

**Crab economic data collection
North Pacific Fishery Management Council
April 2011**

As a part of its Bering Sea and Aleutian Island crab rationalization program, the Council developed an economic data collection program to provide information to analysts to assess the effects of the program and future amendments to the program. Based on reviews of the data, it has been established that certain of the data elements collected are not accurately or consistently reported across respondents, preventing their use for some of their intended purposes. Given these circumstances, at its October 2010 meeting, the Council elected to begin the process of developing an amendment to revise the data collection program, by adopting a purpose and need statement and outlining alternatives. At that time, the Council also requested that staff use the outlined alternatives to draft fully specified alternatives for its consideration. This paper is the staff response to that request.

To guide its action to revise the data collection program, the Council has developed the following purpose and need statement:

As a part of its Bering Sea and Aleutian Island crab rationalization (CR) program, the Council developed a comprehensive economic data collection ("EDR") program to provide information to analysts to assess the effects of the CR program and identify problems that may require future amendments to the EDR program.

Council review of the EDR program, development of the EDR metadata through PNCIAC and testimony from the industry has resulted in the identification of substantial portions of the EDR data that are inaccurate. In addition, several elements are wholly or partially redundant with other existing data collection requirements, and some components may not further the Council's objectives. The cost to industry, both directly through data submission, and indirectly through cost recovery funding of program administration, outweigh the benefits of the resultant data and greatly exceed estimates provided in the initial analysis of the EDR program and in the accompanying regulatory analyses.

To address these problems, the Council intends to amend the EDR process so that the data collected is accurate, informative to the Council, not redundant with existing reporting requirements, and can be reported by industry and administered at a reasonable cost.

The Council expressly wants to limit the EDR to the collection of data that have been demonstrated, through the development of the EDR metadata, and other reviews of the data, to be sufficiently accurate. Data collection should be structured and specific elements identified, to minimize costs while maintaining accuracy and providing the greatest information value to the management decision making process.

As analysts develop, refine, and verify methods for accurately collecting additional informative data elements the Council will consider expansion of the data collection program to include those elements. This process can also inform the future Council action regarding other existing and future EDR programs.

To address this purpose and need, the Council adopted the following outline of alternatives for further development at this meeting:

- 1) critical operational components by individual crab fishery,
- 2) critical operational components from all crab fisheries (aggregated across all crab fisheries),

- 3) critical operational components from all fisheries (aggregated across all fisheries), and
- 4) all operational components by individual crab fishery (similar to current data collection program). (updated status quo)¹

These alternatives are bolded in the following table:

		Fishery information level		
		<u>By individual crab fishery</u>	<u>Crab fishery only</u>	<u>All fisheries</u>
Economic information level	<u>Critical elements</u>	Critical operational components by crab fishery	Critical operational components in the crab fisheries	Critical operational components pertinent to activities in all fisheries
	<u>All elements</u>	All operational components by crab fishery	All operational components in the crab fisheries	All operational components in all fisheries

Background

This section briefly reviews relevant work previously undertaken by the Council and staff. Specifically, the Council’s rationale for adopting a data collection program is reviewed and assessments of data quality are summarized. These prior steps form the backdrop for this action.

The Council’s rationale for data collection and its data collection motion

In June 2002, early on in the development of the crab economic data collection program, the Council adopted an expansive motion identifying its purpose for pursuing data collection. Although lacking some specificity, the motion suggests that collected data would be used to examine the economic and social effects of the rationalization program on harvesters, processors, regions, and communities. In an attempt to further understand the Council’s objectives, analysts relied on the following five problems identified in the purpose and need statement for the rationalization action:

- i. Resource conservation, utilization and management problems;
- ii. Bycatch and its associated mortalities, and potential landing deadloss;
- iii. Excess harvesting and processing capacity, as well as low economic returns;
- iv. Lack of economic stability for harvesters, processors and coastal communities; and
- v. High levels of occupational loss of life and injury.

Based on these identified problems, analysts suggested measures that could be used to examine the success of the program in achieving objectives. Since the data collection program was intended to address economic aspects of the fishery, only the third and fourth problems were pursued in the data collection.

¹ It should be noted that both the status quo (and the revised status quo present in this paper) include data at all three fishery levels (e.g., by crab fishery, aggregated across all crab fisheries, and aggregated across all activities).

To examine these objectives, the analysts identified a number of measures and the data necessary to estimate those measures. These include:

Excess harvesting and processing capacity and low economic returns

For both the harvest sector and processing sector:

- 1) capacity and capacity utilization
- 2) profits
- 3) quasi-rents
- 4) productivity
- 5) technical efficiency
- 6) allocative efficiency

Computation of these measures requires the following data:

- a) variable input quantities and prices
- b) capital quantities and fixed costs
- c) catch quantities and prices (species)
- d) input quantities and prices
- e) output quantities and prices by product form

Lack of economic stability for harvesters, processors, and coastal communities

For both the harvester sector and processor sector:

- 1) Distribution of ex vessel revenue
- 2) Distribution of product revenue
- 3) Distribution of profits and quasi rents within and between harvesters and processor
- 4) Distribution of privileges within the harvesting and processing sectors
- 5) Seasonality of catch and revenues by location
- 6) Vertical integration
- 7) Domestic and foreign ownership
- 8) Harvesting employment and payments to harvesting crews
- 9) Processing employment and payments to processing crews
- 10) Involvement of crab fishery participants in other fisheries
- 11) Value of privileges
- 12) Regional economic impacts

Computation of these measures requires the following data:

- a) Vessel owner information
- b) Plant owner information
- c) Catch
- d) Landings
- e) QS and PQS ownership information
- f) Harvester crew employment and compensation
- g) Processor crew employment and compensation
- h) QS and PQS prices and quantities transferred
- i) Expenditures by location
- j) Crew residence information

The current data collection program omits non-variable (or fixed) cost data from the collection, except to the extent necessary to understand variable costs. In addition, the data collection focuses on crab fishery data with much of the data collected on an individual crab fishery basis, to provide more detailed information for analyses, as crab fisheries differ in their prosecution. Other data are aggregated across all crab fisheries, while some additional data are aggregated across all fisheries.

Assessment of the existing collection

As a part of the October 2010 discussion paper, staff presented the Council with an assessment of the crab economic data reporting program that assessed each data element currently collected based on its accuracy, cost of collection, and utility for informing management decisions. That assessment drew from prior data assessments of Alaska Fisheries Science Center, Pacific Northwest Crab Industry Advisory Committee, and various industry workgroups. Although the Council's outline of alternatives does not directly rely on these factors for identifying specific alternative elements, the purpose and need statement specifically identifies these factors as determinative of the scope of the data collection. As a consequence, the assessment of data may be useful to the Council in the development of alternatives, and is attached as Appendix A.²

In reviewing the assessments and fashioning revisions to the data collection program, the Council should primarily assess the extent to which the collection of data elements will improve information concerning 1) the effects of management decisions on fisheries and 2) the social and economic effects of fisheries. An assessment of the utility of the data collected poses certain challenges. First, the utility of a data element is dependent on several aspects of that element and its collection. The information value of a data element often arises directly from the nature of the factor that it represents. For example, landings by a vessel are particularly informative, as they are representative of a vessel's production from the fishery. Spending on paper supplies used to maintain logs and business records is less fundamental to understanding the fishery. Utility is also dependent on the accuracy of the data. Inaccuracy (or even unknown accuracy) can substantially diminish utility by leaving analysts uncertain of the reliability of any analytical results. In addition, a data element's utility will also depend on the information of the element relative to other data currently collected. For example, data concerning product forms and sizes may be informative, but (depending on the fishery) may represent only a marginal improvement over existing data on product form alone. Lastly, the utility of data elements may vary with other data availability. For example, pot purchases may provide useful and relevant information concerning a vessel's expenditures, but without knowing whether the vessel shares pots owned by other vessels in its cooperative, these costs are less informative (and possibly provide misleading information) concerning the vessel's operation and costs. Each of these different aspects is presented in the assessment of the utility of the data.

A review of the metadata (or the table accompanying this document concerning data quality) suggests that the data collected in their current form have (and, in the near future, will continue to have) several limitations. Several elements are not accurately and consistently reported. In addition, the reviews of the data submissions suggest that barriers (surmountable only with considerable and time consuming efforts) are likely to prevent the accurate and consistent collection of some of these items in the near future. Other elements provide only partial information concerning operations in the fisheries. For example, the collection includes only purchased bait, although many vessels in the crab fisheries harvest a portion of their bait. To estimate quasi-rents (a suggested goal for the data collection program) would require comprehensive collection of information concerning the costs of bait harvesting. Similarly, many of the shore based processors deploy crews as needed to process groundfish and crab. Company housing is often provided, along with meals and other support services. The costs of labor associated with crab fisheries must be apportioned from these labor and labor support costs. An analyst will have an incomplete

² The assessment includes only the assessments of catcher vessel and shore plant data collection. Although some variations exist between the forms for these sectors and the forms for catcher processor and floating processor sectors, this paper is intended addresses only the catcher vessel and shore plant forms. Once the Council has identified alternatives for catcher vessels and shore plants, staff will construct alternatives for the catcher processor and floating processor sectors based on the Council's catcher vessel and shore plant alternatives that can be reviewed and revised by the Council to fully specify alternatives for those sectors.

understanding of the operations, if the method of apportionment and influences of other fisheries on crab labor choices are not considered. Complete consideration of these factors likely requires an understanding of the timing and labor demands of those other fisheries. To fulfill the original objectives of the data collection (such as estimation of quasi-rents) would require that these elements be fully and consistently reported.

Framework for defining alternatives

The Council has outlined its alternatives based on a two levels of distinguishing data. First, data may be submitted at one of three **“fishery levels”** – by individual crab fishery, aggregated across all crab fisheries, or aggregated across all fisheries. If data are submitted at the **individual crab fishery level**, for each specific variable collected, a vessel (or plant) would report the value of variable for each fishery in which it participated. For example, if crew payments are collected at the fishery level, each vessel operator would report payments to crew for each fishery the vessel participated in. This level of collection is ideal for analyzing issues and effects at the fishery level, but may lack reliability, if the data are not applicable at the fishery level. In some cases, the submitter may be able to estimate a fishery level value for a variable, but inconsistencies in data could arise across the fleet, if segments of the fleet choose to use different methods of estimating values. The Council could instead choose to collect data at the **crab fishery level**, in which case data elements would be submitted aggregated across all crab fisheries. This collection level would be ideal for elements that are specific to crab fisheries, but not specific to any particular crab fishery. For example, if a vessel uses pot gear exclusively in crab fisheries and otherwise participates in trawl fisheries, it may be appropriate to collect certain gear and equipment data (such as pot launcher specific costs) at the crab fishery level. In cases where the vessel uses the pot gear for crab and groundfish fisheries, separation of data at the crab fishery level might be less appropriate. Lastly, the Council could elect to collect data from a plant or vessel aggregated across **all fisheries (or activities)** it participates in. This level of collection may be appropriate for inputs that support all operations. For example, general vessel repairs cannot be said to be undertaken to support a single fishery, but likely support all activities of a vessel.³

The Council also chose to use a framework that distinguishes data by their **“operational importance”**. Certain elements may be critical to operations, in the sense that changes in their levels may more accurately signal an operational change – either a change in the structure or scale of operations. For example, a notable change in fuel consumption could arise either from improved efficiency in operations or in simply scaling down operations. These elements that are likely to be reflective of changes in operations are considered “critical operational” elements. Other elements (while possibly important) may less directly reflect operational changes (particularly short term changes). Focusing data collection exclusively on these “critical operational” elements would eliminate the collection of data elements that are less informative of operations, but which might be desirable for more all-encompassing analyses, such as estimating profits. This approach might be intended to reduce the burdens associated with data submission, while still providing improved information concerning the certain aspects fisheries operations and their effects. The collection, however, would not support some of the more expansive analyses that might be possible with a broader data collection program. For example, it may not be possible to generate estimates of quasi-rents, profits, or net benefits derived from the fisheries. Relying on a suite of indicators (or critical elements) may make it difficult to resolve how overall economic well-being has changed over time. This difficulty underlies the appeal for overall measures of quasi-rents or profits, but those measures must be comprised of components of sufficient quality to be of use to analysts, and at present there are considerable issues to resolve. In short, it may not be prudent to collect all revenue and costs solely for the purpose of getting an overall measure of well-being if inaccuracy in the components makes the overall measure suspect.

³ In considering whether to aggregate data should be collected (or whether to have the respondent disaggregate), the Council should also consider that analysts may be able to compare a variety of methods of disaggregation.

The framework proposed by the Council is applied in Appendix B attached hereto. Two tables are included in that attachment, one showing elements that could be considered for inclusion in catcher vessel alternatives and a second showing elements that could be considered for inclusion in processor alternatives. Alternatives for floating processors and catcher processors could be adapted from the alternatives shown in the table after that Council has developed alternatives for catcher vessels and shore-based processors.

In developing specific alternatives, the Council could consider selecting elements from the different structural alternatives shown in the tables. For example, the Council could choose to collect certain elements at the crab fishery level and others aggregated across all crab fisheries in the same alternative. In addition, the Council could consider some elements to be critical operational components that are not identified as critical operational components in the table. Taking this broader approach is likely to result in alternatives that are of better utility and accuracy and less redundancy with other data collection programs.⁴

In considering the attached tables, the Council may also consider the data categories used in the existing data collection. The following discussion briefly reviews the data currently collected, identifying some of the issues that arise that should be considered in making revisions to alternatives. Based on this discussion and the materials in the tables, the Council could identify specific elements (including the fishery level at which they would be collected) for inclusion in specific alternatives. The Council could use a table form similar to (or adapted from) that of Appendix B to define the alternatives.

Catcher vessel sector

The various categories of data currently collected provide some structure for the development of specific alternatives.

In the catcher vessel sector, fishing data are collected for each vessel. These data include fish ticket numbers, days fishing, and days travelling from port to the grounds and offloading. These data are generally available from (or may be estimated using other sources). Fish ticket numbers can be identified for all vessels in the fishery. In addition, fish tickets and log books both include information concerning fishing time and time of offload that could be used to develop estimates, similar to the estimates provided in this collection. In all cases (including this collection) some degree of estimation is required for determining number of days of activity. It is unclear whether these data provide any improvement over existing sources.⁵

⁴ At present, certain elements may be reported either on the individual fishery level or at the overall crab fishery level, at the discretion of the submitter. While this flexibility allows reporting entities to report in a manner more consistent with their records, it is unclear to analysts which (if any) apportionment methods may have been used by the submitter. Selecting a standard method for all submitters would represent a trade-off between flexibility for the submitter and a more consistent basis of measurement.

⁵ For most submitters, vessel logbooks are the primary source for information used to calculate summary estimates reported in the EDR, although it has been reported that accountants and other administrative staff that fill out EDR forms on behalf of vessel owners have difficulty accessing logbooks, which are kept onboard vessels, significantly increasing the burden of EDR completion. Logbook records are not currently available to analysts, but if made available in electronic format, would provide the best source of information on vessel operations. This would eliminate the need for reporting this information in EDRs. It should also be noted that the submission of paper logbooks represents a substantial reporting burden that currently does not provide information for any analytical use due solely to NMFS administration of the submitted records. Changing the mode of administration of logbooks to an electronic format, as has been implemented in other fleets, would significantly reduce submitter burden as well as provide an important source of information for analytical purposes. More efficient administration of logbook reporting may eliminate the need for this reporting.

Among data not currently available for the fisheries are days transiting from a home port to a port that is proximate to the fishing grounds (such as Dutch Harbor or King Cove) and days of crew work in port. Estimates of these values are important to assessing crew pay per day. Whether inclusion of these data in this collection would be an improvement over simple estimates based on anecdotal information is uncertain. For example, a vessel may take 16 days to transiting to and from Alaska for crab fishing. The vessel may also fish cod (which could be reported). In addition, half of the crew may transit with the vessel, while remaining crew meet the vessel in Alaska. The amount of port time worked by each crewmember may also vary with availability. To fully describe crew work would require separate information for each of the crew, or knowing the work of the average crewmember. This discussion should not be read to suggest that this crew work is unimportant to assessing crew pay. It is only meant to suggest that collection of information to a degree that it is an improvement over crude estimates applied to the fleet in general may require much more specific data for each crewmember that is a notable increase over the existing collection.

The second section of the data collection concerns revenue data. Although the collection includes catch amounts by share type that replicate permit landings data, these data are unique in that they are accompanied by revenues by share type (e.g. Class A IFQ/Class B IFQ or CDQ/C share IFQ).⁶ These data are the only source of information concerning landings revenues by share type.

Data identifying harvested IFQ that are held by the owner are also distinguished from IFQ leased to the vessel. These data are intended to provide information concerning the scale of leasing in the fishery. Unfortunately, the variety of overlapping vessel and quota share ownership structures in the fishery make these data difficult or impossible to interpret. Some vessel owners hold quota share and vessel interests in separate companies. A strict interpretation of common ownership would consider all IFQ harvested by the vessel as leased. Persons owning a partial interest in a vessel may independently hold their quota shares, fishing those shares on the vessel under a contract that assigns revenues to the vessel and the IFQ based on considerations other than market values. The variety of arrangements is likely to confound any collection of data that attempts to draw a distinction based on vessel ownership and share holdings. An alternative might be to limit the collection in this category to arm's length leases. These transactions provide information concerning market lease rates, which is the target of this portion of the collection. In considering this approach, it should be noted that it may substantially limit the amount of data collected, as a number of persons have a variety of vessel and share holding interests.⁷ An additional alternative could be to collect information from all QS holders concerning their transfers of IFQ. The broader collection could be used to gain a comprehensive understanding of the distribution of IFQ within the fishery. As a part of the collection, submitters would be requested to identify arm's length transactions, which would be used to determine the market lease rates.

⁶ Class A IFQ landings are required to be delivered to a process that holds IPQ; Class B IFQ may be delivered to any processor; C share IFQ are issue based on holding of "C share" quota shares that are available only to qualified captains and crew (and may be delivered to any processor).

⁷ An additional alternative would separate reporting of quota lease royalties from vessel EDRs into a separate report filed by individual quota owners. Because vessels act as aggregators of quota, both from owners of the vessel as well as leases from other sources, reporting lease royalties at the vessel level is confounded by the variety of lease arrangements and ownership structures and would be burdensome for the submitter to delineate or group into types of lease arrangements. Individual quota share owners, particularly those who do not participate in operating an active vessel, are likely to execute fewer individual lease contracts and employ more consistent arrangements across individual leases. Using this approach, IFQ sellers (QS owners) would report the income received from the lease of IFQ, by share type, net of all in-kind transactions. Vessel owners would report a) the cost of all compensated lease transactions, by share type, and b) the amount of charged cost for IFQ withheld from crew payments, by fishery, which would incorporate the valuation applied to in-kind transactions that were charged against vessel owner and crew/captain earnings). It might be useful to specifically report in the crew compensation section the net ex vessel by fishery that comprises the basis for crew share payments, to control for any other differences from gross ex vessel revenue reported in the revenue section of the report.

A section of the data collection is focused on crew data. The collection currently includes the number of crew employed by a vessel in each fishery. These data, however, do not identify whether a vessel includes rotations of crew on and off the vessel. So, if a vessel had eight crew work during a season, four of which worked the first half of a season and four of which worked the second half, the vessel would report eight crew. Elandings data showing the number of crew on a vessel for each landing may be used to estimate average crew, which could then be used with total crew compensation in the fishery (also included in the report) to determine average crew pay for the fishery. Captains pay in each fishery is also reported. These compensation amounts are informative concerning crew pay and its change over time generally, as well as in relation to other factors, such as vessel revenues and days fishing.

The Council also collects a variety of information concerning computation of crew pay. In its current form, the collection contains incomplete information concerning these computations. As a result, analysts cannot fully determine the effects of the various factors on crew pay. Whether certain vessels costs (e.g., bait) are deducted or charged is currently collected based on the typical treatment of the cost in crab fisheries overall. If a vessel treats the cost differently in different fisheries, it is directed to report its average treatment of the cost. These data provide only a general assessment of whether a vessel typically charges or deducts a cost (or portions thereof) from revenues prior to compensating crew. Since the terms of pay (including how the charge or deduction is applied) is not fully described in the reports and many vessels compute payments in different ways, these data may not allow the accurate recalculation of crew pay. Likewise, shares of net revenues paid to owners, captains, and crews are reported. These are the percentages typically applied to net revenues (after deductions and before charges) for computing crew pay in a fishery. These percentages also provide incomplete information concerning crew pay, as one must consider both the amounts of deductions and charges to understand the implications of these percentages. In their current form, the data concerning crew deductions and charges and shares applied to net revenues are incomplete and may be misleading to an analyst attempting to understand crew pay. For example, a vessel that reports a large share percentage may pay crew a low amount, if it charges crew for a large share of certain costs, while another vessel may pay substantially higher on a lower share percentage by charging a smaller share of those costs. If the Council wishes to fully understand the structure of crew contracts and changes in that structure over time, it could consider the collection of specific deduction and charge amounts in each fishery and all other adjustments to revenues and pay, along with the specific contract terms for generating net revenues and applying share percentages. In the absence of this information, it is not clear that this collection of deductions or crew share percentages (that are applied to net revenues after deductions) are informative.

Crew license and permit information is also collected for each crewmember on each vessel at any time during a crab fishery in the reporting year. In its current form, these data provide general information for considering longevity of crew on a vessel and in the fishery overall, but do not provide any information concerning the amount that any crewmember worked. So, the data can be used to determine if a crewmember worked on a vessel, but cannot be used to distinguish a person taking a single trip from a person that worked in all trips in all seasons. These license and permit data can be used with demographic information submitted with those applications to determine the demographic characteristics of crab crew.

Certain crab specific costs are also collected currently. Insurance premiums for crab operations and deductibles paid based on crab operations are included in this section of the collection. Insurance premium costs are rarely fully separable for crab operations, so vessel owners can alternatively submit premium costs for the vessel without distinguishing the crab portion. Crab fishery costs also include numbers of pots purchased and their cost by location. The utility of these pot data are limited, as a variety of arrangements (both in pot usage and in transactions) have arisen under the rationalization program. Pots may be shared by vessels that fish for the same cooperative, including occasional arrangements under which one vessel deploys a pot and another retrieves it. In addition, recent transactions for pots

often include all of the used pots in a given location. Payment may (or may not) depend on the number of “good” pots. Pot leasing arrangements have also become more common.⁸ Gear and line data are also collected. Since some vessels reconfigure doors to use their pots in different fisheries, the data are currently collected in the aggregate for all crab fisheries. In considering these data, it should be noted that some pots may also be reconfigured for use in Pacific cod fisheries. Given the amount of used pots currently available (because of the fleet contraction) and the range of conditions of those pots, the Council could consider collecting only new pot purchases. Gear purchases have similar issues to pot purchases, as substantial amounts of used gear are currently available as a result of fleet contraction.

Bait purchases (by species, pounds, and costs) are collected on a fishery basis. Bait caught by some vessels (in the cod fishery) make these purchases an incomplete representation of bait use in the fisheries. In addition, carry over amounts from one season to the next complicate bait reporting. An alternative approach could separate bait purchases from bait usage. Using this approach, a vessel could report its bait purchases (in pounds and dollars) without assigning those purchases to fisheries. In a separate entry bait can be assigned to each fishery (in pounds). This reporting would be intended to allow the assignment of these costs to the different fisheries and ensure that caught bait is considered. Alternatively, pot lift data could be used to apportion bait usage among fisheries.

Fuel use (in gallons and dollars of cost) is currently reported on a crab fishery basis. These data are currently considered inaccurate and an accurate method of estimating fuel use by fishery has not been established. In addition, fuel purchases (by location and costs in dollars) are currently reported. The amounts are believed to be accurate. Since fuel costs are clearly an important operational component, the could be collected on an annual basis for each vessel. This collection would likely provide limited information concerning crab fishery operations until a reasonable means of apportioning fuel among different activities (e.g., crab fishing, cod fishing, tendering, etc.) is determined. The Council could also consider collecting fuel charged to crew, but arrangements often differ across the fleet concerning the extent of deductions or charges (e.g., whether fuel use to homeport is charged).⁹

Food and provisions, “other crew expenses”, and freight costs for landed crab are collected currently on an annual crab fishery basis. These data are likely not critical operational data. Food and provisions are considered accurate in general, although some inventories are carried over between crab and non-crab fisheries. Storage, wharfage, and gear costs can be difficult to separate on a vessel basis for multiple vessel operations, operations that share pots, and operations that fish groundfish and crab. Catcher vessel observer costs are only incurred in the golden king crab fisheries. Landing taxes and fees may be approximated based on crab price information and tax rate information. In addition, fees and taxes may be paid, in part, the year after the landing posing a challenge to analysts using reported data. Cooperative fees are collected independent of arbitration organization fees and arbitration costs. The Council should consider whether these costs should be aggregated. In addition, the Council should consider that the collection only includes vessels. To the extent that these costs are based on share holdings, the data collected in this section are incomplete. In addition, it may not be possible to determine whether the costs are based on vessel ownership or share holdings confounding attempts to consider the use of the data. The Council could consider collecting this information from other sources or with additional detail to overcome these shortcomings.

⁸ These arrangements may further confound fully understanding crew compensation, as lease costs are not collected, but may be deducted.

⁹ An alternative might be to have fuel purchase volume and cost reported on a periodic (e.g. monthly or quarterly) basis, rather than on a fishery basis. Fuel purchase date, amount, and cost is readily available in accounting records, but amount of fuel used on a daily, trip, or seasonal basis is not consistently monitored. Periodic information on amount of fuel purchase amount combined with eLandings data or improved availability of logbook data would may allow estimation of fuel consumption rate on a seasonal basis and apportionment of fuel costs by fishery.

The collection also includes vessel costs, which a submitter may designate as either an overall cost or crab fishery only cost. Vessel and equipment investments and vessel repair and maintenance costs are collected. Certain costs may be allocated to either of these two data elements, but both are important operational expenses. Annual fuel and lubrication costs, as well as annual insurance costs, are important operational expenses collected in this section.

The catcher vessel collection concludes with general vessel activity information, including aggregated gross revenues from all activities, pounds harvested in all fisheries, and labor costs in all fisheries. Harvest data are available from other sources, as are revenues from fishing. Revenue data from other sources may have quality limitations, as often times the revenue recorded at the time of landing is not the final settlement. Other data sources also exclude revenues from other activities, such as tendering operations and vessel charters, although these revenues are not separated in the crab data collection program. Labor costs are unavailable elsewhere.

Processing sector

In the processing sector, data fall into a few different categories that are helpful to identify for consideration of the scope of the collection.

The first section of the collection concerns primarily production data. Portions of these data are duplicated in the State of Alaska Commercial Operator's Annual Report (COAR). The crab data collection in its current form goes beyond COAR collection in three respects. First, production is broken down by grade. Most processors may distinguish grades to some extent, but those distinctions are generally not consistent across processors. If the Council wished to continue collection of this production data, it could consider distinguishing only sub-quality or dirty shelled crab. The current collection also specifies that different crab sizes be distinguished in production reports. Standard or large size is distinguished from smaller size. Lastly, the collection requests that box sizes be distinguished. This disaggregation might be used to identify whether packaging size is being changed to serve different markets. In all other respects, the information collected duplicates that collected in the COAR.

The second component of the data collection concerns revenues. These data also generally parallel COAR collection, again with a few distinctions. Data collected in the crab program are from actual sales, while COAR data include projected sales. In addition, the crab data collection distinguishes sales to affiliated companies from sales to independent entities. These data could be used to better understand market prices and the structure of crab markets. The collection also includes revenues from custom processing services. This aspect of data collection can be used to assess both the market for custom processing services and gain some information concerning the value of those services.

The third section of the collection concerns labor. This section collects information not available from any other source. Data in this section are generally reported on a crab fishery basis. At most plants, crab processing occurs simultaneously with the processing of groundfish. Processors tend to deploy crews as needed and move crews among lines and duties. This relatively fluid system limits the ability of processors to accurately report man-hours or payments on a fishery basis. To date, reported data suggest that hourly pay to labor may vary by more than 100 percent annually in each fishery (ranging from approximately \$10 per hour in at least one year in every fishery to over \$20 per hour in at least one instance in each fishery). This variation is likely attributable to data error arising from the difficulty of attributing man hours to crab fishery processing, as opposed to other activities. An alternative could be to collect these data on a plant basis, for all activities at a plant annually. This level of collection would not necessarily inform crab management decisions specifically, but would provide better insight into processing labor impacts more generally. Employee residence information could also be incorporated into the collection to assess community, Alaska, and non-Alaska impacts.

The purchase of custom processing services is also included in data collection. This collection parallels the revenues from custom processing that are included in the revenue section of the collection. The data collected here should mirror those data.

Crab purchases data are also collected. These include purchases from plant operators, as well as purchases by persons who contract custom processing services. Crab purchases are distinguished by share type (i.e., Class A IFQ/Class B IFQ/ C share IFQ) in this collection to gain a better understanding of the effects of the different share types on crab prices.

The collection also includes certain crab processing costs. Complications with the collection of crab processing costs parallel those complications arising in the collection of crab labor data. Some processing and packing materials, equipment and supplies may be used in several fisheries, requiring the plant operator to apportion costs among the different fisheries to report a crab fishery value. Likewise, freight shipments to and from the plant often combine a variety of materials and products that require the plant operator to estimate the crab portion of the costs. In addition, some plants use their own vessels for some shipments, requiring the operator to attribute some cost to the vessel. In many cases, brokers and promotional efforts serve several types of products, not strictly crab products (and may even include products from other plants). Food and provisions are also difficult to track, as purchases often overlap a variety of fishery seasons. These costs must also be apportioned among different fisheries to derive a crab only cost. Insurance deductibles also must be apportioned among fisheries. These apportionments are somewhat arbitrary, as incidents contributing to the deductible may occur in multiple fisheries. The basis for this apportionment is likely man-hours. Product storage costs may be estimated based on the amount of plant cold storage space occupied by crab products in comparison to other products and an assumed (or estimated) cost of operating that cold storage facility. Those costs are often intertwined with other costs at the operational costs facility (such as general fuel and electricity costs). In each case, these values are estimated. Estimates may not be determined based on a consistent methodology across responding plants. While the Council may wish to continue to collect some or all of these elements, issues concerning the need of the responding plant to derive estimates (and the potential inaccuracy of those estimates) should be considered. An alternative, in some cases, may be to collect data aggregated across all fisheries reducing the need to estimate the value for crab fisheries. In considering this revision, the Council should also consider whether the reported data's use for examining fishery impacts and crab fishery impacts in particular.

The data collection also includes general plant costs, which are aggregated at the plant level. Annual fuel, electricity, lubrication, and hydraulic fuels are included in the collection. Both plant and equipment investments and plant repairs and maintenance are included in this collection. Since aggregated to the plant level, these data may include expenditures not attributable to crab operations. In addition, it is not clear the extent to which these costs overlap with each other or other data collected. For example, it is possible that a plant may categorize the replacement of certain equipment in a processing line as either routine upkeep or an equipment investment – the choice of which may be driven by tax treatment of the expenditure. In addition, it is possible that plant staff labor may be treated as a cost of repairs, in addition to a labor cost. These overlaps raise some questions concerning use of the data and its application to any particular analysis.

The collection concludes with general processing information. This includes processing days at the plant in all fisheries, total plant revenues, total finished pounds, and total plant processing labor payments. The first three of these items are available from (or may be approximated using other sources). The payments to labor are unique to this collection.

Conclusion

The Council has expressed its intention to revise the economic data collection reporting requirements that apply to participants in the crab rationalization program. In the process the Council outlined framework alternatives that could be used for identifying data elements for inclusion in alternative for analysis. This paper (and its appendices) applies that framework to data elements from which the Council could construct specific alternatives.