New England Fishery Management Council
EAFM Stakeholder Workshop #1
Gouldsboro, ME

Date:	October 2, 2005
Location:	Gouldsboro Volunteer Fire Station
Attendees:	(17) – Trish Kontur, Sullivan ME; Robin Alden, Stonington ME; Ted Hoskins, Blue Hill ME; Marianna Bradley, Bar Harbor ME, Erica Maltz, Bar Harbor ME; Heather Hudson, Hancock ME; Linda Hoskins, Blue Hill ME; Bill Zoellick, Prospect Harbor ME; Ted Ames, Stonington ME; C.W. Comer, Sorrento ME; Denny O'Brien, Winter Harbor ME; Barbara Arter; Stueben ME; Bill Stone, Prospect Harbor ME; Dana Rice, Gouldsboro ME; Dwight Carver, Beals Island ME; Lee Hudson, Hancock ME; James Houghton, Bar Harbor ME
Facilitators:	Chad Demarest (NEFMC), Kathy Mills (Cornell University)
Start time:	1:00 scheduled, 1:15 actual
End time:	3:30 scheduled, 4:30 actual
Questionnaires:	12 completed on-site, 1 received in mail

I. Purpose and format

The purpose of this workshop was to engage participants in a discussion, and to solicit a wide range of opinions, on topics critical to integrating ecosystem approaches into the Council's stewardship of marine resources and our fisheries.

After introductions, the workshop was divided into two groups: Group A began with 9 people and Group B with 8. Kathy led Group A through Objectives, Indicators and Tools first, while Chad led Group B through Ecosystem Boundaries and Collaborative Management. After approximately 1 hour and 45 minutes, the groups were rotated.

II. Break-out Session: Objectives, Indicators and Tools

Implementing an ecosystem-based approach to fisheries management requires drawing upon stakeholder input to define objectives for both local fisheries and ecosystems. Identifying indicators to track the status of these fisheries and ecosystems, and determining methods or tools for reaching these objectives, follow closely after. Participants were asked to consider changes in fisheries management that may result if ecosystem approaches are utilized, and to identify objectives related to the fishery management process and its outcomes for both fisheries and the ecosystem. From this information, we hoped to gain a sense of the issues and priorities stakeholders want to see addressed through an ecosystem approach, and the results they hope such an approach will achieve. Participants were also asked to identify indicators (including biological, ecological, social, and economic features) that can be used to track how well fisheries and the ecosystem are doing based on metrics relevant to our stakeholders. Finally, participants shared their perceptions of

the usefulness and acceptability of common current management tools and offered suggestions for other tools that could be adapted under an ecosystem approach.

A. Objectives

Objectives stated by participants in this session fell into several major categories: management and the management process, fisheries, stakeholders, ecological considerations, community considerations, conservation and stewardship, and science. [Note that these categories were developed after the discussion and were not used to guide the session.] There was strong support among participants for use of an area-based management structure and for local management of fisheries, including an awareness of and willingness to accept the responsibilities that would come along with such a management structure. There was also strong support for a more holistic approach to management, one that brings together all stakeholders, considers necessary trade-offs, moves beyond a focus on single species fisheries, and includes considerations of factors beyond the fishery and its resources.

Management structure and process

- Fishermen take responsibility for fishery management and outcomes
    - Local and fishery wide
    - Use science from government, industry, NGOs, independent researchers
- Area management with local input
- Need area management approach
    - Base areas on habitat (naturally-occurring features)
    - Recognize that some areas are good for certain species, not for others
- Utilize area management for sustainable populations
    - Control scale of fishing effort
- Create adaptive processes and structures
    - Don't have to know everything about all interactions
    - Start small
    - Monitor impacts

Fisheries

- More small operators (not striving for as much harvest as possible for as little economic input as possible)
- Diversity of fishing opportunities (reduce dependence on lobster)
- Greater access—more opportunities in federal waters
- Many more participants in fisheries
- Maintain communities
- Sustain fisheries
- Specialized fisheries may be counter to ecosystem/community goals
- Healthy resource and an understanding of what we're doing to it
- Stronger local fisheries achieved via local management by stakeholders
- Restore diversity in species and in nature of fisheries (consider multi-species fisheries) on local level

Stakeholders

- Full stakeholder approach
    - Governments have responsibility and provide inputs
    - All stakeholders are equal partners
- Include stakeholders as part of decision-making and science
    - Broad definition of stakeholders—not just permit holders
- Include and value holistic perspectives

Ecological considerations

- Manage based on ecosystem bounds, not political bounds
    - Recognize that humans are a factor in how decisions are made, so bounds should not just be bio-physical either (should account for human uses of system)
- Recognize that can't manage all species at B_{MSY} and shift from single species approach
    - Discussion that single species protections also may be necessary to attain healthy fish stocks
- Less focus on single species and overfishing
    - Account for fishery interactions (e.g., dredging affects spawning, harvesting kelp affects habitat)
- Be sure harvesting techniques do not affect other components of ecosystem
- Restore biodiversity
- Protect critical life stages
    - Develop management strategies for nursery grounds, spawning areas
- Consider upland / inland factors
- Look at historical (natural) biological composition and base management decisions on that (use historical conditions as a baseline to strive towards regaining via management actions)

Community considerations

- Sustainable communities
- Best local healthy food supply possible
- Consider economics
    - Distribution/allocation of benefits
    - Restore/maintain infrastructure (e.g., processors, boat builders, ice suppliers)
    - Reverse tendencies towards consolidation
    - Encourage vessel downsizing without economic losses

Conservation and stewardship

- Recognize relationship between conservation, stewardship, etc.
    - Develop harvesters as stewards
- Foster sense of stewardship
    - Be inclusive
    - Establish a clear sense of "What is success?", define desired outcomes/endpoints

    - Structure to develop and advance stewardship
- Create rewards for conservation
    - Intrinsic incentives for conservation/stewardship

Science

- Decisions based on facts
- More thorough science needed
    - Collaborative research with fishermen
    - All species/life stages/physical interactions
    - To divide fishing grounds regionally
    - More frequent re-assessment/sampling
    - Science should be asking the right questions

B. Indicators

Indicators put forward by the group include ecological and socio-economic features that were relevant for tracking the status fisheries and the ecosystem. [Note again that categories for the indicators were developed after the group discussion.] In suggesting potential indicators, participants expressed that there was a real need to move beyond MSY and its associated indicators, as these are not understandable to most stakeholders and are not relevant locally. Participants also recognized that the scale (e.g., spatial, temporal, taxonomic) at which indicators are measured is important, and that scale considerations will need to be explored further.

Ecological

- Intact population structure
- Fine scale structure—reproductive success and nursery areas
- Diversity of species, trophic levels, etc.
- Forage stock availability
- Water quality
- Spatial dynamics
    - Track movement of species due to ecosystem changes
    - Understand factors that define species ranges
    - Predator-prey interactions
- Competitive/keystone interactions balanced
    - Status of non-target food sources
    - Primary/secondary production
- Pollution/water quality/substrate quality (in fisheries context)
- Age of fish (age distribution)
    - Link to nursery habitats
    - Strength of juveniles
- Catch per unit effort (as both fishery and ecosystem indicator)
- Land inputs/effects

Socio-economic

- Fishermen's mortality index
- Fishermen's mentality index
    - Confidence

  - Frustration with complexity of management
  - Discouragement with restrictions on fishing or access
- Average age of fishermen—reflects confidence in future
- Distribution of catch/benefits

C. Tools

Participants recognized useful benefits of many currently-utilized management tools, including effort controls, technical tools, and protected areas. However, they felt all possible management options should be exhausted before implementing output controls, particularly quotas. Several participants also suggested a number of management tools that may be explored further in the future and that are compatible with local area-based management approaches.

Management tools	Useful for?	Acceptability?
Effort controls (DAS, trip limits, trap limits)	Avoiding output controls Avoiding resource ownership Avoiding monopoly	
Output controls (quotas, size limits)	Use EAFM before implementing output controls; perceptions that EAFM will be more useful	Concern about survival, ownership, and where rights go; consolidation
Technical tools (gear/vessel regulations)	Reduce by-catch Protect habitat Can distribute local effort to appropriate scales	
Protected areas (spawning/year-round closures)	Protect spawning areas May protect bottom habitat Maybe useful for corals	Depends on what protecting Should not be permanent Need more understanding
Area management (e.g., lobsters)	Have been applied in federal waters Protects resource	Ability to retain local control Willingness to accept responsibility
Commitment-centered entry programs	Ensures participants understand sustainability, customs Local ownership Rewards for effort	Apprentice plan Allows access but must have commitment to fishery Goes with area management approach
Stock enhancement (e.g., mussels)	Increasing stocks of certain species	

III. Break-out Session: Ecosystem Boundaries and Collaborative Management

One of the foundational concepts underlying Ecosystem Approaches to Management is that different geographically-defined areas have different biological production capacities, and that it may be advantageous to scale science and

management to these areas. The first step, obviously, is to define the areas. The group was asked the question "what makes a particular area unique." The answers in many cases may be predictable, such as "temperature," "salinity," "sediment," etc., but the question was designed to get the participants thinking in terms of spatially-differentiated geographical areas. It was especially interesting to note when novel indicators were explored, and to what degree participants felt that actions of humans (fishing and non-fishing) should be factored into the equation.

Input was then solicited on the appropriate geographic scale for fisheries management, the link between 'scientifically-defined ecosystems' and potential 'management areas,' and any governance issues that may arise as a result of spatially-defined ecosystems.

Terrestrial and, to some extent, international literature on ecosystems approaches to management frequently target community-based (or co-management, collaborative management) principals as a primary driver for ecosystems approaches to management. The group was asked to comment on the perceived advantages of collaborative management, such as an increased sense of stewardship and the potential to see gains from personal conservation-based behaviors, and how these benefits may dovetail with what might be considered a highly geographically mobile fishing fleet in New England. Does the capacity for local management exist? Is there a way to maintain geographic flexibility while achieving the perceived benefits of community-based management? Are communities necessarily geographic, or can they take on other units?

A. Ecosystem Boundaries

Responses by participants are categorized (below) into one of three themes: delineation, governance, and scale. These themes emerged from discussions during the workshop and they were not presented to participants in this structured format.

Boundary delineation indicators initially focused on oceanographic and physical features, with some mention of the role of humans in determining the location of local ecosystems. Participants preferred a heavy emphasis on areas important to the survivability of juvenile species. "Critical habitats," "spawning" and "nursery" were frequently referenced, and discussions about broader-ranging indicators seemed to return to these central points. The explicit need to capture anthropogenic influences was noted, but the participants generally favored accounting for the impacts of humans within defined ecosystems vice altering ecosystem boundaries in accordance with anthropogenic influences.

Existing political boundaries were highlighted as positive examples, particularly the seven lobster management zones which appear to have stemmed from a stakeholder-driven process and accommodated both human influences and biological/physical realities. A natural distinction between near-coastal and offshore environments was highlighted, both from a governance and ecological perspective. The importance of incorporating anthropogenic influences in fisheries science and management was also noted.

Participants had few common opinions regarding the appropriate scale for ecosystem boundaries, but the potentially important notion of adaptability was highlighted. At least two participants stated explicitly that, regardless of the size/character of local ecosystems, fisherman should be required to declare into a finite number of areas and restrict their activities to those areas. This idea generated no opposition.

Delineation

- Population structure of managed species
  - Migration
  - Spawning
  - Nursery
- Critical habitats
  - Ocean currents
  - Topography
- Community (Human)
- Spawning grounds
- Migration patterns/tendencies
- Benthic habitat
- Physical features
- Genetic differentiation amongst species
- Species composition
- Upwelling
- Currents
- Gyres
- Complexity
- Topography, substrate
- Temperature, salinity
- Shoreside population density
- Fishing practices
- Some emphasis should be placed on existing boundaries
  - Political
  - Community knowledge
- Political boundaries
- Existing groundfish Regulated Mesh Areas

Governance

- Adaptive boundaries
- Problems arise with MFCMA species "managed as a unit"
- Must emphasize conservation and stewardship
- Council may want to employ geographically specified management units, i.e.:
  - Council => GeoArea => Species and/or Fisheries
  - vice Council => Fishery =>Areas
- Areas defined on a few key species
- Account for impacts on adjacent areas and/or sub-areas

- Predator/prey relationships
- Need for developing interface between local community activities and science
- Coastal shelf as different unit
- Inshore/offshore
- Acct for ecological connections between inshore and offshore areas
- Connectivity
    - Energy flows
    - Landscape ecology concepts may be appropriate
- Science and communities--communities may be advantageous for:
    - Developing appropriate questions
    - Targeting research to community activities
    - Designing experiments/protocols (also, ground-truthing them)
    - Interpreting results
- Need for pilot program
    - Downeast Maine has capacity and unique areas
- Conservation and stewardship requires area-based restrictions
- Specific gear and technical restrictions, applicable to different areas
- Declare in to areas – eg. offshore, inshore
- Downeast '600 line'

Scale

- Regional w/ capacity for smaller management areas
- Small enough to give people a stake
- Adaptive
- Large enough to get broad community-level involvement
- Need to develop scientific capacity to accommodate smaller-scale areas management

B. Collaborative Management

Both groups of participants felt that the needs of downeast Maine were sufficiently different from what they perceived the needs of other coastal areas to be that these portions of Maine could benefit substantially from the application of 'local' objectives and tools. There was a strong positive feeling about the link between ecologically-delineated ecosystems and spatially-based management. According to the participants, downeast Maine appeared to have the capacity for high degree of local, community-based involvement in management.

- Emphasis on importance of community involvement in management decisions
- Include local governments as stakeholders
- Maine (downeast) has structures in place for community management
- Management works best from the waterfront up
    - Heavy emphasis on stakeholder involvement/interaction
- Use Maine lobster areas as example

IV. Summary statements

Both groups were reassembled in plenary and given an opportunity to provide any comments or feedback on any issues pertinent to ecosystem approaches to fisheries management. Here is what they felt was most important:

- Emphasize the importance of change
- There is a need for change
- Area management vs. fishery management
- Eastern ME is a good place to start a pilot project – both the resource and communities lend themselves to an ecosystem approach
- Give those who want change the resources, permissions and abilities to make changes happen
- Ecosystems approaches will lead to more successful management
- Need common definitions of important terms to focus further
- The clock is ticking