ATTACHMENT C *EVOSTC Annual Project Report Form*

Form Rev. 10.3.14

*Please refer to the Reporting Policy for all reporting due dates and requirements.

1. Program Number: *See*, Reporting Policy at III (C) (1).

14120111-L

2. Project Title: *See*, Reporting Policy at III (C) (2).

PWS Herring Program – Herring Condition Monitoring (HCM project)

3. Principal Investigator(s) Names: *See*, Reporting Policy at III (C) (3).

Ron Heintz and Fletcher Sewall (NOAA/Auke Bay Labs), Scott Pegau and Kristen Gorman (PWSSC)

4. Time Period Covered by the Report: *See*, Reporting Policy at III (C) (4).

1 February 2014 to 31 January 2015

5. Date of Report: *See*, Reporting Policy at III (C) (5).

February 2015

6. Project Website (if applicable): *See*, Reporting Policy at III (C) (6).

Http://pwssc.org/research/fish/pacific-herring/

7. Summary of Work Performed: *See*, Reporting Policy at III (C) (7).

Project Summary for this reporting period

The juvenile HCM project is a collaborative effort between the Prince William Sound Science Center (PWSSC) and the Auke Bay Laboratory (ABL). This is the third year of sampling within the Herring Research and Monitoring (HRM) program although the work is a continuation from similar efforts in the Prince William Sound (PWS) Herring Survey program. The core of this project involves the collection of age-0 Pacific herring (*Clupea pallasii*, hereafter herring) at two time periods during winter, November and March, to assess energetic strategies that might influence over-winter survival throughout PWS. Specific objectives for the HCM project follow:

Objective 1. Monitor juvenile herring condition by sampling in November.

Objective 2. Monitor juvenile herring condition by sampling in March.

Objective 3. Apply resultant observations from Objectives 1 and 2 to continue refining an overwintering mortality model with the addition of physiological indicators.

Objective 4. Monitor seasonal changes in juvenile herring diets (November vs. March) and examine relationship between diet and herring condition (objective not specifically defined in earlier proposals).

A new development in 2014 for this project was the addition of Dr. Kristen Gorman to serve as PI on this project, continuing Dr. Tom Kline's initial work with the HRM program. Dr. Kline left the PWSSC in June 2013 and Dr. Gorman joined the program in July 2014. Thus, there was a year lag in filling the

PI position, which caused some delays in sample processing and data summary. Dr. Scott Pegau (PWSSC) coordinated the HCM project in the interim between summer 2013 and summer 2014 during which time two technicians (one tech working through May 2014 and another tech working between June and August 2014) continued to make progress on sample processing in lab. Since Dr. Gorman's arrival at PWSSC, the project has hired a series of technicians (two techs between November 2014 – March 2015 and one tech to begin and continue the laboratory work in March 2015). These technicians have been tasked with 1) completing the November 2014 herring research cruise, 2) working on the backlog of bomb calorimetry samples of age-0 herring from 2012 onwards that serve as a comparison with the isotope-derived estimates of juvenile herring, 3) process samples collected in November 2014 for isotope and bomb calorimetry analyses, and 4) begin collections of age-0 herring for dual energetics and disease measurements in Cordova Harbor starting in January 2015.

During the 2014 project, samples were successfully collected in March and November 2014. March sampling was conducted in collaboration with Cordova fisherman (CDFU) where local herring fisherman use cast and gill nets to collect age-0 herring from several study sites located throughout PWS (Fig. 1).

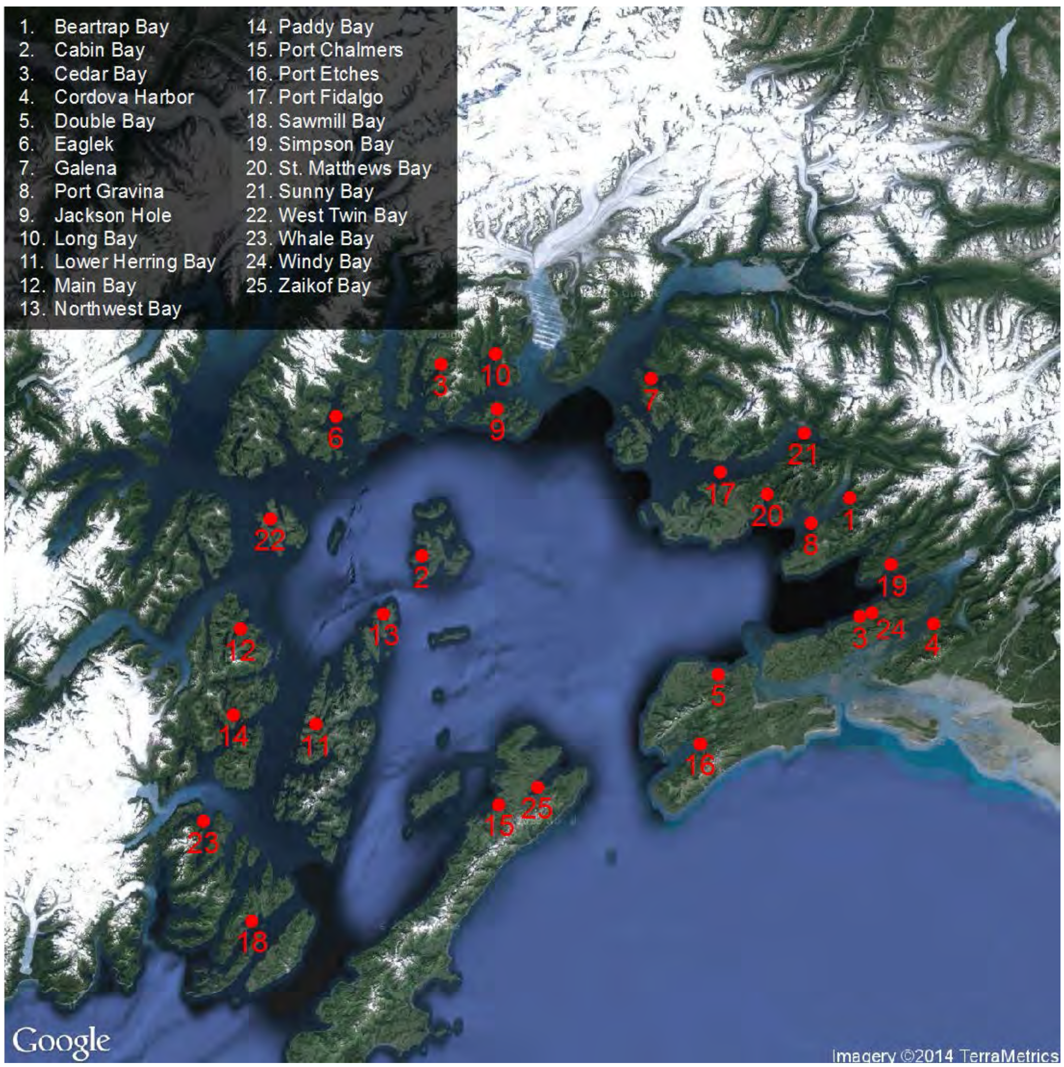

Figure 1. Sampling locations for juvenile herring condition monitoring throughout Prince William Sound.

The following samples were collected in the field during March 2014 for energetics analysis at PWSSC:

Date	*Location*	*Sample Size (n)*	*Collector*
3/16-17/2014	Fidalgo	152	CDFU
3/16-17/2014	Lower Herring Bay	146	CDFU
3/17-18/2014	Gravina	50	CDFU
3/18/2014	Zaikof Bay	94	CDFU
3/21/2014	Cordova Harbor	4	PWSSC

November sampling was conducted by PWSSC aboard a charter vessel primarily using trawl equipment, although other types of gear are sometimes used such as cast and gill nets. The following sample sizes were collected in the field during November 2014 for energetics analysis at PWSSC:

Date	*Location*	*Sample Size (n)*	*Collector*
11/15-16/2014	Simpson Bay	340	PWSSC
11/16/2014	Gravina	158	PWSSC
11/17/2014	Fidalgo	26	PWSSC
11/18-19/2014	Eaglek	121	PWSSC
11/19-20/2014	Lower Herring Bay	51	PWSSC
11/20/2014	Whale Bay	182	PWSSC
11/23/2014	Zaikof Bay	34	PWSSC
11/23/2014	Windy Bay	84	PWSSC

Monthly winter sampling to obtain disease and energetic data has been initiated during 2015 in Cordova Harbor. Cast nets are used to catch age-0 herring that are processed for disease in collaboration with Dr. Paul Hershberger's work (n = 60). An additional set of samples (n = 20) is collected and processed for coupled disease and energetics data where the energy analysis is performed at PWSSC using bomb calorimetry. The following samples have been collected for this project in the 2014 fiscal year:

Date	*Location*	*Sample Size (n)*	*Collector*
1/7/2015	Cordova Harbor	60	PWSSC

Lipid and RNA/DNA analyses as indicators of fish condition and growth were conducted at ABL on the following samples:

Date of sampling	*Location*	*Sample Size (n)*
Nov-2013	Eaglek	20
	Lower Herring	39*
	Port Fidalgo	15
	Port Gravina	20
	Simpson	20
	Whale	9
	Zaikof	15
Mar-2014	Lower Herring	20
	Port Fidalgo	20
	Port Gravina	17
	Simpson	38*
	Zaikof	20

*Sample sizes were increased to enable comparisons among multiple gear types.

Processing of stomach contents samples for identification and enumeration of prey taxa was also completed for these fish. Compilation and proofing of the diet data is in progress.

Project deliverables for this reporting period

Annual PI Meeting: A PI meeting was held in March 2014 attended by both Drs. Heinz and Pegau. Another PI meeting was held in Anchorage during November 2014 and was attended by both Drs. Pegau and Gorman. Dr. Ron Heinz and Fletcher Sewall were unable to attend the November 2014 PI meeting. However, Dr. Heinz presented results from this project at the EVOSTC Science Panel Meeting that took place in Anchorage during February 2015 in preparation for the next round of RFPs by EVOSTC.

March Juvenile Herring Collections: Completed March 2014. Samples sent to Auke Bay Labs in April 2014.

Submit FY2015 Work Plan for Review: Work Plan was submitted in August 2014 to match the current EVOSTC reporting dates.

Reporting: A semi-annual project report was submitted to NOAA in August 2014.

Submit synthesis to EVOS Science Council: The Synthesis Report was submitted to EVOSTC in November 2014, which included updated analyses of this dataset and new analysis of stable isotope data as a proxy of Gulf of Alaska carbon influence on herring energetics.

November Juvenile Herring Collections: Completed November 2014. Samples sent to Auke Bay Labs in early December 2014.

Alaska Marine Science Symposium: Drs. Scott Pegau, Kristen Gorman, Ron Heinz and Fletcher Sewell attended AMSS in January 2015. Dr. Gorman did not present on this project as when AMSS Abstracts were due, new analyses had not been finished at that time. However, new analyses were reported in the Synthesis Report that was submitted in November 2014. Dr. Heinz and Fletcher Sewell presented on this project at AMSS in 2014.

Progress Update and Results

The long-term data set for stable carbon and nitrogen isotopes, which is used to estimate energy density, is now complete with data received from the Alaska Stable Isotope Facility (http://ine.uaf.edu/werc/asif/) through Spring 2014 (Fig. 2). New data for Spring 2014 continue to confirm our understanding that age-0 herring in March hold a reduced energetic state in comparison with fish collected in November. What is interesting about the March 2014 sampling is that despite November 2013 being one of the highest months of energy density in the fall time series, March 2014 is similar to other spring months with a low energy density, suggesting that variation in energy density in the fall does not necessarily predict that of the spring.

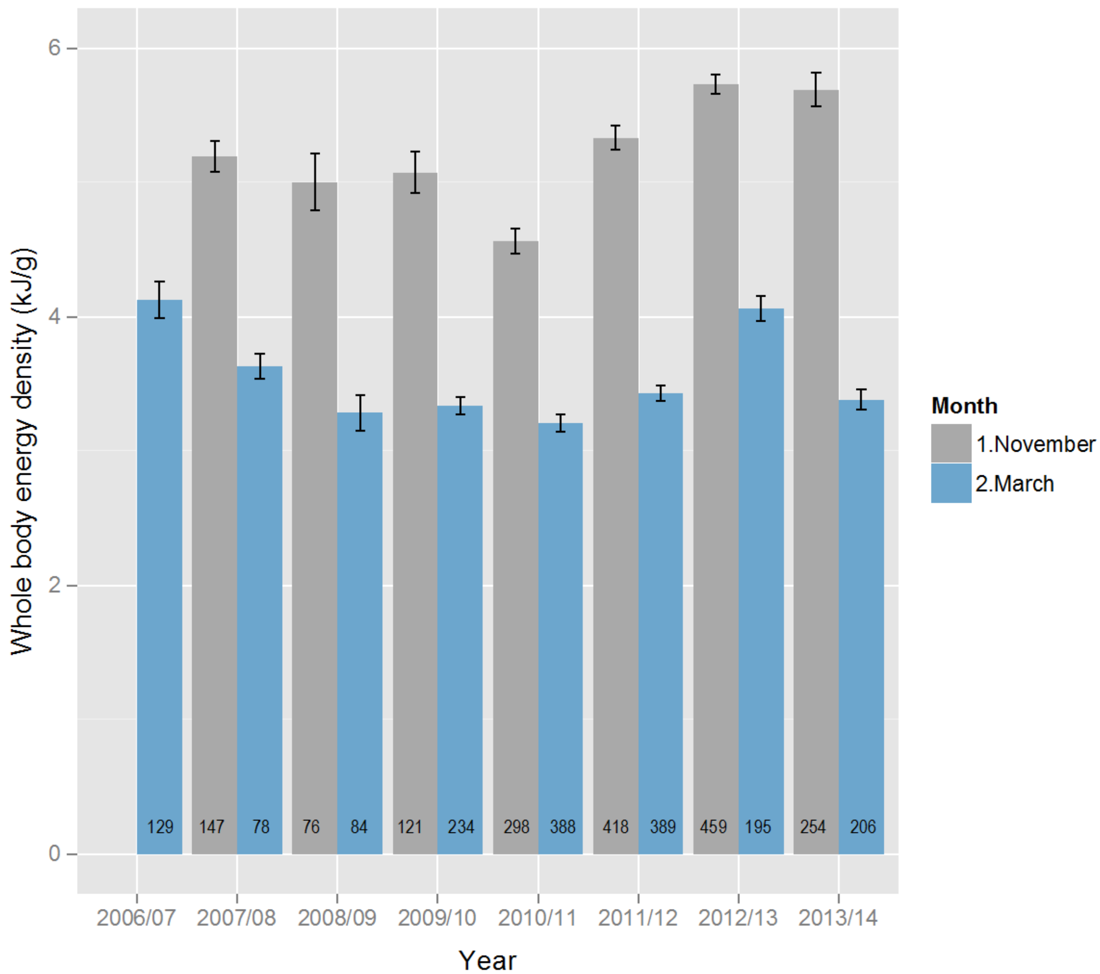

Figure 2. November and March time series of energy variation among age-0 herring collected from Prince William Sound. Sample sizes are noted at the bottom of each bar. Note the increased sample size for March 2014 (*n* = 206) in comparison with this figure submitted in the Synthesis Report from November 2014 (*n* = 51). Error bars are 95% confidence intervals.

Currently, technicians in the lab are working on processing samples from the November 2014 cruise for stable isotope analysis. Technicians have completed backlogged bomb calorimetry work through 2012 (Fig. 3) and are starting to work on 2013 and 2014 samples. Completing the 2013-14 backlog of bomb calorimetry is a priority for Spring 2015 laboratory work. Importantly, new bomb calorimetry data generated in 2014 (Fig. 3) demonstrate a strong correlation between stable isotope and bomb calorimetry energy density estimates based on these techniques, suggesting that isotope-derived values of energy density appear relatively accurate. However, we need to explore the entire bomb calorimetry dataset more thoroughly in order to assess whether the stable isotope derived values are in fact over-estimating energy density at higher levels as is suggested by the regression line falling slightly below the 1:1 equivalence line at higher energy densities.

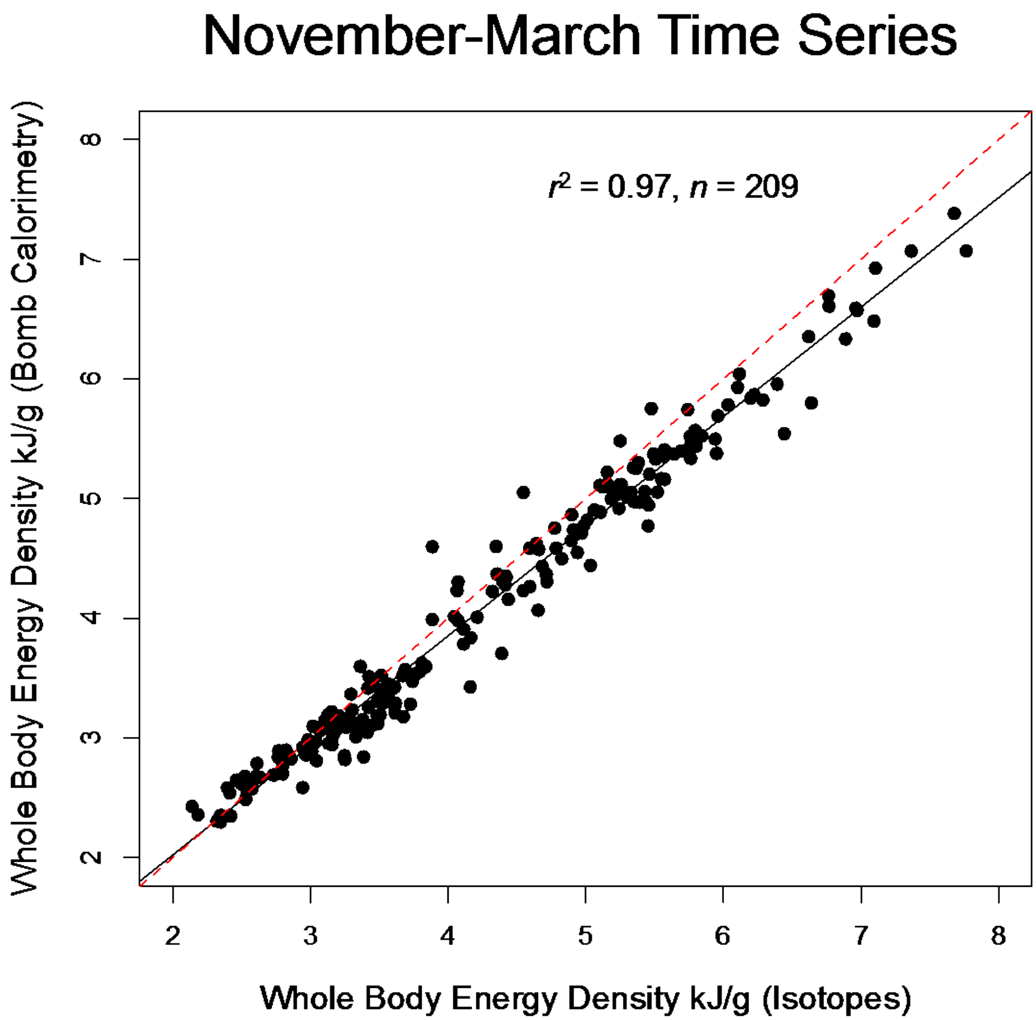

Figure 3. A comparison of energy density estimates of age-0 herring from the November and March time series using coupled stable isotope and bomb calorimetry techniques. Bomb calorimetry data were produced in 2014. The red dashed line indicates a 1:1 relationship.

In response to EVOSTC comments during summer 2014 regarding the development of better linkages between juvenile herring energetics and environmental drivers, we initiated analyses in 2014 that are examining relationships between age-0 herring energy density and naturally occurring ratios of stable carbon and nitrogen isotopes ($^{13}C/^{12}C$ [$\delta^{13}C$] and $^{14}N/^{15}N$ [$\delta^{15}N$]) that provide a biogeochemical proxy of carbon sources ($\delta^{13}C$) or the trophic level at which individual fish forage ($\delta^{15}N$). Earlier work by Dr. Tom Kline indicated that carbon in plankton originating from the Gulf of Alaska (GoA) is relatively depleted in $\delta^{13}C$ in comparison with carbon originating within PWS (Kline 1997). We examined relationships between energy density and carbon source (i.e., GoA vs PWS) among age-0 herring collected as part of the long-term November and March time series. We found a consistent negative relationship between energy density and enrichment of $\delta^{13}C$, which suggests that when juvenile herring uptake a GoA carbon source they tend to be in better energetic condition. This relationship was evident in both November and March time series, but stronger in November (Figs. 4 and 5).

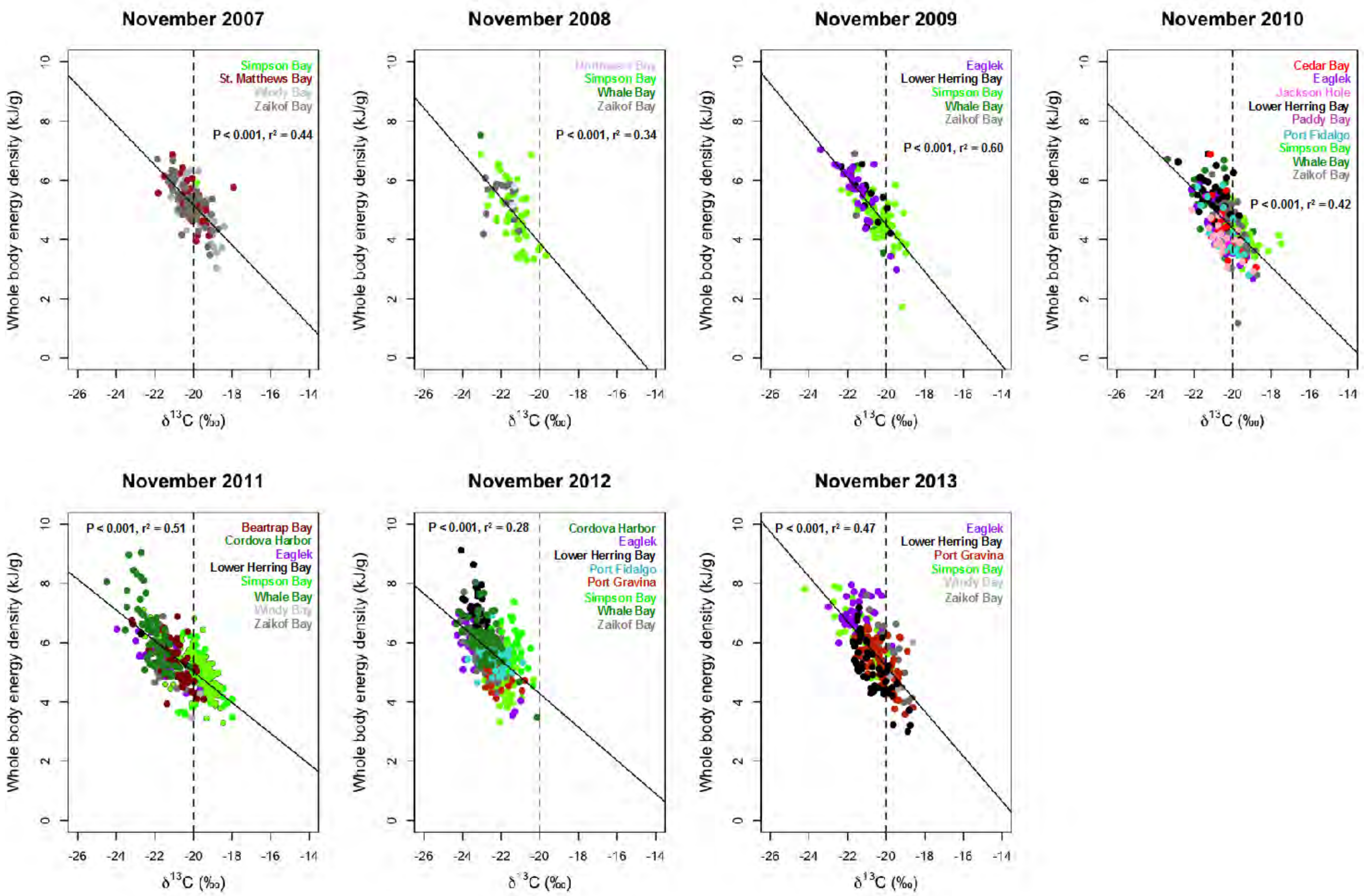

Figure 4. Long-term November monthly time series of variation in age-0 herring energy density as predicted by stable carbon signatures ($\delta^{13}C$) of fish tissue. Fish with more depleted $\delta^{13}C$ values that reflect Gulf of Alaska carbon sources for this region are more energy dense. Sampling locations are noted in different colors. Data for November 2014 are not currently available.

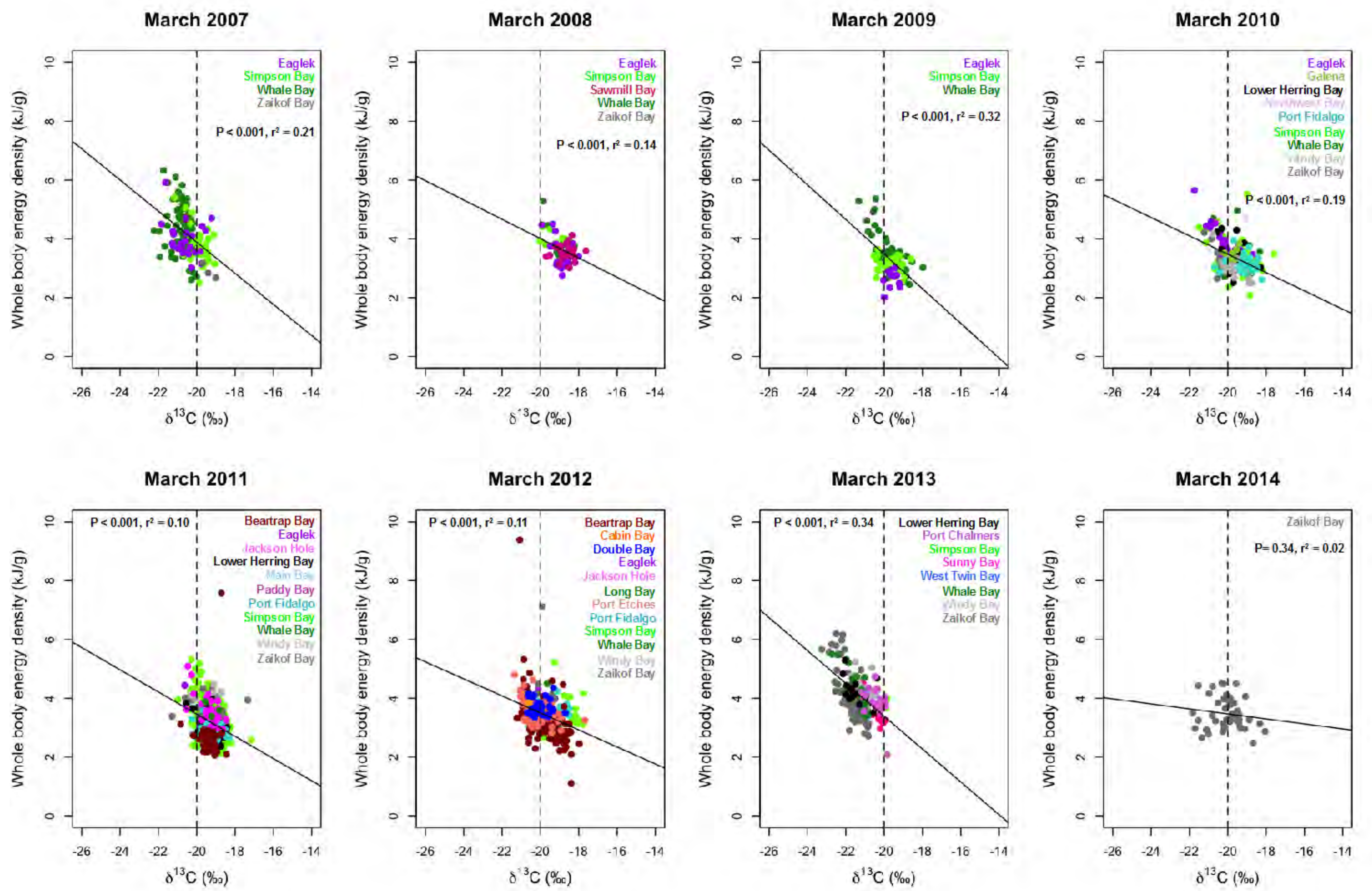

Figure 5. Long-term March monthly time series of variation in age-0 herring energy density as predicted by stable carbon signatures ($\delta^{13}C$) of fish tissue. Fish with more depleted $\delta^{13}C$ values that reflect Gulf of Alaska carbon sources for this region are more energy dense, which is more evident in years such as 2007 and 2013. Sampling locations are noted in different colors.

One aspect of this work that is particularly interesting is the apparent spatial variation throughout PWS in these relationships that is associated with large-scale bathymetric features. Fish collected from the western part of PWS, where a large marine canyon occurs acting as a conduit of GoA water into PWS, appear to be more energy dense and depleted in $\delta^{13}C$ in comparison with fish collected elsewhere in PWS (Fig. 6).

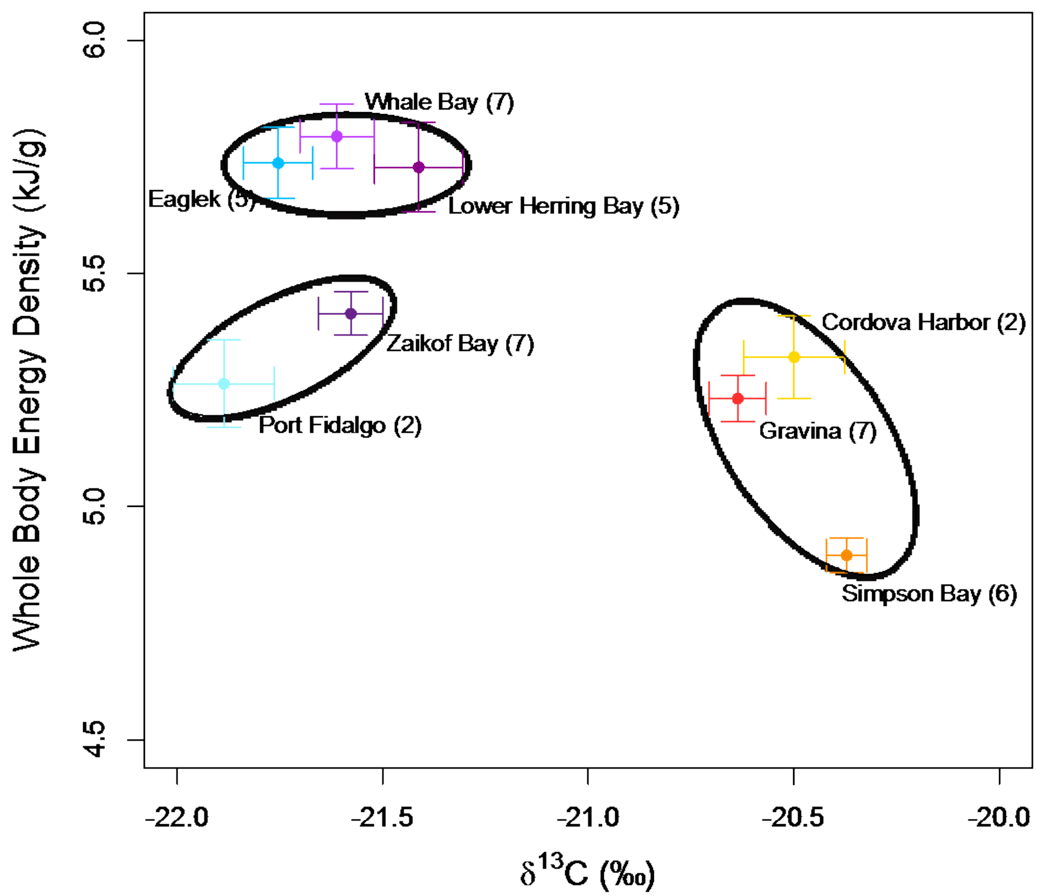

Figure 6. Spatial variation in energy density and stable carbon signatures ($\delta^{13}C$) of age-0 herring collected throughout Prince William Sound. Sampling locations and associated number of years in the long-term dataset are noted. Fish collected from western Prince William Sound appear to be more energy dense and depleted in $\delta^{13}C$, i.e., data points from Eaglek, Whale and Lower Herring Bays, see also Fig. 1.

Preliminary results from ABL work indicate that November young of the year (YOY, i.e., age-0) herring fat content (% lipid on wet tissue mass basis) increases with body size (fork length) in a relationship best described by a piecewise regression (Fig. 7).

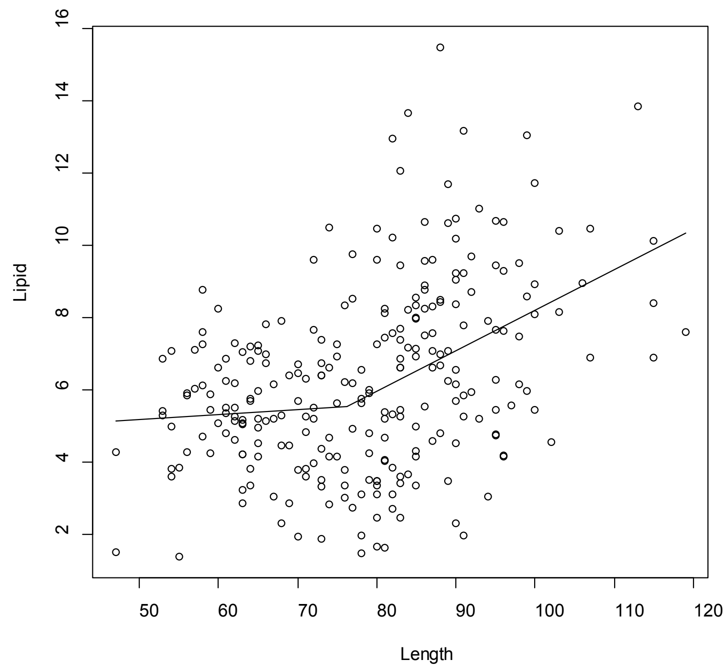

Figure 7. Lipid content (% wet tissue mass) as a function of fork length with piecewise regression line for YOY herring collected in PWS in November 2012 – 2013.

In contrast, YOY herring growth effort (RNA/DNA ratio) decreases with body size (Fig. 8).

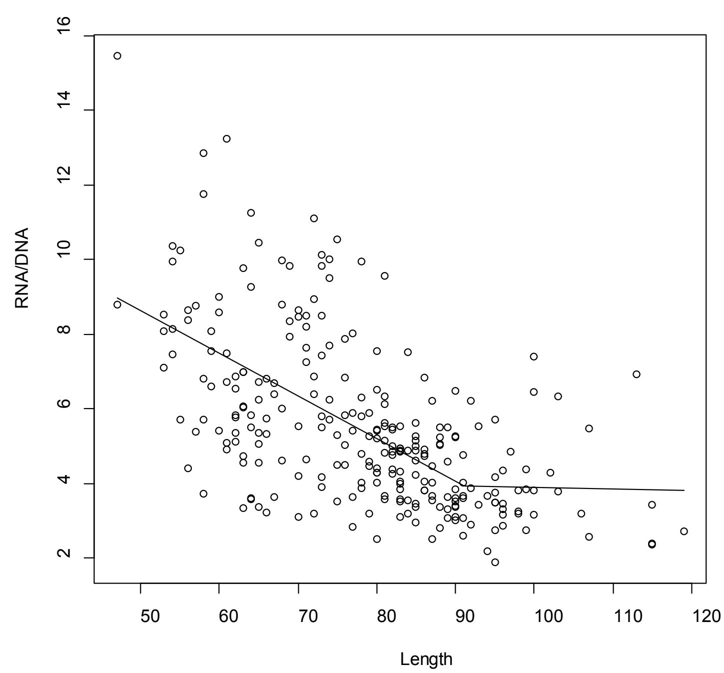

Figure 8. RNA/DNA as a function of fork length with piecewise regression line for YOY herring collected in PWS in November 2012 – 2013.

These patterns are similar to those described for November YOY herring from PWS as part of the Herring Survey program in 2009 – 2012. To compare relative condition and growth of YOY herring among years and bays within PWS from 2009 to 2013, it is necessary to compare residuals from these regression models to account for the effects of different sizes of fish captured among sampling events. Comparison of lipid and RNA/DNA residuals indicates YOY herring in 2012 were above average in % lipid and RNA/DNA over the 5 year period studied (Fig. 9).

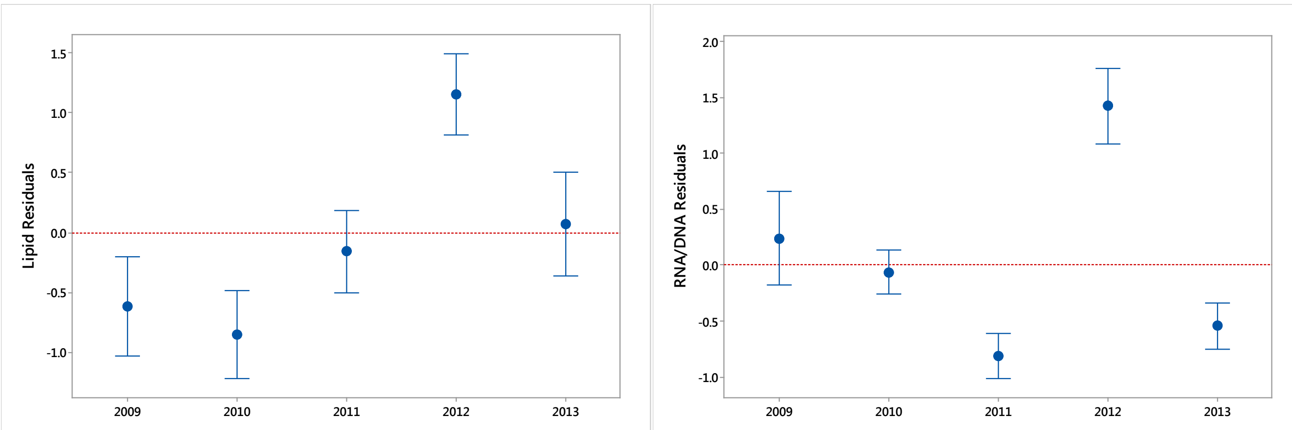

Figure 9. Residuals from the piecewise regression of lipid (left panel) and RNA/DNA (right panel) versus length of YOY herring collected in PWS in November 2012 – 2013. Means and 95 % confidence intervals shown.

The condition and growth of YOY herring in autumn varied among bays across years, such that a given bay was not generally above or below average in herring condition or growth. An exception to this was Simpson Bay tended to be below average across years (Figs. 10 and 11).

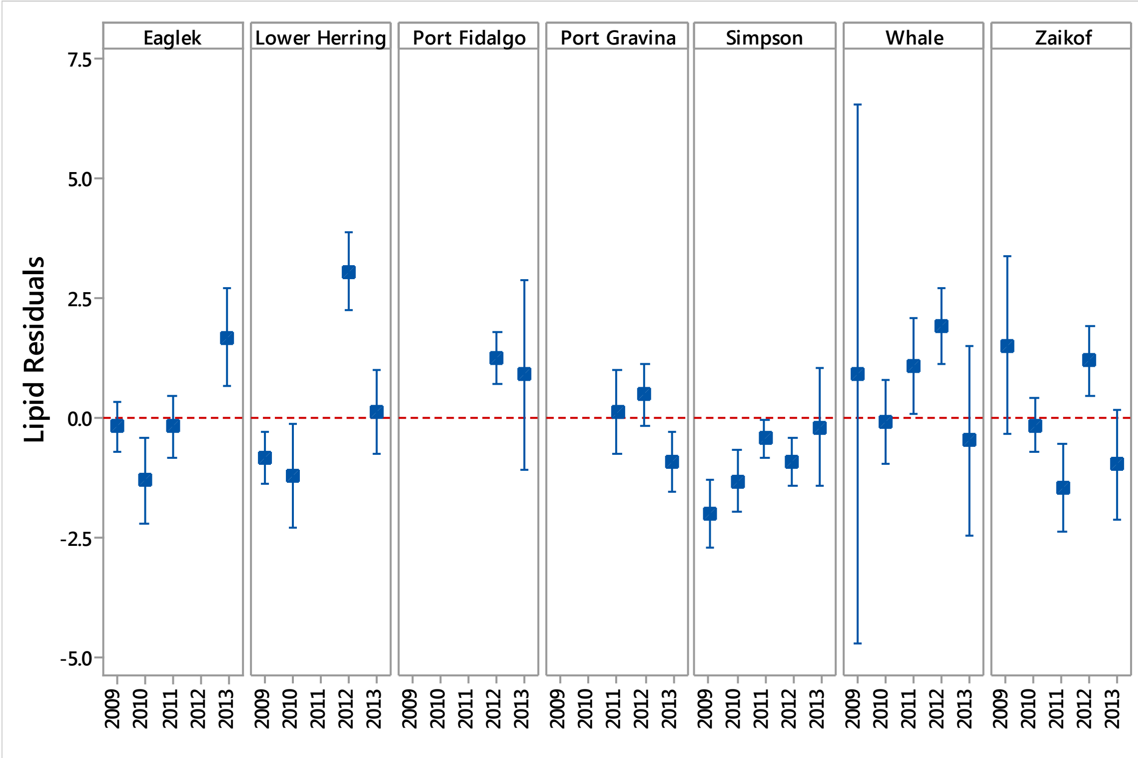

Figure 10. Residuals from the piecewise regression of lipid versus fork length of YOY herring collected in PWS in November 2009 – 2013. Means and 95 % confidence intervals shown

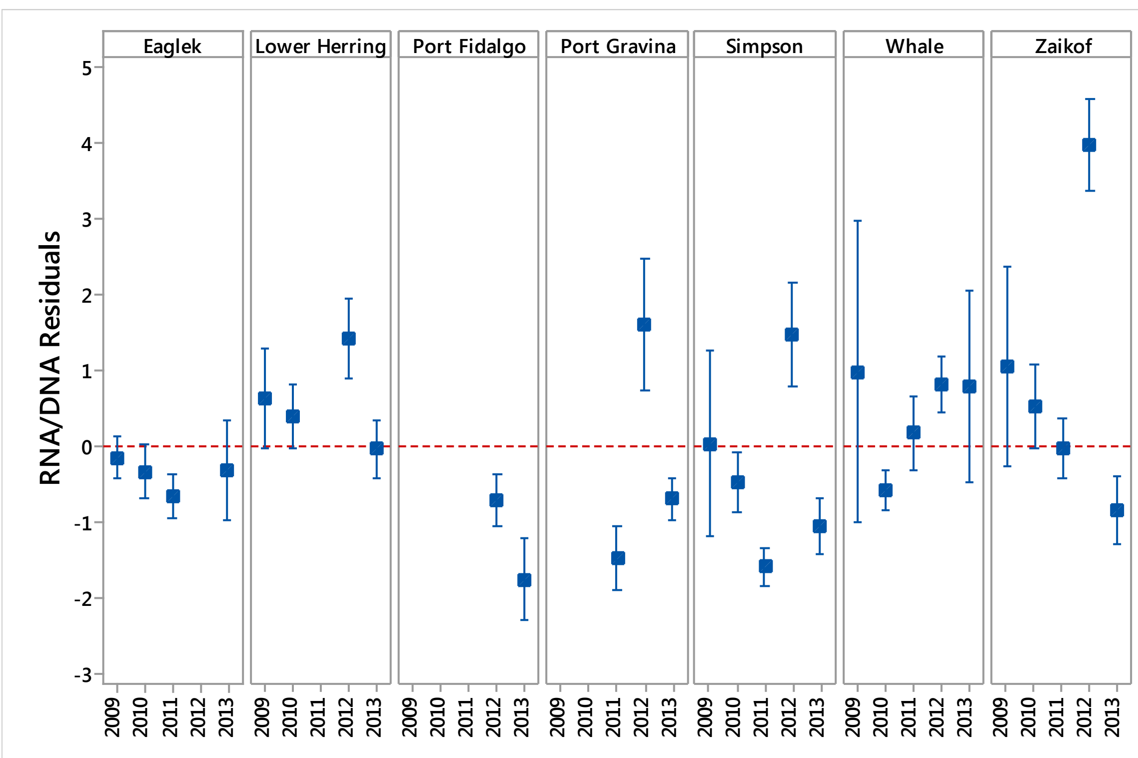

Figure 11. Residuals from the piecewise regression of RNA/DNA versus fork length of YOY herring collected in PWS in November 2009 – 2013. Means and 95 % confidence intervals shown.

YOY herring that had above-average growth rates tended to also have greater fat stores in November (Fig. 12).

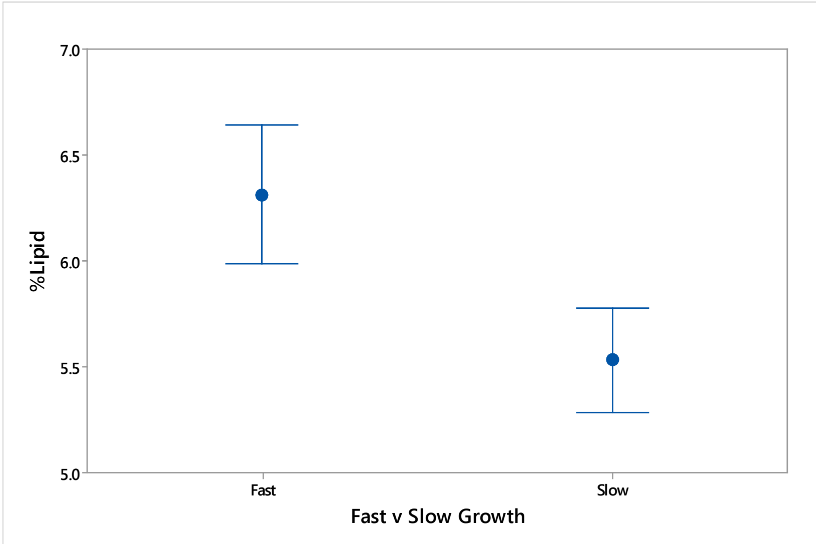

Figure 12. Comparison of lipid content (% wet tissue mass) for YOY herring collected in PWS in November 2012 – 2013 with above average growth rate versus below average growth rate. "Faster growth" group is defined as individuals with positive residuals from the piecewise regression of RNA/DNA vs. length. "Slower growth" individuals had negative residuals. Means and 95 % confidence intervals shown.

By late winter (March), YOY herring that were close to exhausting their fat stores were compelled to forage, as indicated by the higher stomach content masses (as % body weight) for herring with low % lipid (Fig. 13).

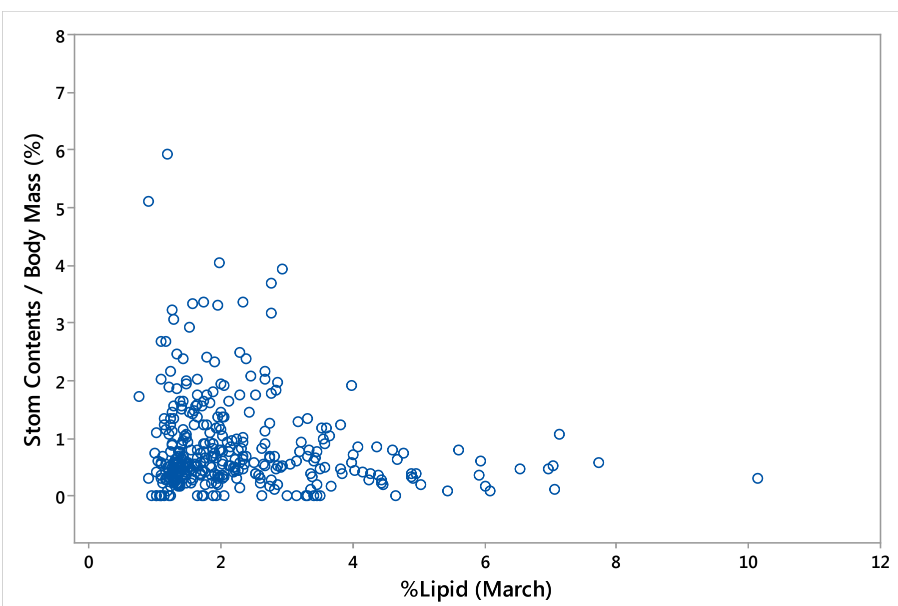

Figure 13. Stomach contents mass as a percentage of body mass, relative to lipid content (% wet tissue

mass) for YOY Pacific herring collected from PWS in March of 2013 – 2014.

An additional project proposed in the FY2105 project renewal was initiated in fall 2014 in collaboration with Alaska Department of Fish and Game (ADFG) to examine age-0 herring scale growth and the relationship with body size and energy density. These relationships will greatly expand ADFG's long-term database that includes age-0 herring growth based on scale analysis of older fish, and allow for insights on how relationships between age-0 fish size and energetic state relate to successful recruitment as adults. We have received scale measurement data back from ADFG and as expected scale increment accords well with fish length (Fig. 14). We plan to further examine this dataset and ADFG's long-term data more thoroughly in 2015 regarding relationships with energy density and recruitment.

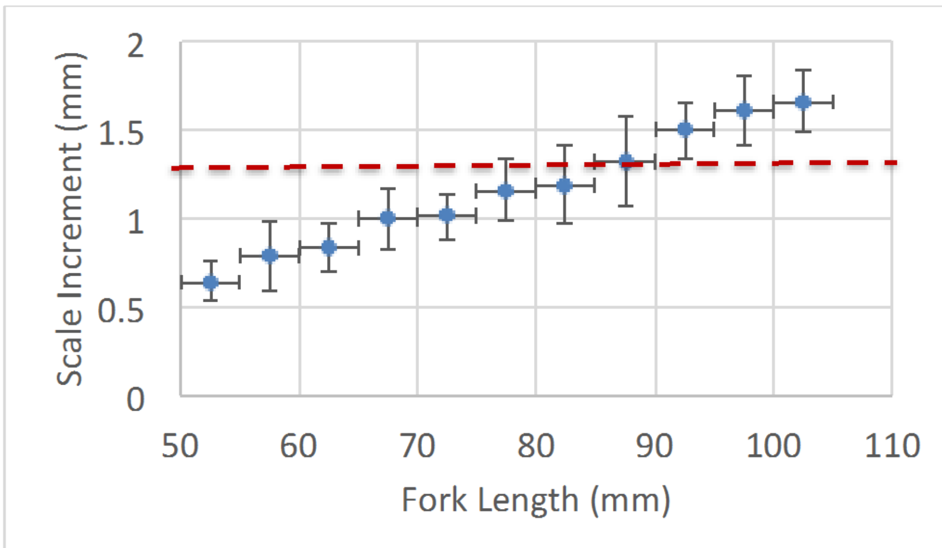

Figure 14. Relationship between age-0 herring body and scale size. Error bars are standard deviations.

Literature Cited

Kline, T. C. 1997. Confirming Forage Fish Food Web Dependencies in Prince William Sound using Natural Stable Isotope Tracers. Forage Fishes in Marine Ecosystems Alaska Sea Grant College Program AK-SG-97-01.

Summary of Future Work to be Performed

Work efforts for FY 2015 are expected to be the same as proposed. Thus, in 2015 we plan to continue with the March and November sampling, in addition to coupled winter disease and energetics sampling in Cordova Harbor.

Two major areas of focus for 2015 are to 1) continue working on the backlog of bomb calorimetry samples from 2013 and 2014 and 2) significantly update the long-term database into a more organized and user-friendly interface, i.e., possibly Access. Dr. Gorman's interest in updating the long-term database stems from needing to more easily facilitate data summary and analysis. The current dataset exists in Excel and is organized. However, because there are multiple users of the dataset, i.e., PIs using the data and technicians producing the data, there tends to be multiple copies of the dataset that are in various stages of up-dating and it can be difficult to keep only one dataset organized. Further, the current dataset includes many stages of data processing from field and initial lab analyses, to stable isotope and bomb calorimetry of a subset of samples, to otolith and scale analyses of a different subset of samples. Thus, when trying to filter the data for the various datasets of interest it can be time consuming to pair the full dataset down. It would seem that if the data were housed in a proper data system that filtering data would be much easier. Dr. Gorman would like to contract with an outside consultant on upgrading the data system used for the long-term herring energetics project at PWSSC.

Several manuscripts will be initiated in 2015 on age-0 herring energetics. First, a synthesis manuscript with Dr. Heinz and Fletcher Sewall is proposed for the next year where we plan to combine our various data types such as energetics, stable isotopes, fatty acid signatures, RNA/DNA data and diet studies. Dr. Gorman also plans to pursue a manuscript that explores environmental variables as predictors of energy variation in age-0 herring in the November and March time series. Environmental driver data will be obtained from Gulf Watch Alaska or other available regional datasets on ocean and climate variables.

8. Coordination/Collaboration: *See*, Reporting Policy at III (C) (8).

a) Within a Trustee Council-Funded Program.
The juvenile HCM project primarily requires coordination of PIs at PWSSC and ABL. With the departure of Dr. Kline, the initial focus was on working with Dr. Pegau to coordinate sample processing and handling, which is now bring handled by Dr. Gorman as she is now on staff at PWSSC.

In 2014 we initiated a winter monthly study of disease and energetics in collaboration with Dr. Hershberger's lab at Marrowstone Marine Field Station/USGS whose work is a separate project within the HRM Program.

Further, Dr. Gorman is becoming more aware of datasets available through Gulf Watch Alaska after having attended both AMSS and the EVOSTC Science Panel meeting in February 2015 and expects to be using available regional data in future analyses of juvenile herring energetics, particularly in relation to yearly and seasonal variability in age-0 herring energetics.

b) With other Trustee Council-Funded Projects.
None

c) With Trustee or Management Agencies.
In 2014 we initiated an analysis of juvenile herring scale growth in collaboration with ADFG.

9. Information and Data Transfer: *See*, Reporting Policy at III (C) (9).

a) Publications produced during the reporting period.
None

b) Conference and workshop presentations and attendance during the reporting period.
March PI meeting: Pegau and Heinz attended
November PI meeting: Pegau and Gorman attended
AMSS: Pegau, Heinz, Gorman and Sewell attended

c) Data and/or information products developed during the reporting period, if applicable.
Synthesis Report submitted in November 2014.

d) Data sets and associated metadata that have been uploaded to the program's data portal.
The long-term herring dataset is being updated in its current form (Excel) with new isotope and bomb calorimetry data obtained during fall 2014 and will be added to the AOOS workspace as soon as all newly available data are entered.

10. Response to EVOSTC Review, Recommendations and Comments: *See*, Reporting Policy at III (C) (10).

Comment by EVOSTC September 2014

Parts of this expensive proposal/project are vague. In particular the 'new' work looking at juvenile scales is not clear. (1) Is the plan to take scales from juvenile fish? If so, this could be difficult because, depending on the time of year and fish size, scales may be incompletely developed and very fragile. (2) Have the investigators done any 'preliminary work' to examine the feasibility of their approach? (3) The project refers to 'predictive models' but is there a hypothesis? (4) Will this project build on previous 2012 EVOSTC-supported projects on scales by Moffitt?

PWSSC Response
The plan for this new project is to measure scales from age-0 fish. Our preliminary data reported in Figure 14 demonstrate this project is feasible. In terms of hypotheses, we plan to test the hypotheses that 1) increased growth in age-0 fish is associated with increased energy density based on juvenile data and that 2) larger scale growth at age-0 is associated with successful spawning based on scale data from older recruited fish where age-0 scale growth has been measured. The work will build off of previously supported EVOSTC projects.

Comment by EVOSTC Summer 2014

One of the earlier recommendations by EVOSTC during summer 2014 was to incorporate environmental drivers into data analysis of the age-0 herring energetics data. Our first response to this important recommendation is the isotope analysis presented here and in the Synthesis Report submitted in November 2014. However, as mentioned earlier, Dr. Gorman plans to continue this effort by working on a manuscript that explores environmental drivers, i.e., oceanographic and climate variables, of yearly and seasonal variation in juvenile herring energetics. This will involve compiling datasets from those already available as part of Gulf Watch Alaska or other agency data.

11. Budget: *See*, Reporting Policy at III (C) (11).

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$0.0	$64,700.0	$67,300.0	$70,000.0	$72,800.0	$274,800.0	$ 37,385
Travel	$0.0	$3,000.0	$5,900.0	$5,900.0	$6,100.0	$20,900.0	$ 2,417
Contractual	$0.0	$24,800.0	$25,600.0	$26,300.0	$28,900.0	$105,600.0	$ 29,687
Commodities	$0.0	$7,500.0	$5,000.0	$8,300.0	$6,700.0	$27,500.0	$ 636
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	
Indirect Costs (*will vary by proposer*)	$0	$30,000	$31,200	$33,200	$34,400	$128,800.0	$ 21,038
SUBTOTAL	$0.0	$130,000.0	$135,000.0	$143,700.0	$148,900.0	$557,600.0	$91,163.0
General Administration (9% of	$0.0	$11,700.0	$12,150.0	$12,933.0	$13,401.0	$50,184.0	N/A
PROJECT TOTAL	$0.0	$141,700.0	$147,150.0	$156,633.0	$162,301.0	$607,784.0	
Other Resources (Cost Share Funds)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	

COMMENTS:
This summary page provides an five-year overview of proposed funding and actual cumulative spending. The column titled 'Actual Cumulative' should be updated each fiscal year to provide information on the total amount actually spent for all completed years of the project. On the Project Annual Report Form, if any line item exceeds a 10% deviation from the originally-proposed amount; provide detail regarding the reason for the deviation.

Gorman's budget from FY2014 at PWSSC will carry over significant funds into FY 2015, ~$174k as of February 6, 2015. The un-used funds from FY2014 reflect the lack of a dedicated PI for 2013 and half of 2014. These funds however will be used for PI and tech salary, in addition to funding a contractor to help with updating the data management system for PWSSC's juvenile herring energetics database. Further, these funds may also allow for hiring an additional technician in 2015 to help with the continued backlog of bomb calorimetry samples from 2013 and 2014.

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	
Travel	$0.0	$0.0	$3,900.0	$7,100.0	$4,000.0	$15,000.0	$1,774.0
Contractual	$0.0	$75,000.0	$75,000.0	$75,000.0	$75,000.0	$300,000.0	$112,700.0
Commodities	$0.0	$6,000.0	$5,000.0	$5,000.0	$5,000.0	$21,000.0	$697.0
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	
SUBTOTAL	$0.0	$81,000.0	$83,900.0	$87,100.0	$84,000.0	$336,000.0	$115,171.0
General Administration (9% of	$0.0	$7,290.0	$7,551.0	$7,839.0	$7,560.0	$30,240.0	N/A
PROJECT TOTAL	$0.0	$88,290.0	$91,451.0	$94,939.0	$91,560.0	$366,240.0	
Other Resources (Cost Share Funds)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	

COMMENTS:
This summary page provides an five-year overview of proposed funding and actual cumulative spending. The column titled 'Actual Cumulative' should be updated each fiscal year to provide information on the total amount actually spent for all completed years of the project. On the Project Annual Report Form, if any line item exceeds a 10% deviation from the originally-proposed amount; provide detail regarding the reason for the deviation.

ABL component budget:
~$26k from FY13 was carryover into FY14. A portion of the funds to be spent on contracts and commodities in FY13 was shifted to FY14 due to acquiring samples late in FY13 and processing delays resulting from the federal government shutdown.

~$50k from FY14 will be carryover into FY15. A portion of the funds to be spent on contracts and commodities in FY14 was shifted to FY15, to be used for final processing of samples acquired in 2014, including quality assurance/quality control analysis of preliminary data, data proofing and archiving, and re-processing problematic 2014 samples. Travel expenses in FY14 were less than anticipated for the proposed travel to AMSS and principal investigators meetings. Commodities expenses were also low due to extensive use of stocked supplies on hand, which are anticipated to be replenished in FY15.

We appreciate your prompt submission
and thank you for your participation.