

# Alaska Regional Initiative (2012–2015)



**NOAA  
FISHERIES**

## AKCSI Team

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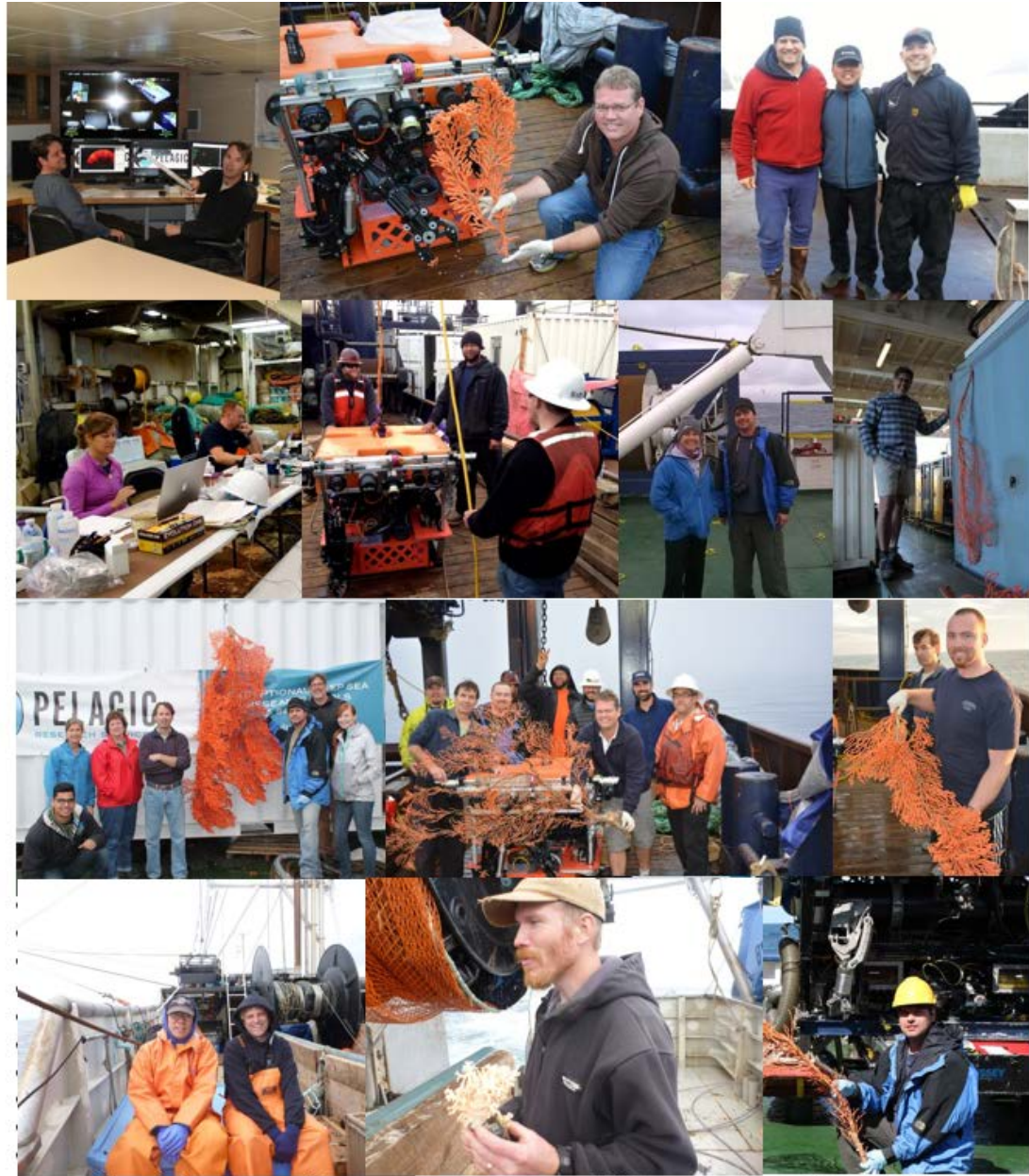
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John Tomczuk (OAR)

Gary Greene (MLML)



## Coral a

model

- Hot Spots

Co

Recovery

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based on priorities table & feasibility)



# Objectives of the Initiative

- Maps of distribution, abundance and diversity of sponge and coral
- Habitat and substrate maps
- Associations with FMP species and contribution to fisheries production
- Impacts of by gear type and modifications to reduce impacts
- Recovery and recruitment rates
- Long-term monitoring program for climate change & ocean acidification

# AK Initiative Timeline

## 3 – Year Plan

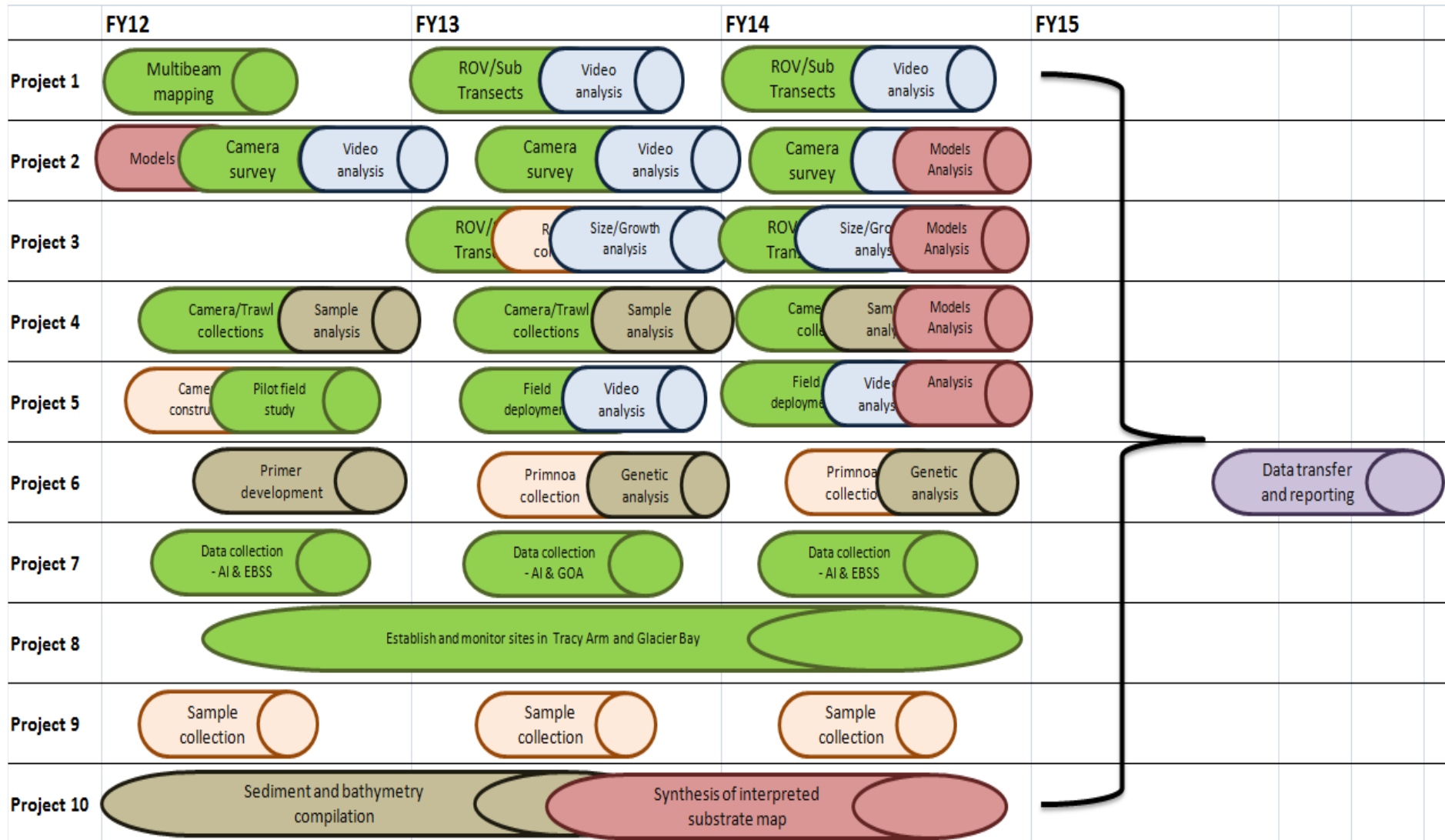
Field  
activity

Image  
analysis

Laboratory  
analysis

Sample  
collection

Data  
analysis

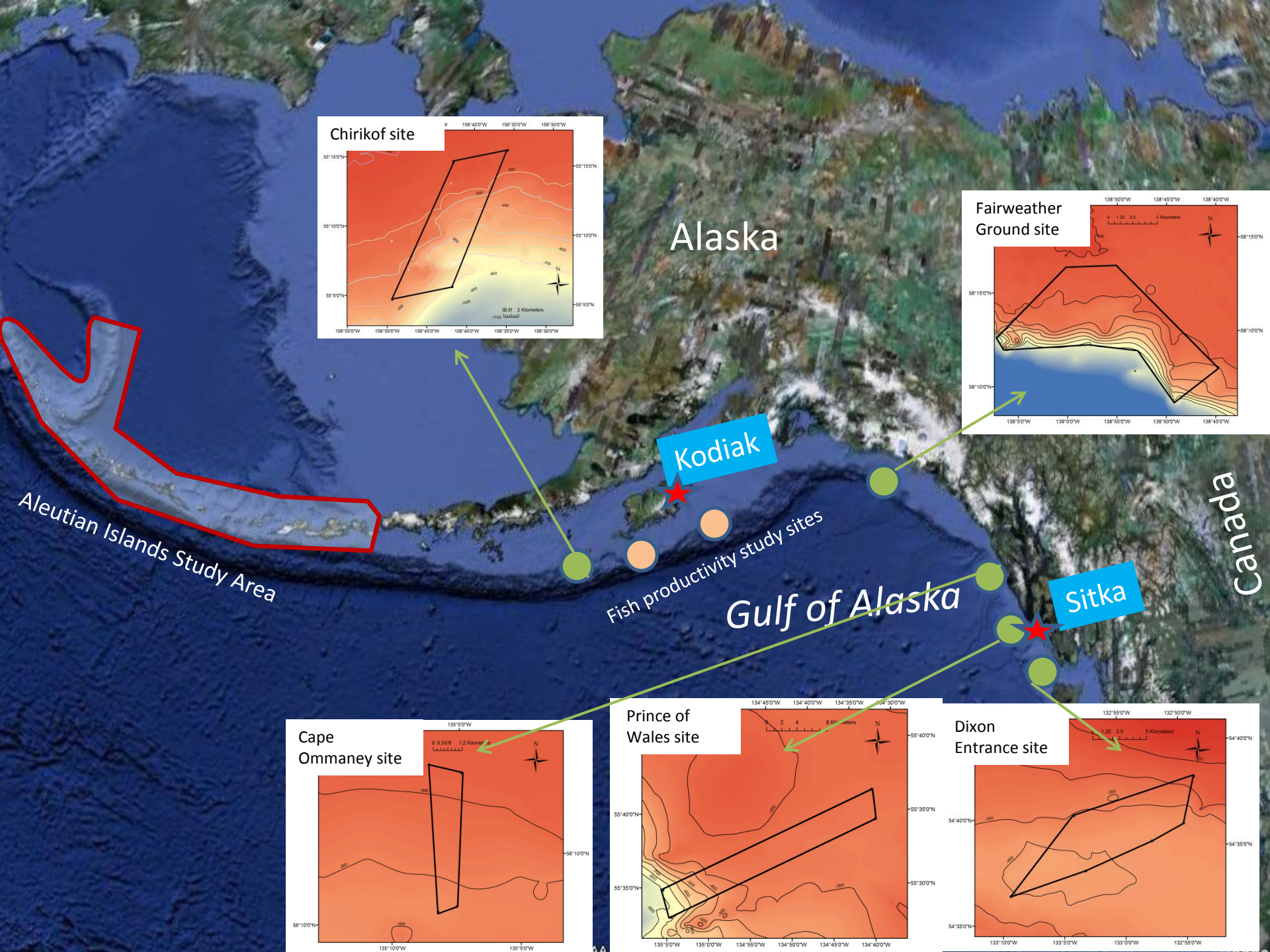


Data transfer  
and reporting



# Summary of Work

- 3 major field programs
- 12 associated analyses
- All 9 planned cruises were accomplished
  - FY14 -> FY15 for ROV fieldwork in SEAK
  - Government shutdown
- Some projects were piggy-backed onto vessels/cruises of opportunity
  - May have limited the outcome in a couple cases
- Generally, lab analyses have been completed
- Image analyses mostly complete
- Products on track to be delivered for all 10 projects
- Integrated into 2015 EFH review and other management processes where possible





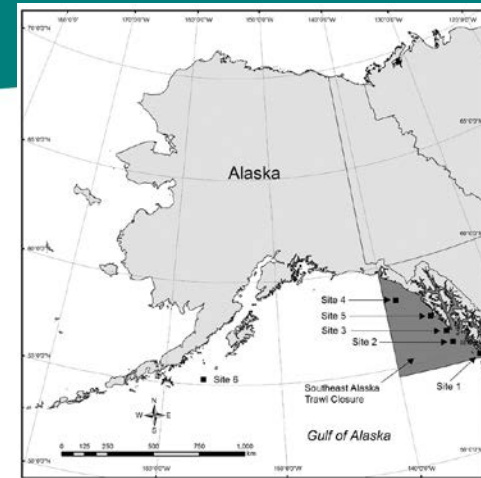
# Results

- Generally, work that achieved objectives was based on known methodology and had some background knowledge (bycatch data, existing multibeam, etc)
- Work that fell short was “experimental” or used newly developed tools or was underfunded
- Projects that exceeded expectations were generally using newly developed tools or were experimental
- All of these projects were adaptive

# Projects that worked well



## Project 1: *Primnoa* distribution



### Objective:

Identify and map thickets of *Primnoa* corals

### Method:

Multibeam mapping with ROV and camera surveys

Platform for multiple other studies

### Result:

Expanded the known range of *Primnoa* thickets in 2 of 5 areas

Observed evidence of coral degradation in Dixon Entrance

Observations of corals at 2 previously undocumented sites (no new thickets)



# Projects that didn't work so well



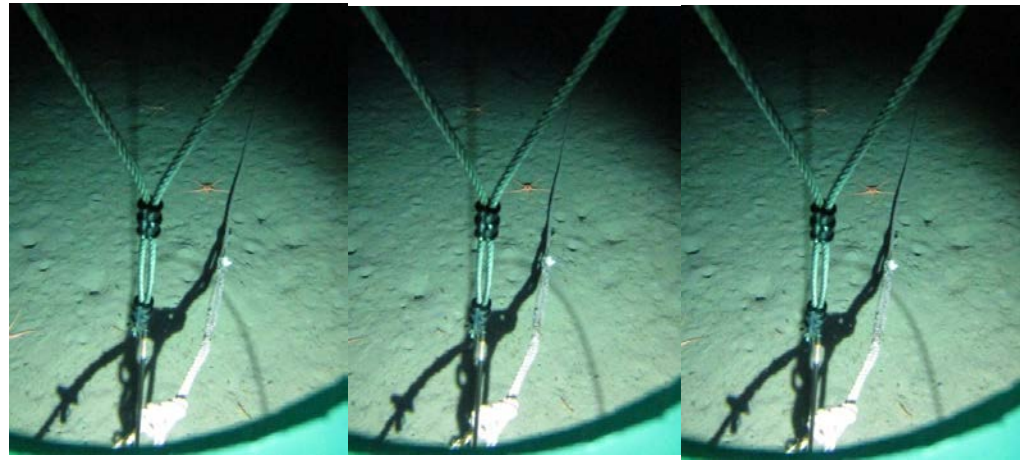
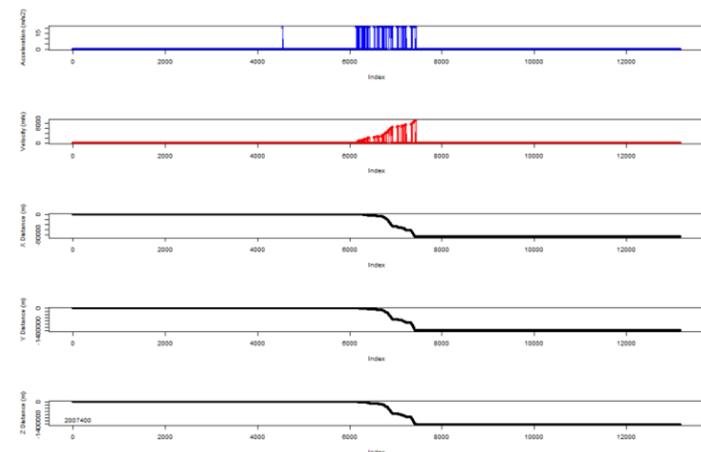
## Project 5: Gear impacts on habitat

**Objective:** Measure potential area swept by longline and pot gear

**Method:** Stereo camera and inertial instrumentation of gear during fishing operations

**Result:** Prototypes built and 14 successful deployments of camera  
Accelerometer data from 72 units (6 locations on 12 deployments)

**Issues:** Accelerometer data was very noisy  
Camera often tangled and images unusable  
Analyses ongoing, but needs work

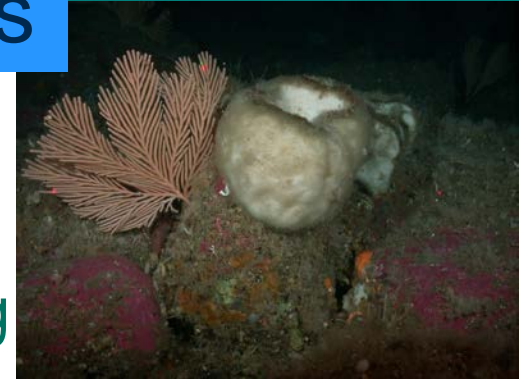


# Projects that exceeded expectations

SERVICE



## Project 2: Predictive modeling and groundtruthing corals and sponges



**Objective:** Predict and groundtruth the distribution and areas of high abundance and diversity of deep-sea corals and sponges

**Area covered:** Gulf of Alaska, EBS slope and shelf & Aleutian Islands

**Results:** Predictive models developed for all regions based on bottom trawl survey data

Groundtruthing conducted in AI and EBS\*

Presence-absence predicted very well, density not so well

**Bonus:** Project resulted in size structure information

Spin-offs to fish association project, bottom typing, EFH, etc.

Further development of new stereo video technology and analysis software (now in nationwide use)

Norwegians trying to automate processing

# Projects that were adaptive

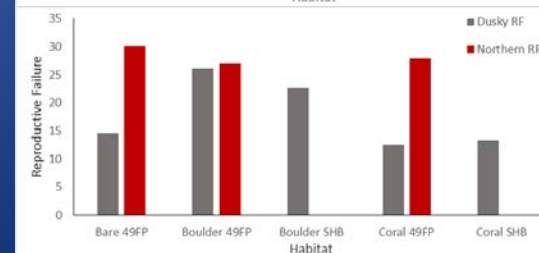
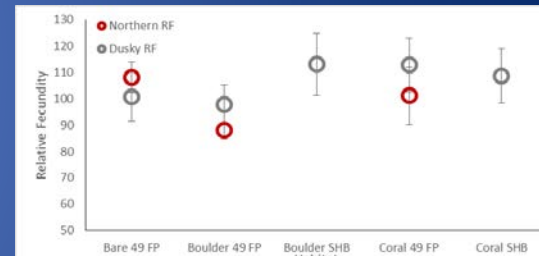
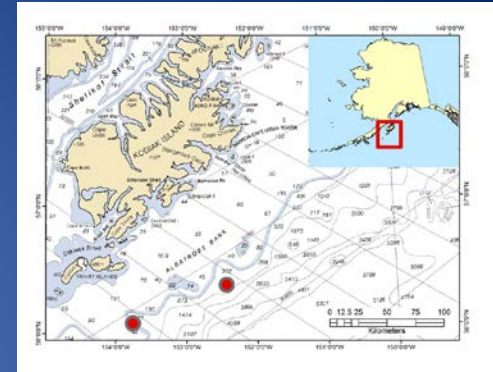
## Project 4: Rockfish production in coral habitat

**Objective:** Compare production measures of rockfish species inside/outside coral habitat

**Method:** Stereo imaging, semipelagic net, lab work

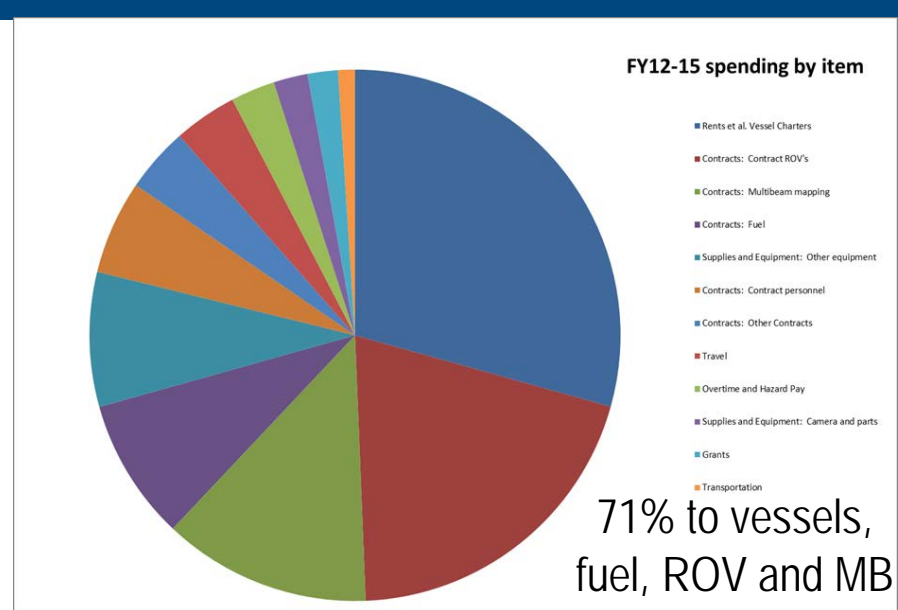
**Results:** Densities higher in coral and rocky habitat  
Reproductive condition higher in coral habitat  
Energy content was higher in coral and rocky habitat

**Adaptation:** One initial site did not have a good mix of coral, non-coral habitat, had to choose another  
Outside funding to do seasonal cruises  
Partnerships with ABL, REFM to do lab work  
Contracted local commercial fishing vessels to assist in collection techniques



# Challenges

- Ship time not available
- Short weather window
- Late funding arrival in FY
- Contracting and administrative support
  - Hire full time project administrator
- Government shutdown
- At AFSC no real habitat infrastructure or program and primary focus on stock assessment
- Integrating into existing programs and getting personnel time





# Standardized Data Products

- Site characterization reports not easy
  - Template organized around ROV/site explorations
  - 3 produced so far for EBS, AI and FMP studies
- Standard data products easily integrated into databases
  - MB, models, point processes
  - Absences not captured
  - Size and association data capture a little inefficiently
- Significant lag for data



# Initiative Operation


## Things that work

- Multi-year funding was great for designing and accomplishing projects
- Small projects can keep continuity between initiatives and assist in prep work in off-years
- Small projects have also been critical for data mining
- Data portal is being used and is very informative

## Suggestions

- Some funding in 2<sup>nd</sup> Quarter
- Priority on vessel time
- 4<sup>th</sup> year of synthesis at lower cost?

Operations								
	Year (Days at Sea)	MB Map	Vessel	Dives			Reports	
Project (Location)				Number	Annotation	Summary	Cruise	Site Char
Southeast Alaska Primnoa study	2012 (12)	573 km²	R/V Pacific Star				Y	N
	2013 (14)		F/V Alaska Provider		N	N	Y	N
	2013 (5)		R/V Medeia	10 (SDC)	Y	Y	Y	N
	2015 (10)		R/V Dorado Discovery		N	Y	Y	N
Aleutian Islands mapping study	2012 (15)		F/V Sea Storm	106 (SDC)	Y	Y	Y	Y
	2014 (25)		F/V Alaska Endeavor	110 (SDC)	Y	Y	Y	Y
Gulf of Alaska fish productivity study	2012 (6)		F/V Pacific Storm	19 (SDC)	Y	Y	Y	Y
	2014 (7)		F/V Gold Rush	19 (SDC)	Y	Y	Y	Y
	2014 (8)		F/V Gold Rush	2 (SDC)	Y	Y	Y	Y
TOTAL	102	573		266				



# Small Projects – 12 from FY10-17

## Basis for regional fieldwork

- FY09 - A Field Guide to the Deepwater Sponges of the Aleutian Islands Archipelago
- FY11 07 - Data Mining to Support Deep-Sea Coral and Sponge Research in Alaska
- FY12 03 - Predicting Tidal Currents for the Aleutian Islands and Gulf of Alaska
- FY12 02 – Support for Predictive Habitat Modeling for Alaska’s Deep-Sea Coral and Sponge Resources

## Seeded by regional fieldwork

- FY16-07 Analyses to assess habitat associations for rockfish and coral, summarize new research on Bowers Bank and Ridge and create a story map for the eastern Bering Sea Canyons

## Stand-alone

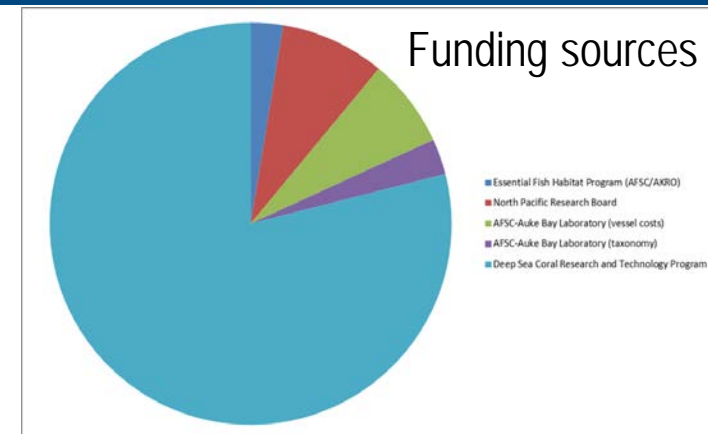
- FY11 02 - Assessing the Effectiveness of the Aleutian Islands Habitat Conservation Area in Protecting Deep-Sea Coral and Sponge Habitat
- FY12 01 - Assessment of Coral Bycatch from the Alaska Groundfish Trawl Fleet in Collaboration with the North Pacific Fisheries Observer Program
- FY14 01 - Exploring off-bottom trawling and other approaches to avoid interactions with structure-forming invertebrates during Pacific Ocean perch fishing on the Bering Sea slope
- FY15 01 - Summit on role of deep-sea corals and sponges as habitat on West Coast and in Alaska
- FY16-06 - Coral and Sponge Diversity in the eastern Bering Sea of Alaska
- FY16-08 - Extended analyses of deep-sea corals and sponges from past AFSC surveys
- Genetics of Deep-Sea Corals - Taxonomic and Genetic Identification of Fisheries Bycatch of Deep-Sea Corals

# Applications (to date)

- Sediment/bathymetry/models used in EFH revisions
- Monitoring data used in Ecosystem Considerations chapter of SAFE
- Coral data incorporated into AI Integrated Ecosystem Assessment
- 18 publications in review, press or published
- 23 new species of demosponge (plus range and depth extensions)
- Incorporation of analyses and data into NPFMC decision on EBS canyons
- Final report submitted – December 2016

# Conclusions

- Most objectives were met
- Some left room for further study
- Logistics and balancing costs were difficult in Alaska
- Vessel time was unavailable, transit costs were an issue, and vehicles were often limited, driving up costs and reducing at-sea days
- 3-year format allowed us to formulate a long term plan, adjust from year to year and achieve success
- Having a 3-year plan allowed us to leverage support from other sources (NPRB, EFH, Co-operative research)



# Future Plans and Priorities

- Field validation of Gulf of Alaska distribution models
- Assessment of the effectiveness of current fishing closures/spatial management
- Population assessment for major corals in each region
- Longline and pot gear impacts rates for coral and sponge
- Further research on fish productivity in coral/sponge ecosystems
- Research in the Arctic?
- Construct benthic habitat maps

