MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director

DATE: June 11, 1997

SUBJECT: Observer Program

ESTIMATED TIME
6 HOURS

ACTION REQUIRED

(a) Extend existing program through 1998 with minor revisions
(b) Review alternative program structures and give further direction

BACKGROUND

(a) Extend current program through 1998

Last week you were mailed a brief RIR for a regulatory amendment to extend the current observer program through 1998 (the existing program will otherwise sunset at the end of 1997). Included in that RIR is a summary of the provisions, and recommended revisions, to that program. Final action is necessary at this meeting to make sure we have the existing observer requirements in place for January 1998. A replacement program structure, discussed below, could replace the existing program by the end of 1998. NMFS staff will summarize the provisions of the recommended rollover.

Because insurance issues are relevant to the rollover of the existing program, the report of the Council's Insurance Technical Committee (ITC) will be presented at this time. A copy is provided under Item C-8(a)(1). The Council's Observer Advisory Committee (OAC) concurs with the ITC recommendations. Item C-8(a)(2) is a copy of the membership list for both Committees.

(b) Alternatives for a Modified Program Structure

Since the repeal of the Research (fee) Plan, and at the direction of the Council, NMFS has been developing alternative program structure to address, in a long-term fashion, problems which have been identified with the current observer program structure. The Council's latest direction, from April 1996, emphasized development of a 'third-party', modified pay-as-you-go program, but did not preclude development of other program structures, including a fee-based system or some blended program utilizing pay-as-you-go in conjunction with a fee program. Item C-8(b)(1) is a copy of a discussion paper provided by NMFS which outlines the issues leading to consideration of alternative program structures, including options to address these issues. NMFS is now recommending further development of a joint partnership agreement (JPA) with the Pacific States Marine Fisheries Commission (PSMFC) to implement the 'third party' system previously discussed by the Council. NMFS staff will summarize the approach for the Council.

The Council's OAC met in Seattle during the first week of June to review information on this initiative and supports NMFS proceeding with this alternative. The report from the OAC is contained under Item C-8(b)(2) and will be presented by Committee Chair Chris Blackburn. Additional materials which were provided to the OAC, and which were mailed to you last week, include two reports from NMFS Observer Program titled 'Groundfish Observer Costs by Harvesting and Processing Sector', and 'Observer Coverage Needs'. These reports were reviewed by the OAC and factored into the overall Committee recommendations. Dr. Karp is available to summarize the information in these reports for the Council.

Correspondence received is under Item C-8(b)(3), including the proposal from Kim Dietrich which was reviewed by the OAC. As is reflected in the OAC report, further development of that proposal is not consistent with development of the third party (JPA) alternative.

Insurance Technical Committee (ITC) Report

to the North Pacific Fishery Management Council

The Council's ITC met on June 4, 1997 to discuss insurance issues as they relate to the Domestic Observer Progam in the North Pacific. Two primary issues were on the agenda: (1) the recent language in the Magnuson-Stevens Act designating observers to be federal employees for purposes of insurance coverage under the Federal Employees Compensation Act (FECA), and (2) Current insurance coverage requirements for contractors providing observers.

Members present: Jerry Nelson (Chair), Craig Nodtvedt, Steve Kennebeck, Nancy Munro, Michael Lake, Lisa Van Atta

Staff: Chris Oliver, Bill Karp

Other: Steve Drew, Dick Nielsen, Doug Schulz

FECA Designation for Observers

The Committee discussed the feedback from the Department of Labor (DOL) received thus far regarding the FECA designation for observers in the recent Magnuson-Stevens Act language. The language in the Act deems observers to be federal employess *for purposes of insurance coverage by FECA*. The language in the Act specifically refers to observers on fishing vessels and does not refer to plant observers or to activities of vessel observers when assigned to vessels, but not actually on the vessel. The advice from DOL is that FECA is a workman's compensation coverage and does not relieve the contracting company from the existing liability coverages or their existing Alaska Workman's Comp policies. (Attachment I provides copies of correspondence regarding this issue). In essence, while FECA may provide an alternative workman's comp remedy for some observers, it does not resolve the overriding issue of observer status, nor does it relieve the contracting companies or vessels owners from potential liability.

In determining the heirarchy of remedy in an injury case, DOL advises that it cannot answer this question until a claim is filed, and that the determination of remedy may vary from case to case. They further advise that existing coverages should still be maintained by the contracting companies. This is contrary to the ITCs original focus - to develop a single, comprehensive source of insurance which protects the observers, the contractors, and the vessel owners. The FECA designation further confuses the observer insurance issue, does not relieve the contracting companies of any existing comp or liability coverages, is redundant to existing comp coverages for observers, and could actually result in increased costs of the existing insurance coverage packages (due to the uncertainties created).

For these reasons, the ITC recommends that the Council recommend to Congress that the FECA designation in the ACT, as it relates to North Pacific FMP groundfish and FMP crab observer programs, be removed. This was a unanimous recommendation of the ITC. NMFS Observer Program representatives concur in this recommendation.

Because other observer programs around the country may benefit from the FECA designation, this recommendation is specific to the application of FECA to North Pacific groundfish and crab fisheries. Deletion of this language will not adversely affect the insurance coverage for observers - the existing package of comp and liability coverages more than adequately covers the observers, as well as contractors and vessel owners. Seaman's status (and Jones Act remedy) is an unanswered question in either case. If the FECA language remains, there is a real risk of the existing insurance carriers opting to no longer provide that coverage, due to the uncertainties created by the FECA designation. It is also still uncertain as to whether FECA payments would come from the agency's (observer program) budget. Deletion of the FECA designation would at least get us back to 'square one', and allow the ITC to concentrate on an appropriate and effective insurance source, perhaps under USL&H.

CGL requirement in the existing observer program regulations

The ITC originally (in 1994) recommended that Contractual General Liability coverage be required to be carried by observer contractors. The language in the regulations actually refers to Contractual General Liability as a requirement, which is in reality a confusion of terms. *Contractual* liability actually refers to an endorsement to a more general, *Comprehensive* liability policy, and extends the liability coverage to an additional party (the vessel owner for example), and represents a considerable additional insurance cost to contractors. The ITC recommends that the contractual endorsement (which is in effect the 'hold harmless' indemnification to the vessel owners) be an option, not a requirement. Consistent with this recommendation, the language in the regulations should be changed to require Comprehensive liability, but allow the contractual endorsement to be optional. This change should be effected for the remainder of 1997 (if possible) and beyond.

Next steps

Once the direction of the overall Observer Program is determined by the Council, the ITC would like to meet again to address the basic issue for which this Committee was formed - that is to develop a single source coverage which takes care of all involved, at least in terms of a single workman's compensation package (perhaps USLH), recognizing we probably cannot answer the (seaman's) status issue - that will likely remain as an issue to be determined by the courts.

U.S. Department of Labor

Employment Standards Administration
Office of Workers' Compensation Programs
Division of Federal Employees' Compensation
Washington, D.C. 20210

File Number:

MAY 29 1997

Michael Lake
President
Alaskan Observers, Inc.
130 Nickerson, Suite 206
Seattle, WA 98109

Dear Mr. Lake:

This is in response to your letter dated January 10, 1997, requesting information concerning section 403 of the Magnuson-Stevens Fishery Conservation and Management Act, as amended by section 304 of the Sustainable Fisheries Act (Pub.L. 104-297, 110 Stat. 3559 October 11, 1996). As amended, section 403 (c) provides that observers on fishing vessels and under contract to carry out responsibilities under the Magnuson-Stevens Act or the Marine Mammal Protection Act of 1972, would be deemed to be Federal employees and thus entitled to compensation under the Federal Employees' Compensation Act (FECA) for job-related injuries.

Many of the questions you raise cannot be answered at this time, but must await the development of the law as actual claims are processed. Thus, although the plain language of section 403(c) appears to limit FECA coverage only to injuries sustained while onboard a vessel, a final decision on this issue can be made only in connection with an actual claim. It should be noted, moreover, that even if FECA applies to injuries other than those sustained onboard a vessel, this would not necessarily relieve the employer of the obligation to insure itself against such liability.

While the issue of whether FECA immunizes an employer or vessel owner of potential liability may ultimately have to be decided by the courts, it is our considered judgment that nothing in either the Magnuson-Stevens Act or the FECA relieves the employer or vessel owner of liability imposed by other laws such as the Jones Act. Detailed discussions with your attorneys and insurance advisors should be had before deciding what kind(s) of insurance your company should purchase.

Enclosed for your information is a notice we will be circulating to interested persons with regard to the filing and processing of claims of observers seeking benefits for job-related injuries. Copies of claim forms mentioned in the notice are enclosed for your information.

If you have additional questions or suggestions, please feel free to contact my office or the office listed in the notice. Your interest in this matter is appreciated.

Sincerely,

THOMAS M. MANLEY
Director for
Federal Employees Compensation

Enclosures

SUBJECT: FISHING VESSEL OBSERVERS AND THE FEDERAL EMPLOYEES' COMPENSATION ACT

Section 403(c) of the Magnuson-Stevens Fishery Conservation and Management Act, as amended by § 204 of Public Law 104-297 (16 U.S.C. 1881b), provides -

> An observer on a vessel and under contract to carry out responsibilities under this Act or the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 *et seq.*) shall be deemed to be a Federal employee for purposes of compensation under the Federal Employee (sic) Compensation Act (5 U.S.C. 8101 *et seq.*).

The purpose of this notice is to describe the procedures an injured observer and the employer should follow to file a claim under the Federal Employees' Compensation Act (FECA).

I. Filing of a Notice of Injury and/or Claim. An observer who sustains an injury while assigned to a vessel should complete the employee's portion of a CA-1 or CA-2 claim form (the CA-1 is for traumatic injuries, while the form CA-2 is to be used in connection with occupational disease claims). This form should be given to the injured observer by the immediate supervisor who should complete that portion of the form entitled Official Superior's Report, and send the completed claim form to -

> U.S. Department of Labor, OWCP
> 800 North Capital Street, N.W., Room 800
> Washington, D.C. 20211
> Telephone (202)565-9770

The injured worker should also complete and file a Form CA-7 if the injury results in a wage loss for more than 3 calendar days, or a permanent impairment or serious disfigurement as described at 5 U.S.C. 8107.

If the injury results in death, a claim for survivor benefits may be made by filing a Form CA-5 (Surviving Spouse, or Children), or a Form CA-5b (Other Eligible Dependents). The employer should also complete and file a Form CA-6, the Official Superior's Report of Employee's Death.

II. Medical and Other Evidence. The injured person has the burden of establishing that he or she is an "observer" within the meaning of section 403 of the Magnuson-Stevens Act, that he or she sustained an injury while in the performance of duty on a vessel, and that any claimed disability or impairment is due to the on-the-job injury. Medical evidence should include a report from a qualified physician which establishes (1) the date of the examination and/or treatment, (2) the history of the injury as provided by the worker, (3) the findings and diagnosis made, (4) an opinion as to whether the diagnosed condition is related to injury, (5) the dates of any disability resulting from the injury, and (6) a statement of the prognosis.

The employer should assist the injured worker in collecting and submitting relevant factual and medical evidence, particularly with regard to whether the injured person was (1) an observer assigned to a vessel, (2) under contract to carry out the provisions of the Magnuson-Stevens Act or the Marine Mammal Protection Act, and (3) carrying out official duties on a vessel at the time of injury.

III. Benefits Available. An observer who sustains an injury compensable under the FECA will be entitled to various benefits: medical care and treatment by a physician of the observer's choice, monetary benefits for the wage loss sustained as a result of the injury, including compensation for partial and total disability, either temporary or permanent, and compensation payable under a schedule for the loss or loss of use of certain parts and functions of the body. An observer without dependents is entitled to compensation at the rate of 66 2/3% of his or her monthly pay; the compensation rate increases to 75% for an observer with dependents.

The survivors of an individual whose death is causally related to employment as an observer, are entitled to monthly compensation payments: a surviving spouse without eligible children would receive 50% of the deceased's monthly pay; the rate payable to the surviving spouse would be reduced to 45% if there is an eligible child or children, plus 15% for each child subject to a maximum of 75%. The FECA also provides for reimbursement for funeral expenses up to $800.00, and transportation expenses, if necessary.

IV. Appeal Procedures. An observer who is dissatisfied with the decision issued by the OWCP will be advised of the review procedures that are available and the time within which each procedure must be initiated. Final review authority is vested in the Employees' Compensation Appeals Board established under 5 U.S.C. 8149. There is no judicial review provided in the FECA (*see* 5 U.S.C. 8128(b)).

V. Potential Impact on Other Remedies. Section 403 of the Magnuson-Stevens Act is silent on whether the benefits provided under that section are the injured workers' exclusive remedy. Under the plain language of section 8116(c) of title 5, United States Code, FECA is the exclusive remedy only with respect to claims for damages filed against the United States or an instrumentality thereof. Thus, employers and vessel owners are still required to carry insurance or to otherwise secure their potential liability for injuries sustained by observers.

VI. Additional Information. Additional information and guidance may be obtained by contacting the office referenced above, or by writing to: U.S. Department of Labor, Office of Workers' Compensation Programs, Division of Federal Employees' Compensation, 200 Constitution Avenue, N.W., Room S-3229, Washington, D.C. 20210; telephone (202) 219-7552.

Alaska National
INSURANCE COMPANY

June 3, 1997

Mr. Michael Lake, President
Alaskan Observers, Inc.
130 Nickerson, Suite 206
Seattle, WA 98109

Dear Mr. Lake:

Per your request, the May 29, 1997, letter from the Director of the Federal Employees Compensation Board has been given to me for review and comment.

FECA appears to be strictly a work related injury or occupational disease coverage, therefore would not cover any illness that manifested itself in the service of the vessel. Coverage would not be as broad as under General Maritime Law. It is clear that there is no provision that would limit your liability in this regard. In reviewing the benefits available, medical care would be provided for a work related injury or occupational disease. Temporary total disability benefits may not fulfill your obligation for maintenance and cure under General Maritime Law.

With regards to your responsibility for filing with the Alaska Workers' Compensation Board, it may be found that FECA would pre-empt this jurisdiction, however, there is no legal authority which would relieve the employer from filing under Alaska Workers' Compensation.

I'm afraid I really haven't given you anymore information that what you got from Thomas Markey, other than it appears that this legislation provides an additional remedy for observers to pursue, but does not insulate the employer from its obligation under Alaska State Workers Compensation or under General Maritime Law.

If I can be of additional assistance, please feel free to contact me.

Sincerely,

Ann L Hawks

Ann L. Hawks
Claims Manager
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cc: File

ALH/sjn

Insurance Technical Committee

Revised May 6, 1997

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Revised 5/6/97

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AGENDA C-8(b)(1)
JUNE 1997

OVERVIEW OF ISSUES LEADING TO CONSIDERATION OF AN ALTERNATIVE PROCUREMENT PROCESS FOR THE NORTH PACIFIC GROUNDFISH OBSERVER PROGRAM

Background

The North Pacific Groundfish Observer Program (NPGOP) is responsible for ensuring that mandatory observer coverage requirements established for vessels and plants participating in federal groundfish fisheries off Alaska are met. Observers are trained either at the NMFS Alaska Fisheries Science Center (AFSC) or at the Observer Training Center, University of Alaska, Anchorage. Observers are certified by NMFS upon successful completion of a three-week training program and subsequent hire by one of the five private contractors currently certified by NMFS. With the 100% observer coverage requirement on vessels greater than 125 ft length overall (LOA), the 30% coverage requirement on vessels of 60 ft - 125 ft LOA, and similar requirements on shoreside processing facilities, the NPGOP obtains approximately 30,000 days of observer data each year.

Observers collect data to address information requirements for science, management, and compliance. Primary responsibilities include: provision of data on catch quantity and composition for inseason management and estimation of fishing mortality, collection of biological data and samples for size and age composition determination and other scientific studies associated with stock assessment and ecosystem research, and documentation of interactions between fishing operations and marine mammals and birds. Observer data may be used to evaluate compliance with individual vessel performance programs (e.g. Vessel Incentive Program (VIP) and Community Development Quota (CDQ)) and may be the only source of information available to NMFS to determine whether prohibited species bycatch limits have been reached. The program is managed by staff at the NMFS Alaska Fishery Science Center (AFSC) in Seattle and provides data for fisheries management and science, and compliance monitoring. Vessel and plant owners required to obtain observers may contact the certified contractor of their choice and enter into private negotiations for observer services. Observer costs accrue only to those vessels and plants required to obtain observers.

NMFS' ability to assure that data integrity is maintained is constrained by several features of the current program. In particular, allowing fishing companies to negotiate directly with observer companies creates a serious potential for conflict of interest. As observers assume increased responsibilities for monitoring individual vessel performance and other programs which involve compliance considerations, incentives for industry to

manipulate this procurement system to their advantage increase. Contractors are under constant pressure to provide observers who meet their clients' needs and this influences the quality of the observers they hire. Pressure to reduce costs keeps observer salaries low, further discouraging the best observers from renewing their contracts. Furthermore, instability in the fishing and contracting industries has created situations where observers have not been paid for work performed. These circumstances have undermined observer morale, increased turnover in the observer work force, and adversely influenced data quality.

To address these concerns, the North Pacific Fishery Management Council (Council) directed NMFS to develop a new program (the Research Plan) incorporating a concept which would require all fishery participants to pay a fee based on the value of their catch. Collection of this fee was authorized by an amendment to the Magnuson-Stevens Fishery Conservation and Management Act. Under this program NMFS would collect the fee and would contract directly with observer companies, thus removing the direct link between the fishing industry and the observer contracting industry. The Council adopted the Research Plan in 1992 and NMFS approved and implemented this program in 1994. During 1995, over $ 5.5 million was collected to capitalize the North Pacific Fisheries Observer Fund.

Over the period that the Research Plan was developed and implemented, industry concerns about the program arose. These issues included:

- Redistribution of costs for observer services that resulted from the collection of fees based on a percentage of exvessel value. Operations with high revenues paid high fees. Conversely, operations with lower revenues paid less for observer services. This effect was an objective of the Research Plan ("equalize" costs for observer services), but was deemed no longer desirable by many industry members providing input to the Council's decision making process.

- The amount of observer coverage that could be funded under the Research Plan fee collection program was limited and could constrain the development of programs under consideration by the Council that would require increased observer coverage, such as the groundfish Community Development Quota program and an individual vessel bycatch accounting program.

- New information became available indicating that the contractual arrangements between NMFS and observer contractors envisioned under the Research Plan would be

subject to the Service Contract Act. As a result, the Department of Labor would establish minimum wage provisions for observers that would result in increased salaries for observers and increased costs for observer services. Minimum wage provisions appeared unacceptable to the Council and aggravated concerns about limitations on observer coverage under the Research Plan.

At its December 1995 meeting, the Council voted to repeal the Research Plan and refund the fees collected from the 1995 fisheries. At the same meeting, the Council directed NMFS to develop a new plan to address the data integrity issues the Research Plan was intended to address. Under this plan, fishing operations required to obtain observers would continue to pay coverage costs, but payment would be made to a third party. The third party would enter into subcontracts with observer companies and would direct vessel and processor to specified observer companies for services. Payments received by the third party would be used to pay observer contractors for providing observer services and to cover administrative costs.

At its December 1995 meeting, the Council requested that the above "modified pay-as-you-go" program also address the following issues:

1. Adequate compensation and insurance packages for observers;
2. Consistent mechanisms to provide observers for State of Alaska managed shellfish fisheries to ensure compatibility between the shellfish and groundfish observer programs;
3. Options to defray costs to vessel owners who are perceived to pay an unreasonably high proportion of their gross catch value for direct observer coverage.

Options to address Observer Program Issues

NMFS has explored several options to respond to issues giving rise to data integrity concerns and the challenge by the Council to equalize costs for observer coverage. One of these options, hiring observers through a quasi-governmental organization authorized by legislative statute, may best address concerns about conflict of interest and retaining quality observers. Industry would be billed for observer services and billing would include costs of administrative overhead required to maintain a self-sustaining organization, similar to the U.S. Post Office. However, this option was not pursued because of the required increased staffing requirements, contrary to Presidential mandates for government downsizing (observers would be considered government employees). Secondary concerns included the need for an authorizing statute and the fact that this option would eliminate all existing observer companies.

Other, more realistic options include the concept of an "Observer Corps", the proposed modified pay-as-you-go program, and a fee collection program (the Research Plan). These latter two options are discussed below and are summarized in Table 1. The concept of a NMFS Observer Corps (also discussed below) would be complementary to either program and should not be viewed as a stand alone solution to the issues facing the NPGOP.

From NMFS's perspective, the observer program must be changed to address conflict-of-interest and other concerns which influence data quality. Observer performance cannot be improved simply by developing stricter standards for hiring and retaining observers and certifying contractors, and by increasing participation by enforcement so as to discourage fishing companies, observer companies, and observers from manipulating the system. Improvements are being made in these areas, but they cannot be expected to solve the fundamental problem. Nonetheless, if fishing companies are allowed to negotiate with several contractors for provisions of observer services, conflicts of interest must be expected. NMFS and the Council must be committed to change the NPGOP to address issues giving rise to concerns about the integrity of the data used to monitor the commercial fishing operations off Alaska. NMFS's objectives for this change are as follows:

① Minimization of the potential for conflict of interest;
② Provision of incentives to observers and contractors for high quality work; and
③ Development and maintenance of tools necessary for quality control and field support for observers.

NMFS Observer Corps. The Alaska Region, NMFS, has requested appropriated funds and additional FTEs to provide for an enhanced field presence and to ore effectively meet the following objectives:

- Maintain flexibility to assign staff with recent and extensive observer experience to address problems encountered by observers aboard vessels and in plants.
- Supplement observer training and performance monitoring by providing oversight in the field.

- Have the ability to work directly with fishing companies who have sampling problems and/or difficulties working with observers.
- Supplement existing program staff resources by providing assistance with briefing, debriefing, and other program functions in Seattle, or at the program field offices; and
- Provide backup staffing for special projects and when other program staff work as observers or take leaves of absence.

To date, no guarantee exists that requested funds or FTEs necessary to support a NMFS Observer Corps will be provided. The NMFS Alaska Region/AFSC will continue to petition NMFS Headquarters for these resources.

Proposed Modified Pay-As-You-Go Program. This alternative observer procurement system would be based on a joint partnership agreement (JPA) between NMFS and the Pacific States Marine Fisheries Commission (PSMFC). PSMFC has expressed an interest to work with NMFS to provide observer procurement services and NMFS and PSMFC staff would need to jointly develop the draft JPA between now and the end of the year. Many of the details of this approach have been developed and were included in the draft statement of work prepared for the Research Plan in early 1996. Under this approach, the potential for conflict of interest would be reduced and the ability to recruit and retain high quality observers would increase. NMFS would initiate rulemaking to require that all vessels and processors procure groundfish observers through PSMFC.

PSMFC would subcontract with observer contracting companies and direct these companies to deploy certified observers in response to requests from fishing companies. The JPA would define standards for the quality of observer performance and PSMFC would be responsible for designing a system to ensure that these standards were met. NMFS would be responsible for monitoring observer performance in the field and through debriefing, and providing PSMFC with necessary feedback. Under a pay-as-you-go option, PSMFC would invoice fishing companies for direct observer coverage costs as well as administrative costs and PSMFC would be invoiced for coverage costs by observer contracting companies.

The JPA between PSMFC and NMFS would address procurement arrangements only for groundfish observers. The Alaska Department of Fish and Game is continuing to pursue a separate State-funded crab fishery observer program that would address shellfish observer procurement and data integrity issues.

The modified pay-as-you-go option would not address the Council's desire to change the distribution of costs for observer services

within the affected fishing industry. New information is available to assess the costs of groundfish observer coverage relative to annual gross revenues within different sectors of the fishing fleet. This information indicates that, in general, the fixed gear fleet pays proportionately more for observer coverage relative to other sectors of the fishing industry. Whether or not these observer costs represent an unacceptably high price to pay for access to the groundfish resource and to monitor Pacific halibut bycatch mortality is an assessment subject to Council/industry review.

Scheduling: If the Council takes final action supporting this approach in December 1997, the JPA and associated infrastructure could be effective by mid 1998, although a January 1999 target date may be more realistic.

Fee Collection Program (Research Plan): A number of political and economic issues are associated with the fee collection program authorized under section 313 of the Magnuson-Stevens Act. Lacking a change in statute authority to address some of the concerns associated with the Research Plan, no reason exists to believe that this option would be more acceptable now than it was one year ago when the Council voted to repeal it.

As intended, the Research Plan redistributes costs of the observer program so that all operations proportionately pay the same for observer services, up to 2 percent of the exvessel value of catch. Actual fee payments for large revenue operations, however, can increase several fold relative to existing observer costs, giving rise to a different "non-equity" perspective. A fee based program conceptually enhances NMFS's flexibility in assigning observers so that observer deployments can be adjusted in response to changes in resources or data collection priorities.

Schedule: The revised Research Plan adopted by the Council in December 1993 was not scheduled for full implementation until 1996. A two-year period for program development and collection of start-up funding is not unreasonable. If the Council took final action in December 1997, full implementation of the Research Plan could not be expected before the year 2000. If a revised fee collection program were contingent on statutory changes, the implementation schedule would be extended accordingly.

Combine the Research Plan with PSMFC procurement services. This option would implement the fee collection program authorized under the Research Plan and transfer collected funds to PSMFC, which would provide the procurement services discussed above. This arrangement could be under either a cooperative agreement or

sole source contract (which would trigger the Service Contract Act and associated minimum salary provisions). The advantage to this arrangement relative to only the Research Plan is that PSMFC could enter into contract arrangements with observer companies more easily than NMFS. The disadvantage is that PSMFC administrative costs would be paid from collected fees deposited in the North Pacific Observer Fund and compete in use of the Fund for the provision of observer coverage. Furthermore, the costs to NMFS to implement a fee collection program may not be offset by advantages that would ensue from an organizational infrastructure that brings observers closer to NMFS without a third party interface.

Table 1. Comparison of the proposed "modified pay as you go" program and the Research Plan in addressing conflict of interest, retention of quality observers, and coverage flexibility.

	Status Quo	Modified pay as You Go	Research Plan
Potential for Conflict of Interest	Unchanged	Reduced. PSMFC would receive payment from fishing companies, direct observer contractors to place observers, and pay invoices from observer companies.	Reduced. NMFS or PSMFC would direct observer contractors to place observers, and pay invoices from observer companies. Also reduces nonpayment possibility.
Recruitment and retention of high quality observers.	Improvement unlikely unless NMFS can hold contractors accountable for observer performance.	Improved. Under a JPA, PSMFC could specify salary requirements and performance criteria in contracts with observer companies. If a contract with PSMFC is pursued, the SCA salary provisions would apply. Eliminates nonpayment problem.	Improved. NMFS could contract directly with observer companies or with PSMFC. In either case, SCA and observer company performance requirements would apply. NMFS could engage in cooperative agreement with PSMFC who could specify salary and performance requirements in contracts with observer companies. Eliminates nonpayment problem
Adjustment of coverage levels	Unchanged. Council can recommend changes to 100%/30% requirements but process requires rulemaking	Unchanged. Council can recommend changes to 100%/30% requirements, but process requires rulemaking	Improved. Establishment of an annual specification process would require NMFS and Council to review and justify coverage needs, Increased coverage would increase fee level - if coverage costs exceed 2%, NMFS/Council would have to make difficult decisions and/or seek changes to statutory fee restrictions.
Costs to NMFS	Data quality compromised by conflict of interest, inability to influence observer salaries, working conditions, and contractor performance. Inability to address observer authority? issue constrains compliance monitoring functions.	Commitment to work closely with PSMFC essential. Improved contractor accountability and ability to address observer working conditions will improve data quality. Inability to address observer authority? issue constrains compliance monitoring functions.	Costs associated with implementing and maintaining fee collection program high. Negotiations with industry over fee basis, fee levels, and costs would be time consuming and complex.

Report of the Observer Advisory Committee (OAC)

The Council's OAC met on June 5-6, 1997 in Seattle, Washington to discuss: (1) the rollover, through 1998, of the existing observer program, and (2) the future direction and alternative structures for the domestic observer program.

Members present: Chris Blackburn (Chair), Teresa Turk, John Iani, Jerry Nelson, Michael Lake, Mandy Merklein, Lauri Bowen, Paul MacGregor, Gary Westman, Don Goodfellow, Arni Thomson, Nancy Munro, Paula Cullenberg

Agency Staff: Bill Karp, Sue Salveson, Kim Rivera, Martin Loefflad, Chris Oliver, Earl Krygier, Al Didier (PSMFC)

Other attendees:Wolfgang Rain, John Gauvin, Brent Paine, Howard McElderry, Steve Drew, Mark Coles, Fran Bennis, Fred Munson, Eric Cox, Stephanie Madsen, Glenn Reed , John Roos, Thorn Smith

EXECUTIVE SUMMARY (bold text)

I. Rollover of existing program

The OAC received a report from NMFS staff regarding the rollover of the existing program through 1998, which is necessary to allow for development of a revised program structure. The OAC supports this rollover, including minor changes being recommended by the agency. The OAC also supports the recommendations of the Insurance Technical Committee (ITC) including, (1) deletion of the FECA applicability for North Pacific groundfish and crab observers and (2) clarification of the CGL insurance requirements in the current regulations.

Two issues were raised and discussed by the OAC regarding the existing program: (1) the prohibition on an observer accepting employment from a fishing/processing company for one year from time of employment as an observer, and (2) the requirement by NMFS for copies of signed contracts between fishing companies and observer contractors. While some OAC members were not comfortable with these provisions, the OAC as a whole supports approval of the rollover as is, noting that individuals may comment on these issues during the proposed and final rulemaking process.

II. Recommendation for 'Third Party' Program/JPA

The OAC unanimously supports the agency immediately pursuing a joint partnership agreement (JPA) with the Pacific States Marine Fisheries Commission (PSMFC) to provide observer procurement functions (the third party progam) - it is understood that prior to final action, the agency and PSMFC will present the OAC and Council with a more fleshed out program, including estimated costs, etc. - hopefully for review in September with final action in December. Within this first step, it is the expectation that the observer compensation issue will be addressed, and favorably resolved, through either application of compensation standards for federal employees carrying out similar duties, the unionization efforts, other negotiated

means, or provisions of the JPA.

Specific issues identified by the OAC which will require further work and resolution are:

-Description of how the observer assignments will be distributed among contractors.
-Consideration of the revised relationships between observers, industry, PSMFC, contractors, and NMFS, such as planning for observer placements which is currently done by contractors.
-Consideration of the non-quantifiable aspects of observer working conditions.
-Identification of the responsibility for addressing grievances by any party involved.

Following development and approval of the basic third party program, the OAC recommends development of options to deal with remaining issues of (1) cost equalization and (2) flexibility in placing observer coverage where it is most useful. Options for doing so are an ancillary fee assessment, a surcharge, or a voluntary industry assessment to provide a pool of funds to offset costs for some participants or to fund observer placement in specified fisheries. Exempting coverage requirements based on a minimum landing or revenue threshold is another option for cost equalization. While important, development of these follow-up issues is secondary to getting the basic JPA program in place.

BACKGROUND REPORTS RECEIVED BY OAC

Current Program Overview

Bill Karp provided to the OAC an overview of observer program functions and objectives, including proportion of observer time spent on specific duties, the proportion of prior observers versus 'inexperienced' observers, and future challenges for the program. The OAC noted that the ratios of 'prior' to 'inexperienced' observers have remained fairly steady over the past 3 years.

Canadian Observer Program

Mr. Howard McElderry (with Canadian firm Archipelago Marine Research Ltd. - observer provider) provided an overview of their fisheries and observer program structure and function. Among the information provided was that the average pay for observers in that program is $120-$160 per day (Canadian) depending on experience, and the average cost to industry per observer day is $370 (Canadian)(unsubsidized amount is $317 per day). Typically, an observer would have 150 days (total time, not just at-sea time) to get to the top rate. With conversion rates, the pay rates described are similar to those currently in place for North Pacific observers. There was considerable discussion from the OAC regarding details of Canadian program, particularly the salary and cost per day aspects (though these are not directly comparable to our program because of the way they define sea day, etc.) Some of the other issues discussed include observer duties (in general and as they relate to IBQ program), enforcement aspects of observers in that program, dockside sampling, and relationship between contractors and DFO. In terms of insurance, they are covered by the federal worker's comp Act, and they have no opportunity to sue vessel owners or contractors. These discussions were very helpful to the Committee as a reference point for specific aspects of our observer program.

Northeast U.S. Observer Program

Mr. Steve Drew (with non-profit Manomet Observatory - Fisheries Observer Program, East Coast) addressed the OAC regarding the east coast observer programs. They are the contractor for NMFS to do their observer support. They contract with NMFS, not with vessel owners, and are funded by NMFS. Because they are under a bid process right now, we could not get specific information on salaries and cost per day of observer coverage, but pay is generally higher than in our observer program. Observers are direct employees of the Manomet Observatory. Insurance issues/liabilities are similar to our issues, and Mr. Drew concurs that FECA does nothing for them.

Shellfish Observer Program

The OAC received an update on the status of shellfish program - essentially the crab program is proceeding independently since the repeal of the Research Plan. State program would be funded by cost recovery from a portion of the stocks and observers would be State employees under the proposed structure. It will probably take a year or two to get the program actually on line, because of administrative and legal considerations. Critical point is that the groundfish program is going to proceed separately, and the ideal of a single, integrated program is no longer a viable option. The crab program is on its own track, unless there is some initiative to resurrect the Research Plan, in which case the State would have to re-evaluate their direction and potential participation.It was clarified by NMFS staff that, if the Research Plan is resurrected, the crab fishery would have to pay into the program, in some form or fashion.

The initiative to pursue the JPA (third party) program for groundfish does not assume, but does not preclude, involvement of shellfish observer program. If 'status quo' program for crab overlaps with groundfish JPA program, potential conflict of interest exists, but could be addressed for this short period of time by disclosure requirements. Annual certification process could also deal with this issue.

Unionization effort by observers

Regarding the unionization effort, it was clarified that nothing would preclude shellfish observers from joining the union. Mark Coles, with the Alaska Fishermen's Union, provided an update on the unionization effort. In terms of what happens next, if vote by observers (groundfish at least) approves unionization, DOL would require contractors to bargain in good faith with the union regarding compensation, etc.

Observer coverage needs

Dr. Bill Karp provided handout and overview of statistical analyses to date, including summary of observer duties (catch composition, catch quantity, compliance, etc.) He noted that choice of how target species is determined will affect, perhaps significantly, the confidence intervals depicted. As expected, necessary levels depend on species involved and confidence interval required. Noted that time/area considerations will affect the outcomes of these analyses (stratified by time/area). Basing coverage simply on vessel length makes little sense, and getting to a more appropriate basis for determining coverage requirements remains a primary objective of the OAC in developing a better program. The OAC commends the agency for the work done thus far on this issue, and recommends

that such analyses continue, under any progam structure.

Such programs as VBAs will need to be considered in terms of the statistical variances present, and will need to be determined. It was agreed by the OAC and the agency that this is only a start, and more work has to be done in determining necessary coverage levels. It was noted that ADFG is currently conducting a study of catch and bycatch rates by fish ticket STAT area for the Central Gulf of Alaska, which will correlate coverage with catch levels, and get at issue of fishing behaviour with and without observers on board.

The OAC also discussed the VIP program, and its relationship to observer duties and sampling design. The OAC would like to get an estimate of what the VIP is actually costing, in terms of observer coverage. NMFS noted that VIP does not require additional coverage, rather, it changes the observer sampling procedures and tasks - the observers will still be on the vessel. Because of the issues discussed, the OAC recommends that NMFS provide a discussion paper on the VIP program as it relates to the observer program (how the VIP program affects quality of data, observer duties, and coverage levels required).

Salmon enumeration/retention program

Per previous Council request, analyses were provided regarding the bycatch estimation procedures for salmon enumeration, and comparison of vessel-specific and fleetwide estimates. Lessons from this study indicate significantly higher coverage levels, and engineering hurdles, to accomodate individual bycatch enumeration, for salmon and other species. The report questions the viability of the salmon retention program.

Cost inequity issue

One of the stumbling blocks previously identified under pay-as-you-go programs was that some participants pay a high percentage of their gross (groundfish) revenues for observer costs (on the order of 8% and higher according to information presented). On that issue, NMFS presented analyses which indicate that the cost equity issue is perhaps not as bad as thought, and could nevertheless be addressed down the line. Most vessels, other than fixed gear sector, have costs less than 2%, many less than 1%. Individual vessels with high costs as a percentage do exist, but are few, are relatively small producers, and are mainly fixed gear vessels which may have other fisheries than groundfish, which are not included in the revenue. The OAC found this information very revealing in terms of the magnitude of the problem and the specific area of the problem - there does not appear to be a large number of vessels paying > 7-8%, as had been alluded to. Overall, the formulation of the basic program should not hinge on this issue, and it could be dealt with later, after we get a program going. It was noted that increased cost of observers, which is likely under any program structure, could change (exacerbate) these numbers. The OAC recognizes that there is a small segment of the fleet which is paying higher costs as a percentage of gross, but that solving this issue is a secondary concern relative to getting a modified program on line. As we get a better handle on actual coverage levels needed by fishery, there may be some relief in store for those participants.

Discussion of Future, Alternative Program Structures

The OAC received a report from NMFS regarding the problems facing the current program, and the viability of alternative approaches to address those problems. The NMFS report focused on the JPA (third party) alternative, and advised that such an arrangement with the PSMFC was a legal option which would address the primary issues in the most timely fashion. During discussion, the OAC reiterated that the primary, immediate problems are maintenance of data integrity, establishing an arms length relationship between contractors and fishing companies, and addressing the observer compensation issue. Several alternative program structures were discussed, and a summary of the main discussion points for each is provided below:

A. Agency Program

This is the concept of a wholly governmental program. It would solve the procurement issue, compensation issue, and conflict issue. Costs would be passed to industry such as under Post Office. However, it does not appear to be a viable option at this time because of FTE ceilings, legislative requirements, etc. This approach would also eliminate current contracting companies. Noted that in foreign observer program, there was a direct relationship (contract) between NMFS and the contractors, and that NMFS collected money from vessels, and then passed on to contractors. This would require legislation to do, but may be more viable than actually creating federal employees (FTEs). A long-term time horizon is associated with this option.

B. Research (Fee) Plan

*is currently authorized
* could resolve conflict of interest, compensation, and data integrity issues
*may require statutory change to address problems previously identified with this program
* different non-equity issues involved (relatively higher costs for some sectors)
* logistically cumbersome for NMFS and industry.
* does have flexibility to assign observers where needed
*would require substantial time to get re-implemented.
* would require contract and invoke requirements of SCA

C. Proposal for NMFS contract with subcontractors (Kim Dietrich proposal)

* could resolve compensation, and to some degree data integrity issues
* possible short-term horizon for implementation.
*would not be viable long-term solution
*would require contract and SCA requirements
* would not directly address 'arms-length' issue

D. Foreign observer program design

* direct payments (as opposed to fee) could be submitted to NMFS, who in turn pays contractors.
* would require legislative change

*longer-term implementation
*would require contract and SCA would apply

E Modified Pay-as-you-go Program (JPA with PSMFC)-**PREFERRED ALTERNATIVE**

* Discussion of this issue included the concept of a small Observer Corps (NMFS employees) to facilitate logistics of observer deployment, maintain NMFS link to the program, and provide some flexibility with regard to observer assignments.

* Resolves conflict of interest issue.

* Joint partnership agreement (JPA) is more flexible and allows closer NMFS control than a contract. Is also least administratively burdensome.

* Compensation issue (and associated data integrity) could be resolved by unionization effort, negotiated agreement, or standards imposed in agreement between NMFS and PSMFC. This approach can address the compensation issue, but does not guarantee resolution. Noted that this issue will likely come to resolution regardless of program structure pursued.

*Flexibility to address inequity of cost issue and observer placement issue in the future. Third party cannot charge a surcharge, but ancillary fee (blended program) could be developed under existing legislative authority (to address inequity of cost issue, to extent it is a problem). Other options for addressing cost equalization are discussed in the summary recommendations.

* Note that existing observer coverage requirements can be changed by reg amendment, and could be fine tuned in the future under this, or any, program.

*Could be implemented relatively quickly - by 1999 fishing year.

*VBA, IFQ, or other individual accountability programs would require affected vessels to pay the costs of the necessary additional coverage. Any required coverages would have to be obtained from PSMFC.

GROUNDFISH FISHERY MANAGEMENT PLAN AMENDMENT PROPOSAL
North Pacific Fishery Management Council

Name of Proposer: Kim Dietrich
Address: P.O. Box 30167
Seattle, WA 98103
Telephone: 206-547-4228

Date: March 17, 1997

Fishery Management Plan: Groundfish of the Bering Sea/Aleutian Islands FMP and Groundfish of the Gulf of Alaska FMP. (Modify Amendment 47 of each FMP and/or any new amendments regarding the observer program for 1998).

Brief Statement of Proposal:

Modify current arrangement between NMFS and the contractors who hire observers so that there is a contractual agreement between NMFS and the contractors. NMFS can solicit bids for a no-cost contract (which was proposed under the "Third Party" alternative). Contracts will be awarded annually and for a period of one year. Quarterly evaluations will occur. Certification could expire after 2 negative quarterly evaluations. No contractor additions will occur once the annual cycle has begun for a given year. The year does not need to be based on a calendar year.

NMFS must take more control over their program and take more responsibility for the people who collect the data. During the RFP process, NMFS will evaluate the contractors on their (proposed) ability to retain prior observers. This factor would be weighted heavily. If NMFS feels a contractors plan to retain observers is inadequate, the proposal will be returned to be revised. Some options to maintain priors would be for NMFS to place a cap on the total number of trainees to provide an incentive for retaining prior observers **OR** NMFS could state that a high turnover rate will negatively impact quarterly evaluations. "Prior observers" is defined as successfully completing a three months in the field.

NMFS will maintain central control over data collection, but some quality control checks can be performed by NMFS trained contractor personnel to maintain consistency. NMFS currently does not have staff to perform as in depth of a quality control check as they have in the past.

All Department of Labor laws and regulations, including the Service Contract Act (SCA) will apply to the contractor/observer relationship.

Objectives of Proposal: (What is the problem?)
At the inception of the Domestic Observer Program (DOP), it was understood the Program had flaws and needed to be replaced as soon as possible. Unfortunately, seven years have passed under the flawed system and the status quo continues. Section 301 of 16 U.S.C. 1851 (a)(2) states "conservation and management measures shall be based upon the best scientific information available." The current observer program is not collecting the best information possible and therefore, its continuation is a violation of a National Standard for Fishery Conservation and Management.

NMFS has exhibited little oversight of the contractors to date. Some uncertainty exists whether the lack of authority exists or whether a choice has been made by NMFS not to exercise its authority over the contractors. Regardless, NMFS' input regarding the treatment of their data collectors has been insignificant. NMFS recognizes the potential for conflict of interest under the current system. Yet, the

current contractor certification process has never been enforced. In fact, evaluation of contractors by NMFS was discontinued in 1991. At a national workshop on NMFS Observer Programs held in 1993, guidelines were recommended for all Federal observer programs. One recommendation stated, "Contractual arrangements will only be successful if agency authority and responsibility is adequately defined by legislation, regulation and/or contract. **Contractors must contract directly with the agency responsible; when contractors contract with vessel or plant owners to provide observer coverage, agency oversight is inadequate and the *potential for conflict of interest is unacceptably high*.**"

Data quality is often questioned in the current program. Data quality could be improved by decreasing the turnover rate of observers and by providing extensive, supplementary training to the existing observers. The more consistency there is in data collection, the better the data quality.

Training of new observers is currently unlimited and free of charge. Tax dollars are being spent frivolously. These funds could be spent more effectively with increased training for observers who are already within the program.

Need and Justification for Council Action: (Why can't the problem be resolved through other channels?)

NMFS claims to be unable to take drastic action against a contractor under the current structure. The structure must change if NMFS is to maintain any control over its program and data quality.

No regulation or policy is in place to limit the number of observers trained. There is no incentive for NMFS, the industry or the contractors to invest in prior observers.

Foreseeable Impacts of Proposal: (Who wins, who loses?)

Competent, professional observers who are dedicated to the job win. Wage determinations under the Service Contract Act will apply to any contract NMFS has with a contractor(s). Wages have decreased since the inception of the DOP due to competition between the contractors and ever increasing insurance costs. The wage decrease has not benefitted the program; it has been a detriment. Data quality suffers due to an epidemic of poor morale and negative attitudes among the observers and a high turnover of returning observers.

The public wins due to better utilization of public funds and the public resource. Training is currently unlimited and paid for by our tax dollars. This money would be better spent to supplement training for prior observers. If all observers had better training, there would be an increase in data quality. Better data = better management = sustainability of the public resource.

Industry wins and loses. Higher quality data will be collected so management of the resource improves. The proposed system will be more expensive due to wage increases mandated by the SCA. But, any new proposed system will be more expensive. If industry really wants something different than the status quo, then this will only be the first step.

Contractors win and lose. In general, contractors prefer prior observers because they are less of a risk. Prior observers have done the job successfully in the past and are more likely to be able to adapt to new situations quickly. A prior observer has already proven that he/she won't need to be unexpectedly

replaced due to chronic seasickness. Prior observers require less supervision. Prior observers have more sea experience than the average trainee so they are less of an insurance liability. If a limit is placed on the total number of trainees per year or a limit on turnover, it is possible a contractor may need to sacrifice a little business to another contractor if that contractor suddenly finds itself shorthanded. Contractors find themselves "short" observers under the current system; there is no reason to believe that a limit or specified turnover rate would significantly increase this occurrence.

Are There Alternative Solutions? If yes, what are they and why do you consider your proposal the best way of solving the problem?

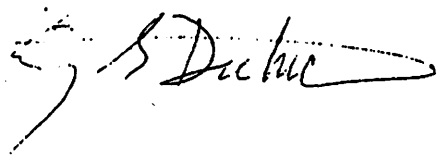
1-Status Quo-current system is not working.
2-North Pacific Fisheries Research Plan would have been an adequate solution but was abruptly repealed in 1995.
3-A new plan similar to the Research Plan is acceptable but extremely unlikely to be implemented by 1998.

Implementation of this proposal would address only a few of the data quality concerns as well as observer wage issues. This proposal is not a solution intended to stand alone but will act as a bridge to ane future plan which requires contractor oversight by NMFS.

Supportive Data & Other Information: What data are available and where can they be found?

The DOP has seen many tragedies since its inception: one observer killed due to negligent vessel operation, one contractor bankruptcy, one observer in jail, injuries without adequate compensation, wage decreases for the observers, and high turnover of observers and staff. This may be the 'biggest and best' observer program in the world, but problems remain which MUST be solved.

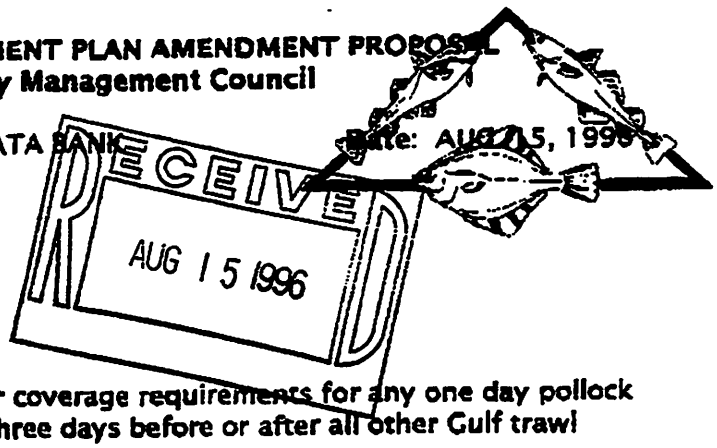
Another recommendation of the NMFS Observer Programs Workshop was to retain experienced observers. "Observer programs operate more effectively, and consistently collect better data if the program is able to retain experienced, high caliber observers. Further, the process of training new observers is time-consuming, costly, and may affect the quality of data collected as the observer goes through the necessary 'learning curve.'" Therefore, **NMFS should establish guidelines that encourage and support the maintenance of experienced staff and observers**. The minutes from this workshop are available from the NMFS and are summarized in NOAA Technical Memorandum NMFS-OPR-94-1.

Signature: 

3/17/97

Alaska Groundfish Data Bank ——— P.O. Box 2298 • Kodiak, Alaska 99615

GROUNDFISH FISHERY MANAGEMENT PLAN AMENDMENT PROPOSAL
North Pacific Fishery Management Council



Name of Proposer: ALASKA GROUNDFISH DATA BANK **Date:** AUG 15, 1996

Address: P.O. BOX 948, KODIAK, AK. 99615

Telephone: 907-486-3033

Fishery Management Plan: GULF OF ALASKA

Brief Statement of Proposal: Waive observer coverage requirements for any one day pollock "mop up" fishery which opens more than three days before or after all other Gulf trawl fisheries have closed.

Objectives of Proposal: (What is the problem?) The cost of bringing observers into Alaska for a one day fishery has proven to be prohibitive. The last one day fishery cost vessels owners and processing plants up to $1,500 for the observer. These costs included not only the one day of observing, but travel time, travel costs and the costs of waiting to reobserve the catch after the vessel unloaded. When the travel and other one time costs can be amortized over a season they are bearable.

NMFS has the option to roll a quarterly apportionment of pollock into the remaining quarters rather than hold a one day opening. We appreciate NMFS efforts to allow the fleet to fully take the pollock OY and as long as there are other trawl fisheries in progress obtaining observers on short notice is neither difficult nor financially burdensome.

Need and Justification for Council Action: (Why can't the problem be resolved through other channels?) Groundfish Observer Coverage requirements are part of the Council's jurisdiction. Electronic reporting may eliminate the need for one day mop up fisheries.

Foreseeable Impacts of Proposal: (Who wins, Who loses?) Since there is no halibut bycatch in the pelagic pollock fishery (and all other trawl fisheries are closed the "mop up" fishery has to be pelagic) we see no loses. Removing the overwhelming observer costs of a one day fishery outside the normal trawl fishing periods is a definite win for the fleet and processors.

Are There Alternative Solutions? If so, what are they and why do you consider your proposal the best way of solving the problem? Electronic Reporting with daily reporting by the processors would prevent the need for mop up fisheries.

Supportive Data & Other Information: What data are available and where can they be found? The NMFS Observer program can document the costs and value of any data collected during a mop up fishery.

Signature:

Chris Blackburn, Director
Alaska Groundfish Data Bank

Al Burch, Director
Alaska Draggers Association

Chris Blackburn • Director • (907) 486-3033 • FAX (907) 486-3461 • e-mail 7353974@mcimail.com

GROUNDFISH FISHERY MANAGEMENT PLAN AMENDMENT PROPOSAL
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

DAVID HILLSTRAND
BOX 1588
HOMER, ALASKA 99603
(907) 235-8706

Date: 7/3/95

LATE

Fishery Management Plan: Gulf of Alaska Pacific Cod fisheries

Brief Statement of Proposal: Reduce observer coverage for vessels 60 ft. - 125 ft. that use pot gear. Reduced to being exempt; such as they are to the Halibut PSC while fishing Cod, or to 18% coverage while fishing at sea.

Objectives of Proposal: To reward clean gear type users and not penalize them. Sufficient data has been collected to date for NMFS and the NPFMC to effectively know established bycatch levels for the pot gear in the P. Cod fisheries.

Need and Justification for Council Action: (Why can't the problem be resolved through other channels?) The cost for observer coverage for pot vessels is higher per vessel than the other gear types. Pots are a clean gear type with little bycatch which should therefore be exempt. Both Trawl and Hook and Line vessels under 60 ft. are exempt from observer coverage and have a greater bycatch than pot gear. NMFS log books report daily bycatch form vessels, to still provide NMFS with current up to date information; thereby not decreasing NMFS management to the P. Cod fisheries.

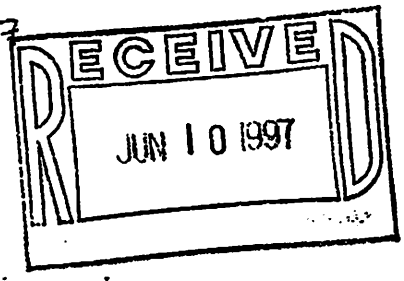
Foreseeable Impacts of Proposal: (Who wins, who loses?) Pot gear will be rewarded for fishing a cleaner gear. There expenses will be lower making pot fishing more affordable. A working relationship will be created between the NMFS & the NPFMC and the fishers causing them to work together. It will also be an incentive to other gear types to continue to clean up there fisheries also.

Table 25.--Number of vessels that landed groundfish in the domestic fisheries off Alaska by area, gear, and vessel length class, 1986-94.

Gear/Length (feet)	1986	1987	1988	1989	1990	1991	1992	1993
Gulf of Alaska								
Hook&Line								
< 60	935	1,476	1,370	1,196	1,409	1,624	1,648	1,373
60-84	89	136	114	107	131	144	144	122
85-109	15	19	14	10	15	29	37	25
110-134	4	6	7	10	13	8	23	22
135-159	1	2	0	0	3	1	8	7
160-184	1	1	4	4	5	2	9	8
> 184	0	0	0	1	5	0	2	3
Unknown	20	31	20	28	29	34	33	53
Pot								
< 60	5	10	34	17	60	111	160	85
60-84	8	4	1	1	27	42	45	25
85-109	5	3	6	2	10	10	10	3
110-134	1	1	2	0	0	1	7	2
135-159	0	0	1	0	1	0	4	0
160-184	2	1	2	1	1	0	2	0
> 184	0	1	0	0	1	0	2	0
Unknown	0	2	0	1	1	2	3	0
Trawl								
< 60	18	35	37	31	43	45	52	72
60-84	14	30	31	35	42	55	57	50
85-109	10	16	18	24	23	30	29	26
110-134	9	14	19	18	24	29	31	19
135-159	2	4	3	4	7	7	9	8
160-184	3	6	6	7	11	11	13	7
> 184	3	4	6	14	22	34	23	16
Unknown	2	1	2	2	1	3	10	8
Other								
< 60	3	21	13	3	24	6	13	25
60-84	0	0	0	0	3	1	1	3
85-109	1	0	0	0	3	0	1	1
110-134	0	0	1	0	0	0	0	0
135-159	0	0	0	0	0	0	1	1
160-184	0	0	0	0	1	0	0	0
> 184	0	0	0	0	1	0	0	0
Unknown	3	3	1	0	2	2	0	0
All Gear								
< 60	850	1,512	1,419	1,235	1,497	1,712	1,769	1,481
60-84	107	160	141	135	167	198	213	169
85-109	28	39	38	34	42	57	65	48
110-134	14	19	28	28	39	37	54	39
135-159	3	6	4	4	10	8	19	13
160-184	6	7	11	12	16	13	24	15
> 184	3	4	6	15	29	34	25	19
Unknown	25	37	22	31	33	40	40	61

Erika I. Acuna
4714 Ballard Ave. NW # 137
Seattle, WA 98107

6-8-97



North Pacific Fishery Management Council
605 W. 4th Ave. Suite 306
Anchorage, AK 99501

Rg: Written Testimony to Observer Program Issues:

I have been a groundfish observer for NMFS since Jan. 1996. Currently I am completing the June Pollock season here in Kodiak. Though this job can be very rewarding, I would like to express some of the frustrations I have experienced in my job that are due to an underbudgeted program and that severely undermine its credibility:

1.) I invite anyone reading this testimony to visit the NMFS Observer Program office on Gibson Cove, Kodiak. Ask to see the flatbed scales which are issued to us observers for weighing our samples at sea. The condition these scales are in are pathetic at best. They are in desperate need of re-building and require serious maintenance; the cost of which I am told is in the range of $100.- to $200.- per scale exceeding the available budget. The scale that I was issued had a sticker on it reading "a little funky". Fortunately a crewmember on the vessel I was assigned to offered kindly to repair it for me. I ask you:" is this how we want our fisheries managed?" Something as important and crucial to our data collection as a scale should be in top condition to lend credability to our work.

2.) I often get asked by fishermen who watch me doing my endless paperwork at their galley tables: "why don't you guys have computers for all that?" Funny that they should be so logical. The fact is: there are 250 laptop computers stored in a Seattle NMFS wherehouse lacking only budget money to be programmed! In the meantime we continue our archaic plundering of the NMFS forms, rather than having a more time efficient and reliable method of data entry.

Again I reiterate: is this how we want our fisheries managed? As vital and useful as observer data is to the management and research of the North Pacific Fisheries, its credibility will continue to be compromised without an adequate, sufficient budget to successfully run the program.

Thank you for your attention,

ERIKA ACUNA

AGENDA C-8
JUNE 1997
SUPPLEMENTAL

UNITED STATES DEPARTMENT C
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

November 20, 1996

PRELIMINARY CRUISE REPORT
F/T AMERICAN TRIUMPH

VESSEL CHARTER TO EVALUATE TOTAL CATCH WEIGHT ESTIMATION

SUMMARY

From August 23 to October 22, 1996, NMFS scientists conducted a research project on the F/T AMERICAN TRIUMPH to evaluate observer program procedures for estimation of total catch weight. This work represents the first phase of a two-phase research study. Additional research will be conducted on the F/T AMERICAN TRIUMPH during the 1997 Bering Sea pollock B-season. The objectives of the research project are to:

— evaluate the accuracy of volume-based methods of catch weight determination, using codend and/or bin volume measurements, by comparing estimates obtained from these procedures with weight estimates obtained from a flow scale;

— obtain accurate in situ fish density factors to use in volume-to-weight conversions in the Bering Sea 1996 pollock A and 1997 pollock B seasons;

— determine the accuracy of the flow scale used in this study and evaluate proposed test procedures for monitoring flow scale performance in production fisheries; and

— evaluate the use of ultrasonic bin sensors for determining fish volumes in holding bins.

This report provides a summary of the data collected during the first phase of the research project, presents preliminary results, and comments on difficulties encountered with sampling procedures and equipment during the vessel charter. A full report will be prepared following the completion of the second phase of the research charter.

The research for each season was divided into three stages, pre- and post-season stages conducted before and after the open access fishery, and an in-season stage conducted while the fishery is open. A research quota of 5,390 metric tons (t) of pollock was established for data collection during the pre- and post-season periods. The experimental design split these fish equally between the 1996 pollock B-season and the 1997 pollock A-season. Due to the unexpected length of the B-season (47 days), the project had almost achieved the B-season sampling goals by the close of the fishery on Oct 17. As a result, a portion of the research quota originally allocated to the B-season was shifted to the A-season research.

The catch of research quota pollock during the B-season research consisted of 158 t during the pre-season stage and 1,182 t during the post-season stage. Consequently, 4,050 t of pollock will be available for the A-season research (5390 - 158 - 1182 = 4050). Although most aspects of the first phase of the research project went smoothly, a number of problems were encountered. These problems, described more fully in the preliminary results, concern the installation and calibration of the ultra-sonic bin sensors, and the difficulty of obtaining sufficiently precise measurements of volumes of fish in holding bins. These problems will be addressed before the start of the A-season phase of the charter.

VESSEL CHARTER ITINERARY

Pre-season stage

Aug. 23	Embark scientific party and observers in Dutch Harbor.
Aug 23-27	Calibration of Marel flow scale and bin sensors, conduct large materials test of flow scale.
Aug. 27	Disembark pre-season scientific party in St. Paul.

In-season stage

Sept 1	Bering Sea pollock B-season starts.
Sept 18	Exchange of Field Party Chiefs in Dutch Harbor during vessel offload.
Oct 17	Bering Sea pollock B-season ends.

Post-season stage

Oct. 18	Embark post-season scientific party in Dutch Harbor
Oct 18-22	Conduct large materials test of the flow scale. Fishing for targeted codend sizes to complete the cells in sampling design.
Oct. 22	Disembark scientific party and observers in Dutch Harbor.

PRELIMINARY RESULTS

Marel flow scale

A motion-compensated Marel M2000 Flow Scale was installed on the conveyor near the fish holding bins and was used to weigh all catch from each bin separately. The scale was tested each day by weighing approximately 400 kg of fish on a Marel CP9140 motion-compensated platform scale and then on the flow scale. In addition, tests using 1,000 kg of fish were performed at the beginning of both the pre-season and post-season phases. The platform scale also was tested daily using cast iron test standards. Both scales were used continuously throughout the 61-day charter without mechanical breakdowns.

Figure 1 illustrates the error in the daily materials tests from August 25 to October 21, 1996. The flow scale met the charter requirement to weigh fish in the materials test to within 3 percent of their known weight. The platform scale weighed all test weights within the required 0.5 percent error.

A simulated load test, in which a 15 kg aluminum bar was weighed on the flow scale for a specific number of belt revolutions, also was performed. This test was performed to evaluate whether it could be used as an alternative to a daily materials tests. However, preliminary results from the simulated load test cannot be fully analyzed until additional information requested from Marel is obtained.

Milltronics ultra-sonic sensors

Ultra-sonic bin level sensors (bin sensors) were installed in one fishing holding bin in order to evaluate them as a alternative to visual measurements of the level of fish in a bin. The sensors measure the distance from the transducer to the top of the fish at five locations in the bin. These level readings are then used together with diagrams and tables prepared by marine engineers to estimate the level of fish at the center of the bin and then the volume of fish in the bin.

The process of making volumetric estimates using the bin sensors was not satisfactory. First, there is some question about whether the individual bin sensors were accurately identified on the bin drawings. Second, accurate measurement of the distance from the transducer to the bottom of the bin were not obtained before the research cruise began, leaving this task to be performed at sea without proper measuring equipment. Finally, repeated readings from each bin sensor indicated periodic erratic readings well outside expected values. Resolution of these questions and further evaluation of the bin sensor data must be performed prior to the next phase of the research in order to identify improvements necessary for this part of the project.

Codend volumes

Estimates of codend volume and total flow scale weight were obtained for 211 of the 226 hauls (93 percent) made by the F/T AMERICAN TRIUMPH during the charter. Standard observer program procedures were used to estimate codend volumes. Codend estimates were not obtained for some hauls because vessel personnel did not routinely notify the observer before emptying a codend. In addition, hauls were occasionally mixed in the same bin making it impossible to assign a flow scale weight to some hauls. Codend volume estimates were distributed in the size categories of the experimental design as follows: haul weights less than 35 t, 45 hauls; haul weights 35-70 t, 60 hauls; haul weights 70-105 t, 61 hauls; and haul weights greater than 105 t, 45 hauls. The targeted sample of 45 hauls per size category was attained for each size category.

A preliminary examination of the data shows no obvious curvature in the relationship between codend volume and flow scale weight, suggesting that a constant density conversion factor may be appropriate to estimate haul weight (Fig. 2). The total combined flow scale weight of the 211 valid hauls was 15,183 t, while the estimated weight using codend volumes and the current NMFS-prescribed density of 0.93 for pollock resulted in a combined weight of 14,002 t. Further analyses will be conducted to evaluate whether the density conversion factor for pollock should be revised to correct for this apparent bias.

Bin volumes

Visual estimates of fish volume in holding bins were made using standard observer program procedures. Prior to the research charter, viewing windows were cut into the live tanks (~50 t max. capacity) and RSW tanks (~120 t max. capacity) on the F/T AMERICAN TRIUMPH. In addition, new measuring strips were installed in each bin. Nomograms of each bin were prepared by a marine surveyor and used to convert the fish depth to a bin volume. A total of 273 bin volume estimates could be matched to a valid flow scale weight. Assuming a 120 t bin represents a full bin, the following sample sizes were obtained per size category in the experimental design: less than ¼ full, 86 bin estimates; ¼ to ½ full, 76 bin estimates; ½ to ¾ full, 55 bin estimates; and ¾ full to completely full, 56 bin estimates. Since the experimental design specified a sample size of 24 per bin level category, the number of bin estimates obtained substantially exceeds the targeted number in each category.

Figure 3 shows the relationship between bin volume and flow scale weight. Compared to the same plot for the codend estimates, there is less scatter about the mean relationship, suggesting that bin volume estimates have higher precision than codend volume estimates. The total combined flow scale weight of the 273 valid bin volume estimates was 14,786 t, while the estimated weight using bin volumes and the current NMFS-prescribed density of 0.93 for pollock resulted in a combined weight of 13,990 t. As with the codend-based volumetric estimates, further analyses are planned to evaluate whether the density conversion factor for pollock should be revised to correct for this apparent bias.

Examination of data shown in Figure 3 revealed an apparent difference in the volume to weight relationship for the live tanks and the RSW tanks. The difference implies that the density of fish in the live tanks is lower than in the RSW tanks. Possible explanations for this phenomena include 1) the presence of large amounts of water in live tanks, which would decrease the apparent density, 2) an error in the nomograms, 3) increases in density due to the greater depth of fish in the RSW tanks. These factors will be explored before the start of the A-season research. New sampling procedures may be needed to identify the source of the difference.

Density sampler

The density sampler was designed to provide a more accurate estimate of fish density than the standard observer program procedures using sampling baskets. The unit is portable, and can be operated by a single observer. The density sampler is a barrel, with a capacity of ~200 kg, mounted in a cradle that allows it to be tilted and emptied. Rulers are attached to the inside of the sampler to allow precise volume estimates.

The density sampler was operated by filling the sampler with fish taken directly from a conveyor belt running from the holding bins. A lid that fit into the sampler was placed on top of the fish, and volume was determined by measuring across from the top of the lid to the rulers. Volumes were obtained with no weight on the lid, and with 10 and 20 kg weights placed on the lid to mimic the compression of fish in a bin. The fish were then weighed on a Marel CP9140 motion-compensated platform scale. Density estimates were obtained for 214 out of the 226 hauls (95 percent) made by the F/T AMERICAN TRIUMPH during the charter. Basket density estimates were also obtained for each haul so that a comparison can be made between these two procedures. The affect of species composition and fish size on density will also be investigated when these data are available. Results will be presented in the final report.

For further information contact Dr. William Karp, Director, Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, 7600 Sand Point Way NE, BIN C15700, Seattle, WA 98115-0070. Telephone (206) 526-4194.

SCIENTIFIC PERSONNEL

Name	Position	Affiliation	Dates on board
Dennis Benjamin	Field Party Chief	NMFS-AFSC	Aug 23 - Sept 19
Sally Bibb	Scientist	NMFS-Alaska Region	Aug 23 - Aug 27
Martin Dorn	Scientist Field Party Chief	NMFS-AFSC	Aug 23 - Aug 27 Oct 18 - Oct 22
Shannon Fitzgerald	Field Party Chief	NMFS-AFSC	Sept 19 - Oct 18
Kim Rivera	Scientist	NMFS-Alaska Region	Oct 18 - Oct 22
Todd Parker	Lead Observer	NWO	Aug 23 - Oct 22
Merri Strayer	Observer	NWO	Aug 23 - Oct 22
Felix Cañez	Observer	NWO	Aug 23 - Oct 22

FIGURE 1. Material Tests on Marel Scale, B-season 1996

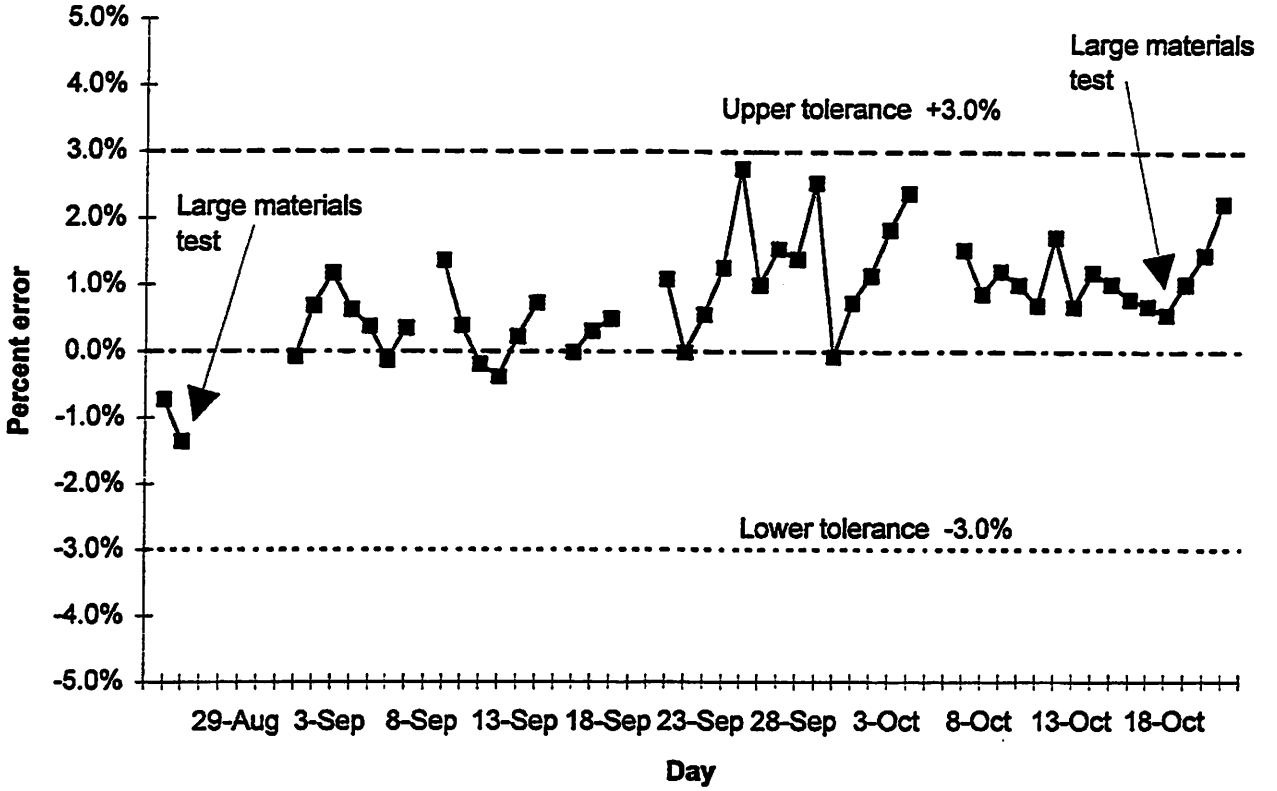


FIGURE 2. Codend volumes and weights

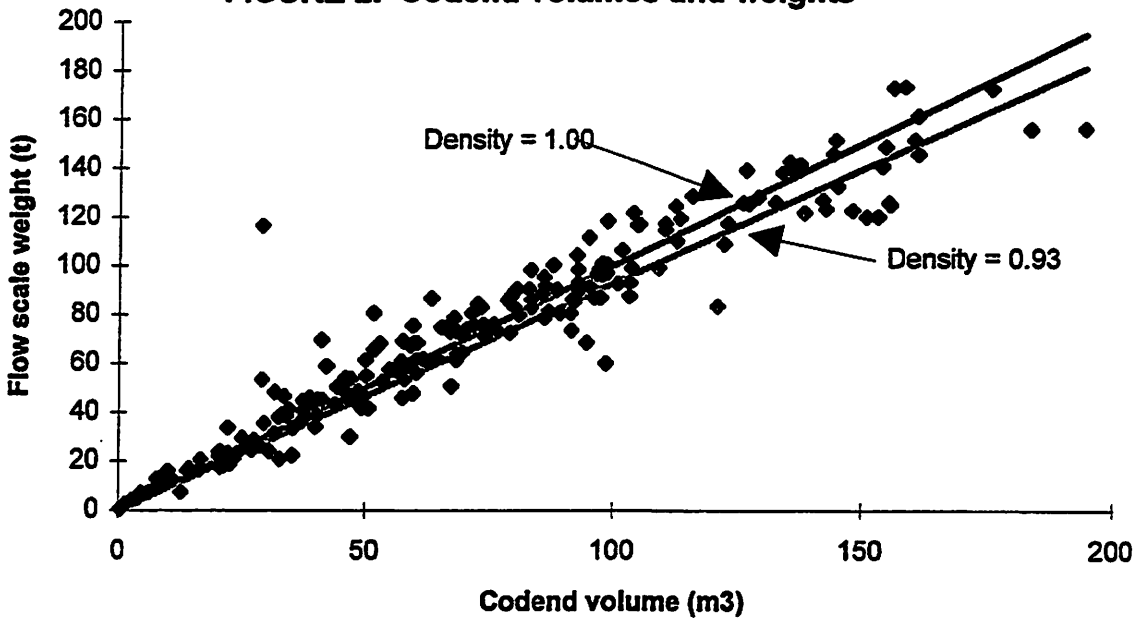
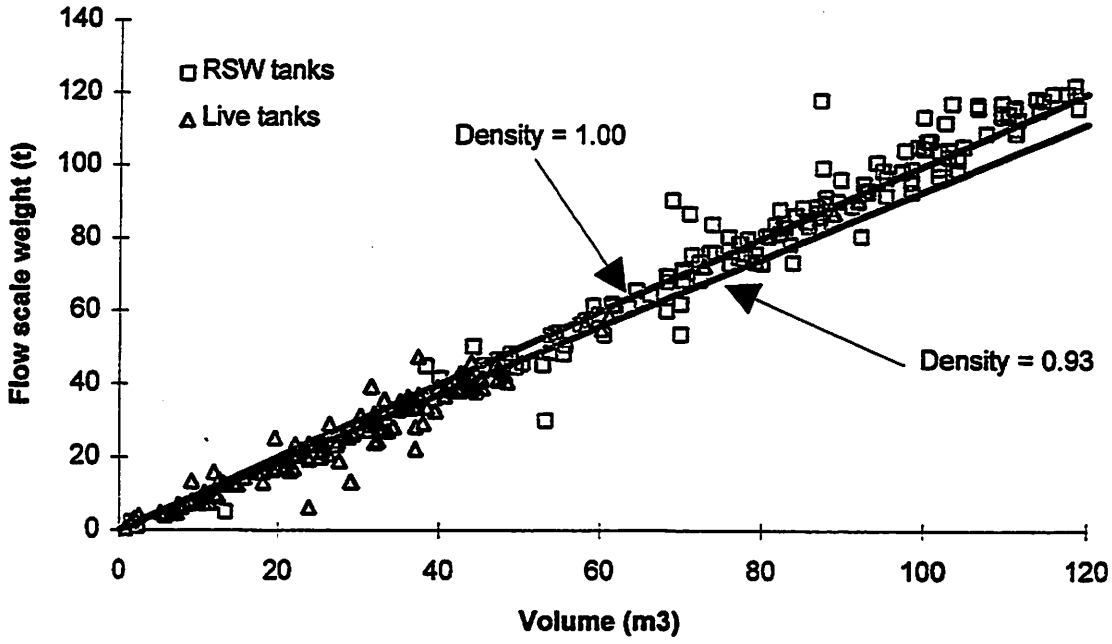


FIGURE 3: Bin volumes and weights



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

March 17, 1997

PRELIMINARY CRUISE REPORT
F/T AMERICAN TRIUMPH

VESSEL CHARTER TO EVALUATE TOTAL CATCH WEIGHT ESTIMATION

SUMMARY

From January 21 to March 10, 1997, NMFS scientists conducted a research project on the F/T AMERICAN TRIUMPH to evaluate observer program procedures for estimation of total catch weight. This work represents the second phase of a two-phase research study. The first phase of the research study was conducted on the F/T AMERICAN TRIUMPH during the 1996 Bering Sea pollock B-season. The objectives of the research project were to:

— evaluate the accuracy of volume-based methods of catch weight determination, using codend and/or bin volume measurements, by comparing estimates obtained from these procedures with weight estimates obtained from a flow scale;

— obtain accurate in situ fish density factors to use in volume-to-weight conversions in the Bering Sea pollock A and B seasons;

— determine the accuracy of the flow scale used in this study and evaluate proposed test procedures for monitoring flow scale performance in production fisheries; and

— evaluate the use of ultrasonic bin sensors for determining fish volumes in holding bins.

This report provides a summary of the data collected during the second phase of the research project, presents preliminary results, and comments on difficulties encountered with sampling procedures and equipment during the vessel charter. A full report is being prepared by NMFS scientists that will analyze data collected during both phases of the research project.

The research for each season was divided into three stages, pre- and post-season stages conducted before and after the open access fishery, and an in-season stage conducted during the open-access fishery. A research quota of 5,390 metric tons (t) of pollock was established for data collection during the pre- and post-season periods. The experimental design split these fish equally between the 1996 pollock B-season and the 1997 pollock A-season. However, because of the unexpected length of the B-season (47 days), the project had almost achieved the B-season sampling goals by the close of the fishery. Consequently, the research quota was reallocated so that 4,050 t of the research quota would be available for research activities before and after the 1997 pollock A-season.

The catch of research quota pollock during the A-season research consisted of 315 t during the pre-season stage and 3,744 t during the post-season stage. Although most aspects of the second phase of the research project went smoothly, several problems were encountered. First, because haul size was larger than expected during the open access fishery (mean = 137 t), the smaller haul size categories (< 105 t) were under-sampled. The additional research quota available for the A-season research made it possible to fill in these smaller haul size categories during the post-season phase of the project, however, the sampling goals for codend estimates in these categories were not achieved. Additional problems were encountered with the ultra-sonic bin sensors, which continued to function erratically during the A-season research. One bin sensor failed during the open-access fishery and had to be repaired.

VESSEL CHARTER ITINERARY

Pre-season stage

Jan. 21	Embark scientific party and observers in Dutch Harbor.
Jan. 22-25	Calibration of Marel flow scale and bin sensors, conduct large materials test of flow scale.
Jan. 25	Disembark pre-season scientific party in Dutch Harbor.

In-season stage

Jan. 26	Start of Bering Sea pollock A-season.
Feb. 20	Bering Sea pollock A-season ends.
Feb. 22-28	Commercial fishing in the Aleutian Islands. By prior agreement, 388 t of research quota pollock was caught between Aleutian fishery openings.

Post-season stage

March 2	Embark post-season scientific party in Dutch Harbor
March 2-10	Conduct large materials test of the flow scale. Fishing for targeted codend sizes to complete the cells in sampling design.
March 10	Disembark scientific party and observers in Dutch Harbor.

PRELIMINARY RESULTS

Marel flow scale

A motion-compensated Marel M2000 Flow Scale was installed on the conveyor near the fish holding bins and was used to weigh all catch from each bin separately. The scale was tested each day by weighing approximately 500 kg of fish on a Marel CP9140 motion-compensated platform scale and then on the flow scale. In addition, tests using 1,000 kg of fish were performed at the beginning of both the pre-season and post-season phases. The platform scale was tested daily using cast iron test standards. Both scales were used continuously throughout the 49-day charter without mechanical breakdowns.

Figure 1 illustrates the error in the daily materials tests from January 23 to March 9, 1997. The flow scale met the charter requirement to weigh fish in the materials test to within 3 percent of their known weight. The platform scale weighed all test weights within the required 0.5 percent error. A simulated load test, in which a 15 kg aluminum bar was weighed on the flow scale for a specific number of belt revolutions, was also performed. This test was performed to evaluate whether it could be used as an alternative to a daily materials tests. Simulated load test results will be summarized in the final report.

Milltronics ultra-sonic sensors

Ultra-sonic bin level sensors (bin sensors) were installed in one fish holding bin in order to evaluate them as a alternative to visual measurements of the level of fish in a bin. The sensors measure the distance from the transducer to the top of the fish at five locations in the bin. These level readings are then used together with diagrams and tables prepared by marine engineers to estimate the level of fish at the center of the bin and then the volume of fish in the bin.

During the A-season research, 60 estimates of bin volume were obtained using ultra-sonic bin sensors. Although considerable efforts were made to improve the installation and calibration of the bin sensors between the end of the 1996 B-season and the start of the 1997 A-season, the process of making volumetric estimates using the bin sensors continued to be hampered by equipment failure and erratic readings. Erratic readings occurred most frequently when the bin was filled close to capacity. In addition, observers reported difficulty in obtaining reliable measurements of fish depth when ship motion caused the level of fish in the bin to fluctuate. In the final report, bin sensor estimates of fish volume will be compared with visual estimates of fish volume and flow scale weights.

Codend volumes

Estimates of codend volume and total flow scale weight were obtained for 175 of the 185 hauls (95 percent) made by the F/T AMERICAN TRIUMPH during the A-season phase of the charter. Standard observer program procedures were used to estimate codend volumes. Codend estimates were not obtained for some hauls because hauls were occasionally mixed in the same bin, making it impossible to assign a flow scale weight to a particular haul. Codend volume estimates were distributed in the haul size categories of the experimental design as follows: haul weights less than 35 t, 33 hauls; haul weights 35-70 t, 34 hauls; haul weights 70-105 t, 32 hauls; and haul weights greater than 105 t, 76 hauls. The goal of 45 hauls per size category was attained only for the greater than 105 t size category.

A preliminary examination of the data shows no obvious curvature in the relationship between codend volume and flow scale weight, suggesting that a constant density conversion factor may be appropriate to estimate haul weight (Fig. 2). The total combined flow scale weight of the 175 valid hauls was 17,496 t, while the estimated weight using codend volumes and the current NMFS-prescribed density of 0.93 for pollock resulted in a combined weight of 16,301 t. Further analyses will be conducted to evaluate whether the density conversion factor for pollock should be revised to correct for this apparent bias.

Bin volumes

Visual estimates of fish volume in holding bins were made using standard observer program procedures. Prior to the research charter, viewing windows were cut into the live tanks (~50 t max. capacity) and RSW tanks (~120 t max. capacity) on the F/T AMERICAN TRIUMPH. In addition, new measuring strips were installed in each bin. Nomograms of each bin were prepared by a marine surveyor and used to convert the fish depth to a bin volume. A number of changes were made to the procedures and equipment used to estimate bin volumes between 1996 B-season and 1997 A-season to reduce the amount of water mixed with the fish in the bins and to improve the accuracy of the bin volume estimates. Holes were cut in the sides of the trawl alley to facilitate drainage. Net emptying procedures were modified to ensure that the codends were allowed to drain a minimum of five minutes on deck before being emptied. The bin nomograms were checked for accuracy and revised. A nomogram of the hopper that led to the RSW tanks was prepared so that it would be possible to obtain volume estimates when fish filled the RSW tanks and backed up into the hopper. Additional measuring strips were placed in the bins, and strips that were broken or in poor condition were replaced. High intensity spotlights were used to read the measuring strips through the viewing windows rather than the flashlights used during the B-season research.

A total of 278 bin volume estimates that could be matched to a valid flow scale weight were obtained. Assuming that 120 t bin represents a full bin, the following sample sizes were obtained per size category in the experimental design: less than ¼ full, 54 bin estimates; ¼ to ½ full, 111 bin estimates; ½ to ¾ full, 31 bin estimates; and ¾ full to completely full, 82 bin

estimates. Since the experimental design specified a sample size of 24 per bin level category, the number of bin estimates obtained exceeded the sampling goal in each category.

Figure 3 shows the relationship between bin volume and flow scale weight. Compared to the same plot for the codend estimates, there is less scatter about the mean relationship, suggesting that bin volume estimates have higher precision than codend volume estimates. The total combined flow scale weight of the 278 valid bin volume estimates was 16,948 t, while the estimated weight using bin volumes and the current NMFS-prescribed density of 0.93 for pollock resulted in a combined weight of 15,958 t. As with the codend-based volumetric estimates, further analyses are planned to evaluate whether the density conversion factor for pollock should be revised to correct for this apparent bias.

Density sampler

The density sampler was designed to provide a more accurate estimate of fish density than the standard observer program procedures using sampling baskets. The unit is portable, and can be operated by a single observer. The density sampler is a plastic barrel, with a capacity of ~200 kg, mounted in a cradle that allows it to be tilted and emptied. Rulers are attached to the inside of the sampler to allow precise measurements of fish volume . A number of minor design improvements were made to the density sampler between the end of the 1996 B-season and the start of the 1997 A-season. The top 5 cm of the barrel was cut off, and a new lid was constructed to fit more snugly in the top of the barrel.

The density sampler was operated by filling the sampler with fish taken directly from a conveyor belt running from the holding bins. A lid was placed on top of the fish, and volume was determined by measuring across from the top of the lid to the rulers. Volumes were obtained with no weight on the lid, and with 20 and 50 kg weights placed on the lid to mimic the compression of fish in a bin. The fish were then weighed on a Marel CP9140 motion-compensated platform scale. Density estimates were obtained for 176 out of the 185 hauls (95 percent) made by the F/T AMERICAN TRIUMPH during the charter. Basket density estimates were also obtained for each haul so that a comparison can be made between these two procedures. The effect of species composition and fish size on density will also be investigated when these data are available. Results will be presented in the final report.

For further information contact Dr. William Karp, Director, Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, 7600 Sand Point Way NE, BIN C15700, Seattle, WA 98115-0070. Telephone (206) 526-4194.

SCIENTIFIC PERSONNEL

Name	Position	Affiliation	Dates on board
Martin Dorn	Field Party Chief	NMFS-AFSC	Jan 21 - Jan 25 Mar 2 - Mar 10
Dennis Benjamin	Field Party Chief, Scientist	Lab Temps, Inc	Jan 21 - Mar 10
Merri Strayer	Lead Observer	NWO	Jan 21 - Mar 10
John Money	Observer	NWO	Jan 21 - Mar 10
Jennifer Bury	Observer	NWO	Jan 21 - Mar 10

FIGURE 1. Material test of Marel flow scale for A-season, 1997

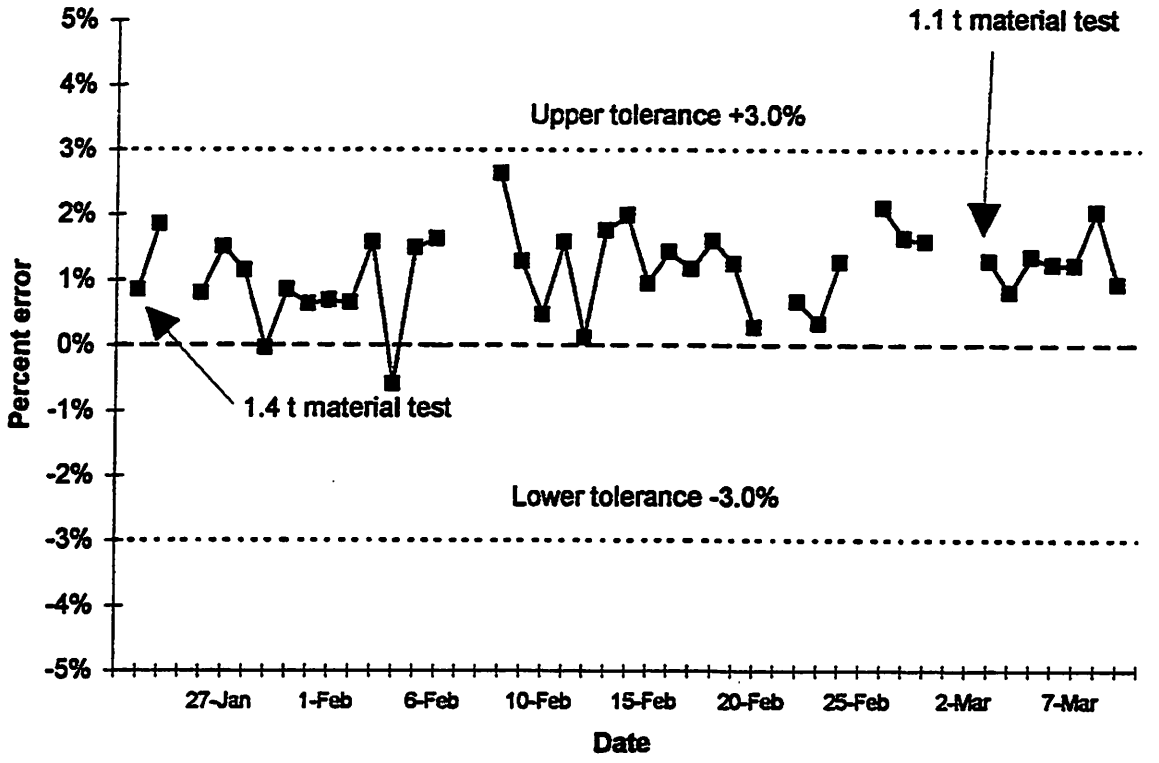


FIGURE 2. Codend volumes and weights

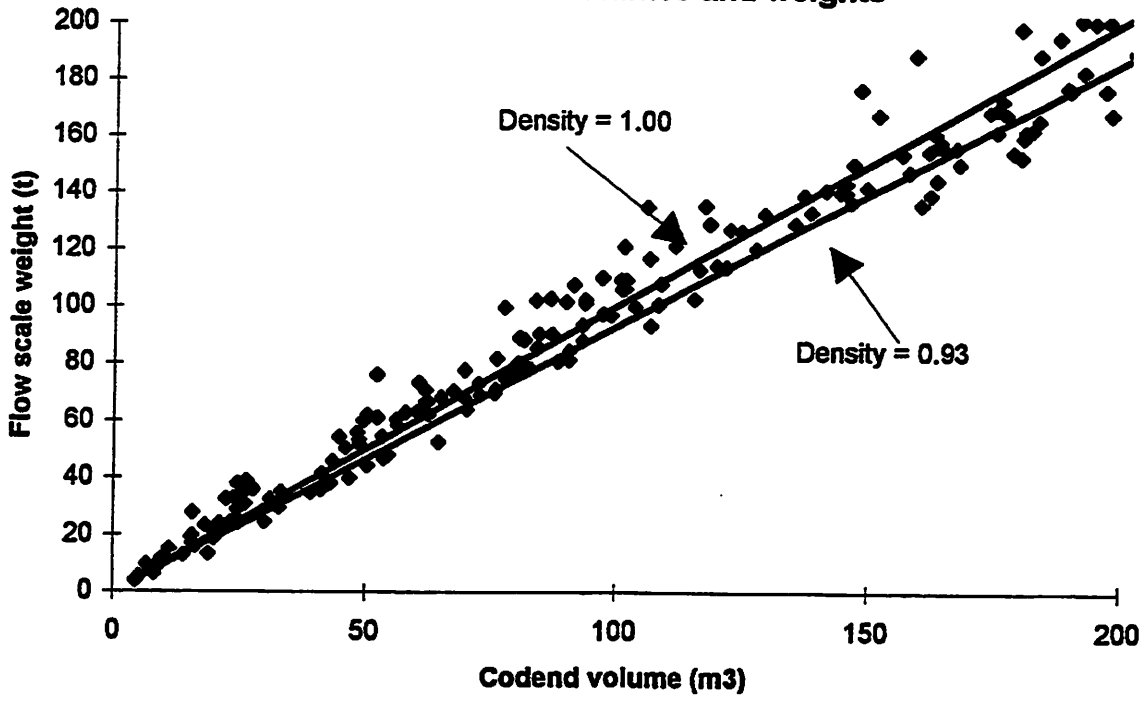
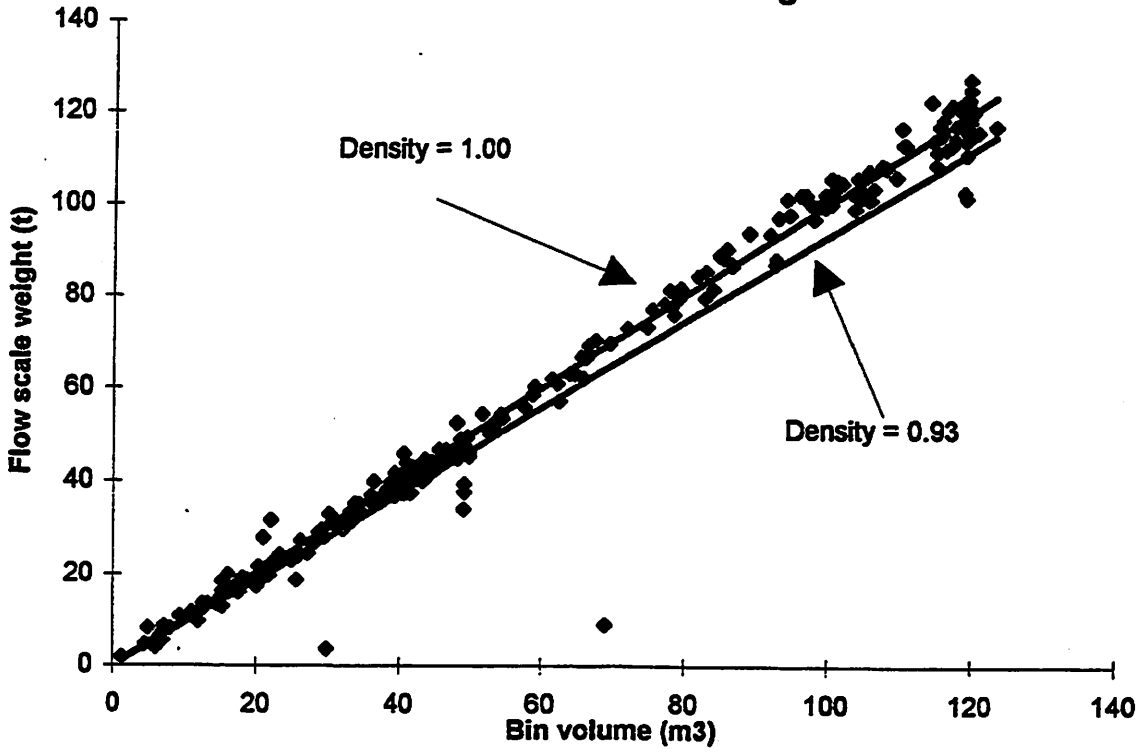


FIGURE 3. Bin volumes and weights



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GREENPEACE

C-8

June 16, 1997

Rick Lauber, Chairman
North Pacific Fishery Management Council
605 West 4th Ave., Suite 306
Anchorage, AK 99501-2252

Dear Chairman Lauber,

It is widely recognized that good quality observer data is absolutely essential as a basis for managing North Pacific fisheries. Further, many of the new programs the North Pacific Fishery Management Council (NPFMC) is considering, or has already passed, to reduce bycatch will rely on increased and effective observer coverage to successfully monitor and enforce the new programs.

It has also been widely recognized for a number of years now that the North Pacific Observer Program has some very serious problems.

"When the Domestic Observer Program was first established, it was understood by all participants that the pay-as-you-go scheme coupled with a contractual arrangement, which could not be monitored by National Marine Fisheries Service (NMFS), was flawed. This Observer Plan was accepted only as an interim arrangement until a more suitable system could be developed and implemented." (1)

Specifically, there are four main problems related to the observer program that have been identified that need to be resolved to ensure that the observer program can produce reliable, good quality, non-compromised data.

1. Observer Compensation: "Pressure to reduce costs keeps observer salaries low, discouraging the best observers from renewing their contracts. Furthermore, instability in the fishing and contracting industries has created situations where observers have not been paid for work performed. These circumstances have undermined observer moral, increased turnover in the observer work force, and adversely influenced data quality." (2)

2. Conflict of Interest: "Allowing fishing companies to negotiate directly with observer companies creates a serious potential for conflict of interest. As observers assume increased responsibilities for monitoring individual vessel performance and other programs that involve compliance considerations, incentives for industry to manipulate this procurement process to their advantage increase." (3)

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3. Cost Inequity: "At it's December 1995 meeting, the Council requested that the 'Modified pay as you go' program also address...options to defray costs to vessel owners who are perceived to pay an unreasonably high proportion of their gross catch value for direct observer coverage." (4)

4. Lack of flexibility in assigning observer coverage when and where needed: The only way to change observer coverage is the "Council can recommend changes to the 100%/30% observer coverage requirements but the process requires rulemaking." (5)

Clearly the status quo is unacceptable. Greenpeace fully supports the fee based Research Plan as a way to address all four of the above concerns. However, given the NPFMC decisions in 1995 to move away from the fee based system, and the current Observer Advisory Committee's (OAC) recommendations to pursue in the short term a 'modified pay as you go' program, we will confine our comments to that proposal.

It appears that the 'modified pay as you go program' does have the potential to solve two of the four major problems identified above. The observer procurement system based on a third party primary contractor such as Pacific States Marine Fisheries Commission (PSMFC) appears as though it would reduce the potential for conflict of interest resulting from industry obtaining observers directly from the contractor companies.

It also appears that it has the potential, through the Joint Partnership agreement between PSMFC and NMFS, to improve observers compensation and benefits. However, the proof of this still rests with agreements on observer compensation that have yet to be drawn up and approved. Perhaps more importantly, careful attention must be paid to the criteria that PSMFC will use to select contractors to supply observers. If contractors are still heavily competing with each other to be selected by PSMFC, it is possible that the burden of that competition may still fall more heavily on the actual observers through some other reduction in benefits, unpaid time in the field or other creative competitive measures.

While the 'modified pay as you go program' may address these issues effectively, there are two very important issues that it does not address. The first is the equity issue. Clearly smaller boats in some fisheries pay a significantly higher percentage of their gross earnings for observer coverage than do larger operations. We often hear the refrain at the council that if certain boats are required to pay more for/carry more observers, they won't be able to make it. We must not discount this issue even if very few of these smaller boat fishermen testify before the council.

This issue will be even more important to solve once the new modified program goes into effect. Assuming observer compensation is increased substantially, that increase will be passed along to industry, further impacting these marginal operations. To that, we must also remember to add another 10%-20% increase for the cost of the third party (PSMFC) administration of the program, even further impacting these boats.

The second issue that is not addressed by the 'modified pay as you go program' is the lack of flexibility to move observers around to where they are needed. It would still take a rulemaking process by the council, and the ability of the fleet in question to pay for the observer coverage, for any changes in coverage to happen. While Bill Karp has come up with an admirable proposal for a small (8-12 person) professional observer corps to try an address their needs in this area, it is still inadequate to the tasks at hand.

The only type of program that we can see that addresses both of these concerns is a fee based program. Because the modified pay as you go program does not address these two important problems, we request that the council explicitly state that any action taken to approve a modified pay as you go program is done only as an interim measure to address two important problems as quickly as possible. Further, the council should make it clear that you fully intend to pass a final program that will solve these problems as quickly as possible and direct the OAC and NMFS to continue working on an acceptable fee based program that will solve the equity and flexibility problems.

Thank you for the opportunity to present our views on this important matter.

Sincerely,

Fred Munson,
Ken Stump,
Greenpeace

References:

1. William Aron, Science and Research Director, AK Region, NMFS - 6/1/95 Letter to Steven Pennoyer, Director, Alaska Region, NMFS

2. "Overview of Issues Leading to Consideration of an Alternative Procurement Process for the North Pacific Groundfish Observer Program", NMFS, May 28, 1997, p.2

3. ibid., pp. 1-2

4. ibid., p. 3

5. ibid., p.8

NMFS
C-8

IMPLEMENTING OBSERVER COVERAGE AND OBSERVER PROGRAM REGULATIONS FOR 1998

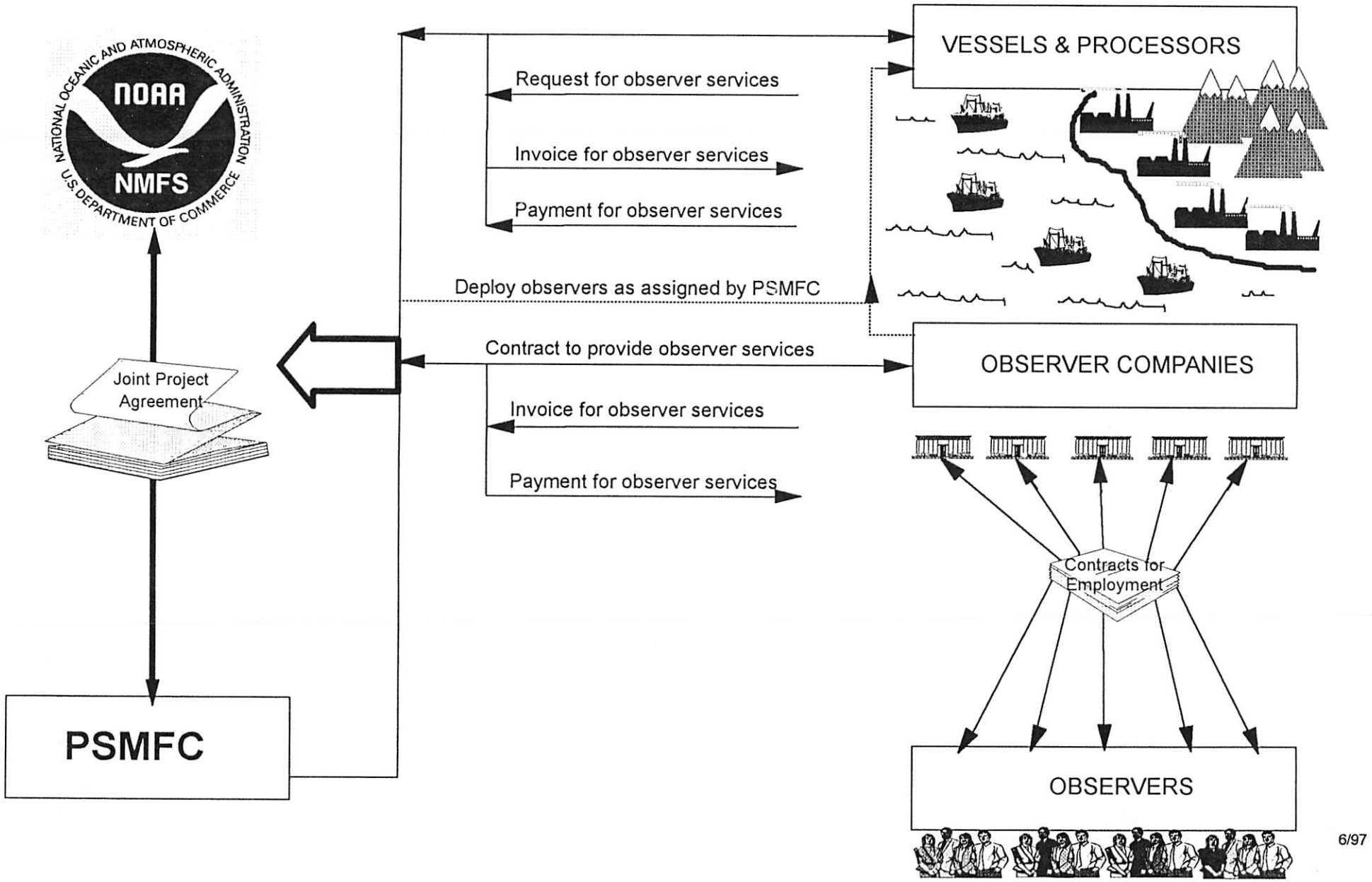
PURPOSE: Extend with some minor revisions the current groundfish observer coverage requirements and implementing regulations for the North Pacific Groundfish Observer Program (Observer Program) that expire December 31, 1997.

PROPOSED CHANGES FOR 1998

- Establish a one-year time period for regulations.
- Conflict-of-interest -- clarify that observers may not solicit or accept employment onboard a vessel harvesting and/or processing or accept employment at a shoreside processor receiving fish from a North Pacific fishery while under contract with an observer contractor.
- Prohibition -- unlawful for any person to forcibly assault, resist, oppose, impede, intimidate, bribe, or interfere with an observer.
- 'NMFS Observer Qualifications' -- require observers to have taken at least one course that used dichotomous keys extensively.
- 'NMFS Observer Training/Briefing Requirements' -- require all prior observers to complete a 4-day briefing prior to their first deployment in any calendar year. One-day briefings will be required prior to subsequent deployments within a calendar year.

CLARIFICATIONS TO EXISTING REGULATIONS, NO EFFECTIVE CHANGE FROM 1997

- 30 percent observer coverage for vessels using pot and/or H&L gear-- clarify that required coverage is specific to the gear type.
- Copies of contracts provided by observer contractors -- clarify that NMFS intends that a copy of each type of signed and valid contract will be complete and unaltered and will include all associated attachments, appendices, addendums, and exhibits.
- Types of signed and valid contracts include but are not limited to the contracts an observer contractor has with:
  - 30% vessels and 100% vessels,
  - 30% shoreside processors and 100% shoreside processors,
  - observers (to include contracts for the various compensation or salary levels of observers, the levels being based on observer experience).


NOAA
NMFS
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
VESSELS & PROCESSORS
Request for observer services
Invoice for observer services
Payment for observer services
Deploy observers as assigned by PSMFC
Contract to provide observer services
OBSERVER COMPANIES
Invoice for observer services
Payment for observer services
Joint Project Agreement
PSMFC
Contracts for Employment
OBSERVERS

6/97

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Alaska Fisheries Science Center
Resource Ecology and Fisheries
Management Division
BIN C15700, Building 4
7600 Sand Point Way NE
Seattle, WA 98115-0070

June 3, 1997

MEMORANDUM FOR: Members of North Pacific Fishery Management Council, Council's Scientific and Statistical Committee, Advisory Panel, and Observer Advisory Committee

FROM: William A. Karp, Task Leader, North Pacific Groundfish Observer Program

SUBJECT: Observer Coverage Needs

For it's June 1997 meeting, the North Pacific Fishery Management Council's Observer Advisory Committee (OAC) requested that staff provide information on observer coverage levels required to address information requirements for science, management, and compliance. Attached are four documents which provide insights regarding this issue.

The first is a chart which portrays the amount of time typical (catcher-processor) observers spend on each of their major duties. The vast majority of observer energies are spent collecting data on catch quantity and composition, and biological characteristics. In this example, 67% of the observer's time is spent collecting information on catch composition. Equally interesting is the statistic that only 1% of each observer's time is spent collecting compliance-related information. This does not include potential compliance-related uses of data collected primarily for science and management purposes.

The second attachment consists of a series of charts illustrating error levels associated with estimates of catch and bycatch for selected pollock and Pacific cod fisheries as a function of observer coverage level (equivalent to proportion of vessels observed). These analyses were conducted using only observer data to estimate catches and are, therefore, not directly comparable with the blend methodology which is used for inseason

management. In general, these figures indicate that vessel coverage levels necessary for target catch estimation are approximately 20-30%. Costs of coverage above this level are high relative to the reduction in uncertainty. For some bycatch and PSC species, however, uncertainty in catch estimates is high, even when 100% of the vessels are observed. These analyses do not account for variability associated with hauls within vessels, or sampling within hauls.

Attachment three is a series of graphs from a draft report by Versar, Inc. The final version of this report, which focuses on Bering Sea pollock and yellowfin sole fisheries and is entitled "Analytical and statistical review of procedures for collection and analysis of commercial data used for management and assessment of groundfish stocks in the U.S. exclusive economic zone off Alaska", should be available late this summer. The figures in the attachment provide information on coefficients of variation (CVs) associated with estimates of pollock catch and salmon bycatch at different levels of cruises (vessels) observed, and hauls sampled by observers, and CVs associated with vessel-specific estimates of pollock and salmon catch under different proportions of hauls sampled by observers. While these analyses do not account for variability associated with sampling within hauls, they provide information useful for evaluating fleetwide and vessel-specific estimation objectives and insights regarding differences among vessels within a fleet.

The fourth attachment is a report entitled " Estimation of salmon bycatch in the 1995 pollock fishery in the Bering Sea/Aleutian Islands - a comparison of methods based on observer sampling and counts of salmon retained by fishing vessel and processing plant personnel." It provides useful insights regarding information requirements for vessel-specific and fleetwide PSC estimation. To date, this is the only analysis which considers variability associated with sampling within hauls; this was accomplished by assuming a distribution of salmon within hauls and simulating the sampling process. The report focuses on comparing salmon bycatch estimates based on observer data with those based on counts of salmon retained by industry personnel (or a combination of observer and industry data) but it does provide information germane to this discussion. It concludes that the fraction of hauls within a vessel sampled by observers, which averages approximately 0.7 (but may be much lower), is, in most cases,

large enough to allow fleetwide and vessel-specific salmon PSC estimation with relatively low CVs (Figures 4 and 5). However, observer sample sizes (as a fraction of haul sizes) are often very low and this results in high uncertainty associated with the estimates (Figures 6 - 10). Recommendations regarding minimum sample sizes are provided, but it is noted that, in many cases, they cannot be achieved because of practical constraints.

Observer sampling is a three-stage process. The between-vessel level defines the proportion of the fleet observed (currently 30% or 100%). The within-vessel level is the proportion of hauls or sets within a vessel sampled by the observer (usually 50 - 70% but sometimes as low as 15% or as high as 100%). And the within-haul level is the proportion of each haul or set in the sample (from <5% to 100%). At the between-vessel level, coverage levels less than 100% result in concerns regarding lack of randomness. Although it is difficult to make meaningful comparisons between observed and unobserved vessels, available information, and the increasing importance of vessel-specific management measures, do provide causes for concern.

At the within-vessel and within-haul levels, several factors limit an observer's ability to collect data. The experience, skill, and physical strength are all important in this context. However, vessel layout and operating procedures, very large haul sizes in some fisheries, and the degree of observer assistance provided by vessel personnel are important considerations.

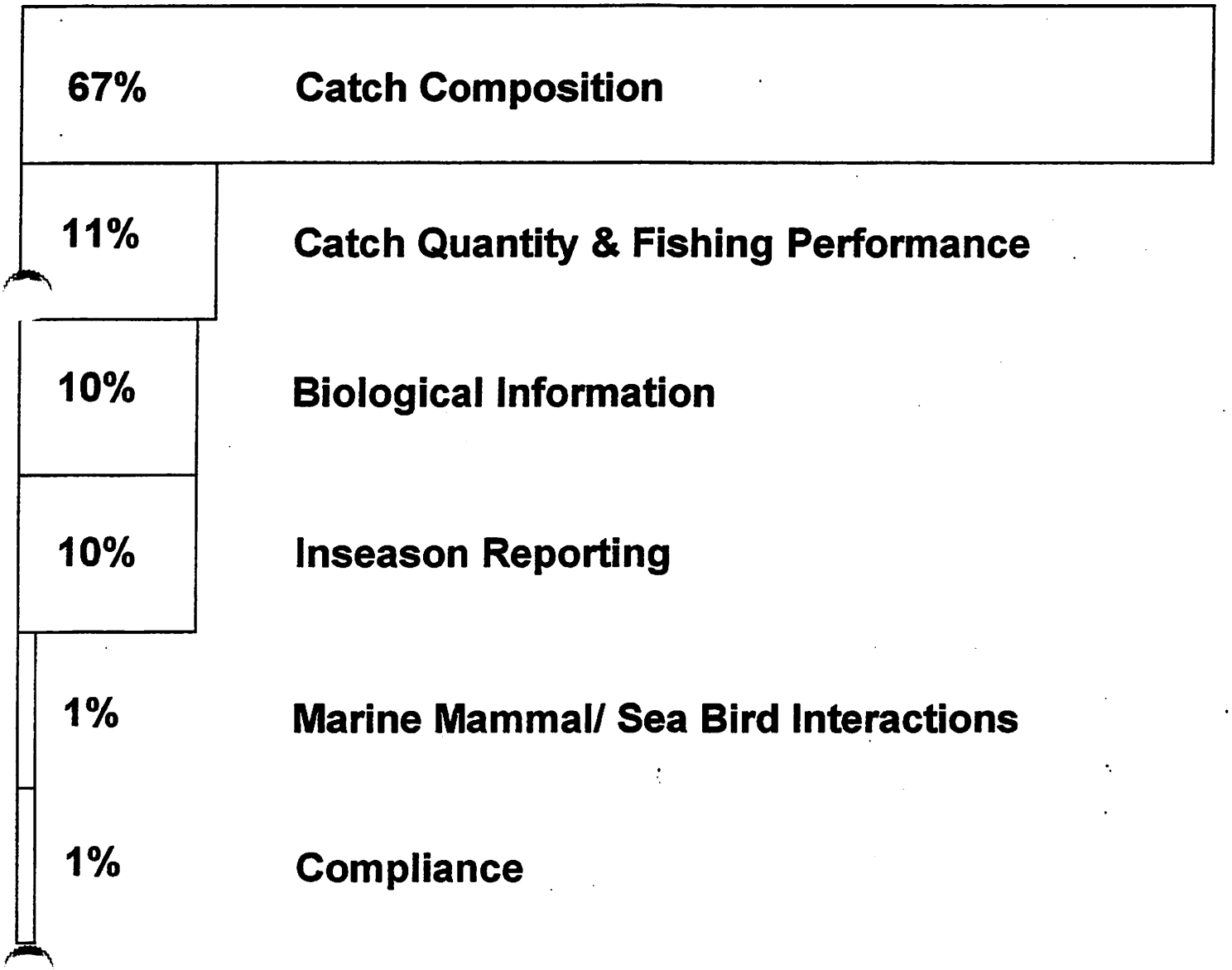
Separating information requirements for science and management is difficult. Biological information collection (lengths, otoliths, maturity information, stomach contents, etc) is exclusively of scientific interest but the observer resources necessary to collect this material are relatively small. Collection of information on catch quantity and composition occupies by far the greatest part of each observers working day. This data is critical for quota or PSC monitoring and for stock assessment. Even though the data required for stock assessment of some species may be obtained with relatively low levels of observer coverage, estimates of bycatch of TAC species with acceptable CVs in some target fisheries may require high coverage levels.

Attachments

NPFMC/OAC June 1997
Observer Coverage Needs
Attachment 1

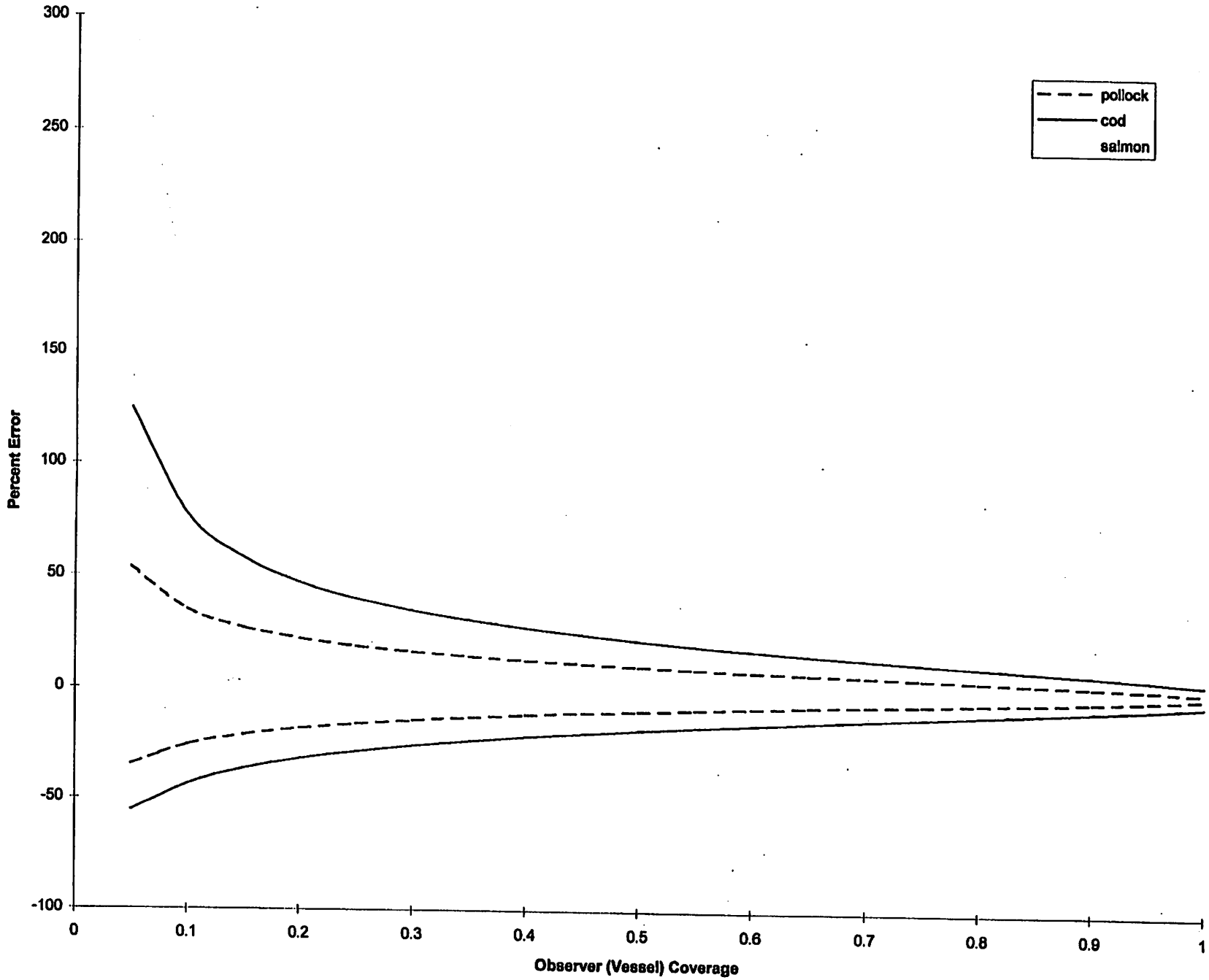
NPFMC/OAC June 1997
Attachment 1

Observer Time Utilization
Catcher/Processor Trawler



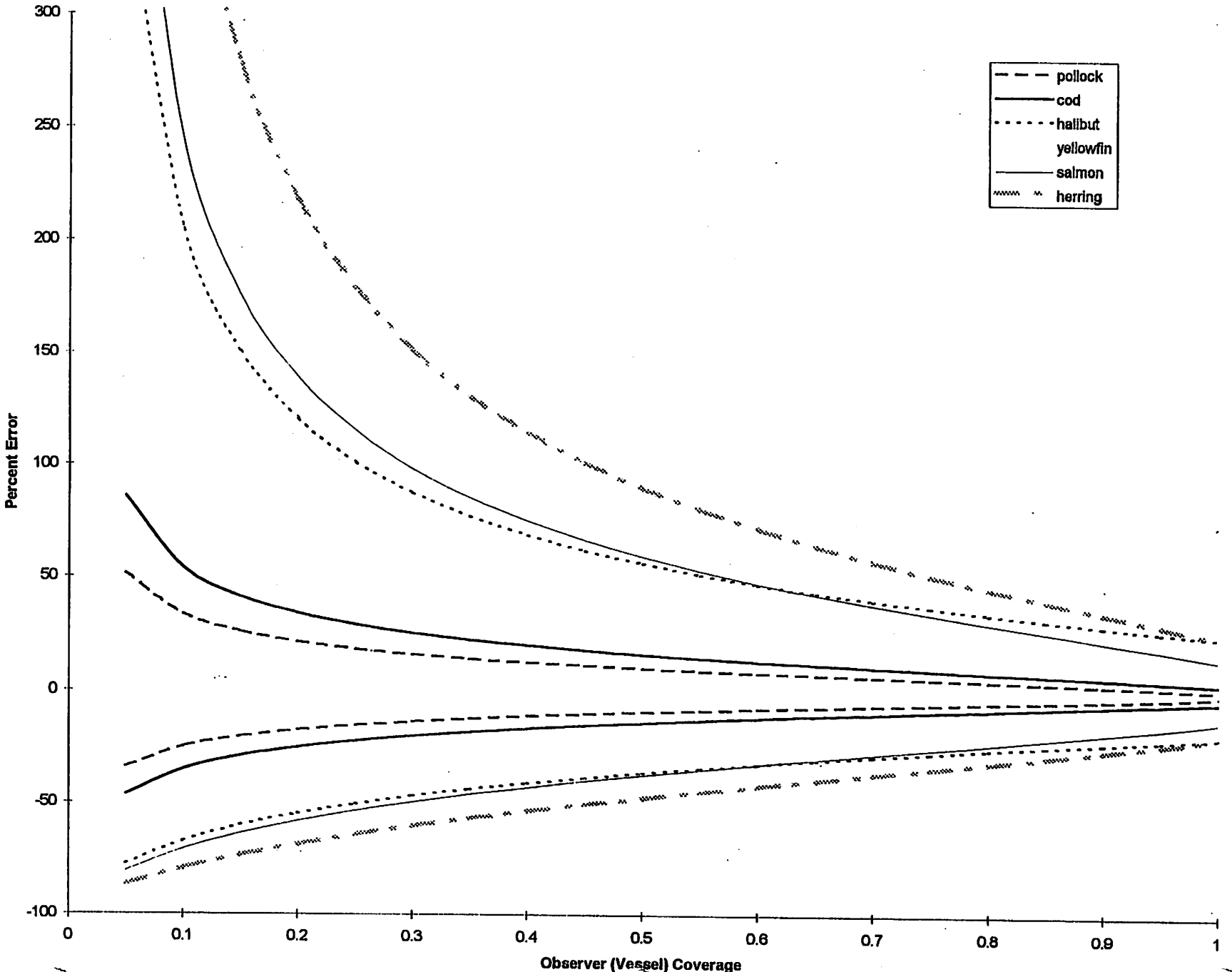
NPFMC/OAC June 1997
Observer Coverage Needs
Attachment 2

1996 Pollock A Season
100% CP Trawlers



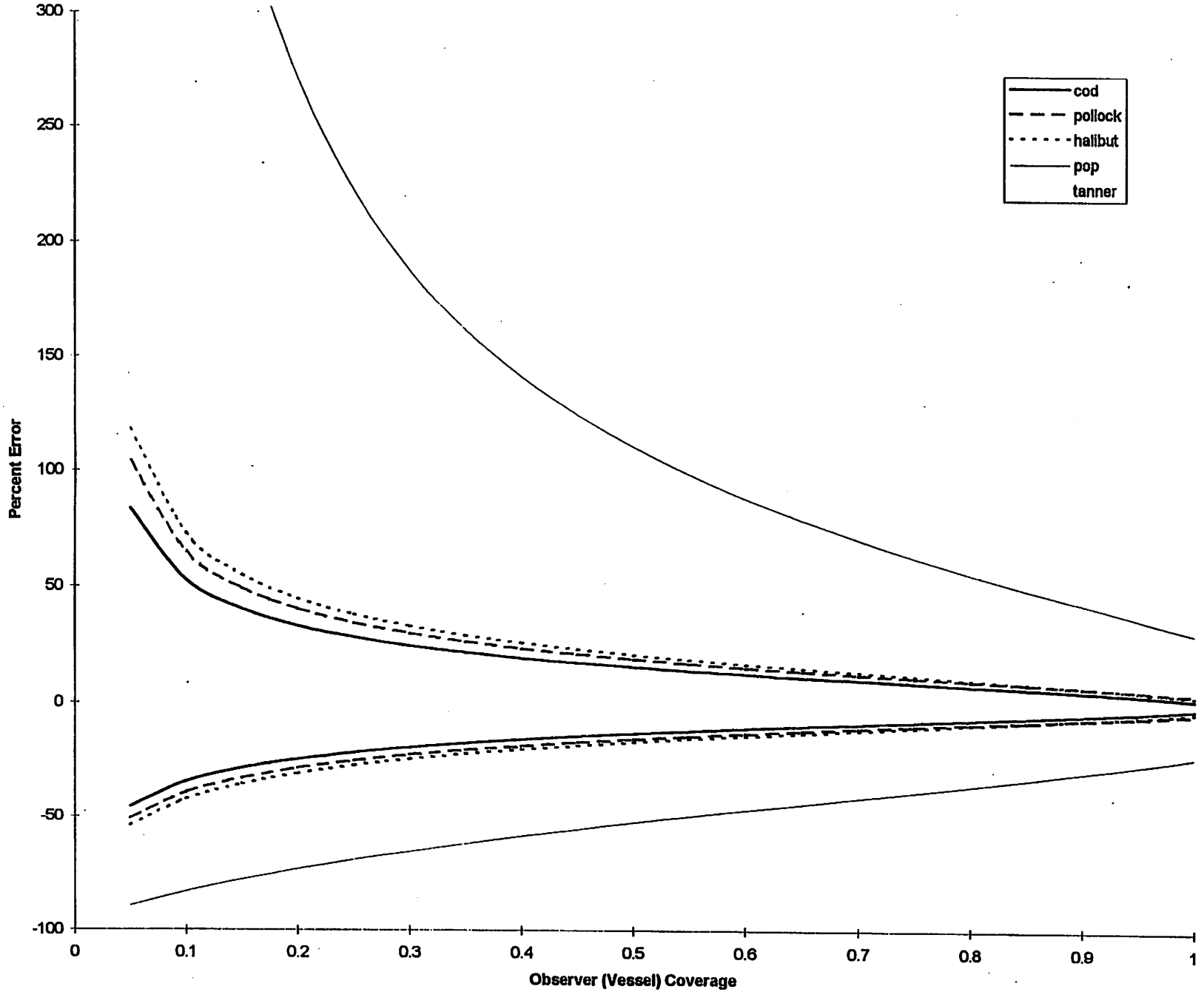
NPFMC/OAC June 1997
Attachment 2 Fig. 2

1996 Pollock B Season
100% CP Trawlers

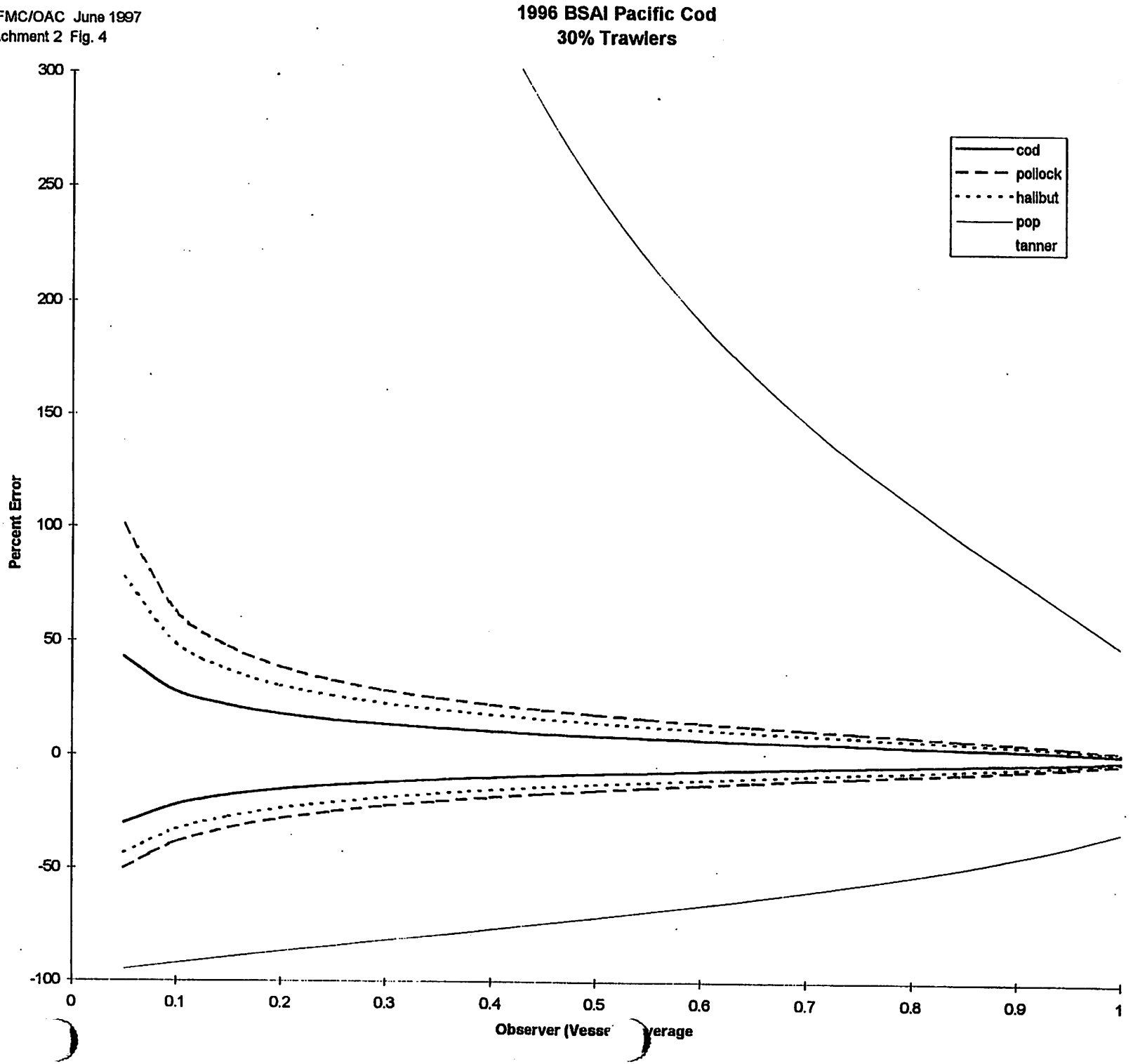


NPFMC/OAC June 1997
Attachment 2 Fig. 3

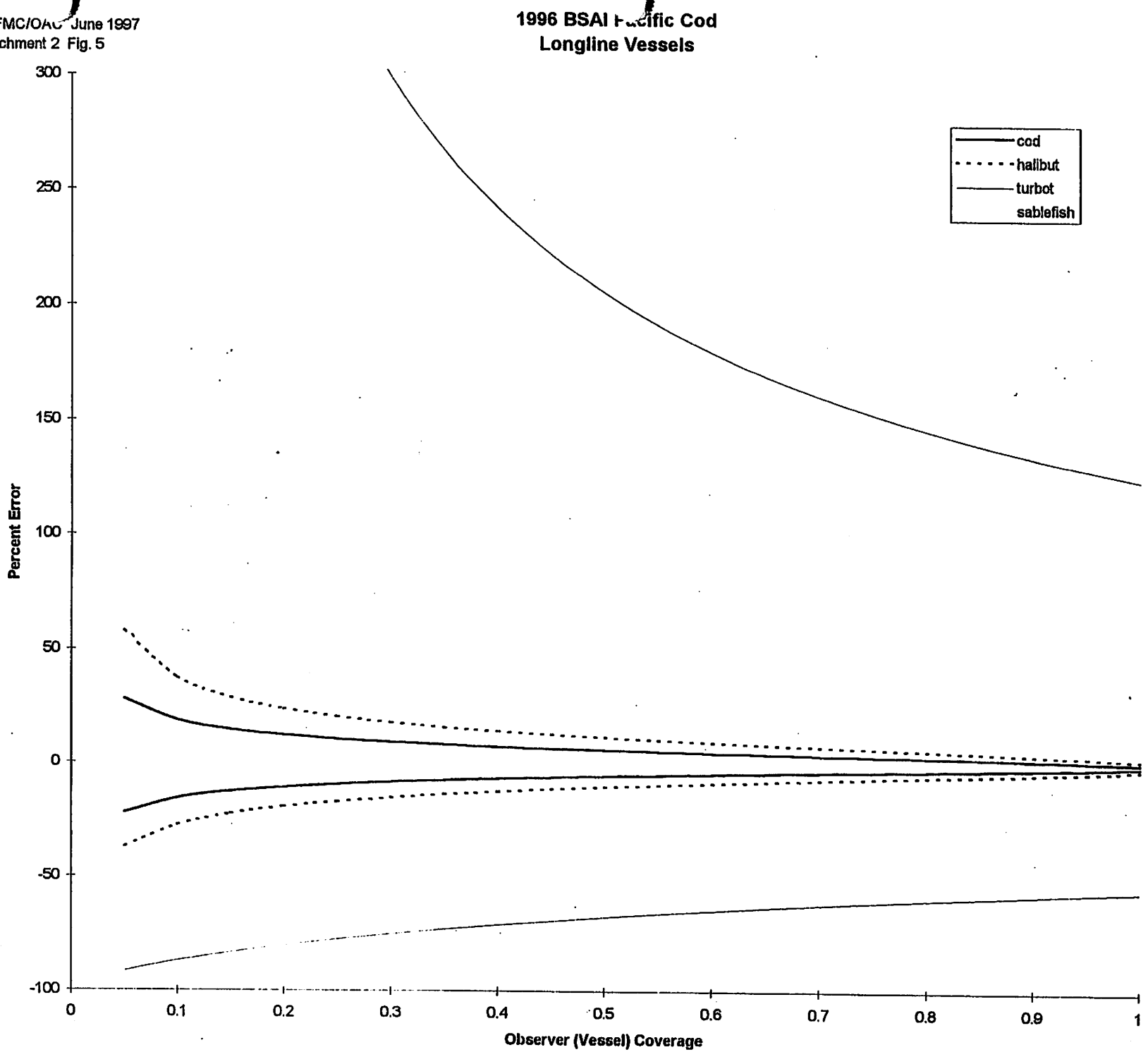
1996 BSAI Pacific Cod
100% Trawlers



NPFMC/OAC June 1997
Attachment 2 Fig. 4



NPFMC/OAC June 1997
Attachment 2 Fig. 5



NPFMC/OAC June 1997
Observer Coverage Needs
Attachment 3

Draft Material from
Report by Versar, Inc.

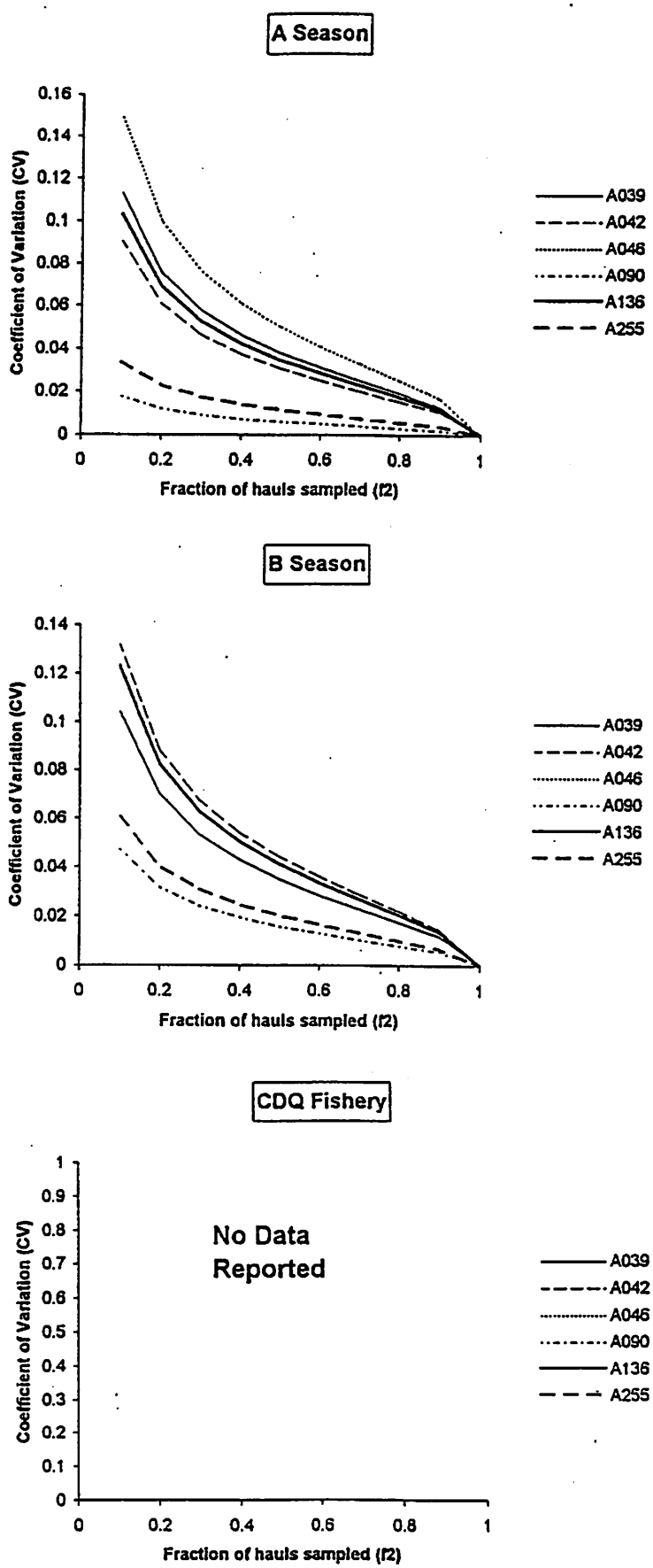


Figure 4-12. Coefficient of variation in several vessels' estimated catch of all species in the three seasons of the 1994 BSAI pollock fishery in relation to fraction of hauls sampled (f_2). Fraction of cruises sampled was held at 1.0.

Draft Material from
Report by Versar, Inc.

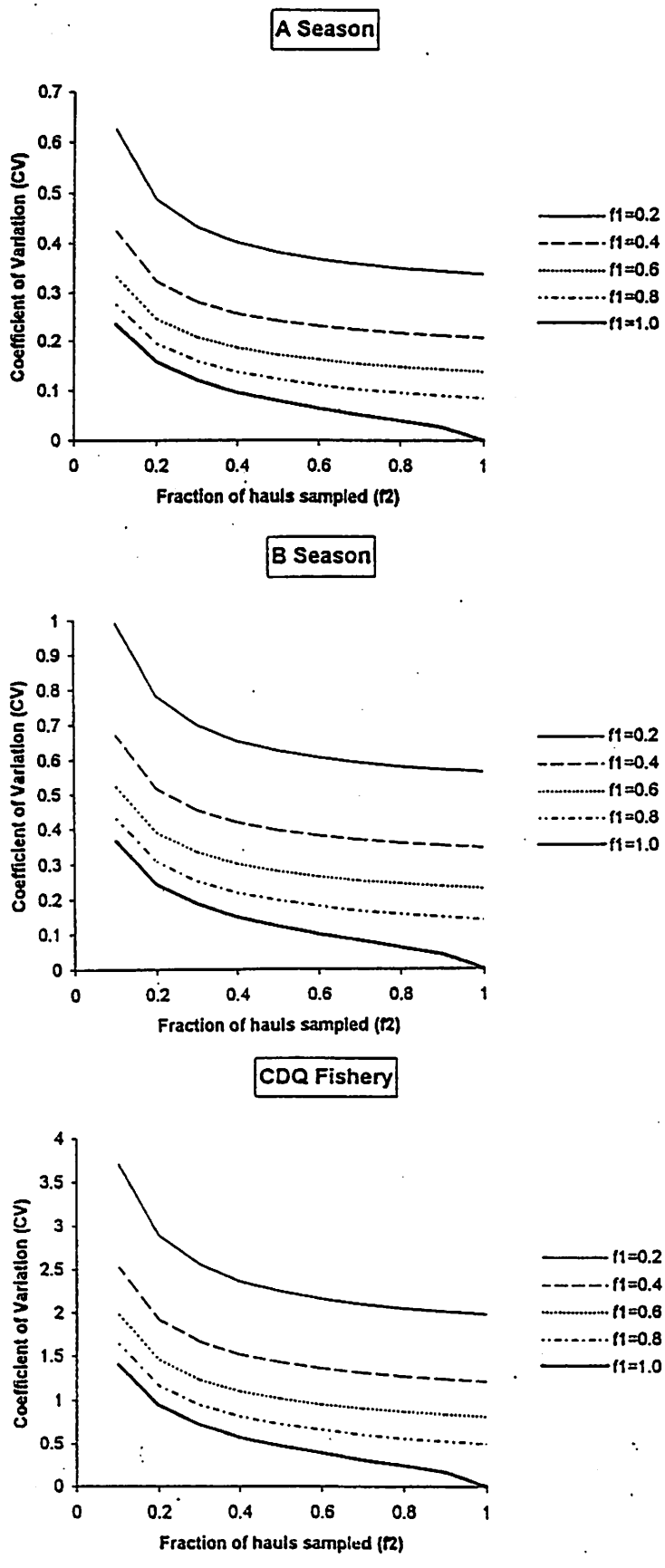


Figure 4-17. Coefficients of variation for fleetwide chinook salmon catch estimates during the three seasons of the 1994 BSAI pollock fishery. Catch estimates were based on the ratio estimator and coefficients of variation are shown in relation to the fraction of cruises sampled (f_1) and fraction of hauls sampled (f_2).

Draft Material from
Report by Versar, Inc.

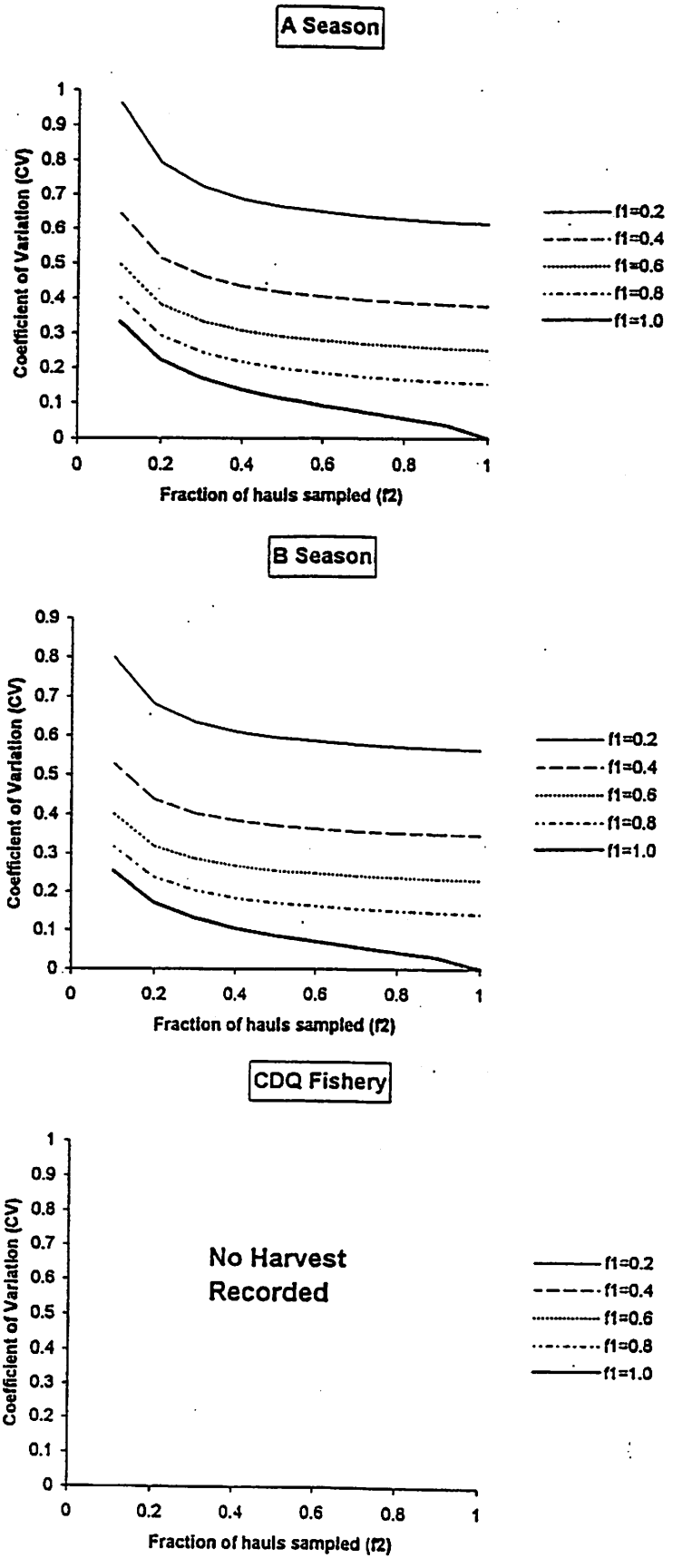


Figure 4-19. Coefficients of variation for fleetwide catch estimates for salmon other than chinook, during the three seasons of the 1994 BSAI pollock fishery. Catch estimates were based on the ratio estimator and coefficients of variation are shown in relation to the fraction of cruises sampled (f_1) and fraction of hauls sampled (f_2).

Draft Material from
Report by Versar, Inc.

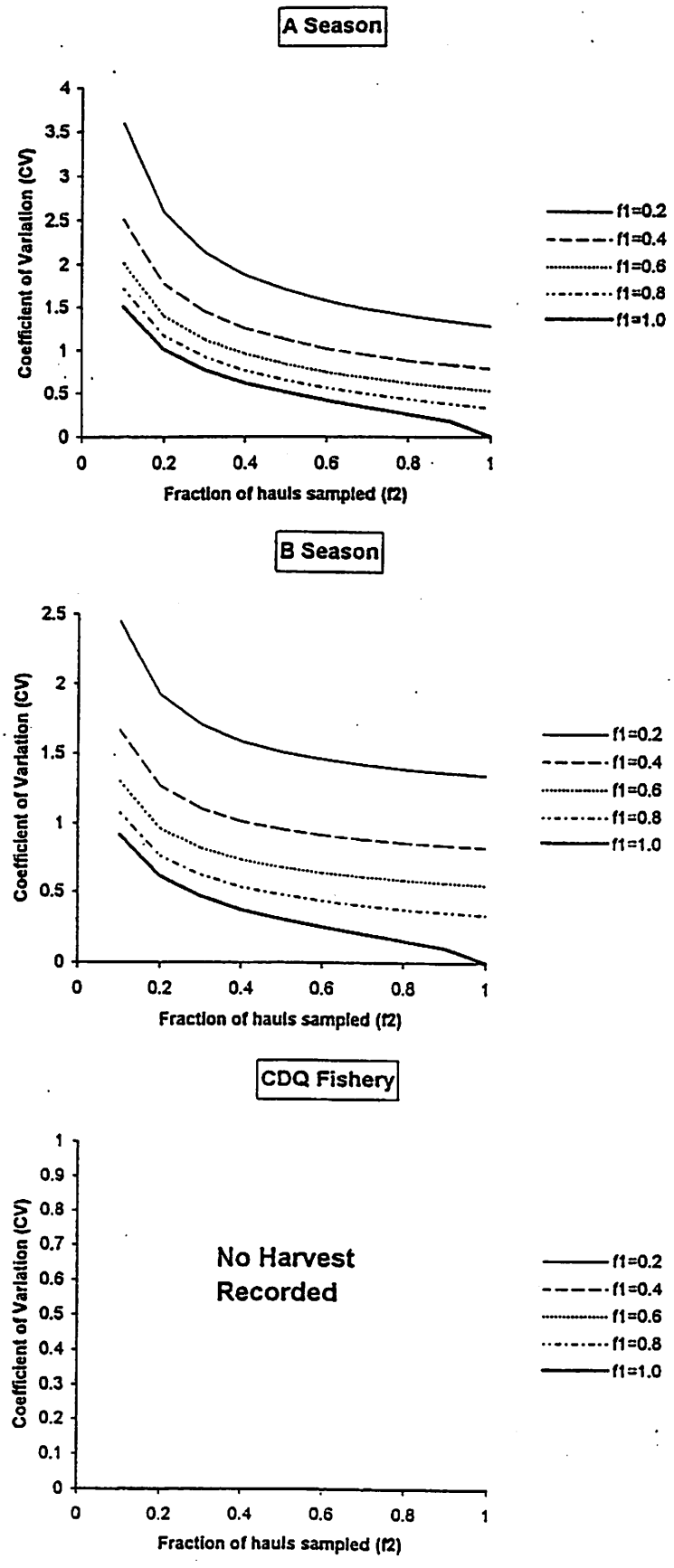


Figure 4-23. Coefficients of variation for fleetwide Pacific herring catch estimates during the three seasons of the 1994 BSAI pollock fishery. Catch estimates were based on the ratio estimator and coefficients of variation are shown in relation to the fraction of cruises sampled (f_1) and fraction of hauls sampled (f_2).

Draft Material from
Report by Versar, Inc.

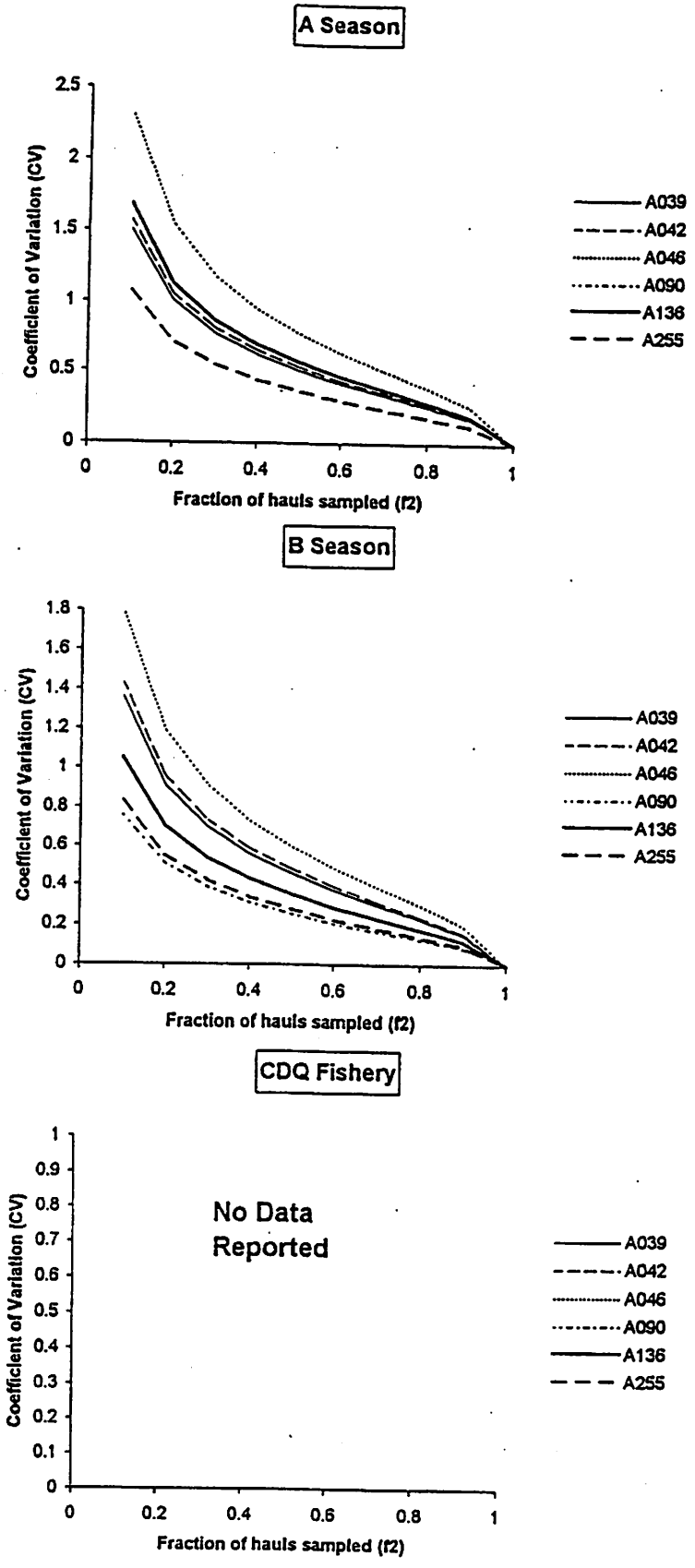


Figure 4-25. Coefficients of variation for chinook salmon catch estimates from individual vessels during the three seasons of the 1994 BSAI pollock fishery. Catch estimates were based on the ratio estimator and coefficients of variation are shown in relation to the fraction of hauls sampled (f_2). The fraction of cruises sampled was held at 1.0.

NPFMC/OAC June 1997
Observer Coverage Needs
Attachment 4

Estimation of Salmon Bycatch in the 1995 Pollock Fishery in the Bering Sea/Aleutian Islands - A Comparison of Methods Based on Observer Sampling and Counts of Salmon Retained by Fishing Vessel and Processing Plant Personnel

by

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Alaska Fisheries Science Center
National Marine Fisheries Service
7600 Sand Point Way NE
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June 3, 1997

Executive Summary

Data from the 1995 BSAI pollock A and B seasons were analyzed to allow comparison of vessel-specific and fleetwide estimates of salmon bycatch.

Data from catcher/processor trawlers, motherships, and shoreside plants were examined separately. Both seasons' data were combined for the shoreside plant analysis.

Five fleetwide estimators were applied. OS was based exclusively on observer samples. ROS utilized observer and industry retention data from observed hauls. RU utilized retention data from unobserved hauls. RO utilized retention data from observer sampled hauls when whole haul sampling did not occur. And OS>0.05 utilized the subset of OS which included within-haul sample fractions greater than .05. Since almost all shoreside plant sampling involved very large within-haul sample fractions, the OS>0.05 estimator was not applied to this data.

Within-haul variance was considered to be zero for all estimators except OS and OS>0.05. For these estimators, within haul variance was estimated by simulating sampling of Poisson-distributed salmon in pollock catches.

Vessel-specific and fleetwide bycatch rate and total bycatch estimates based exclusively on observer data were higher than estimates based on retained counts or observer-sampled data plus retained counts in almost all cases. Variability associated with estimates based exclusively on observer data was higher than for other estimation methods although it was generally lower for OS>0.05 than for OS because of the association between small with-haul sample size and high variance.

Comparison of fleetwide OS and ROS bycatch estimates at different within-haul sample fractions indicated much higher OS-based rates for some comparisons at low within-haul sample fractions. In most cases, however, estimates were similar at sample fractions of 0.2 and greater.

Simulations also indicated rapid decreases in bycatch rate CVs as the within-haul sample fraction increased to 0.2 (and

particularly marked improvement up to 0.02) under a range of between-haul sampling fractions typically employed by observers.

The consistently higher bycatch estimates obtained from exclusively observer data support the argument that independent observer sampling is an essential prerequisite to the collection of objective salmon bycatch data. High levels of uncertainty associated with estimates based on observer sampling is, however, of concern in fisheries were salmon bycatch may be limiting.

Even though observers are able to whole haul sample in some cases, universal recommendations regarding minimum within-haul sample sizes for observers are not currently supportable. This is because factory operating procedures and facilities often preclude taking of large samples and handling of modest sample fractions (0.1 - 0.2) would require observers to physically lift and weigh 10 - 30 t of fish in some cases. Some improvements may be achieved by consultation between NPGOP and industry personnel, assignment of crew members to assist observers, and provision of motion-compensated sampling scales.

Under current constraints, salmon bycatch estimates based on observer samples can be expected to be associated with high CVs. Management measures to control bycatch of salmon (and other infrequently-occurring species) should be designed with this concern in mind. However, current quota and PSC inseason management procedures do not utilize estimation procedures of the type discussed in this report. Rather, they employ *ad hoc* procedures for stratification, expansion, and blending of observer data with industry retained catch reports. Development of quota and PSC management strategies which take into account uncertainty associated with sampling and estimation would be a substantial task.

Continuation of the Salmon Retention Program is not recommended since it provides data which is not useful to NMFS in managing salmon bycatch. Furthermore, estimates based on observer data and those based on retained counts will always differ and may provide a basis for inappropriate arguments regarding the independence of observer sampling.

I. Introduction

Two sources of information are available for estimation of salmon bycatch in the Bering Sea-Aleutian Island (BSAI) groundfish trawl fisheries, observer sampling data and counts of salmon retained by industry personnel. Observer data is collected for all hauls and deliveries sampled by National Marines Fisheries- (NMFS) certified groundfish observers. Observers are present during all fishing days on vessels of 125' and greater length overall (LOA) and during 30% of the fishing days for vessels of 60' - 125' LOA; they sample up to 100% of the hauls taken while they are aboard these trawlers; however, for vessels delivering to shoreside plants, sampling of the whole delivery (consisting of several hauls)may occur at the plant. Federal regulations at 50 CFR '679.218 also require that vessel operators and shoreside plant managers fishing or receiving fish taken in directed BSAI trawl groundfish fisheries not discard salmon taken in these fisheries until they have been enumerated by a NMFS-certified observer. Thus, for observed hauls/deliveries, salmon bycatch can be estimated from observer samples, and for unobserved hauls/deliveries and unsampled portions of observed hauls/deliveries, counts of salmon retained by vessel or plant personnel are available.

The objectives of this analysis are to compare different methods of estimating salmon catch from the BSAI pollock trawl fishery, and to investigate the relationship between the coefficient of variation of the salmon bycatch estimate and within haul and between haul sampling fractions. Salmon bycatch estimates were obtained from observer samples (OS), counts of retained salmon for unobserved hauls (RU), counts of salmon retained from the unobserved portion of observed hauls (RO), and the sum of retained and observer-sampled salmon for observed hauls (ROS). OS, RU, and RO are mutually exclusive data sets but ROS includes data used for the OS and RO estimates. Data from the 1995 BSAI pollock fisheries were used in this analysis. Similar analyses were conducted to allow comparison between observer-sampled and retention-enumerated salmon bycatch estimates for shoreside deliveries of pollock in 1995. These analyses provide the basis for recommendations regarding future sampling and estimation of salmon bycatch in pollock trawl fisheries.

Results of this analysis are useful for comparing different estimation techniques and evaluating the benefits of the salmon retention program. The data sets and techniques used are different from those employed by the NMFS Alaska Region for inseason monitoring of prohibited species bycatch and the bycatch estimates are, therefore, different from those published by the Alaska Region.

II. Methods

Estimation of salmon bycatch and variance

Observer sampling is a three-stage process(Cochran 1977). The first stage is the vessel, the second the haul, and the third the sample within the haul. Most pollock trawlers in the BSAI require 100% observer coverage, so variance associated with the first stage is essentially zero; the sampling process can, therefore, be regarded as two-stage.

To draw inferences from the data, variances or confidence intervals must be estimated. Even though several discrete samples may be taken by observers from individual hauls, however, data are recorded as if only one sample is taken from each haul. Therefore, within-haul variances cannot be estimated directly and total variance cannot be determined for statistics based exclusively on observer sampling. An assumption regarding the distribution of salmon within hauls must be made to estimate the variance of salmon bycatch estimates by haul, vessel, and fishery. A range of possible distributions exists, from regular, (i.e. a constant number of salmon per unit weight of catch sampled) to clumped, where all salmon in the haul occur in a single aggregation which may be completely included in or excluded from the sample. For the purposes of this study, an assumption that salmon are randomly distributed within a haul has been made. However, within haul variance is assumed to be zero for the retained estimates of salmon for unobserved hauls (RU) and the retained plus observer estimate for observed hauls (ROS). Since vessel coverage is 100%, the only source of variability in the RU and ROS estimates is between hauls and depends on the fraction of hauls sampled within vessels.

Estimation of coefficient of variation by within-haul sample haul fraction

Since within-haul variance cannot be determined directly from observer data, a simulation model was developed. Observer data from whole-haul samples were used for this exercise because the total numbers of salmon per haul were known and sampling at different within-haul fractions of the catch could be simulated using the actual data. Based on the assumption that salmon were distributed randomly within each haul, sampling was simulated by drawing random numbers from a Poisson distribution with mean (and variance) equal to the sample fraction times the number of salmon occurring in the haul. The total number of whole-haul sampled hauls was resampled without replacement to obtain various fractions of hauls sampled. The simulation was carried out 100 times, and the mean and variance of the number of salmon per haul was calculated for each run.

Estimation of mean number of salmon per haul by vessel

The mean number of salmon per haul for each vessel and the 95% confidence interval were estimated to allow comparison of the results of the different sampling strategies. The distribution of salmon within hauls was assumed to be random as previously discussed. A bootstrap method for finite populations (Booth, Butler and Hall 1994) was employed to estimate means and confidence intervals by resampling observed hauls, and within those hauls, by sampling from a Poisson distribution with mean equal to the number of salmon in the sample. The bootstrap was done 1000 times and the percentile method was used to estimate the 95% C.I., using the 25th lowest value as the lower bound and the 976th value as the upper bound (Efron and Tibshirani 1993).

Estimates of 95% confidence intervals of the number of salmon per haul for retained counts from unobserved hauls (RU) and retained plus observed counts for observed hauls (ROS) (see below) contain only the variance associated with between hauls, since the number of salmon recorded is assumed to be the total in the haul and therefore has zero variance.

The data were analyzed by season (BSAI pollock A Season (January through March) and B Season(August through October)) and vessel type (motherships and catcher/processors).

Estimation of fleetwide salmon bycatch

The fleetwide total salmon bycatch was estimated by multiplying the mean number of salmon per haul by the total number of hauls within vessels and then summing for all vessels. A bootstrap was used to estimate the total and the 95% confidence interval as previously described. Five estimates were made, one from expanding the observed sample (OS), the second from the retained catch from unobserved hauls(RU), the third from the sum of the retained and observer sample from observed hauls,(ROS), the fourth from salmon retained from the unobserved portion of observed hauls (RO), and the fifth from observed data where the sampling fraction was greater than OS>0.05.

In order to estimate the total number of salmon caught by season and vessel type, the overall estimated mean number of salmon per haul in each of processor/season stratum was substituted as the mean number of salmon per haul for vessels with less than five hauls.

III. Results

Distribution of within-haul sample fraction

The number of hauls sampled and the within haul sample fractions varied by vessel(Table 1). There were 9,203 total hauls of which 6,159 were sampled. Although the fraction of hauls sampled varied by vessel from about 17% to 100%, it was 50% or greater for all but 5 of the 67 vessel/season data sets. Hauls with (within-haul) sample fractions of less than 0.1 made up about 37% of all hauls sampled(Figure 1). The sampled fraction was less than 0.05 for approximately 32% of all sampled hauls. For approximately 35% of the hauls sampled, the sample size was less than 5 t (Figure 2). Thirty-one percent and twenty-eight percent of the

hauls had sample weights less than 1 t and 0.5 t, respectively. Observers are required to sample a minimum of 0.3 t of catch. In many cases this is the maximum practicable sample size.

Estimated salmon bycatch rates by sample fraction, vessel type, and season

Comparison of mean salmon bycatch rates by within-haul sample fraction indicates that, in most cases, OS rates are higher than ROS rates for mothership and catcher/processors in both seasons(Figure 3). In general, salmon bycatch rates were lower in the A season (principally chinook salmon) than the B season (principally chum) and higher for motherships than catcher/processors. OS was generally markedly higher than ROS at low sampling fractions and the estimates become closer as sampling fractions increased. Large differences at low sampling fractions could be caused by rare large observations influencing the mean to a substantial degree.

Coefficient of variation and variance of estimated mean numbers of salmon per haul by within-haul sample fraction

The CV of the mean salmon bycatch rate declined markedly as the proportion of hauls sampled increased (Figures 4 a and b). At a between-haul fraction of 0.7, which is close to the fraction achieved by many observers, the CV decreased from approximately 0.2 to 0.1 as the within-haul fraction increased from less than 0.1 to approximately 0.2(Figure 4b). As the within-haul sample fraction increased from 0.0025 to 0.05, the CV declined from about 8 to 0.5 (Figure 4a). At low within-haul sample fractions (less than 0.05), changes in the between-haul sample fraction had little effect. The relationship between within-haul and between-haul variance components can be used to evaluate the impact on overall variance of alternative sampling strategies(Figure 5). For example, a larger decrease in CV can be obtained by increasing the within-haul sample fraction from 0.1 to 0.2 than can be obtained by increasing the between-haul fraction over the same range. However, practical considerations, such as vessel/factory layout and the quantity of fish which must be handled by observers must be taken into account when

considering such alternatives. For a 100 t haul, increasing the sample fraction from 0.1 to 0.2 would result in a doubling of the quantity of fish handled by the observer, from 10 t to 20 t. It is generally impossible for observers to handle samples of this magnitude.

Estimates of mean numbers of salmon per haul by vessel

Estimates of mean numbers of salmon per haul vary markedly by vessel(Figures 6 and 7). OS estimates were generally higher and confidence intervals were generally broader because within-haul variance was included in the computations. Confidence intervals for catcher/processors were generally greater than for motherships. RU estimates are generally lower than OS and ROS estimates. In the B Season data, only one haul was unobserved aboard vessel 35 but 18 salmon were retained from that haul; therefore the RU estimate for that vessel is considerably higher than the estimate obtained using the other methods.

Comparison of fleetwide estimates by season and vessel type

Estimates based on observer data were greater than estimates based on retained salmon for all vessel/season categories. In one case, however (motherships, A season), the OS estimate for sample fractions greater than 0.05(OS>.05) was higher than the OS estimate based on data from all hauls (Table 2 and Figures 8 and 9). The RO estimate was lowest in all cases except B season catcher/processors where the RU estimate was lowest. Confidence intervals for the OS and RU estimates and the OS and RO estimates did not overlap for either season or vessel type. The largest difference between the OS estimate and the OS>0.05 estimate occurred in the catcher processor data set for the B season because it contained many hauls with small sample fractions. For motherships in the B season the OS, OS>0.05 and ROS estimates were similar because observers generally sampled larger fractions.

Further examination of the A season motherships data (in which the OS>0.05 estimate was greater than the OS estimate) revealed that all but one of the hauls with sample fractions less than 0.05 contained no salmon. Elimination of data from hauls with samples containing zero salmon resulted in an increase in the

estimate of the salmon bycatch. This illustrates the influence that small sampling fractions can have on estimates of bycatch quantity and variance when sampling rare events. Small numbers of salmon in small samples may result in large bycatch estimates, conversely, small sample fractions may result in salmon being missed with consequent underestimation if salmon are present in the catch. If a few samples where the sample fraction was small contain many salmon, a high estimate with high variance may result.

Estimates of salmon bycatch from deliveries to shoreside plants

The OS estimate of the total number of salmon (A and B seasons combined) from for shoreside deliveries in 1995 was 6,728, with a 95% CI of 5,980 - 7,477 (Figure 10). Five hundred out of a total of 893 deliveries were sampled. The RU estimate was 4,717 (95% CI, 4,186 - 5,248). The ROS estimate was 6,656 (95% CI 5,910 - 7,402). Within-delivery sampling fractions ranged from 0.15 to 1.0, however, 448 of 500 deliveries sampled had a sample fraction of 1.0. The RO estimate was 593 (95% CI, 167 - 1,018). Since only 52 of the 500 observed deliveries had sample fractions less than 1.0, and most of those had large sample fractions, the data set for the RO estimate was very sparse.

IV. Discussion and Recommendations

This analysis indicates that salmon bycatch estimates based exclusively on observer data are generally higher than those obtained using retained counts or a mixture of observer data and retained counts.. This pattern is apparent in both vessel-specific and fleetwide estimates. Fleetwide estimates based on observer and retained data were also consistently higher than those based exclusively on retained data. Differences between observer sample-based and other fleetwide estimates was greater for motherships and catcher/processors than shoreside plants. Working conditions are confined in fish processing plants, especially at sea, and industry personnel may find it difficult to keep track of salmon while maintaining demanding production responsibilities. The importance of independent, objective sampling by observers is, therefore, apparent.

The results also indicate high variances associated with estimates based exclusively upon observer data, especially when a high proportion of observer sample sizes are relatively small. Recall, however, that only the OS estimation process considered within-haul variance; it was assumed that all salmon within a haul were counted under the alternative schemes. However, the Poisson within-haul distribution assumption for the OS estimates likely resulted in unrealistically low estimates of within-haul variance. Regardless of these limitations, it is clear that observer sample size is of concern, especially if vessel-specific estimates are desired. A requirement that observers sample a minimum fraction of each observed haul would reduce estimated variances. This study suggests that a minimum sample fraction of .10 is required for fleetwide estimates and .20 for vessel-specific estimates. Under current operating conditions, these goals are not achievable in all situations.

Whole haul sampling for salmon can be accomplished by some observers aboard some vessels. To accommodate whole haul sampling, fish must flow slowly past the point of sampling and must not be so deep that salmon are hidden. Furthermore, the observer's sampling duties must allow him/her to monitor the whole catch. This may take several hours for large hauls. Taking large partial hauls may be even more difficult. The partial haul must be weighed to allow extrapolation from sample to haul and, in many cases, this can be achieved only by the observer placing the sample in 50 kg baskets and weighing them individually. The minimum recommended basket sample is 350 kg; this requires a lot of physical work on the part of the observer and yet the sample fraction may be quite small, especially in fisheries where 100 - 150 t hauls are not uncommon. In such situations, partial samples of 10 -15 t (fleetwide) and 20 - 30 t (vessel-specific) would be required to meet the criteria defined above. Under current working conditions, this is not realistic. Substantial changes in operating procedures would be required aboard many vessels including, in some cases, installation of flow scales and improved observer workstations, and provision of additional observers. More modest improvements, including assignment of vessel personnel to assist observers in handling and weighing samples, and installation of motion compensated sampling scales may provide for some modest improvements in sample sizes and associated reductions of salmon bycatch estimate

CVs . NPGOP and industry personnel should work together to identify alternatives to traditional sampling methods. Research to correctly characterize within-haul sampling variance should also be conducted.

Under current constraints, salmon bycatch estimates based on observer samples can be expected to be associated with high CVs. Management measures to control bycatch of salmon (and other infrequently-occurring species) should be designed with this concern in mind. However, current quota and PSC inseason management procedures do not utilize estimation procedures of the type discussed in this report. Rather, they employ *ad hoc* procedures for stratification, expansion, and blending of observer data with industry retained catch reports. Development of quota and PSC management strategies which take into account uncertainty associated with sampling and estimation would be a substantial task.

Continuation of the Salmon Retention Program is not recommended since it provides data which is not useful to NMFS in managing salmon bycatch. Furthermore, estimates based on observer data and those based on retained counts will always differ and may provide a basis for inappropriate arguments regarding the independence of observer sampling.

V. Literature Cited

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Table 1a. Number of observed and unobserved hauls by vessel and within-haul sampling fraction for the 1995 BSAI pollock A season.

Vessel Type	Vessel Number*	Number of Hauls by Within - Haul Sample Fraction				Number of Hauls Unobserved	Proportion of Hauls Sampled
		0-0.05	0.05-0.3	0.3-0.99	1.00		
CP	1	48	65	19	4	3	0.98
MS	2	4	14	263	37	95	0.77
CP	3	18	1	0	0	16	0.54
CP	4	38	1	0	0	15	0.72
CP	5	0	24	12	0	0	1.00
CP	6	0	0	29	72	5	0.95
CP	7	34	1	0	0	18	0.66
CP	8	36	10	2	1	22	0.69
CP	9	3	44	26	0	14	0.84
CP	10	32	0	1	0	23	0.59
CP	11	20	35	0	0	29	0.65
CP	12	36	42	23	0	35	0.74
CP	13	48	0	0	0	18	0.73
CP	14	2	3	47	102	11	0.93
CP	15	0	30	16	0	23	0.67
CP	16	57	15	52	1	34	0.79
MS	17	0	0	0	14	1	0.93
CP	18	7	45	9	0	25	0.71
CP	19	42	1	41	15	12	0.89
CP	20	19	27	56	12	46	0.71
CP	21	17	5	0	0	76	0.22
CP	22	14	1	12	6	36	0.48
CP	23	14	57	1	0	47	0.61
CP	24	83	0	0	0	43	0.66
MS	25	75	0	0	1	360	0.17
CP	26	6	45	1	1	24	0.69
CP	27	11	45	1	0	40	0.59
CP	28	1	60	24	0	45	0.65
CP	29	125	0	0	0	13	0.91
CP	30	42	0	0	0	56	0.43
CP	31	5	45	41	1	48	0.66
MS	32	0	49	40	10	96	0.51

* Vessel numbers are arbitrary and cannot be compared between season A and B.

Table 1b. Number of observed and unobserved hauls by vessel and within-haul sampling fraction for 1995 BSAI pollock B season.

Vessel Type	Vessel Number	Number of Hauls by Within - Haul Sample Fraction				Number of Hauls Unobserved	Proportion of Hauls Sampled
		0-0.05	0.05-0.3	0.3-0.99	1.00		
CP	1	0	3	31	49	43	0.66
MS	2	0	30	160	32	90	0.71
CP	3	59	1	0	12	55	0.57
CP	4	40	6	0	0	18	0.72
CP	5	31	8	10	12	54	0.53
CP	6	5	11	77	32	7	0.95
CP	7	53	8	1	0	36	0.63
CP	8	9	2	0	0	4	0.73
CP	9	60	0	18	68	15	0.91
CP	10	9	46	5	8	58	0.54
CP	11	2	27	41	6	28	0.73
CP	12	1	58	12	0	35	0.67
CP	13	4	32	2	43	39	0.68
CP	14	58	3	2	3	63	0.51
CP	15	10	59	20	2	45	0.67
CP	16	77	1	0	0	54	0.59
CP	17	35	1	32	21	50	0.64
MS	18	1	38	22	2	63	0.50
CP	19	38	5	2	41	61	0.59
CP	20	80	3	11	17	52	0.68
CP	21	52	39	3	1	51	0.65
CP	22	133	1	0	0	2	0.99
CP	23	4	42	17	11	70	0.51
CP	24	94	2	0	1	53	0.65
CP	25	7	58	29	11	53	0.66
CP	26	2	76	1	1	86	0.48
CP	27	84	0	8	33	45	0.74
MS	28	10	0	0	283	203	0.59
CP	29	0	17	53	16	43	0.67
CP	30	0	75	29	0	43	0.71
CP	31	2	74	33	4	27	0.81
CP	32	97	0	0	1	47	0.68
CP	33	72	2	0	4	98	0.44
CP	34	3	113	12	2	21	0.86
MS	35	1	0	0	318	1	1.00

* Vessel numbers are arbitrary and cannot be compared between season A and B.

Table 2. Estimated total catch of salmon by season and processor type.

Estimation Method	Total Number of Salmon	95% Confidence Interval	CV
A Season			
Catcher/processor			
Observer	3,351	1,982 - 5,210	0.241
Observer + Retained	1,490	1,412 - 1,569	0.026
Retained unobs	1,152	792 - 1,540	0.162
Retained obs	1,065	977 - 1,152	0.041
Observer sample fraction>.05	3,010	2,510 - 3,536	0.085
Mothership			
Observer	1,022	768 - 1,377	0.149
Observer + Retained	485	427 - 544	0.060
Retained unobs	340	188 - 506	0.234
Retained obs	158	112 - 203	0.144
Observer sample fraction >.05	1,477	1,252 - 1,721	0.079
B Season			
Catcher/processor			
Observer	6,512	4,069 - 9,174	0.196
Observer + Retained	3,479	3,026 - 3,865	0.060
Retained unobs	1,646	1,084 - 2,241	0.176
Retained obs	2,519	2,035 - 2,964	0.092
Observer sample fraction >.05	4,352	3,704 - 4,976	0.073
Mothership			
Observer	4,077	3,454 - 4,736	0.079
Observer + Retained	3,614	3,140 - 4,066	0.064
Retained unobs	1,228	890 - 1,559	0.136
Retained obs	289	197 - 372	0.151
Observer sample fraction >.05	4,012	3,507 - 4,514	0.063

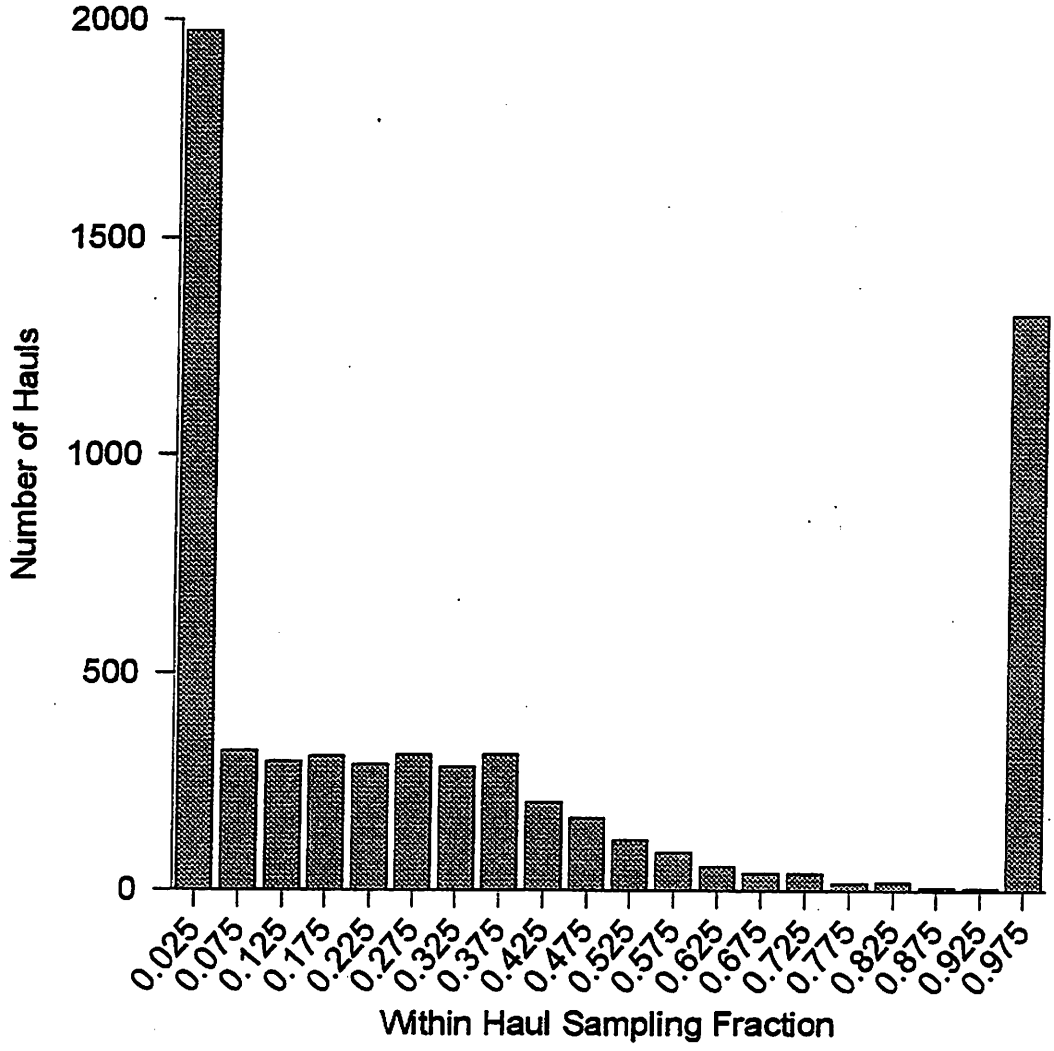

Figure 1. Distribution of within-haul sample fractions for all sampled hauls.

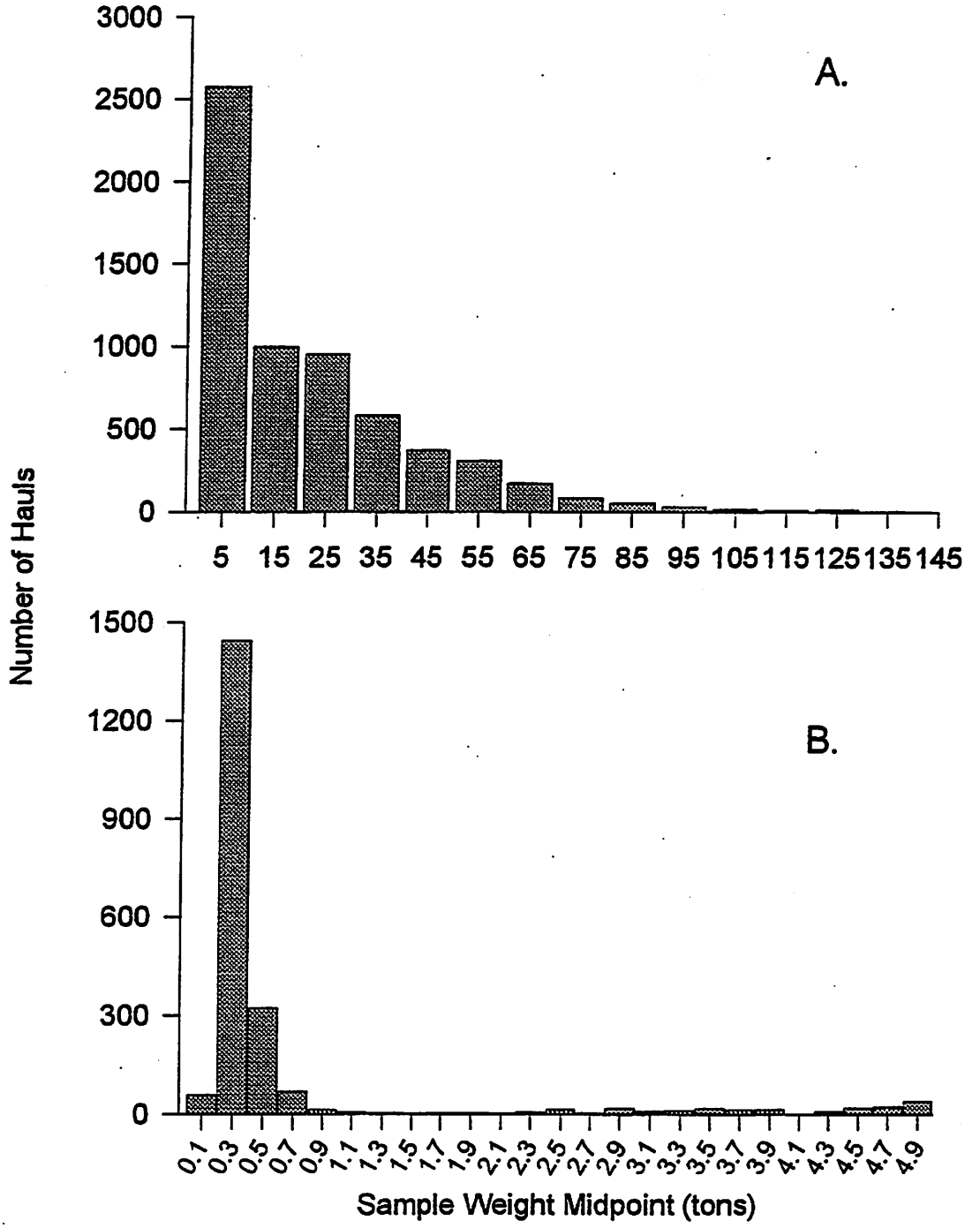

Figure 2. (A.) Distribution of within haul sample weights for all sampled hauls. (B.) Distribution of within haul sample weights between 0.1 and 5 tons.

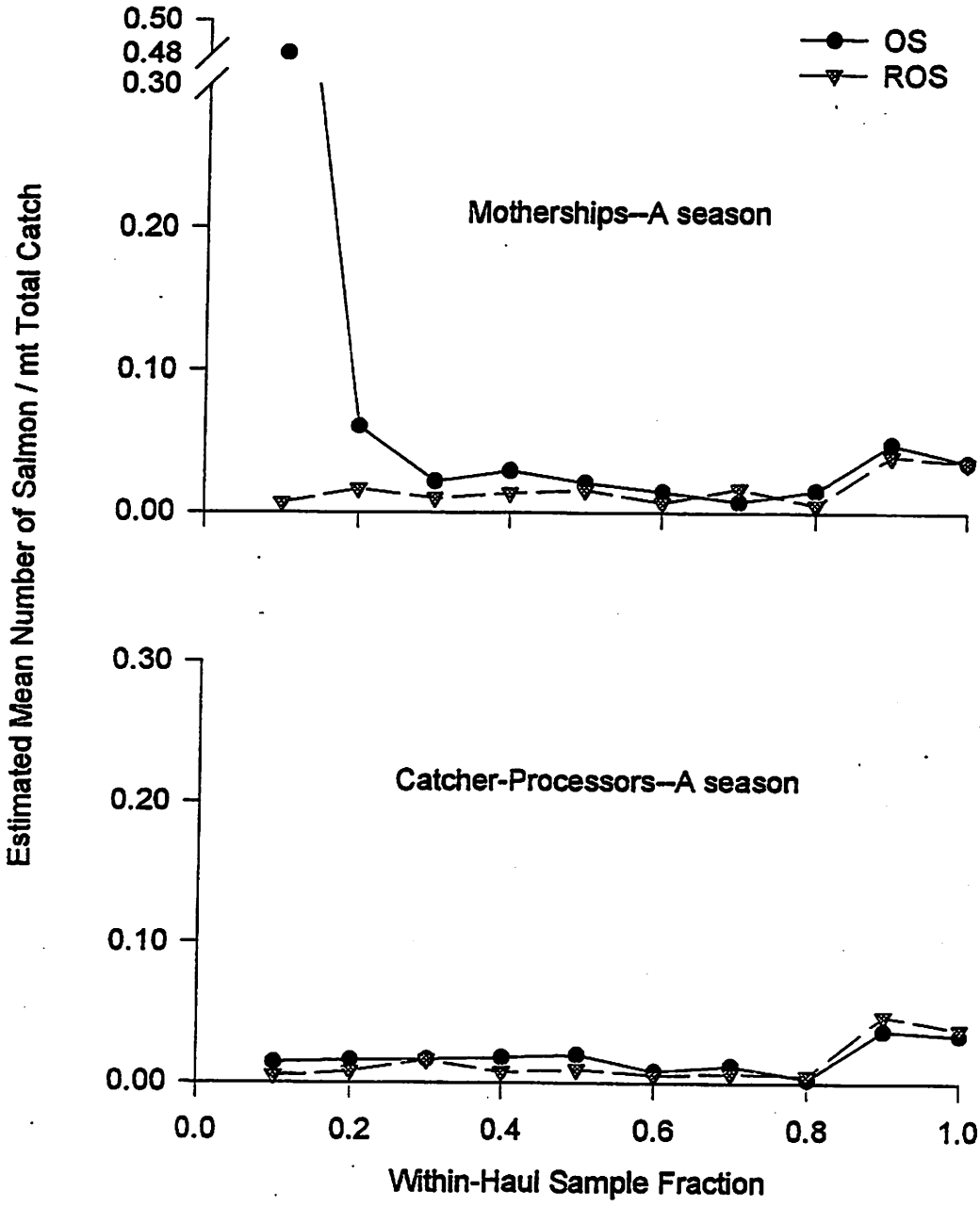

Figure 3. Comparison of estimated mean salmon bycatch rates over increasing within-haul sample fractions. Estimates are from observer samples (OS) and retained plus observer data (ROS) for observed hauls.

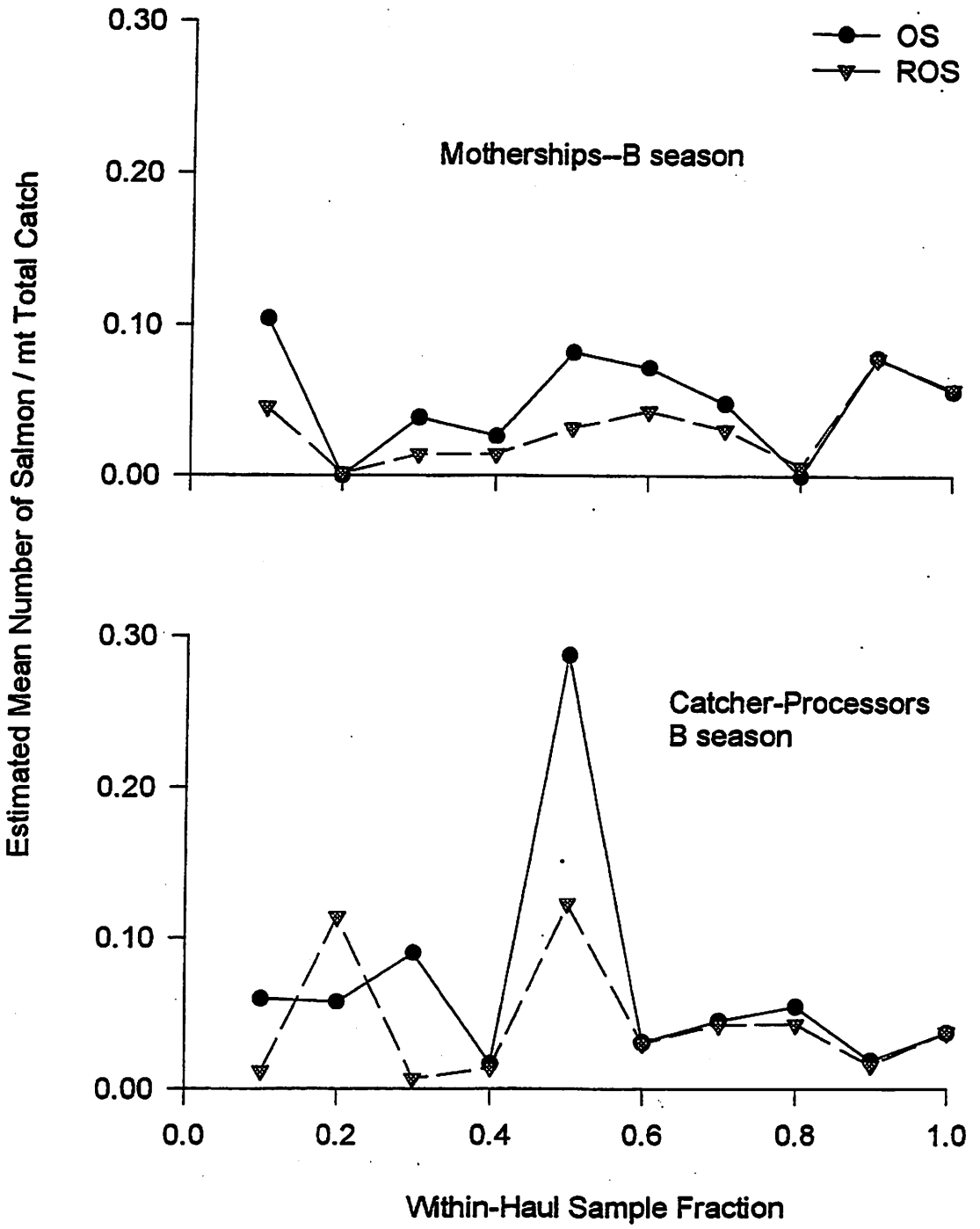

Figure 3, continued. Comparison of estimated mean salmon bycatch rates over increasing within-haul sample fractions. Estimates are from observer samples (OS) and retained plus observer data (ROS) for observed hauls.

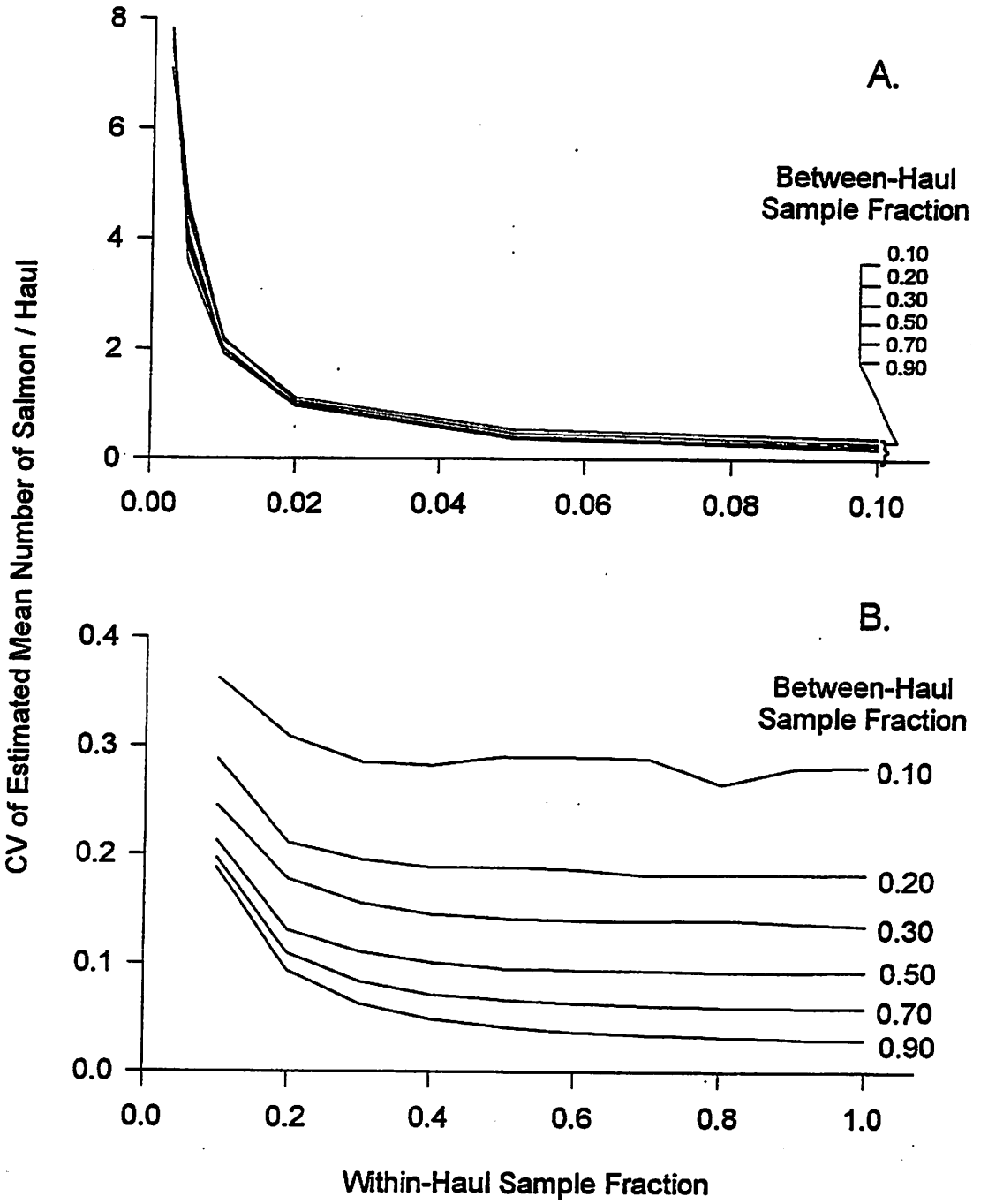

Figure 4. CV of estimated mean number of salmon per haul for different between-haul sample fractions over within-haul sample fractions (A.) 0.0025 to 0.1, and (B.) 0.1 to 1.0.

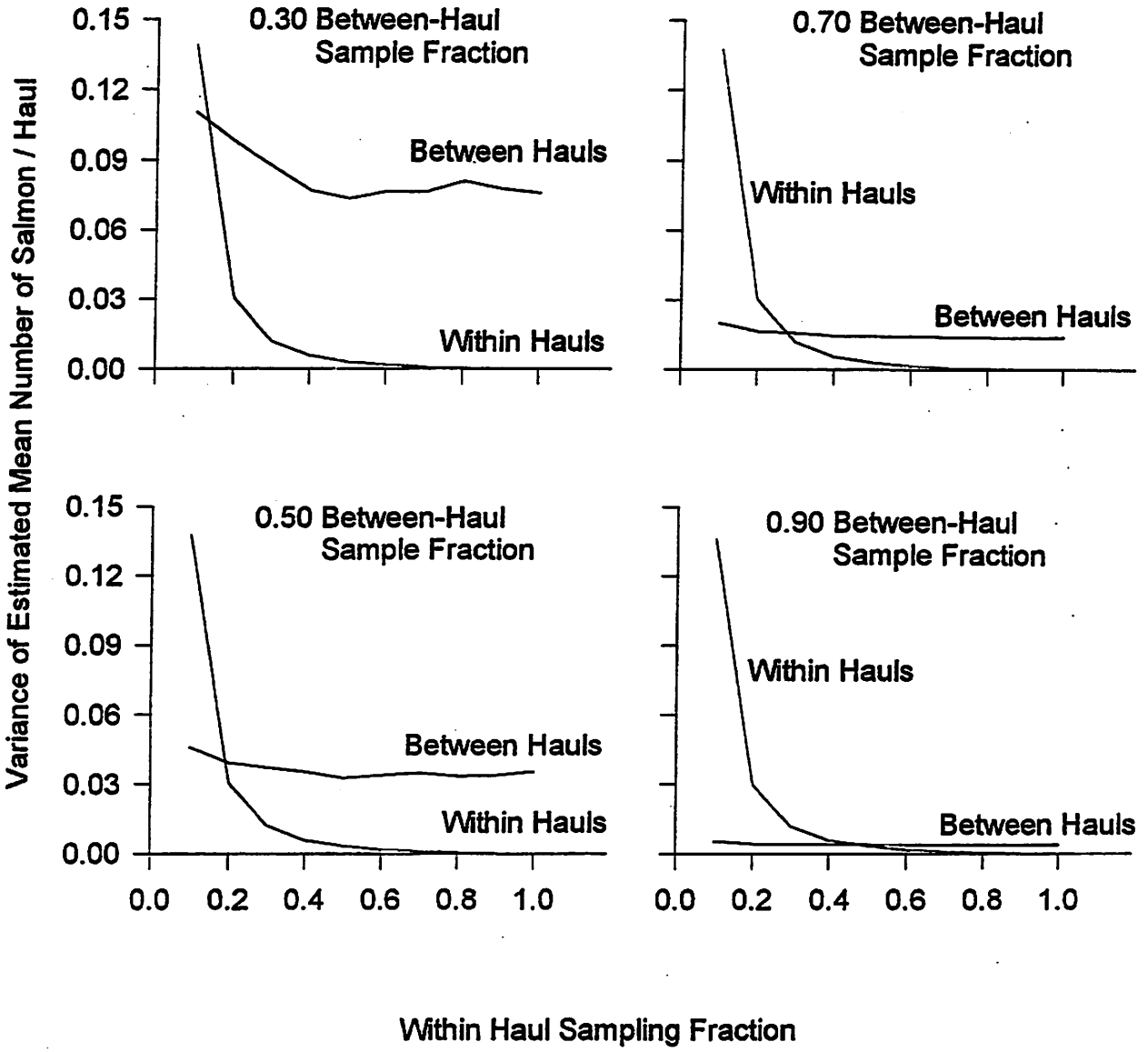

Figure 5. Variance between and within hauls of the estimated mean number of salmon per haul for different between- and within-haul sampling fractions.

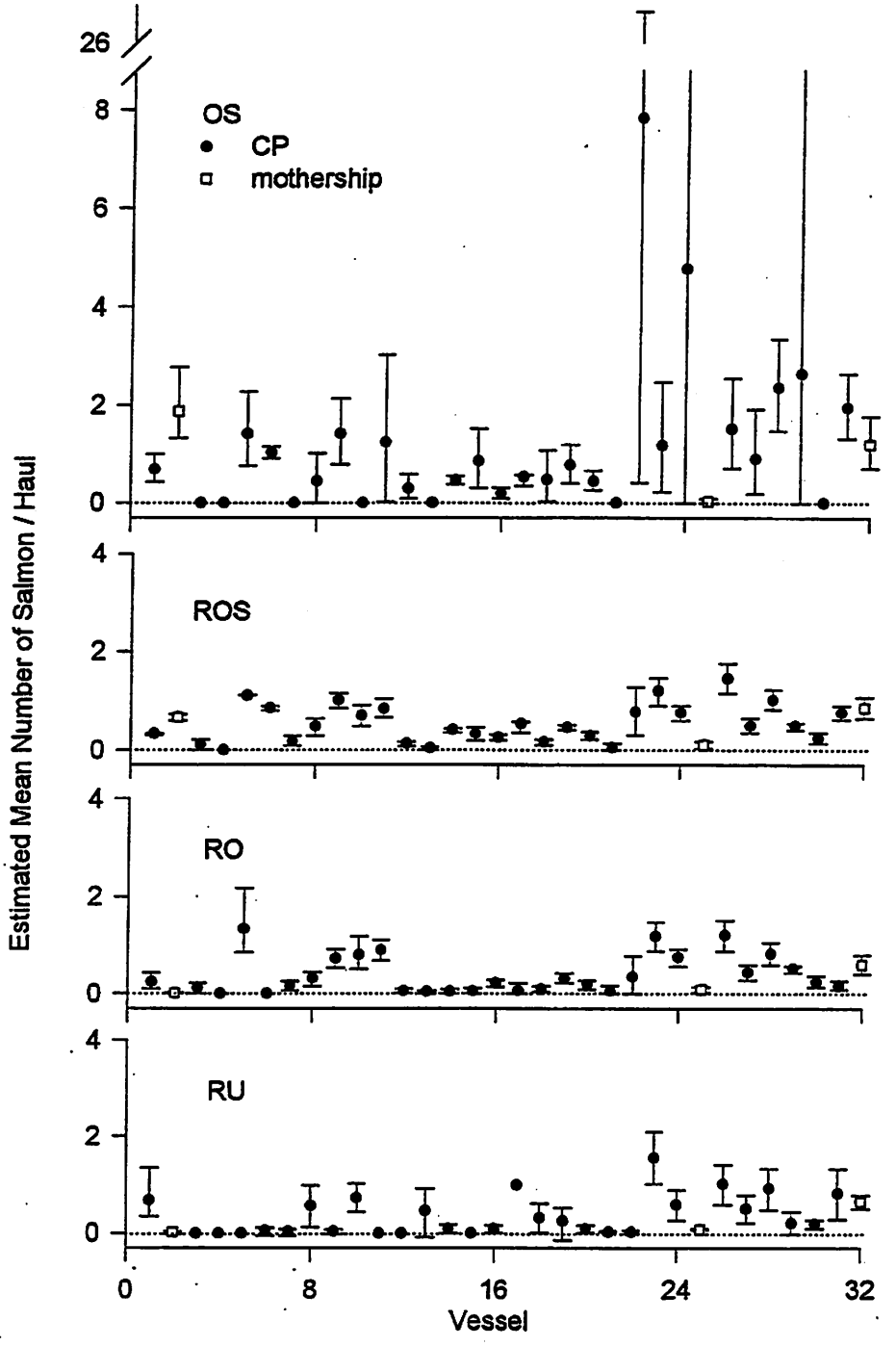

Figure 6. Estimated mean numbers of salmon per haul by vessel for 1995 BSAI A season. Estimates are from observer samples(OS), observed plus retained for observed hauls (ROS), retained from observed hauls (RO), and retained salmon from unobserved hauls (RU).

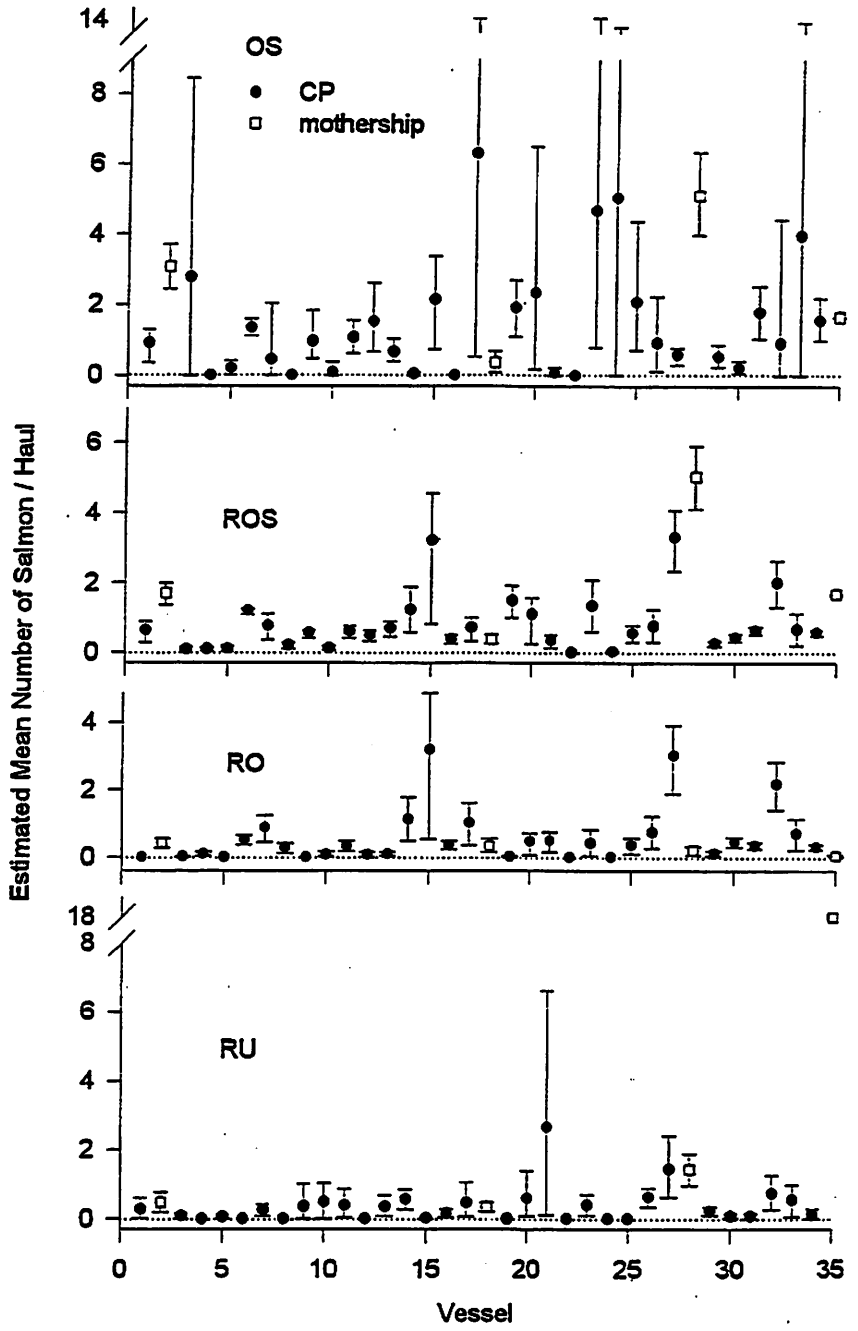

Figure 7. Estimated mean numbers of salmon per haul by vessel for 1995 BSAI B season. Estimates are from observer samples(OS), observed plus retained for observed hauls (ROS), retained from observed hauls (RO), and retained salmon from unobserved hauls (RU).

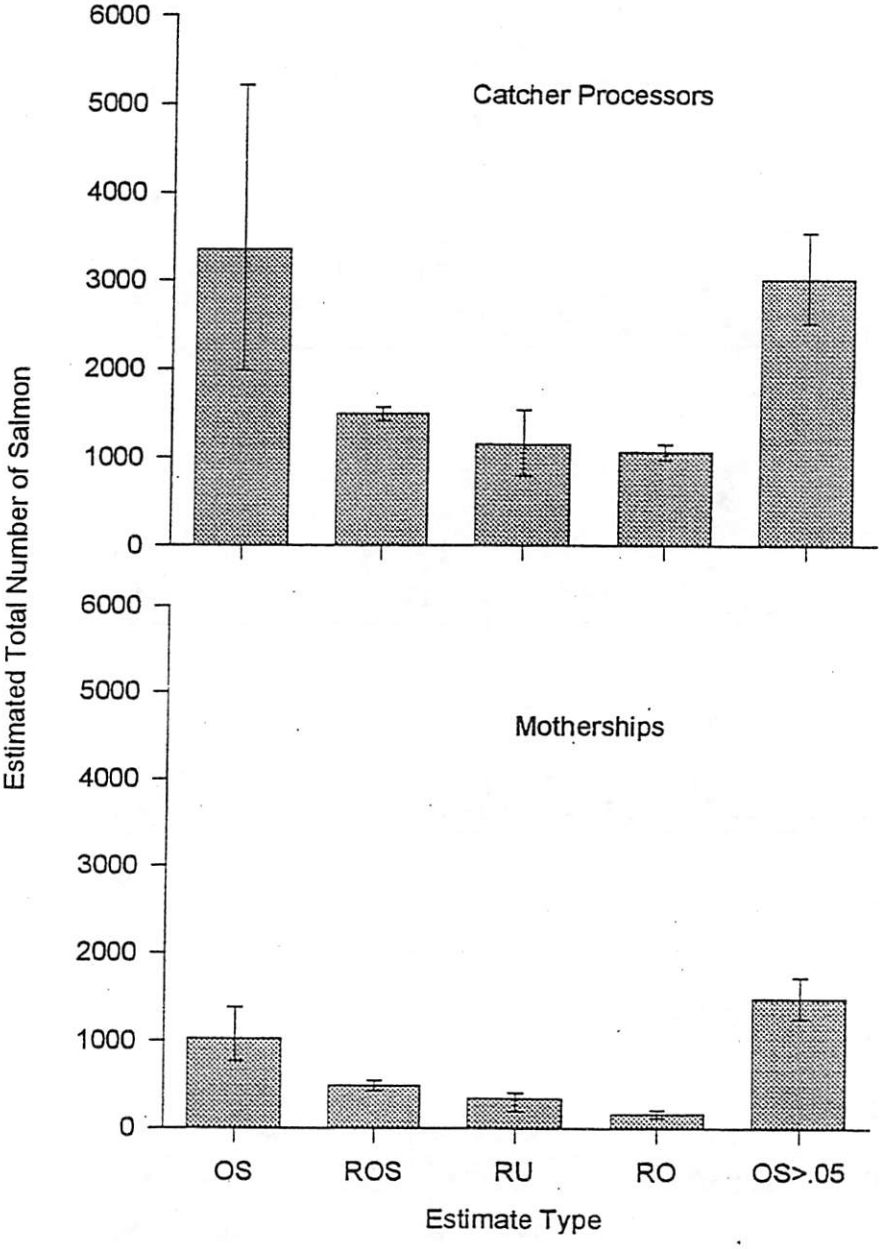

Figure 8. Estimated total catch of salmon by processor type for 1995 BSAI A season. Estimates are from observer samples (OS), observed plus retained (ROS), retained from unobserved hauls (RU), retained from observed hauls (RO), and observer sample fractions > 0.05 (OS>.05).

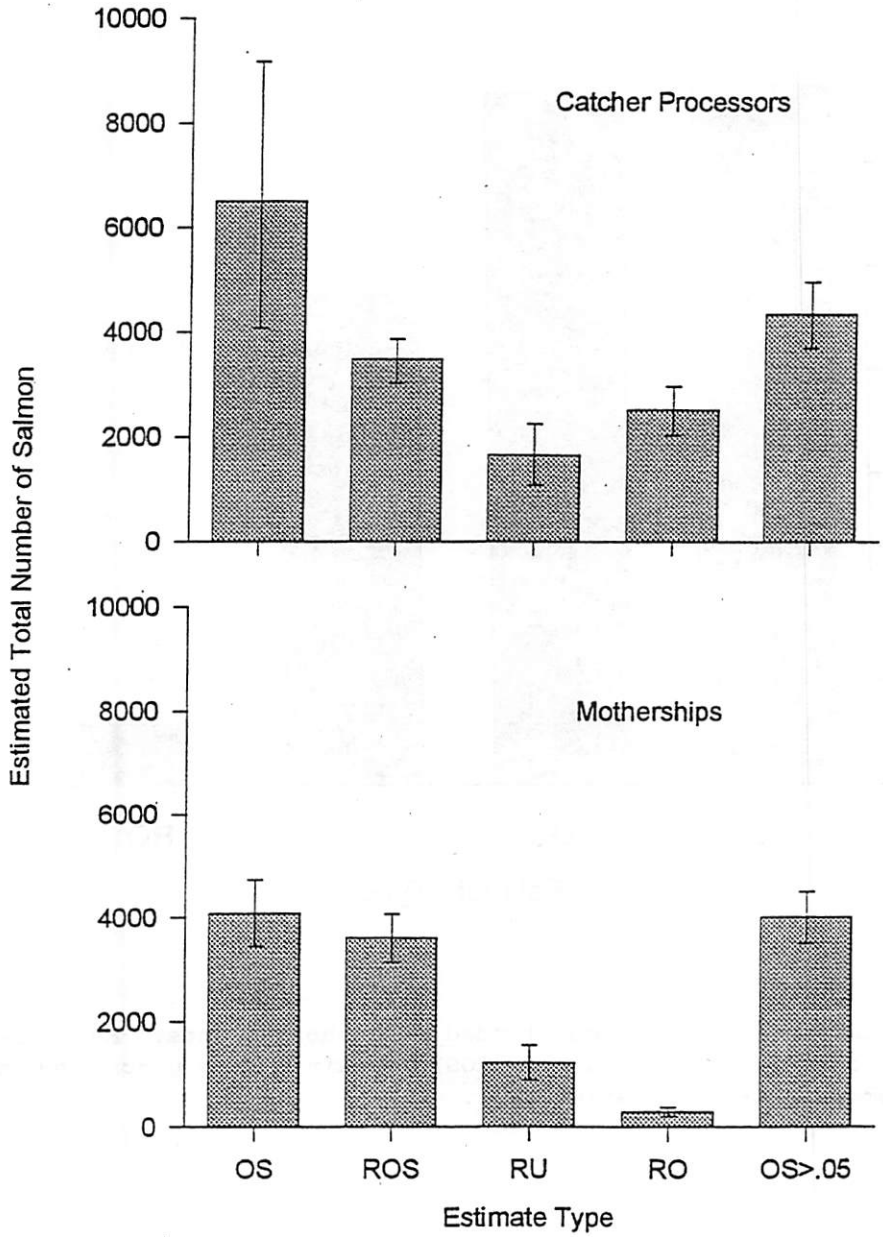

Figure 9. Estimated total catch of salmon by processor type for 1995 BSAI B season. Estimates are from observer samples (OS), observed plus retained (ROS), retained from unobserved hauls (RU), retained from observed hauls (RO), and observer sample fractions > 0.05 (OS>.05).

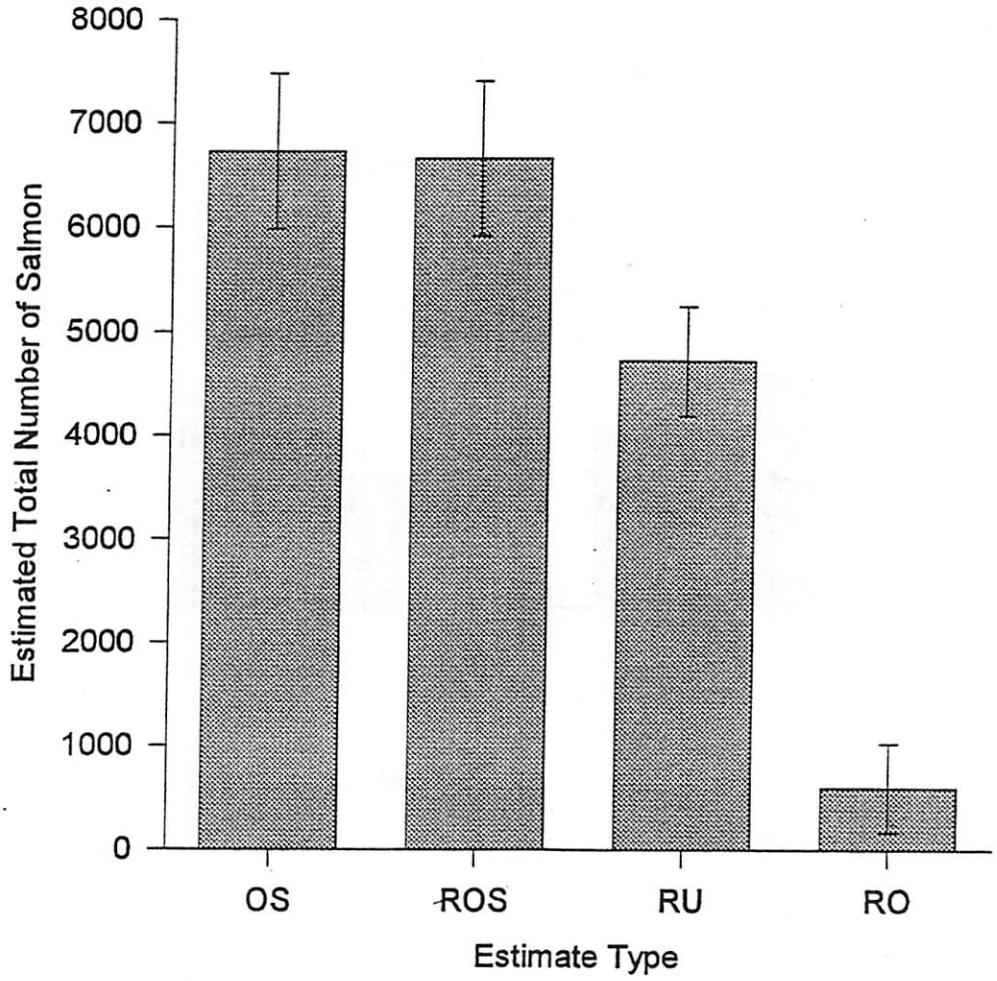

Figure 10. Estimated total catch of salmon landed at onshore plants. Estimates are from observer samples (OS), observed plus retained (ROS), retained from unobserved deliveries (RU), and retained from observed deliveries (RO).