


MEMORANDUM

TO: Council, SSC and AP Members  
FROM: Chris Oliver   
Acting Executive Director  
DATE: January 28, 2002  
SUBJECT: Differential Gear Impact Analysis

ESTIMATED TIME 8 HOURS (for all D-1 items)
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**ACTION REQUIRED**

Develop problem statement, context, and direction for analysis.

**BACKGROUND**

Last October, the Council approved a motion (in concept) to initiate analysis of differential gear impacts, but postponed specification of the details of such an analysis to the December Council meeting, then further to the February 2002 Council meeting. You indicated that adoption of the motion expressed a general intent, but that more specific direction needed to be provided to staff, including development of a Problem Statement, direction on the scope and context of such an analysis, and where it fits in prioritization relative to other Council projects.

Stosh  
Anderson

DRAFT A

12/10/01 DRAFT

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## Differential Gear Analysis for the GOA

### Need Statement:

Fishing gears used in the GOA groundfish fishery have different effects on benthic organisms and substrate, different results for bycatch, and different economic implications for harvesters, processors, markets and communities.

Evaluating the effects of the different gears will assist the NPFMC in making informed decisions. The differential gear analysis is expected to help the NPFMC understand how to provide harvest opportunity and at the same time minimize habitat impacts and achieve bycatch reduction in accordance with the Magnuson-Stevens Act, with sensitivity to economic implications.

The following issues are pertinent to future management of the GOA fishery and achieving objectives of the Magnuson-Stevens Act:

- Bycatch and bycatch mortality
- Habitat considerations
- Stock productivity considerations
- Excess harvesting capacity
- Product value and quality
- Economic stability in the fisheries and communities
- Rationalized management
- Broad participation by community-based fishermen

This analysis is to be completed independently of its application. Objective evaluation of differential gear effects on a broad scale should be designed to provide a clear view of the relative effects, and the opportunities for considering differential gear impacts in GOA groundfish management decisions. Information from this analysis has been sought in several actions in recent years but, due to constraints in staff time and the cloud of allocation that its use may generate, it has not been completed.

### Specific elements to be reviewed in the analysis:

#### Gear types:

- Fixed Gears: pot, longline
- Mobile Gears: Dredge, pelagic trawls, non-pelagic trawls, beam trawls, and jig.

#### Bycatch (including regulatory and economic discards)

- Volume, temporal distribution, species composition, and estimates for unobserved mortality
- Impact of lost gear

Stocks:

- Potential for localized depletion
- Harvest rates and potential for spatial and temporal compression of fishing effort
- Impact on spawning aggregations
- Impact on stocks at different levels of abundance (including declining species or species low abundance not necessarily associated with fishing pressure)

Habitat:

- Impact on benthic substrates and habitat complexity
- Ability of fished area to support species diversity
- Historical distribution of fishing effort by gear type
- Impact of lost gear
- Potential for changes in the distribution of fishing effort if fishery moves from current open access to a rationalized fishery (will areas currently not fished become desirable fishing grounds?)

Economics:

- Are there differences in ex-vessel price or product quality?
- Are there market-related, product distribution, or other considerations (such as market saturation or consumer preferences) that apply to gears?
- Seasonal value of product (milt, roe, etc.)
- Seasonal product entry into market
- Capacity to harvest the TAC
- What is the implication to processors on quantity per delivery
- Gallons of fuel per unit of harvest and other overhead considerations
- Crew size
- Net margins as a percent of gross and maximum gross if there is a quality price differential
- Cost of conversion from one gear to another
- Mitigation of gear conversion costs

Impacts on communities adjacent to the resource:

- Number of vessels participating
- Number of crew employed
- Number of processing workers employed
- Rent or profits that remain in community

Implications of gear conversion for:

- Rationalized fisheries
- Buy outs
- Options for transitioning from one gear to another

## Differential Gear Analysis for the GOA

This analysis is to be completed independently of any particular management measure and should be viewed as a tool or method available to the NPFMC to accomplish the objective of future management decisions that may be considered. The analysis has been sought in several actions in recent years but, due to constraints in staff time and the cloud of allocation that its use may generate, it has not been completed. Evaluation of potential differential gear effects on a broad scale without immediate implications as to its use should provide a means to help the Council decide how GOA fisheries should be managed.

Fishing gears used in the GOA (EGOA, CGOA, and WGOA) groundfish fishery have different effects on habitat, different results for bycatch rates and bycatch mortality rates, different abilities to catch target groundfish species and different economic implications for harvesters, processors, product forms, markets and communities.

By evaluating the effects of the gears used in the fishery and the economic contribution of fish caught and processed by the different gear types to fishing communities dependent on the Gulf groundfish fisheries, the NPFMC will make more informed decisions. The differential gear analysis will help the NPFMC understand how to provide harvest opportunity and at the same time minimize habitat degradation and achieve bycatch reduction in accordance with the Magnuson-Stevens Act, as well as balance the economic dependence of the fishing communities and their fishing fleets.

The following issues are pertinent to future management of the GOA fishery::

- Bycatch and bycatch mortality rates
- Habitat considerations
- Stock considerations
- Excess harvesting capacity
- Economic efficiency, benefits to consumers and producers
- Economic stability/dependence on groundfish in the fisheries and communities
- Relative management cost and ability to be managed rationally.
- Broad participation by community-based fishermen
- Integrity of data base (observer coverage levels)

Specific elements to be reviewed in the analysis:

Target Species:

- Pollock
- Pacific cod
- Flatfish
- Rockfish
- Sablefish
- Scallops


Gear types:

- Fixed Gears: pot, longline
- Mobile Gears: Dredge, pelagic trawls, non-pelagic otter trawls, and jig.
- Monitoring/enforcement: Differential observers coverage, VMS, etc.
- Safety
  
- Bycatch Bycatch rates (weight of bycatch divided by total catch), temporal distribution, species composition, and estimates for unobserved mortality
- Bycatch rate of invertebrates and other non target species
- Impact of lost gear
- Levels of observer coverage by gear type and associated confidence limits around catch and bycatch data with regards to reliability of data given

Stocks:

- Potential for localized depletion  
Rate of catch in terms of catch per week  
Rate of catch in terms of catch per square mile fished
- Harvest rates and potential for spatial and temporal compression of fishing effort
- Impact on spawning aggregations, impacts on non-spawning aggregations
- Impact on stocks in decline or low abundance (not necessarily associated with fishing pressure)

Habitat:

- Impact on benthic habitat substrates and gear specific effects on diversity
  
  - Historical distribution of fishing effort by gear type
  - Impact of lost gear, ghost fishing, etc.
  - Potential for changes in the distribution of fishing effort if fishery moves from current open access to a rationalized fishery (will areas currently not fished become desirable fishing grounds?)
  - Percentage of total fishing area already closed to gear type either seasonally or annually  
Analyze the effectiveness of present closed areas  
Percentage of areas already protected for benthic effects of fishing per gear type
  - Rational used in past allocation issues (eg. Amendment #14)
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#### Economics- relative efficiency of gear:

- Is there an ex-vessel price, product or quality difference?
- Is there market saturation for product derived by gear
- Seasonal value of product (milt, roe, etc.)
- Seasonal product entry into market
- Capacity to harvest the TAC
- What is the implication to processors of various levels of product quantity per delivery
- Economic efficiency and versatility of targets of harvest type
- Economic dependence of coastal communities based on fish landings by gear type
- Crew size and associated community benefits
- Net margins as a percent of gross
- Cost of gear conversion by vessel size, configuration and economic feasibility
- Annual expenditure per gear type in communities
- Ability to use gear in other fisheries with swing in fish abundance
- Jobs
- Support industries

#### Impacts on communities adjacent to the resource:

- Number of vessels participating
- Number of crew employed (in FTEs)
- Number of processing workers employed (in FTEs)
- Rent creation and rent capture

#### Rationalized fisheries

- Implications of gear conversion for:
- LLP endorsement issues
- Conservation, economic and safety benefits of the removal of the race for fish through a comprehensive Gulf rationalization program

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This analysis is to be completed independently of any particular management measure and should be viewed as a tool or method available to the NPFMC to accomplish the objective of future management decisions that may be considered. ~~The analysis has been sought in several actions in recent years but due to constraints in staff time and the cloud of allocation that its use may generate, it has not been completed.~~ Evaluation of potential differential gear effects on a broad scale without immediate implications as to its use should provide a means to help the Council decide how GOA fisheries should be managed.

Fishing gears used in the GOA (EGOA, CGOA, and WGOA) groundfish fishery have different effects on habitat, -different results for bycatch rates and bycatch mortality rates, different abilities to catch target groundfish species and different economic implications for harvesters, processors, product forms, markets and communities.

By evaluating the effects of the gears used in the fishery and the economic contribution of fish caught and processed by the different gear types to fishing communities dependent on the Gulf groundfish fisheries-, the NPFMC will make more informed decisions. The differential gear analysis will help the NPFMC understand how to provide harvest opportunity and at the same time minimize to the extent practicable, the adverse effects of fishing on essential fish habitat and habitat areas of particular concern ~~habitat degradation~~ and achieve bycatch reduction in accordance with the Magnuson-Stevens Act, as well as balance the economic dependence of the fishing communities and their fishing fleets.

The following issues are pertinent to future management of the GOA fishery:

- Bycatch and bycatch mortality rates
- Habitat considerations
- Stock considerations
- Excess harvesting capacity
- Economic efficiency, product value, and quality benefits to consumers and producers
- Economic stability/dependence on groundfish in the fisheries and communities
- ~~Relative management cost and ability to be managed rationally.~~ Rationalized Management
- Broad participation by community-based fishermen
- Integrity of data base (observer coverage levels)

Specific elements to be reviewed in the analysis:

Target Species:

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Gear types:

- Fixed Gears: pot, longline
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- Monitoring/enforcement: Differential observers coverage, VMS, etc.
- Safety

—Bycatch (Including regulatory, economic discards & unobserved mortality):

- Bycatch rates (weight of bycatch divided by total catch), volume, temporal distribution, species composition, and estimates for unobserved mortality
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- Impact of lost gear
- Levels of observer coverage by gear type and associated confidence limits around catch and bycatch data with regards to reliability of data given

Stocks:

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- Impact on spawning aggregations, impacts on non-spawning aggregations
- Impact on stocks in decline or low abundance (not necessarily associated with fishing pressure)

Habitat:

- Impact on benthic habitat substrates and ~~gear specific effects on diversity~~ (including habitat complexity and biodiversity)
- Historical distribution of fishing effort by gear type
- Impact of lost gear, ghost fishing, etc.



- Potential for changes in the distribution of fishing effort if fishery moves from current open access to a rationalized fishery (will areas currently not fished become desirable fishing grounds?)
- Percentage of total fishing area already closed to gear type either seasonally or annually  
Analyze the effectiveness of present closed areas
- Percentage of areas already protected for benthic effects of fishing per gear type
- ~~Rational used in past allocation issues (eg. Amendment #14)~~

~~Economics—relative efficiency of gear:~~

- Is there an ex-vessel price, product or quality difference?
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- Economic efficiency and versatility of targets of harvest type
- Economic dependence of coastal communities based on fish landings by gear type
- Crew size and associated community benefits
- Net margins as a percent of gross and maximum gross
- Cost of gear conversion by vessel size, configuration and economic feasibility
- Annual expenditure per gear type in communities
- Ability to use gear in other fisheries with swing in fish abundance
- Jobs
- Support industries
- Effects on processors by changing harvest shares by gear groups

Impacts on communities adjacent to the resource:

- Number of vessels participating
- Number of crew employed (in FTEs)
- Number of processing workers employed (in FTEs)
- Rent creation and rent capture

Rationalized fisheries

- Implications of gear conversion for LLP endorsement issues
- ~~Conservation, economic and safety benefits of the removal of the race for fish through a comprehensive Gulf rationalization program~~
- Options for transitioning from one gear to another