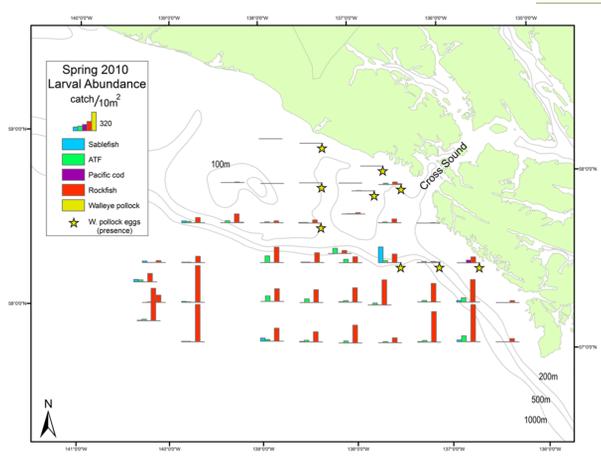


Preliminary Observations on Fish Eggs and Larvae Collected During GOA-IERP Cruises in 2010 and 2011

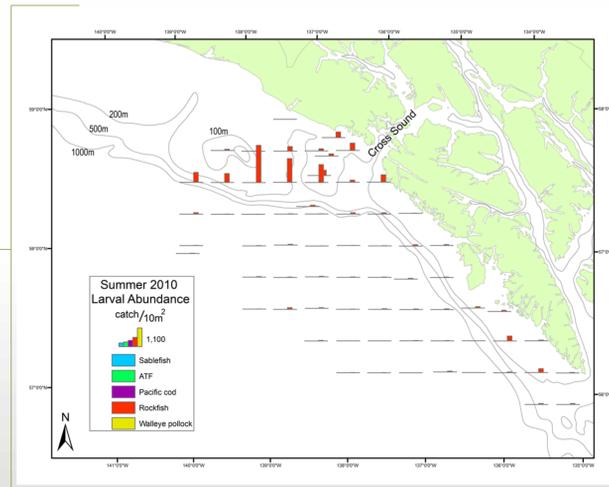


Lisa De Forest, Ann Matarese, Jeff Napp, and Miriam Doyle
Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Seattle, WA, USA 98115



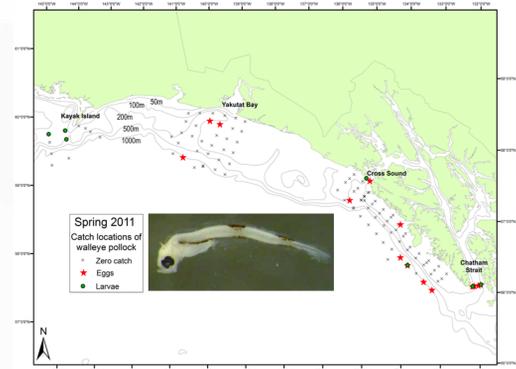
Spring 2010 (15-24 April)

- Of the five target species, only eggs of walleye pollock were collected. The highest concentration of eggs was NW of Cross Sound.
- Larvae of all five target species were collected.
- Rockfish were the most abundant larvae collected, with the majority collected in deep water, south of Cross Sound.
- Highest abundance of sablefish larvae was at the shelf break.
- Arrowtooth flounder larvae were collected in deep water.
- Larvae of both walleye pollock and Pacific cod were rare and only collected on the shelf.



Summer 2010 (4-22 July)

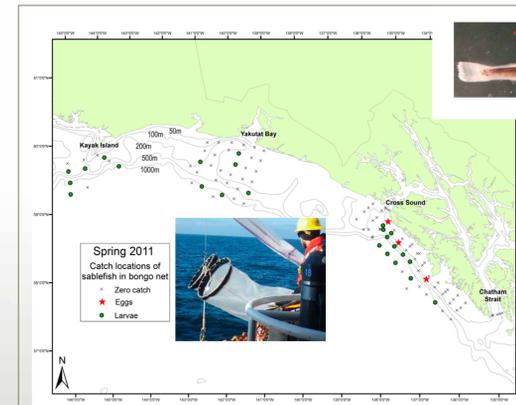
- No eggs of the target species were collected.
- Of the five target species, only larvae of rockfish were collected.
- The distribution of rockfish larvae in summer was different from the distribution in spring. Larvae were more abundant on the shelf, NW of Cross Sound. Average individual size of larvae (4.79±2.86 mm) was not significantly different than spring (4.93±0.96 mm), although several larger larvae (10-20 mm) were collected in the summer.



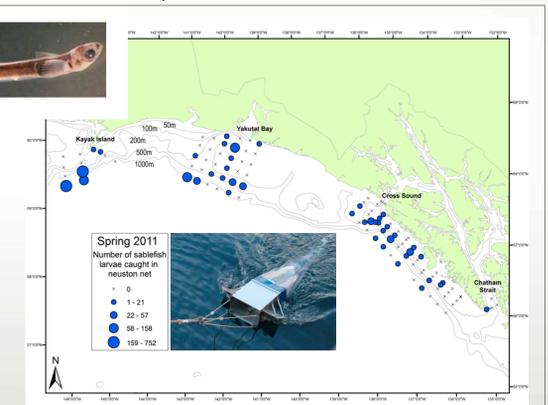
Walleye pollock eggs and larvae were collected. The eggs were collected in deep water on the shelf and at the entrance to Chatham Strait. Few larvae were collected; they were found as far south as Chatham Strait and as far north as Kayak Island.

Spring 2011 (3-17 May)

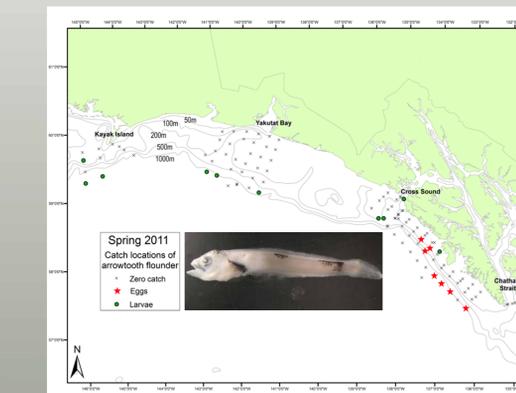
- Samples from this cruise have been counted in Poland, but have not yet been verified at the AFSC. Abundance estimates will soon be available.
- Larvae of four of the five target species were collected (all except Pacific cod).
- Eggs from three of the five target species were collected.



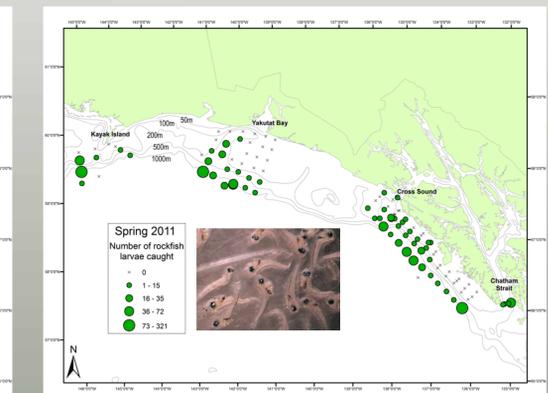
A few sablefish eggs were collected near the shelf break south of Cross Sound. Sablefish larvae were also collected in the bongo net both on and off the shelf.



The neuston net was a more effective sampling gear for sablefish larvae than the bongo with the distribution of larvae captured being much broader. Larvae were found at many more stations, with the highest numbers generally occurring at the shelf break.



Arrowtooth flounder eggs and larvae were collected along the shelf break and in deep water. The larvae collected this year were larger (9.5-22.0 mm) than those collected in 2010 (6.0-12.0 mm).



Most rockfish larvae were collected in deep water; they were ubiquitous and frequently encountered throughout the study area.

Overall Species Diversity

Larvae	Spring 2010	Summer 2010	Spring 2011
Clupeiformes			
Pacific herring (<i>Clupea pallasii</i>)			X
Osmeriiformes			
Popeye blacksmelt (<i>Bathylagus ochotensis</i>)		X	X
Pacific blacksmelt (<i>Bathylagus pacificus</i>)	X	X	X
Northern smoothtongue (<i>Leuroglossus schmidtii</i>)	X	X	X
Capelin (<i>Mallotus villosus</i>)		X	
Stomiiformes			
Pacific viperfish (<i>Chauliodus macouni</i>)			X
Unidentified hatchetfish (Sternoptychidae)		X	
Myctophiformes			
Chubby flashlightfish (<i>Electrona risso</i>)	X		
Northern flashlightfish (<i>Protomyctophum thompsoni</i>)	X	X	X
Northern lampfish (<i>Stenobrachius leucoparus</i>)	X	X	X
Gadiformes			
Pacific cod (<i>Gadus macrocephalus</i>)	X		
Walleye pollock (<i>Theragra chalcogramma</i>)	X		X
Scorpaeniformes			
Sablefish (<i>Anoplopoma fimbria</i>)	X		X
Scaleyhead sculpin (<i>Artedius harringtoni</i>)	X	X	
Rosylip sculpin (<i>Ascelichthys rhodorus</i>)			X
Gray starsnout (<i>Bathygonus alascanus</i>)	X		X
Spinycheek starsnout (<i>Bathygonus infraspinus</i>)			X
Blackfin poacher (<i>Bathygonus nigripinnis</i>)	X		X
Red Irish lord (<i>Hemilepidotus hemilepidotus</i>)	X		X
Brown Irish lord (<i>Hemilepidotus spinosus</i>)	X		X
Kelp greenling (<i>Hexagrammos decagrammus</i>)	X		X
Masked greenling (<i>Hexagrammos octogrammus</i>)	X		X
Unidentified sculpin (<i>Icelinus</i> spp.)	X		
Silpskin snailfish (<i>Liparis fucensis</i>)	X	X	X
Darkfin sculpin (<i>Malacocottus zonorus</i>)			X
Lingcod (<i>Ophiodon elongatus</i>)	X		X
Thornback sculpin (<i>Paricelinus hopliticus</i>)	X		X
Slim sculpin (<i>Radulinus asprellus</i>)			X
Puget Sound sculpin (<i>Ruscarius meanyi</i>)	X	X	X
Unidentified rockfish (<i>Sebastes</i> spp.)	X	X	X
Roughspine sculpin (<i>Triglops macellus</i>)	X		
Perciformes			
Pacific sand lance (<i>Ammodytes hexapterus</i>)	X		X
Wolf-eel (<i>Anarrichthys ocellatus</i>)			X
Unidentified searcher (<i>Bathymaster</i> spp.)		X	X
Dwarf wrymouth (<i>Cryptacanthodes aleutensis</i>)	X		X
Ragfish (<i>Icosteus aenigmaticus</i>)		X	
Daubed shanny (<i>Lumpenus maculatus</i>)	X		X
Whitebarred prickleback (<i>Poroclinus rothrocki</i>)	X		X
Northern ronquill (<i>Ronquillus jordani</i>)	X	X	X
Prowfish (<i>Zaprora silenus</i>)			X
Pleuronectiformes			
Arrowtooth flounder (<i>Atheresthes stomiad</i>)	X		X
Rex sole (<i>Glyptocephalus zachirus</i>)		X	
Flathead sole (<i>Hippoglossoides elassodon</i>)	X		X
Pacific halibut (<i>Hippoglossus stenolepis</i>)	X		X
Southern rock sole (<i>Lepidopsetta bilineata</i>)	X		
Yellowfin sole (<i>Limanda aspera</i>)		X	
Slender sole (<i>Lyopsetta exilis</i>)		X	
Dover sole (<i>Microstomus pacificus</i>)		X	

Emerging Questions

Was 2011 unusual in terms of timing of spawning and subsequent development rates of larvae?

- Direct comparisons between the 2010 and 2011 spring cruises are difficult due to different timing of the cruises and the late spring bloom in 2011.
- Levels of abundance and size ranges of species of larvae from the 2010 and 2011 cruises will be compared to April and May data from the historical sampling in the WGOA.

How do taxonomic composition, levels of abundance among species, larvae sizes and distribution patterns from the Eastern GOA compare with the western GOA?

- We anticipate spring WGOA results will be available in Spring 2012 and summer western and eastern GOA results will be available in Summer 2012.

Eggs	Spring 2010	Summer 2010	Spring 2011
Osmeriiformes			
Northern smoothtongue (<i>Leuroglossus schmidtii</i>)			X
Gadiformes			
Unidentified grenadier (Macrouridae)		X	X
Walleye pollock (<i>Theragra chalcogramma</i>)	X		X
Scorpaeniformes			
Sablefish (<i>Anoplopoma fimbria</i>)			X
Perciformes			
Ragfish (<i>Icosteus aenigmaticus</i>)		X	X
Pleuronectiformes			
Arrowtooth flounder (<i>Atheresthes stomiad</i>)			X
Pacific sanddab (<i>Citharichthys sordidus</i>)	X	X	X
Deepsea sole (<i>Embassichthys bathybius</i>)	X		X
Rex sole (<i>Glyptocephalus zachirus</i>)	X	X	X
Flathead sole (<i>Hippoglossoides elassodon</i>)	X		X
Butter sole (<i>Isopsetta isolepis</i>)		X	
Yellowfin sole (<i>Limanda aspera</i>)		X	
Slender sole (<i>Lyopsetta exilis</i>)		X	X
Dover sole (<i>Microstomus pacificus</i>)		X	X
Alaska plaice (<i>Pleuronectes quadrituberculatus</i>)			X
C-O sole (<i>Pleuronichthys coenosus</i>)			X



Additional Samples for Analysis

- Final verification of the R/V *Thompson* cruise. Length analysis of larvae. Estimated Completion: Spring 2012.
- The spring R/V *Tiglex* cruise in 2011 collected 47 neuston and 46 bongo samples on the shelf and at the shelf break in the western GOA. Estimated Completion: Spring 2012.
- The summer F/V *Northwest Explorer* collected 52 neuston and 50 bongo samples in the southeast and 53 neuston and bongo samples in the western GOA. Estimated Completion: Summer 2012.
- There were four MOCNESS tows on the spring 2011 cruise. Preliminary data from these tows indicate that walleye pollock eggs occur more frequently in the deeper nets (>200 m) and that although rockfish larvae occur throughout the water column, they were also collected in greater numbers in the deeper nets.