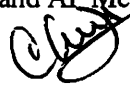


MEMORANDUM

TO: Council, SSC and AP Members
FROM: Chris Oliver 
Executive Director
DATE: March 25 2008
SUBJECT: Scallop Management

ESTIMATED TIME 2 HOURS

ACTION REQUIRED

Receive Plan Team Report, Review and Approve SAFE report

BACKGROUND

Scallop SAFE Report

The Scallop Plan Team met in Anchorage on February 21-22, 2008 to review the status of the weathervane scallop stocks in Alaska and to prepare the Stock Assessment and Fishery Evaluation (SAFE) report. This SAFE report was mailed to you on March 7th. The SAFE report provides an overview of scallop management, scallop harvests and the status of the regional weathervane scallop stocks. Scallop stocks are neither overfished nor approaching an overfished condition. The report from the Scallop Plan Team meeting is attached as Item D-4(a).

**Scallop Plan Team Meeting
February 21–22, 2008
The Hotel Captain Cook
Anchorage, AK**

Plan Team members present:

Gregg Rosenkranz (ADF&G Kodiak), Herman Savikko (ADF&G Juneau), Scott Miller (NMFS), Jie Zheng (ADF&G Juneau), Gretchen Harrington (NMFS), Diana Stram (NPFMC)

Public and agency personnel present: Mark Kandianis (Provider), Tom Minio (Provider), Max Hulse (La Brisa Inc), John Lemar (Ocean Hunter), Wayne Donaldson (ADF&G), David Witherell (NPFMC), Steve Davis (NOAA Fisheries), and Ken Goldman (via telephone).

The Scallop Plan Team meeting convened on February 21st at the Hotel Captain Cook in Anchorage, Alaska. The attached agenda was approved for the meeting.

Membership

SPT Chair Jeff Barnhart retired from the ADF&G at the end of 2007. The team gratefully acknowledges the years of leadership, knowledge and participation of Jeff Barnhart and wishes him well in his retirement.

The team elected to have Diana Stram serve as Chair of the SPT as an interim measure for one year. The team intends to solicit additional members in 2008 with the intention that they will be approved for participation at the 2009 SPT meeting. At that time the team will discuss elections again for chair and vice-chair noting that these are in the terms of reference as two-year terms. The team discussed dividing the minutes responsibilities up amongst members to assist Diana in revising the final report of the meeting.

Gregg Rosenkranz updated the team on the timing and process for hiring Jeff Barnhart's position. He explained that the State is in the process of reorganizing the scallop program to modify supervisory positions and once administrative issues have been clarified the State will begin to hire for this position. He noted that the role will be redefined to have both an observer program and research focus. Management of scallops is by regional managers instead of single statewide manager.

Wayne Donaldson noted that he will be taking over some of the observer program management and will plan to call members of industry that have information to begin to organize observer contracts and training. He commented that federal budget cuts had stalled hiring for this position but that these seem to be resolved at this point. The team briefly discussed some of the state and federal budget cuts and the potential impacts on managing the scallop fishery given that it received funding from both the state and federal budgets.

Mark Kandianis commented that it seems more cost-effective for the state to manage the fishery than the federal government. Dave Witherell commented that at the time of creating the FMP it was felt to be more appropriate to manage the fishery by the State but that the current situation and budget could have changed in the interim and could merit reevaluation. Gretchen noted that extended jurisdiction discussions are larger than scallop and has to do with all state/federal managed fisheries and budget cuts are prevalent in both right now. Gregg noted that while some scallop positions are federally funded, much of the actual management costs and research costs are borne by the State.

The team notes that it is missing participation from a State scallop manager. The team would like to request additional membership from a State scallop manager. The team further notes that a southeast or central

region person would be preferable given the Kodiak/westward focus of many team members already. Herman Savikko volunteered to send letters out to all regions to solicit interest in serving on the plan team next year.

Survey Techniques: Camera Sled Research

Gregg Rosenkranz provided an overview of his continued work with camera sled survey research. A document is appended to these minutes, which provides more detail on the background and direction of the research. His presentation included additional slides on state-federal boundary lines with 90% historic effort polygons. These slides indicate the implications of sunset provision on state license program. Gregg noted some plans for the future including looking into the use of additional forward looking cameras to better evaluate fish avoidance behavior. He noted that there are many additional ways the camera sled could be useful. Tanner crab are observed often in sled photo data, and video images document buried Tanner crab. Gregg cautioned that the camera does not compensate for movement (ie could double count Tanners over 2-day survey period). The Woods Hole HabCam goal is to be analyzing these data real-time. Gregg noted the necessity of additional biologists and benthic ecologists to begin to review the data. He also noted documentation of Sea Star predation on scallops and the presence of king crabs in video as well. The team discussed the utility of this methodology for groundtruthing of acoustic data.

Mark Kandianis requested clarification as to the prioritization of areas for surveying. Gregg replied that the current focus now is to be training additional personnel to utilize sled and technology and obtain additional ship time. For the actual survey work they are currently planning to continue as scheduled with the Yakutat area next. Mark asked if there was a possibility of putting together a proposal to gather data for the BOF to evaluate the closed areas with the camera sled. Gregg noted that it could be used to evaluate closure areas for Tanner crabs.

Status of Statewide Scallop Stocks

The team reviewed the draft SAFE report by region. Team members commented that additional information was necessary for inclusion by region as to why GHs are increased or decreased on an annual basis. Actual details on stock status by region are contained in the SAFE report sections. Central Region discussion of stock status was delayed until Friday in order to have Ken Goldman (ADF&G) available to participate. The team reviewed changes to the structure of the SAFE report, additional sections added in response to SSC comments, and the intent to continue to improve upon the report in subsequent years.

Economics of Scallop Fishery

The team discussed the need to provide updated information on economics of the scallop fishery in the SAFE report. The team understands that staff timing and prioritization precluded the ability to move forward with a revised community impacts discussion paper (previously appended to the SAFE report itself). Scott Miller volunteered to update the table and section on economics contained in the body of the SAFE report this year. To the extent that his time becomes available he will plan to work on updating the community impacts paper and further expanding the economic section of the SAFE report next year. Members of the industry present offered to assist in obtaining accurate pricing information for revising the paper. The team decided to hold off on attaching it to the SAFE report again until such a time as it is revised and the team can have further discussion at a subsequent plan team meeting.

Scallop Stock Assessment in Central Region

Ken Goldman (ADF&G) provided an overview of central region surveying effort and assessment plans. The PowerPoint presentation is attached. He noted that next year they will have comparative estimates from the video line transects and systematic dredge from the Kamishak scallop survey and potentially the preliminary comparisons for the Kayak Island scallop beds. Once each area (Kamishak and Kayak) have had a full line transect survey completed, the minimum number of transects necessary can be calculated for the camera sled

to adequately estimate biomass on the beds for future years to compare against the dredge estimates. He noted that despite the intention to move towards video-based survey methodology, there will always be a need for some sub-sampling with a dredge to obtain meat weight and age composition of samples. He noted that they are currently working on a standardized area sampling plan for Kayak Island scallop beds, but that the Kamishak beds were standardized last year prior to the first complete video survey at that location. Working with standardized areas is highly preferable to the previously utilized quasi-adaptive sampling technique.

In 2008, the camera sled will be used to survey the east bed for Kayak Island. Some preliminary camera sled data have shown that some dredge tracks are visible, therefore it would be possible to repeat dredge sampling. Video data indicated that flatfish and crab are attracted to dredge tracks and some scallops in the dredge path are not captured.

Jie Zheng questioned how long the comparative study will take. Ken commented that they need a minimum of 2 years of comparative data at each location. They have completed one year at Kamishak Bay, and will survey Kayak Island in 2008 and need additional years for each. The Kayak Island comparative survey is funded for this year but budget cuts may impact this comparative study as well.

Ken reviewed the sections to be updated in the draft SAFE report on stock status in Prince William Sound and Cook Inlet. For Prince William Sound, he noted that scallop density estimates are incorrectly listed, and 1996 in particular needs to be rechecked. He said that these re-estimates would be available for this year's SAFE. Additional information will also be added as to the management rationale for why GHR ceiling declined in 06/07 from previous year. He commented that shell height data showed some recruitment in the last two years. (Note: these corrections were made for the final SAFE.)

For Cook Inlet, Ken noted that while observers are not required, Rich Gustafson (ADF&G) has frequently gone out as an observer on vessels. In 2002, there was a large scallop die-off in Kamishak Bay. There was minimal fishing last year because the stock has not recovered from the biological die-off. The team discussed the probable causes including a bacteria and anecdotal evidence of a boring sponge in that area. There is as yet no definitive pathology from that die-off. The density of scallops is much lower now than previously. Additional information was requested by team members as to the rationale for not decreasing the GHR ceiling. Members noted it may have to do with the subsequent accidental discovery of a new south bed in the region at the same time as the large die-off in the other bed. The south bed was first surveyed in 2003.

Gregg noted that beds are well defined by survey (therefore definitely two beds not one contiguous). Scallops in this region seem not to settle in the same place, which is notably in contrast to nearby Shelikof Straights where scallops do settle in same area.

Jie requested clarification regarding the variability in survey biomass. The differences in station numbers may have a larger impact than the area surveyed. Ken noted that defining the standard area should help to standardize results. The adaptive survey methodology may have had an impact on previous results, and a standardized survey should help for comparative purposes.

Ageing techniques and documentation issues

The team reviewed the status of aging techniques and the intent to develop a standard manual for methodology of aging statewide. The team noted that documentation is lacking on appropriate methodology and this is a critical issue for scallops. Ken asked if additional investigation had been done into another method using isotopes, noting that the most difficult estimate is the first year estimate and secondly the second margin. A new technique (laser ablation) might be a possibility as well. Gregg noted that there is the possibility of additional isotope aging work from the Woods Hole staff. Ken noted his interest in the aging

techniques and offered to assist in developing scallop ageing protocols. There are a lot of data available for aging once an appropriate process is established.

Age-structured analysis

Ken and Jie will work together on moving forward with an age-structured analysis. Jie noted that the intent is not necessarily simply updating the previous model but possibly beginning with a new model, which is appropriate for the data available and model structure. Ken and Jie will work together on this starting next month. It seems possible that next year the team might be able to review a draft age-structured assessment. Note that the focus in recent years has been to verify the age data first and then move onto age-structured assessment.

Research Priorities

The team discussed the June 2007 research priorities for scallops and made the following revisions to the list (items reorganized and revised):

Scallops

1. ~~Expansion~~ **Continue** use of the recently developed remote video survey method for four objectives:
 - a. to estimate densities and abundance of scallops in major fishing areas as well as in nearby unfished areas for monitoring environmental effects independent of fishing,
 - b. to conduct field studies to compare the dredge survey used in Central Region to the video sled survey.
 - c. to estimate catchability coefficients for commercial and research dredges,
 - d. to evaluate habitat and distribution of non-scallop species that are present in scallop beds.
2. Develop/standardize scallop shell aging methodology, **explore growth and variability in growth around state**, and complete aging of backlogged observer-collected scallop shells. **After this methodology is standardized, an ~~Development of an~~ age-structured model for assessment of abundance may be developed ~~for to be applied to~~ each stock (e.g., Yakutat, Prince William Sound, Cook Inlet, and so forth).**
3. Estimate survival rates for discarded scallops and of scallops contacted by the dredge that are not captured.
4. Investigate causes of high natural mortality recently observed in the Cook Inlet fishery, and scallop meat quality issues (i.e. off-color meats, 'weak meats', 'weak shell syndrome') observed in the Yakutat area.
5. Identify larval sources of stocks (e.g. **Bering Sea self-seeding or advected elsewhere**) as well as advective pathways, to evaluate the potential effects of fishing on recruitment for major beds.

Mark Kandianis commented that #4 is a very important issue for the fishing industry with the competitive market implications with respect to marketing southeast scallops. The fishing industry is sensitive to the aspect that if scallops are left unharvested in that area then they may lose access or have this opened up in legislature due to the underharvesting of that region. Gregg noted that a Ph.D. chemist in Kodiak is available and could potentially begin looking at this issue specifically. Ken also noted concerns with the health of the scallops in the Kamishak bed as well.

The team discussed a related problem with the need for a correlation between scallop shell height measures and meat weight. Mark Kandianis questioned the relationship between area-wide thickness and length of scallop, and meat weight relationship. Gregg commented that observers are currently able to weigh scallops with highly accurate scales (i.e. to gram measurement). Team members commented that the new hire for Jeff's former (modified) position should be committed to going out as an observer on scallop vessels.

Gregg requested that industry should email comments to the department regarding improving observer protocols for scallop vessels, what data should be collected as well as what data appears to be unnecessary. He commented that there is still an issue with efficiency in that observers do not take laptops with them, thus they would need to be able to have backup of data logs and work on how to ensure data would not be lost. Mark Kandianis indicated that members of the industry would be willing to purchase laptops for observers if the department could format them appropriately.

New Business

Sunset provision in legislature: The team continues to express concern regarding the potential conflict with the limited license program in state waters expiring at the end of 2008 and reverting to open access while the federal waters portion of the stock would remain license limited. The team added additional information regarding the potential problems this could cause in the regulatory section of the SAFE report. The team noted that the Council sent an additional letter to the legislature encouraging the continuation of the program and encourages further action by the SSC and Council as necessary regarding this issue.

BOF proposals: The team discussed the issue of noting guideline harvest ranges (GHRs) and guideline harvest levels (GHLs). Wayne Donaldson requested input from the team on to what extent there should be a proposal to revise GHRs to GHLs. The team discussed this and felt that given that GHRs are in the FMP and form the basis (as the sum of the upper ranges) of the statewide overfishing definition, that they should remain. However the team felt that given the confusion inherent in using them in two different forms (as inseason quotas as well as regulatory ranges) it would be appropriate to use the term GHL whenever the inseason quota level is referenced to, and GHR when it is the regulatory range within which GHLs can be set. The team agreed to modify the SAFE language accordingly to clarify this. Wayne noted that making this distinction did not require BOF action. Gregg volunteered to send an email to each department requesting that staff define quotas accordingly.

Mark Kandianis provided an overview of an industry proposal to the BOF for an earlier opening in southeast by one month to accommodate weather and efficiency constraints. Gregg commented that the department position is likely to be neutral or opposed to that proposal due to potential overlap with the spawning period. Another industry proposal to the BOF may be put forward to look at opening some of the historical closed areas, e.g. Unimak, Chirikof.

VMS discussion: The team reviewed the new VMS requirements for the AI and GOA in accordance with EFH regulations in July 2006. Team members noted that these regulations were not well publicized to the fleet and encouraged NOAA Enforcement and ADF&G to improve communication between them in order to ensure that this type of information is disseminated to the fleet quickly

Meeting scheduling: The team scheduled the 2009 meeting for February 19-20, 2009. The team intends to hold this meeting in Juneau, with the actual meeting place TBD (likely either the federal building or the Ted Stevens Marine Research Institute).

The meeting adjourned at 12:00pm on February 22, 2008.

Scallop Plan Team Meeting
February 21-22, 2008
The Hotel Captain Cook
Anchorage, AK

Timing:

Thursday, February 21st: 10:30am – 5pm

Friday, February 22nd: 9am – 2pm

Draft topics for meeting discussion:

- Introduction and approval of agenda
- Membership: elect officers, discuss additional membership needs
- Discussion of current and future scallop survey techniques: Gregg Rosenkrantz presentation on camera sled survey work, discussion of direction for surveying in AK
- Scallop stock assessment in Central region(9am Friday time certain):
 - update on age-structured assessment: discussion of timing and plans for future
 - discussion of central region assessment techniques and management: survey changes (std), work w/westward region on camera sled survey, update on mgt activities
- Status of Statewide Scallop Stocks: review scallop stocks and fishery by region, compile SAFE Report
- Economics of scallop fishery
- Discussion of ageing techniques/documentation/issues
- Review and revise research priorities
- New business

PROGRAM & PROJECT HIGHLIGHTS:

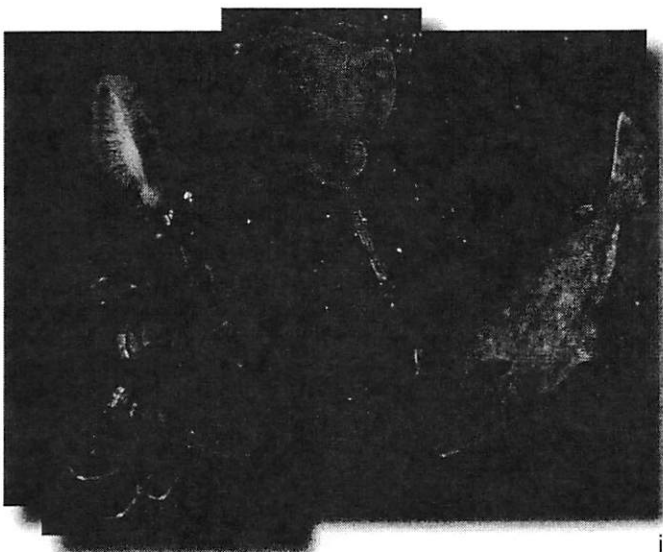
ADF&G UNDERWATER MACHINE VISION IMAGING PROJECT

by Gregg Rosenkranz, ADF&G statewide scallop biometrician, Kodiak

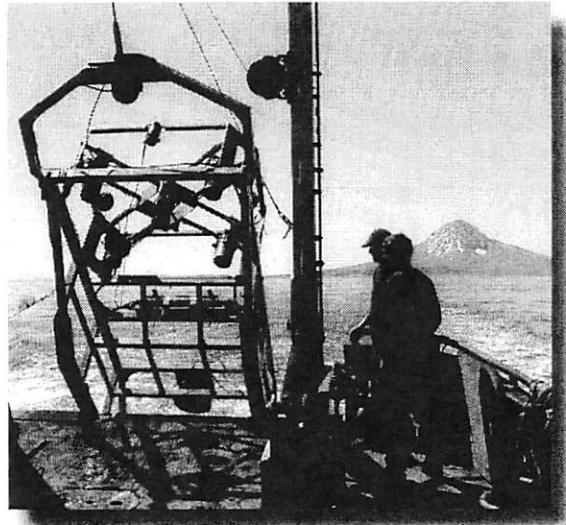
ADF&G began developing methodology to directly assess weathervane scallop (*Patinopecten caurinus*) abundance using a towed, bottom-tending camera sled in 2001. Our efforts took a huge leap forward in 2005 when, after consulting with scientists from the HabCam project in Wood's Hole, Massachusetts (<http://habcam.whoi.edu/>), we began assembling a new system featuring a machine vision camera, strobe lighting, and 1900 feet of armored fiber optic tow cable. The new system streams four 1360 X 1024 pixel digital images per second to the ADF&G research vessel Pandalus, where they are stored on computer hard drives. The camera is mounted in a water-tight housing on the sled pointing straight down to image a 1.0 X 0.75 meter area of the bottom. The strobe lighting is key, as the short duration of the light pulse eliminates motion artifacts, allowing us to acquire high-quality images while towing 3–5 knots.

Our camera sled system is basically a high-speed TCP/IP computer network that extends underwater using commercial off-the-shelf ethernet hardware. The camera connects directly to the network and image data are converted for transmission over the fiber optic link (the tow cable) by hardware that is typically found providing internet connectivity in office buildings or on college campuses. Advantages of the ethernet hardware compared to proprietary oceanographic systems include lower cost, wide availability, and excellent reliability. HabCam project leader Scott Gallager was instrumental in development of equipment specifications for ADF&G's system and pioneered the use of machine vision and network technology in fisheries research.

ADF&G's camera system spews data from the bottom to the Pandalus at a rate of 56 gigabytes (14,400 images) per hour, creating a georeferenced digital image archive of benthic habitat along a track covering tens of miles per day with resolution on the scale of millimeters. This rate is a bit mind-boggling given the 8 micron diameter (less than 1/10th the diameter of a human hair) of the single optical fiber that the data travels over. Images accumulate rapidly, and to date, review has been done manually at the Kodiak ADF&G office after returning from sea. However, HabCam scientists are working cooperatively with image processing specialists from Los Alamos National Laboratories to develop software that will allow computers to process the image data, counting benthic creatures such as scallops and crabs and classifying habitat. The HabCam project will be testing their software on Alaska data during the next year thanks to a grant through ADF&G's Nearshore Program.



Blakeslee of Aqualife Engineering in Kodiak provided consulting expertise and assembled many system components, Alaska Hydraulics in Kodiak built our winch, water-tight housings were turned in Kodiak by Nass Machine Shop, and the sled and Pandalus U-frame and the were built by Bay Welding in Homer.



Rich Gustafson and Sid Wolford of Commerical Fisheries in Homer prepare to deploy the sled near Augustine Volcano.

ADF&G marine fisheries staff are excited by the prospects for cutting-edge science using this new tool. For example, on a recent survey near Augustine Volcano in lower Cook Inlet, large numbers of juvenile scallops were observed on hard bottom habitat along the edge of a regularly fished scallop bed. For the first time, ADF&G will be able to track the numbers and spatial distribution of these animals as they grow and recruit into the harvestable population. Numerous Tanner crabs were also observed during the survey, including mature males that were barely visible due to being buried in the mud of Shelikof Strait. Assessment and life history studies of scallops and crabs, habitat mapping, and fishing effects studies all appear to be feasible using this new technology.

Many ADF&G employees and Alaska businesses contributed to the success of this project. Mark Hottmann, captain of the Pandalus, and Ric Shepard, programmer for Westward Region, went far beyond the call of duty to make the system work. Marnee Beverage in Homer and Penni Hees in Kodiak handled piles of purchasing paperwork. Mark

Program & Project Highlights continued, pg 4

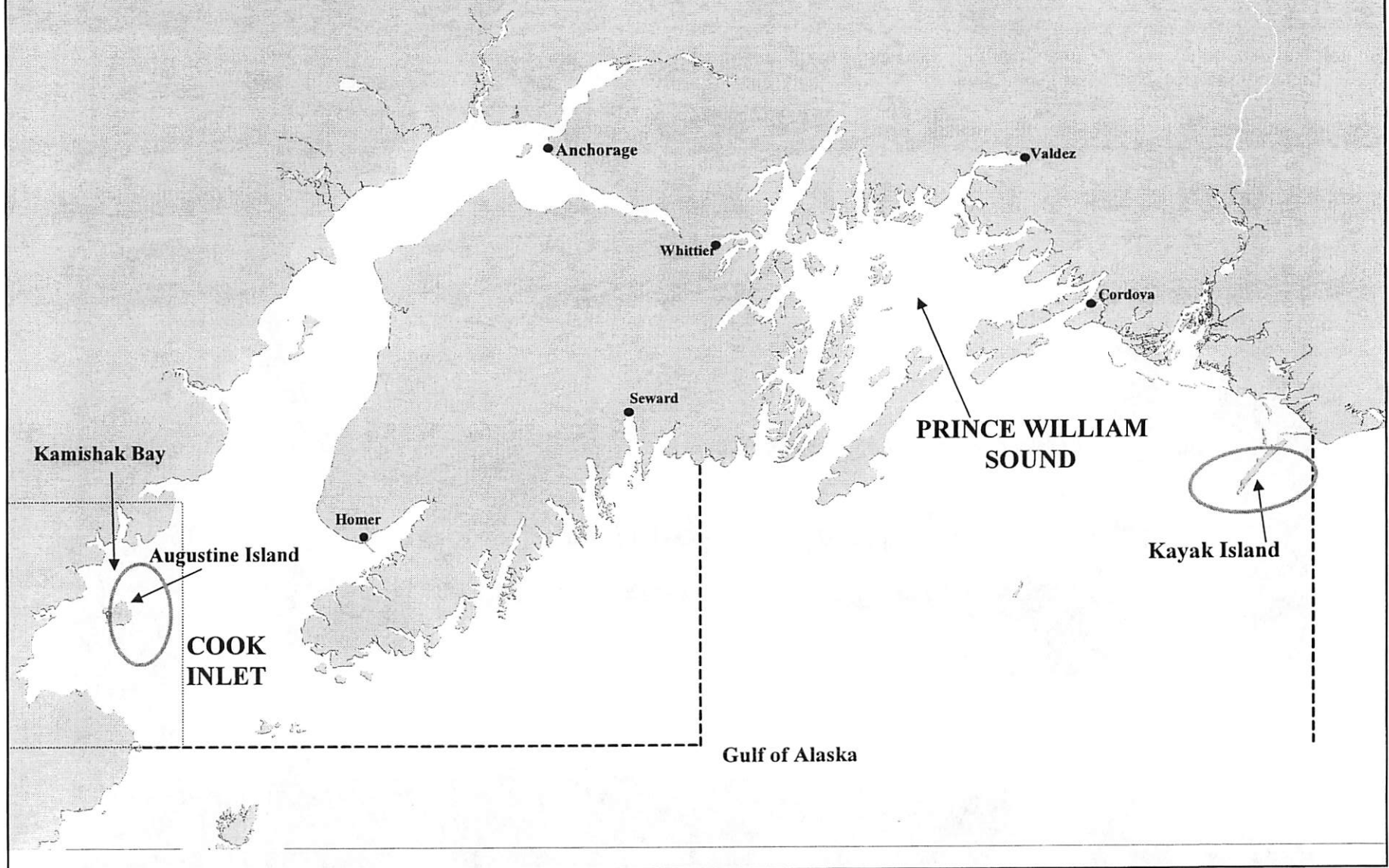
**Alaska Department of Fish and Game
Central Region Scallops**

An Overview Presentation to the Scallop Plan Team

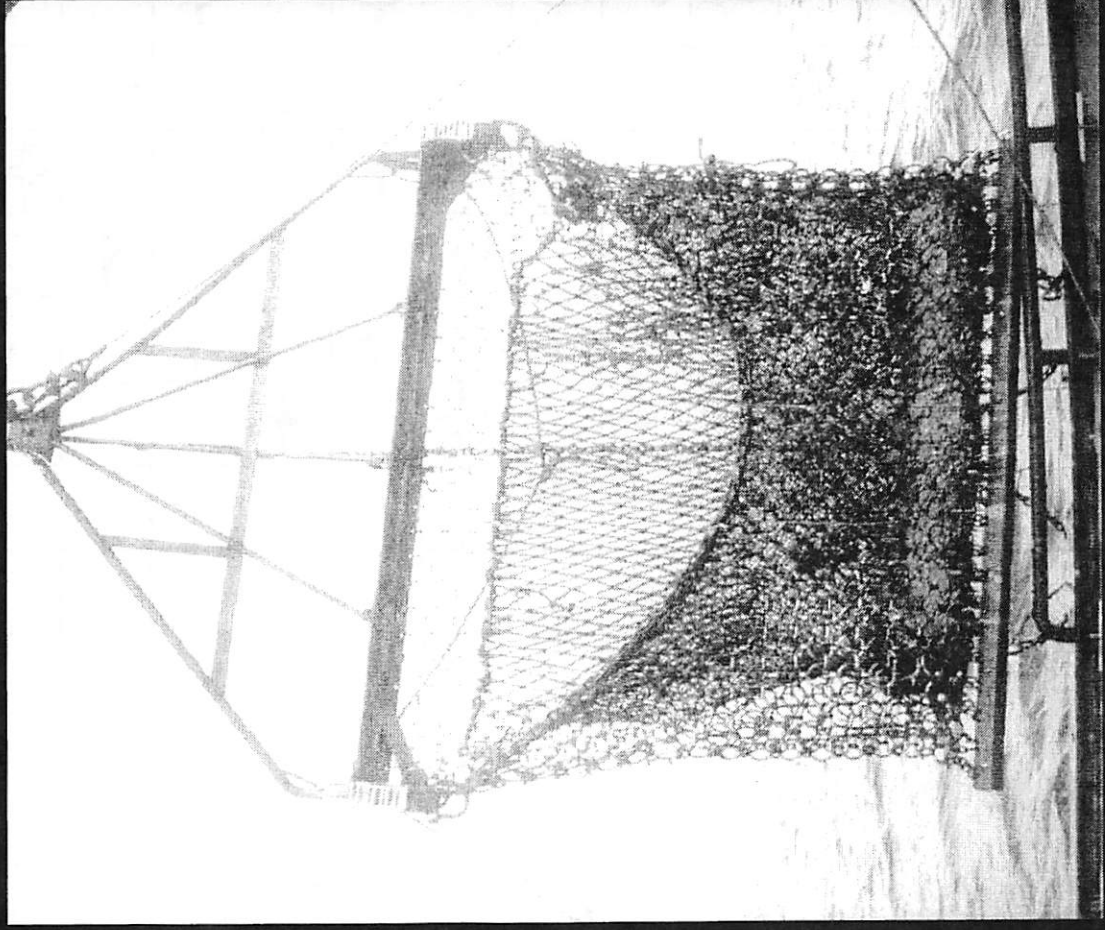
By:

**Kenneth J. Goldman, Ph.D.
ADF&G, Homer, Alaska**

ADF&G Central Region Scallop Surveys: Kamishak Bay and Kayak Island



ADF&G survey uses an 8' wide dredge with 4" inside diameter rings a 1.5" liner



Adaptive Systematic Sampling Design:

Really quasi-adaptive

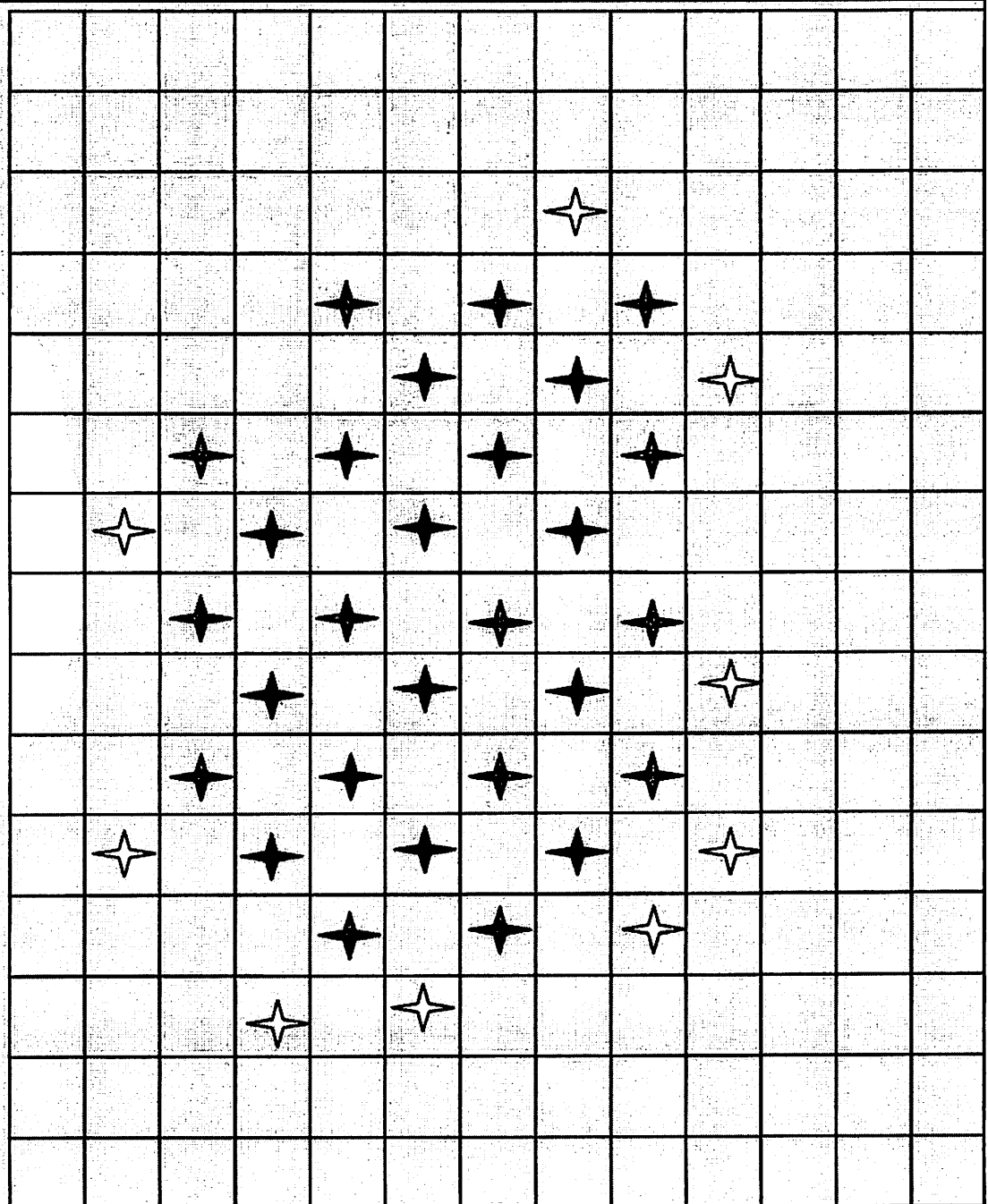
Grid set up like
checkerboard with
black & white squares.

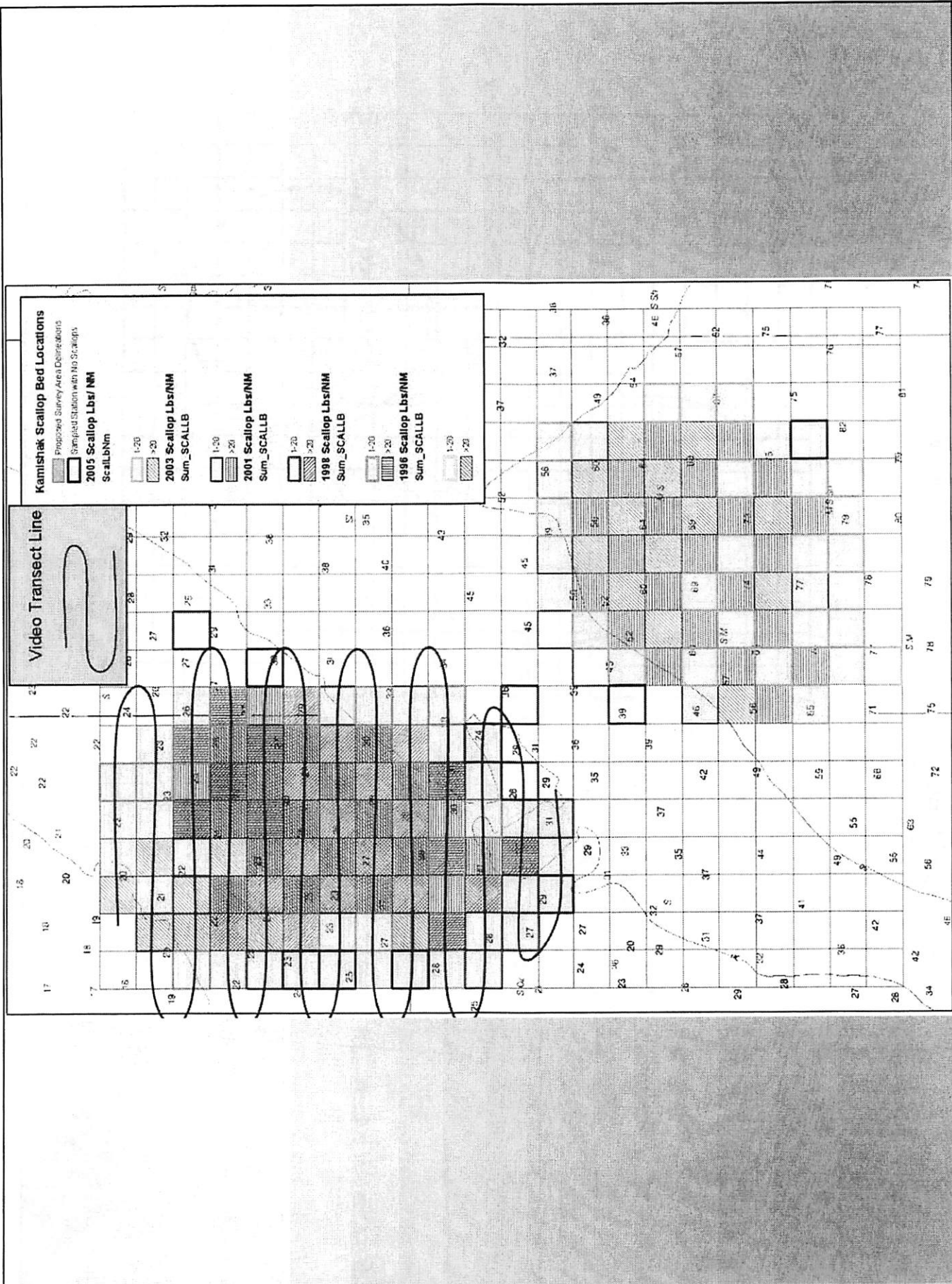
Random selection of
which colored squares
will be sampled on the
diagonal.

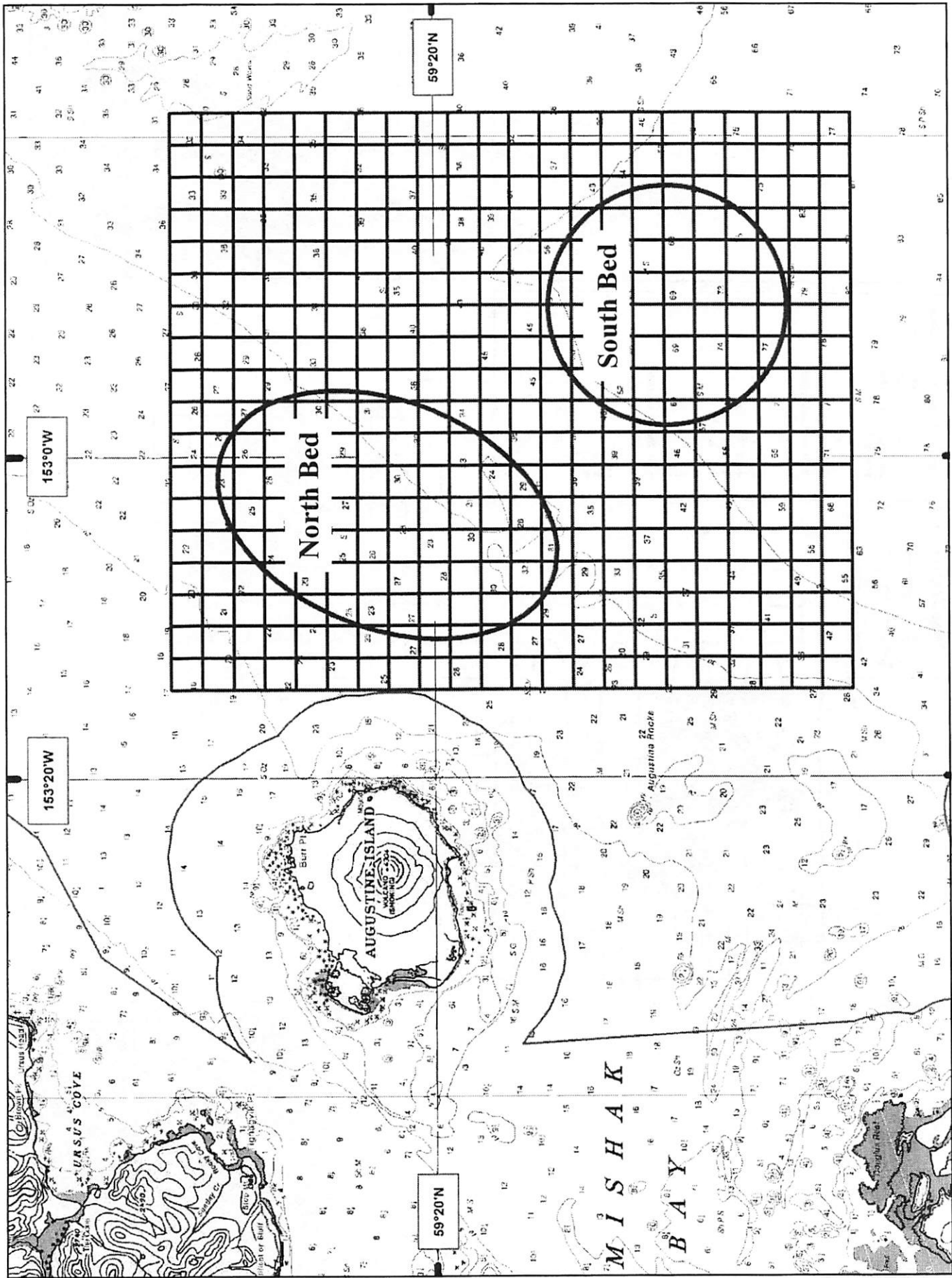
1st station is arbitrarily
chosen - Tows are 1 nm

Starting Point

Threshold for ledge
(20 lb per tow)

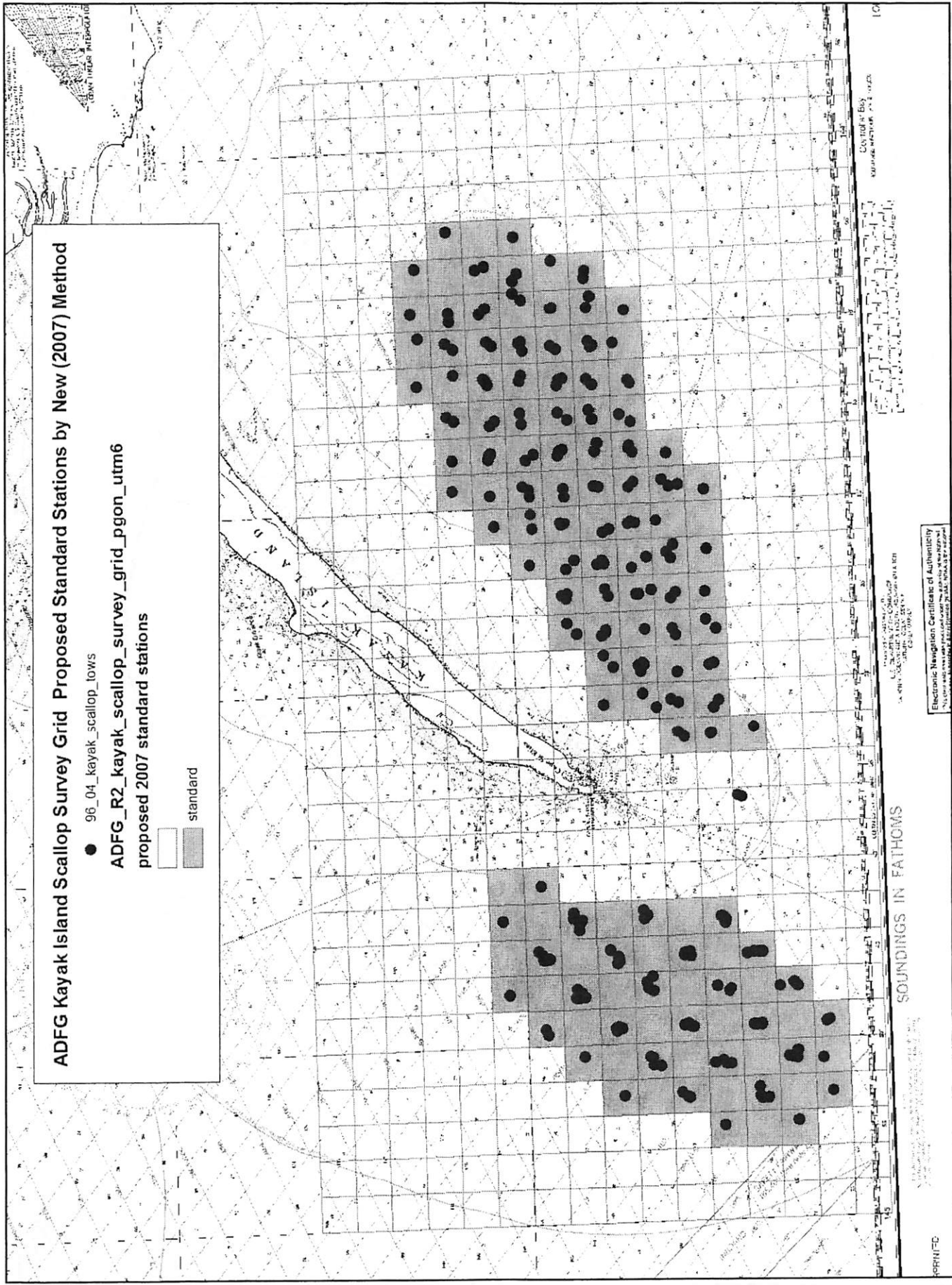






ADFG Kayak Island Scallop Survey Grid Proposed Standard Stations by New (2007) Method

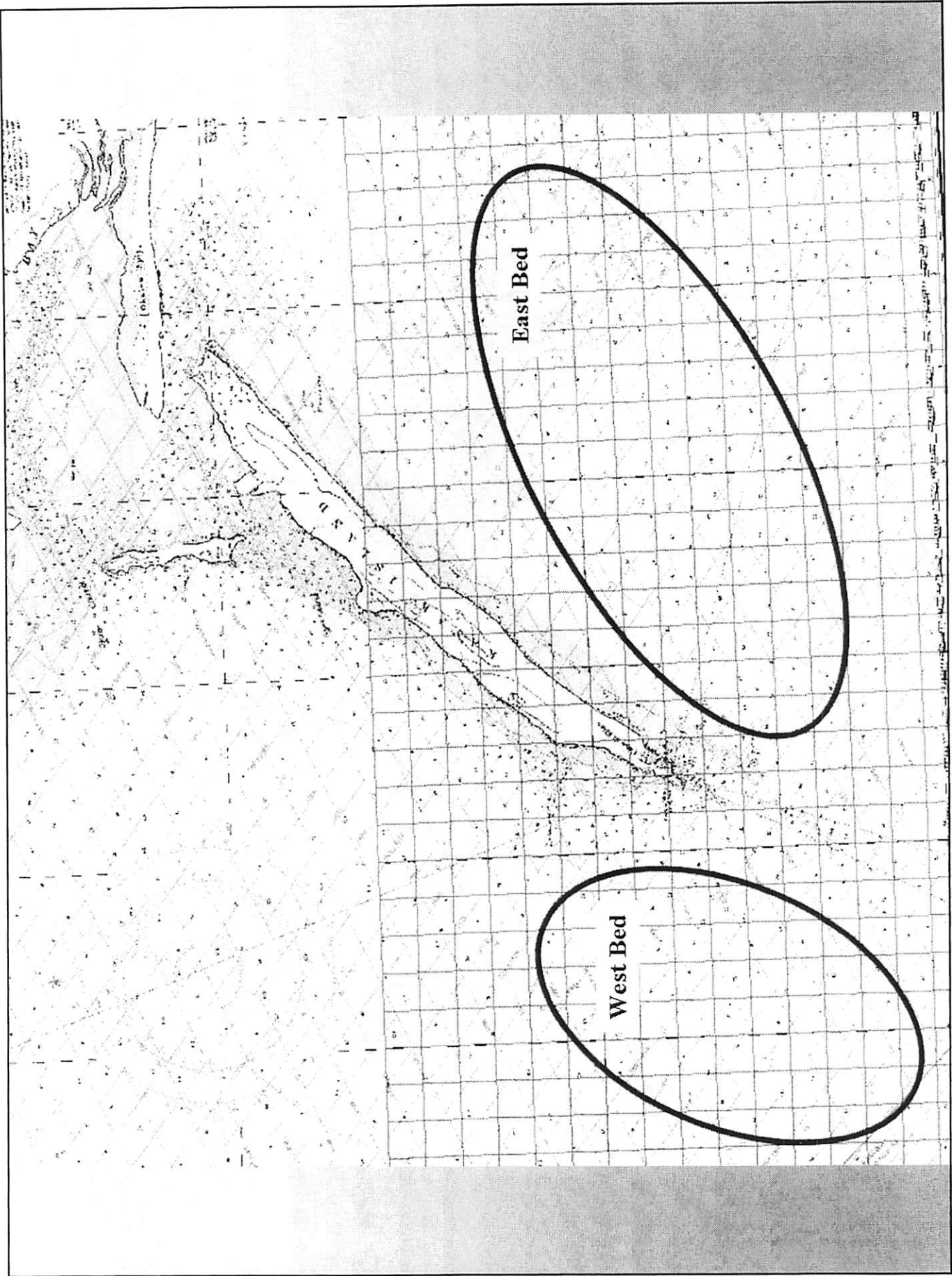
- 96_04_kayak_scallop_tows
- ADFG_R2_kayak_scallop_survey_grid_pgon_utm6
- proposed 2007 standard stations



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SOUNDINGS IN FATHOMS



East Bed

West Bed