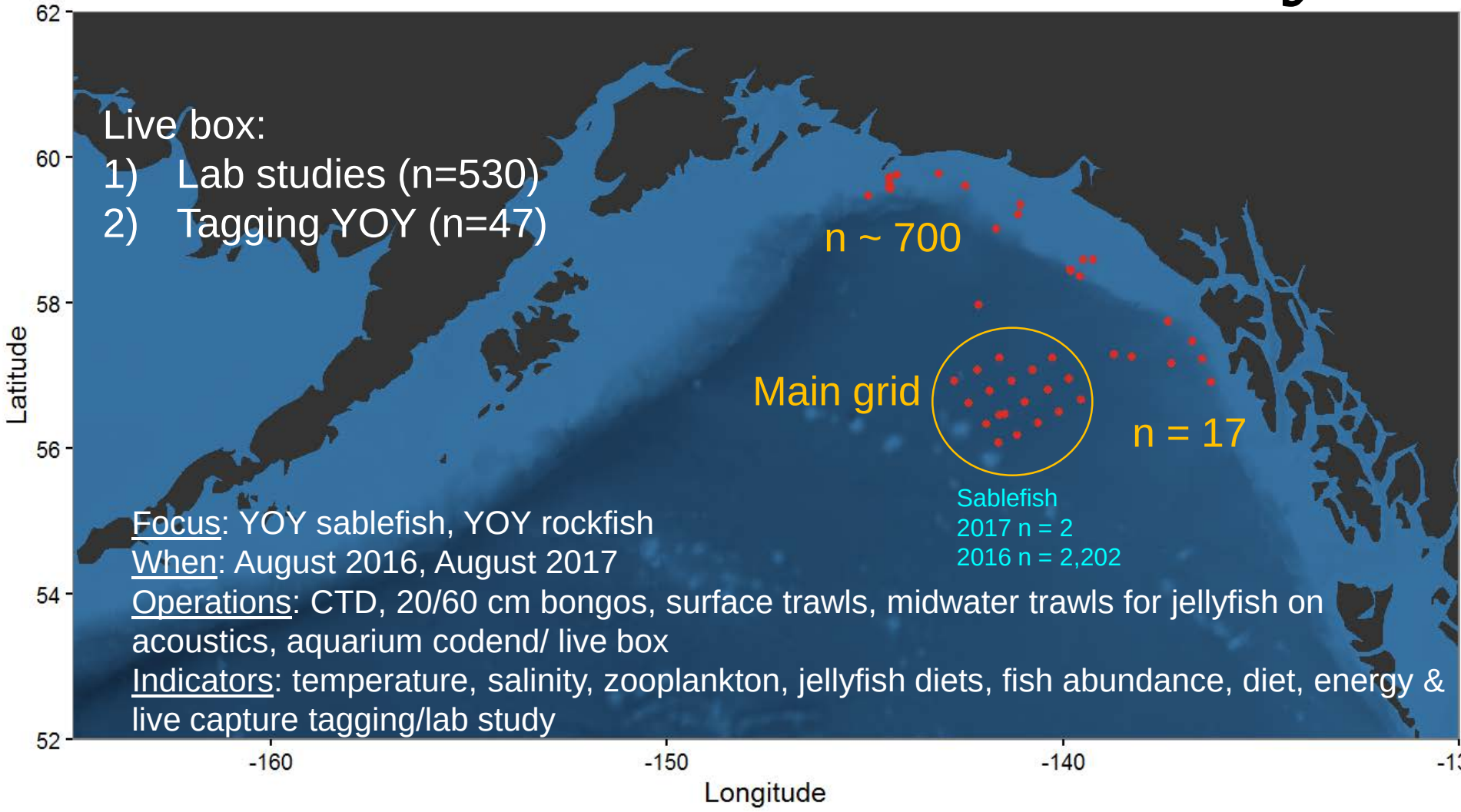
Contact : Farley, Moss, Strasburger, Yasumiishi ESR using VAST Thorson et al. 2015

Eastern Gulf of Alaska

YOY sablefish survey

2016-2017

2017 YOY sablefish survey



Gulf of Alaska

2 Whale Surveys

Overwintering survey

Focus: Humpback whales, overwintering condition of YOY pollock (Sept, Dec, March)

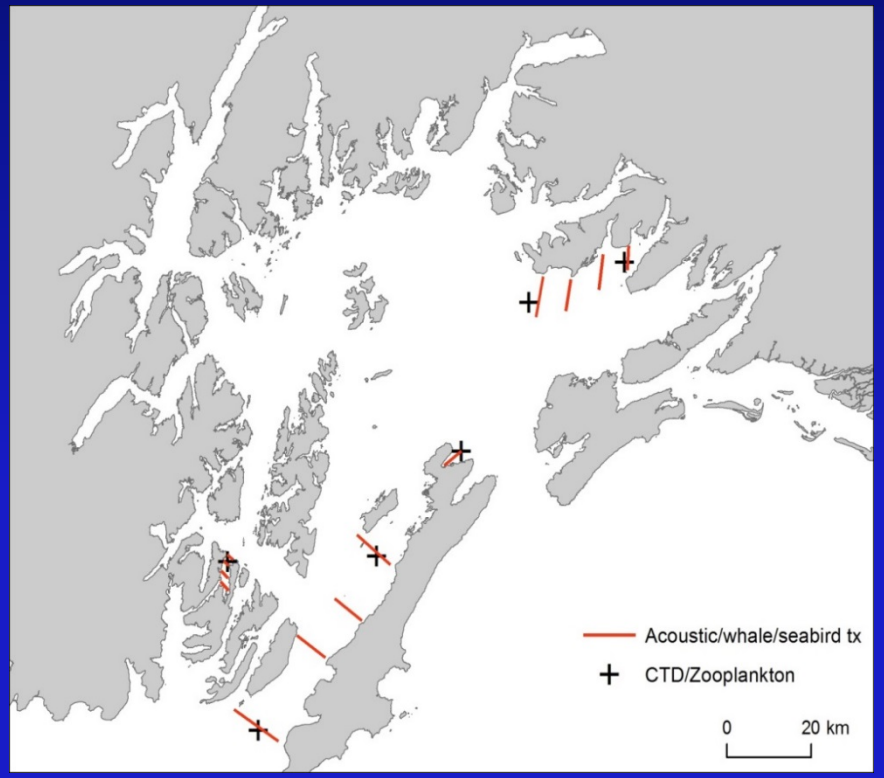
When: 2007-2015: Sept, Dec, March 2017-2021

Operations: CTD/Bongo, Acoustics, Photo ID & count whales/birds

Indicators: Humpback & seabird abundance, distribution & diets. Forage fish & krill abundance.

Products: Synthesis report to Gulf Watch Alaska. Data are on AOOS portal website

Prince William Sound



Contact : Heintz, Moran

SPLISH survey

Focus: Humpback whales

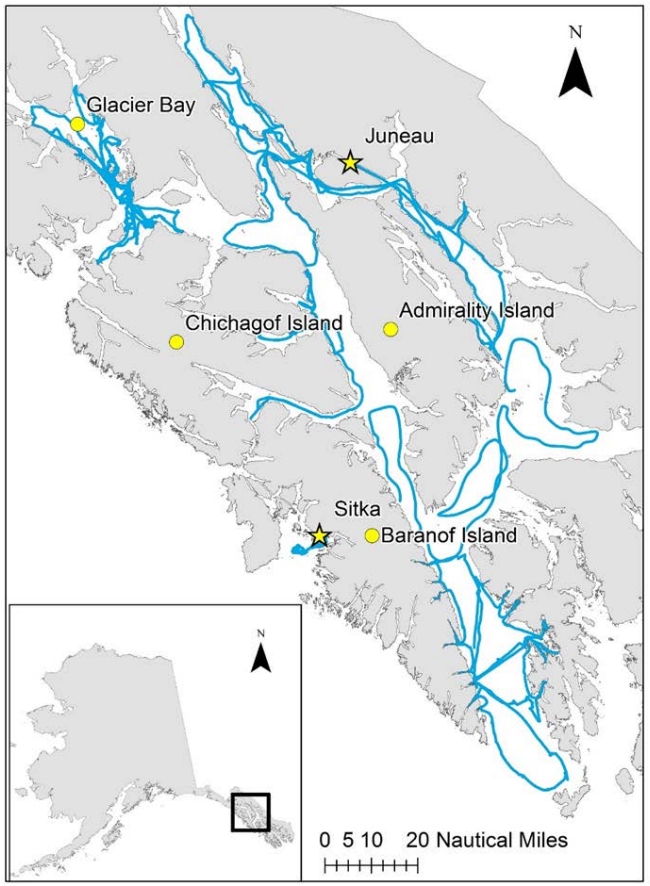
When: July-Aug 2016, 2017 (plan for annual survey)

Operations: Photo ID, counts, small boats, drones.

Indicators: Abundance, distribution, diets, Cyamid "Whale Lice", calf presence, condition.

Products: Collecting baseline data now, no analyses. Building on a 40 year database.

Northern southeast Alaska



Survey of Population Level Indices for Southeast Alaska Humpback (SPLISH)

Contact : Heintz, Moran

Drones & body condition

Proof of concept: Taking aerial photos and digitizing whale dimensions to examine body condition.

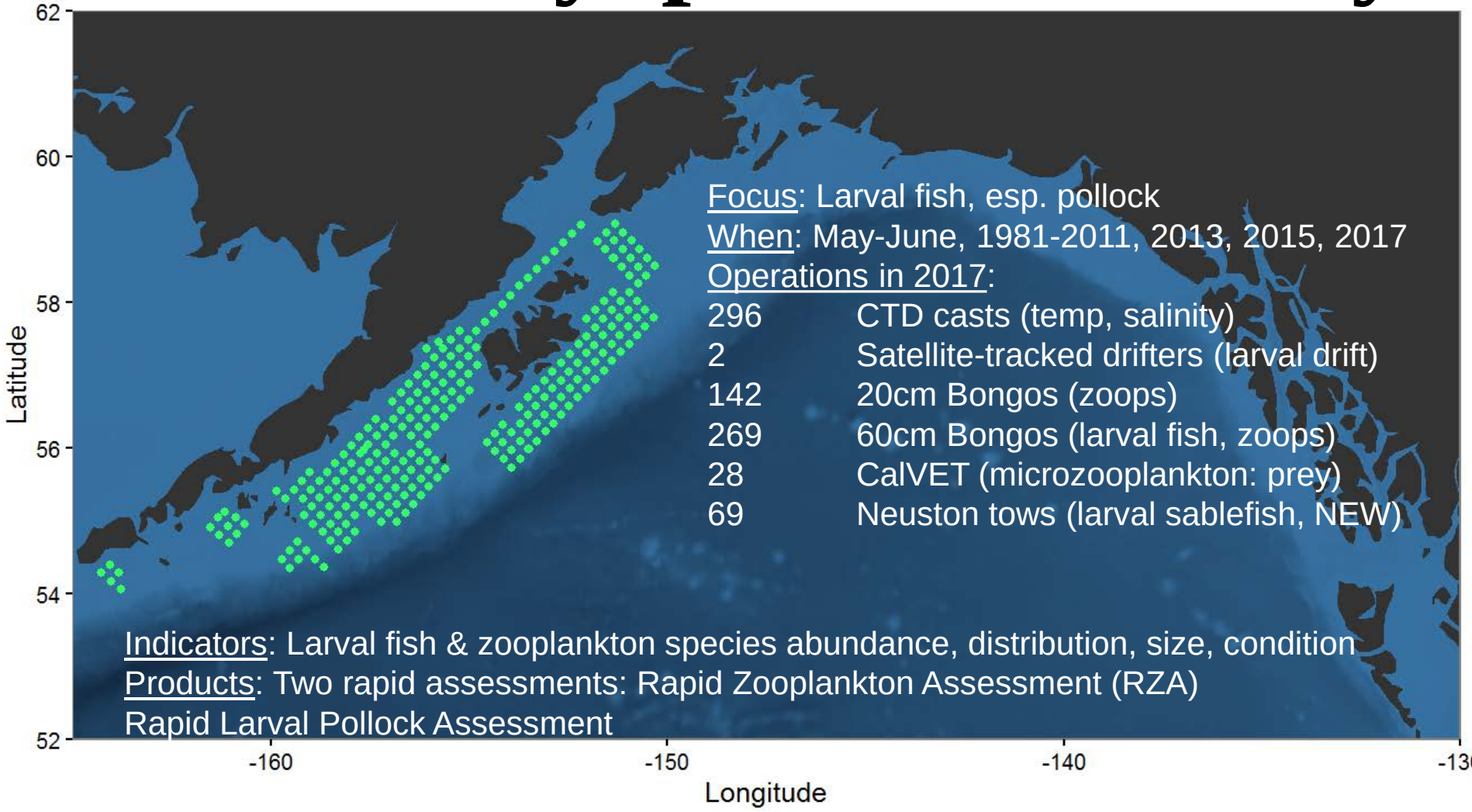
Why is this important? Whale condition is an integrated ecosystem index for prey, such as lipid-rich krill that are fed on by YOY groundfish.

Contact : Heintz, Moran

Western Gulf of Alaska

Spring Ichthyoplankton Survey
1981-2011, 2013, 2015, 2017

2017 Ichthyoplankton survey

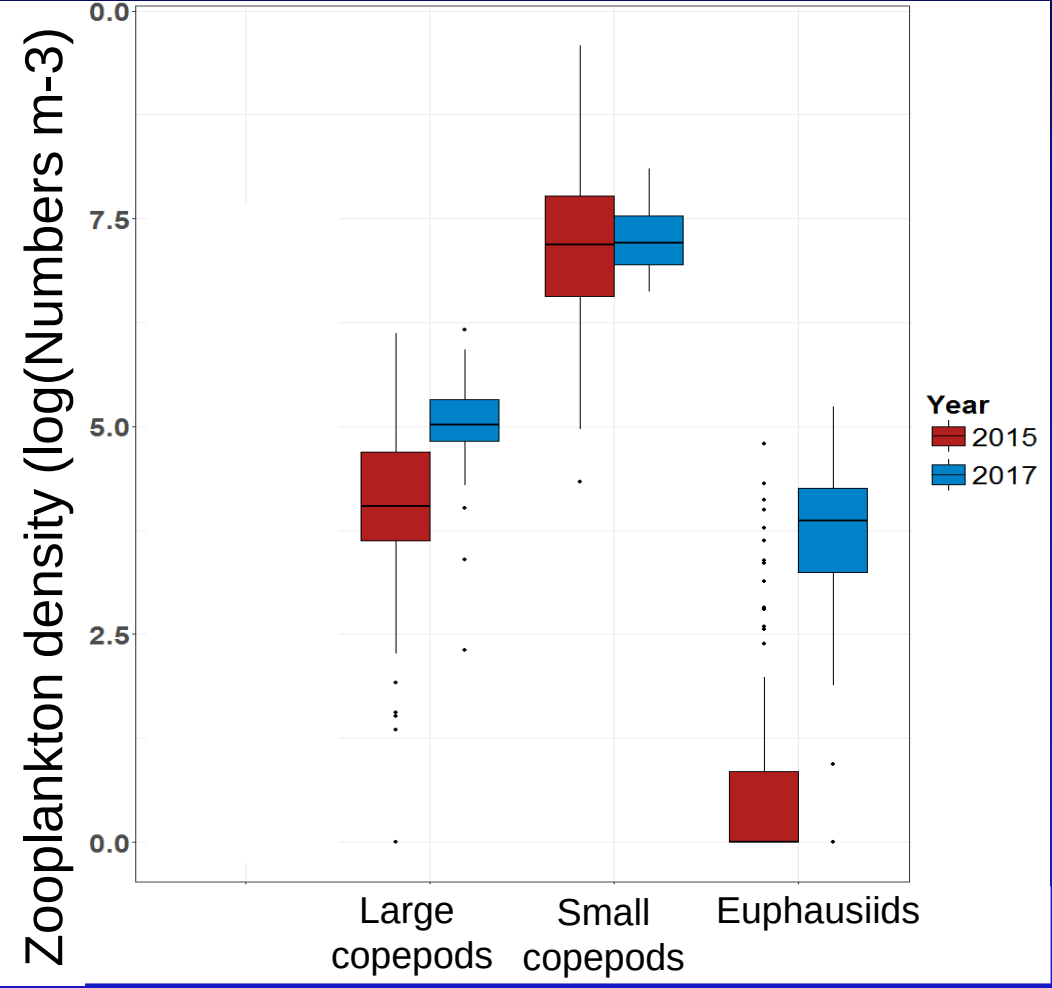


Focus: Larval fish, esp. pollock
When: May-June, 1981-2011, 2013, 2015, 2017
Operations in 2017:

296	CTD casts (temp, salinity)
2	Satellite-tracked drifters (larval drift)
142	20cm Bongos (zoops)
269	60cm Bongos (larval fish, zoops)
28	CalVET (microzooplankton: prey)
69	Neuston tows (larval sablefish, NEW)

Indicators: Larval fish & zooplankton species abundance, distribution, size, condition
Products: Two rapid assessments: Rapid Zooplankton Assessment (RZA)
Rapid Larval Pollock Assessment

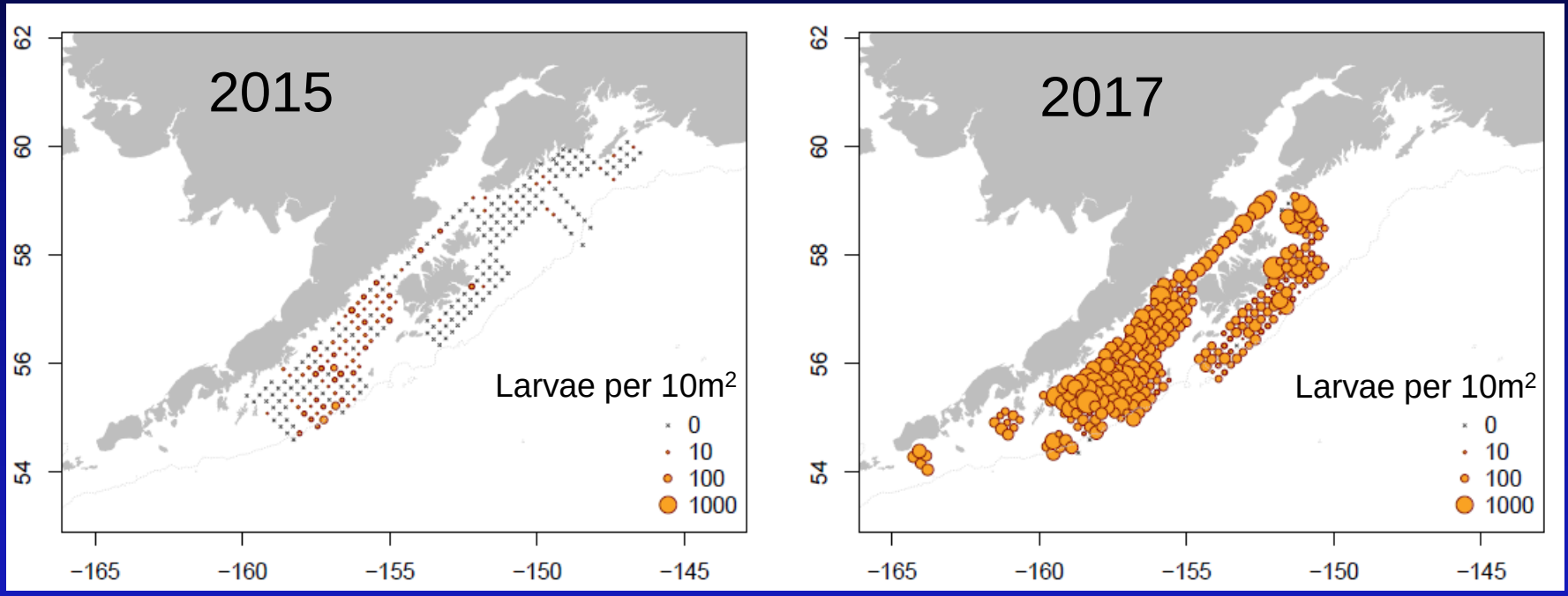
Rapid Zooplankton Assessment



- 2017: Significantly more large copepods and euphausiids than in 2015.
- Many lipid-rich copepods observed (*Calanus marshallae* and *Neocalanus spp.)*
- Larval pollock are eating copepod nauplii
- Large and small copepods are producers of prey.

Contact : Janet Duffy-Anderson

Rapid Larval Pollock Assessment



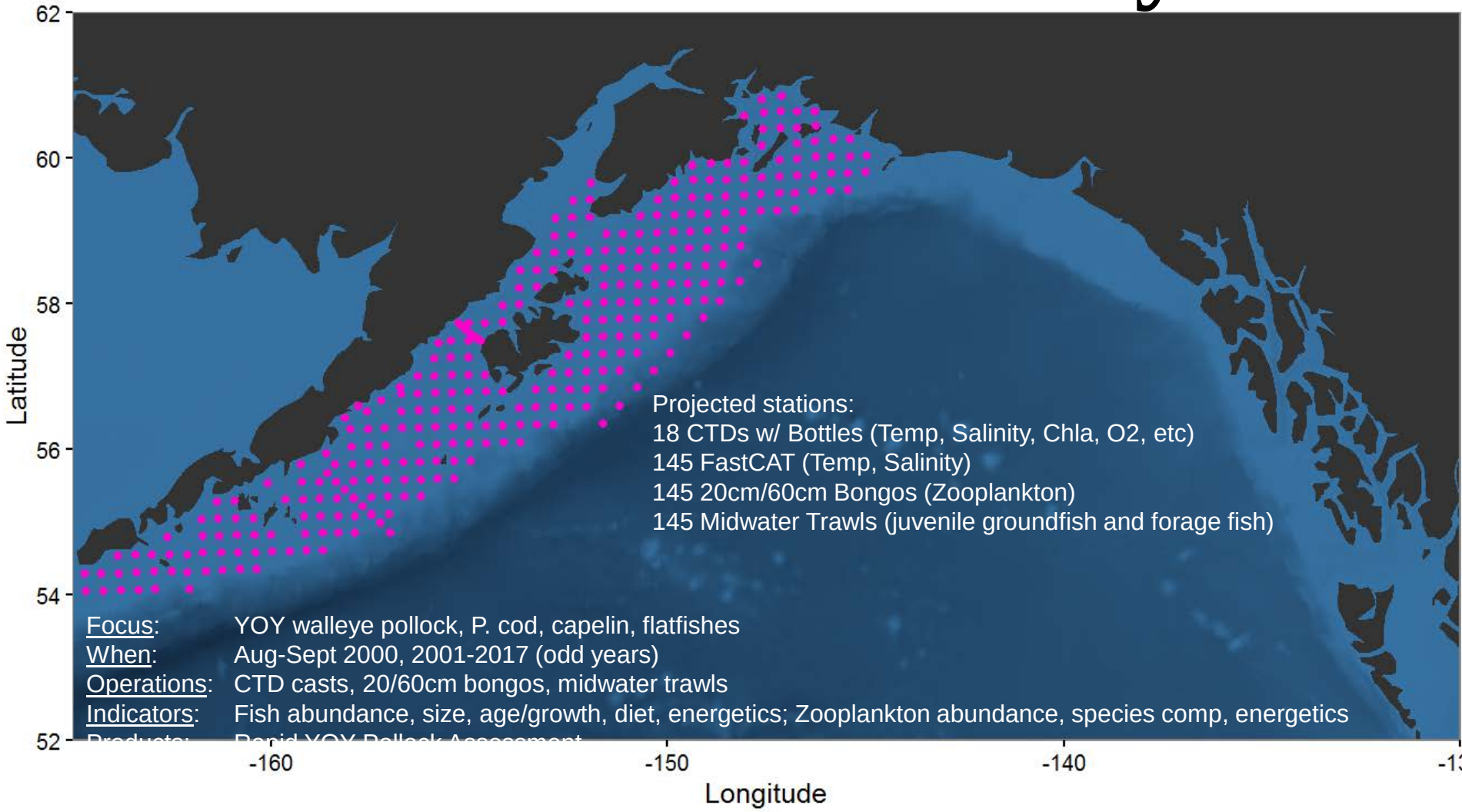
Larval pollock abundant and wide-spread across the shelf from Kodiak to the Shumagins

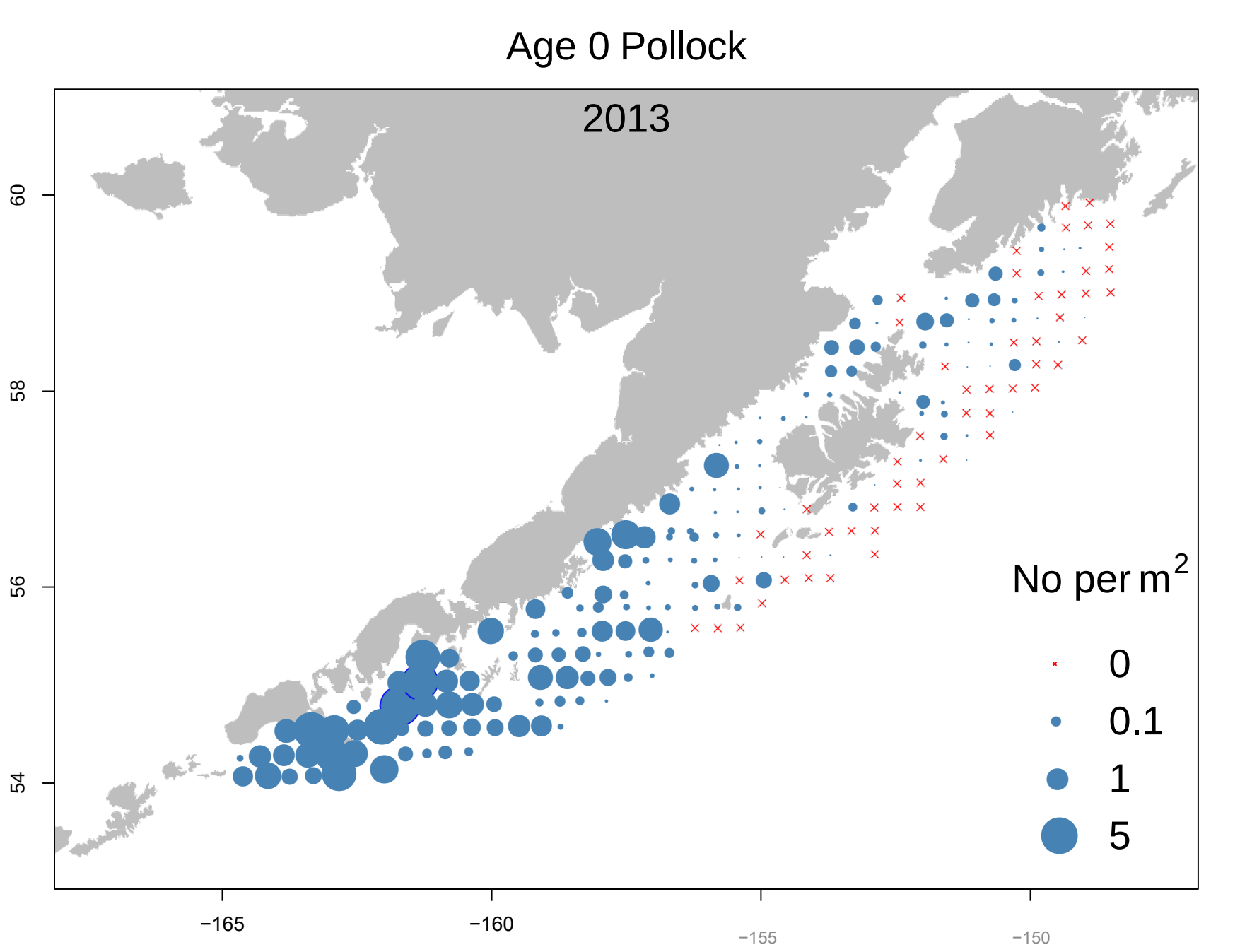
Contact : Janet Duffy-Anderson

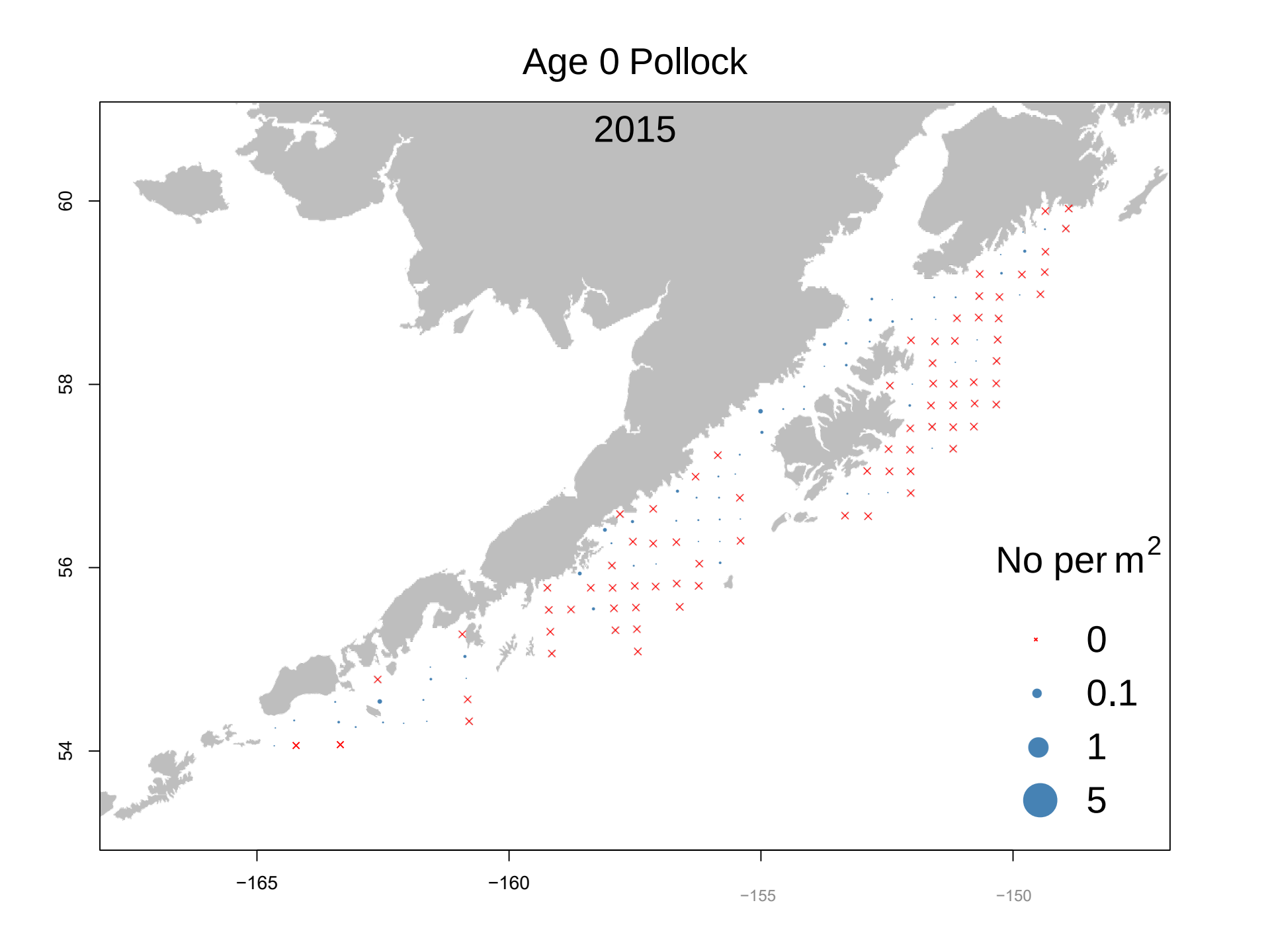
Western Gulf of Alaska

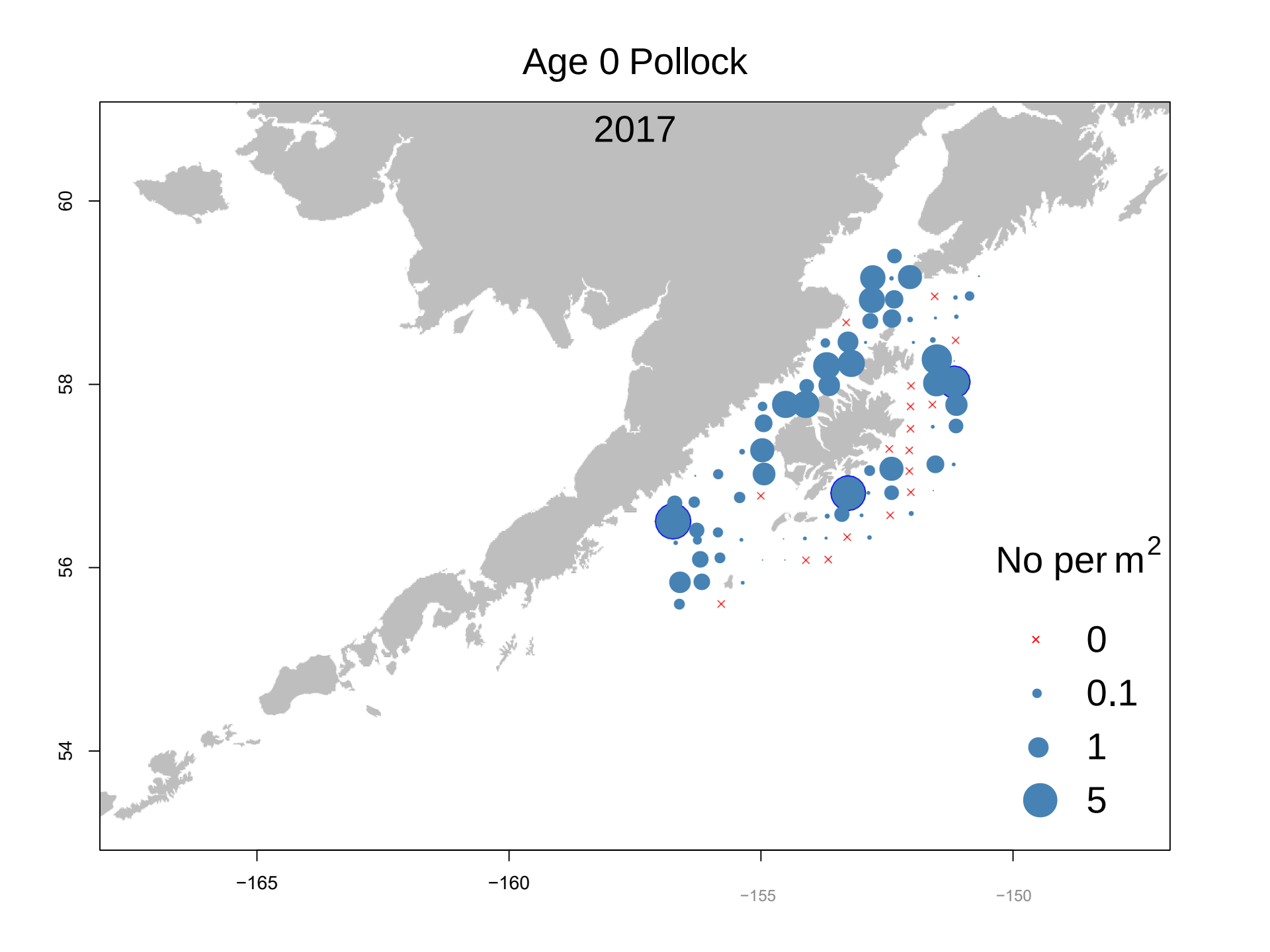
Late summer YOY survey

WGOA YOY survey




Age 0 Pollock
2013
60
58
56
54
−165
−160
−155
−150
No per m2
0
0.1
1
5


Age 0 Pollock
2015
60
58
56
54
−165
−160
−155
−150
No per m2
0
0.1
1
5


Age 0 Pollock
2017
60
58
56
54
−165
−160
−155
−150
No per m2
0
0.1
1
5

2017 GOA RPA surveys

EGOA inside waters
- ↓YOY pollock, juvenile salmon, capelin,
- average herring

EGOA YOY survey
- ↓ YOY pollock, P cod, rockfish, squid, herring, wolf eel
- ↑ YOY ATF, juvenile chum salmon

EGOA YOY sablefish survey
- ↓ YOY sablefish, YOY sablefish were up near Kayak Island
- New tagging & lab work

Whale surveys
- Potential overwintering index for pollock condition
- Whale health index based on drones

WGOA YOY survey
- ↑ larval pollock densities
- ↑ densities of copepods

WGOA larval survey
- ↑ YOY pollock catches

Acknowledgements

Jordan Watson (maps), John Moran (Whale survey), Wes Strasburger & Jamal Moss (EGOA), Jordan Watson & Emily Fergusson (SECM), Lauren Rogers (WGOA), Steph Zador (Review)