

The Ecology of Marine Wind Farms: Perspectives on Impact Mitigation, Siting, and Future Uses; 8th Annual Ronald C. Baird Sea Grant Science Symposium, held November 2 to 4, 2009, Newport, Rhode Island, USA.

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The morning session included a round robin discussion by participants of what they envision would further place-based activities relevant to ecology of wind farms. Relevant research recommendations are integrated into the second portion of the workshop that focused on critical research needs related to the specific issues of wind farm ecology. The workshop participants were asked to answer three questions:

- What three or four research directions would enhance our understanding of the placement of alternative energy production systems?
- Which of the research concepts have the most potential to engage other partners and support a program to address issues? What are some key elements of regional partnerships?
- What are major management issues and what management tools are needed to support decisions?

The workshop recognized that there are many difficult choices ahead. In thinking about moving forward, how can we retain our quality of life and coexist with the ecosystem that provides us with the goods and services in a way that minimizes harm? Several responses focused on ways to communicate information.

Communication, Outreach and Education

- Scientists do a good job of communicating with each other; need to ask non-scientists how to better communicate science to the public/decision makers
- Explore tools (web sites, newsletters, etc.) for effectiveness in reaching stakeholders
- Examine ways to bring key players together to cut through politics rather and engage public rather than what tools we should use
- Consider applying research from tobacco use to climate change and multiuse discussions and other examples of successful communication
- Neutral broker to create newsletter between fishermen, aquaculturists and energy industries

Short-Term Issues of Multiuse Effort

- Involve engineering (firms) early in the process to integrate the multiple purposes (e.g. wind farms, aquaculture, fishing, recreational boating, etc.)
 - Example, Deep Water Wind has completed analysis phase (engineering and business), adding aquaculture requires a new analysis
 - Involve oil and gas industry that are involved in design phase of structures
 - Improve maintenance needs (i.e., less reliance on divers) before structures are built

- To compete with high income-generating energy extraction/generation in the ocean, other sectors needs to form coalition (e.g., aquaculture, recreational boating, etc.) to indicate economic benefits since no one group can compete economically
- Job creation is a high priority and needs to be integrated at all levels; unions are more organized than mom and pop aquaculture facilities
- Insurance industry also a key factor for all users
- Cables are an issue not really addressed in most considerations
- Land-side needs for alternative energy generated in the ocean
- Semi-enclosed waters for aquaculture is an option to be considered
- Permitting process needs to be agreed upon early in the process; currently difficult to get a permit for one activity and no system for multiple activities
 - States are more proactive than federal agencies in terms of multiuse and potential permitting solutions
 - Federal agencies are reactive
 - RI Special Area Management Program will not be in place when permits are issued
 - Mediators (e.g. state agencies such as RI Coastal Resources Management Council) may serve in this role; but unclear who would do so at the federal level.
 - A larger governance body is proposed at the federal level, but what should it be?
- Engineering changes are easier than social changes
- Need to evaluate impact assessment, e.g. construction of turbines will create 800 jobs
- Fishing boats are getting larger, need to integrate with design considerations
- Each body of water is different and therefore each needs to be evaluated on case by case basis
- Conduct decision risk analysis early

Potential Players

- Players include wind farm, fisheries, aquaculture, and tourism industries among others; few of the wind farm participants remained to discuss issues at the workshop
- Investors play a huge role in multiuse approaches
- Oil and gas companies have a vested interest and experience in building structures

Long-term Goals and Considerations

- Message of climate change and ocean acidification impacts are compelling and not being addressed adequately
- The goal is to plan for ocean zoning/use
- Competing goals include developing offshore wind, turbines, and also developing better technology for aquaculture. Trying to accomplish both can be limiting
- Generally leases have a limited time line; renewable energy does not and this issue needs to be addressed so that it is dealt with correctly
- Need to address the question of what will one give up for the greater good, e.g., environmental lobbyists and society often disagree and this can lead to no action

- Need to consider consequences of management lag in terms of managing for a growing population and what is required to meet their needs and to provide ecosystem goods and services
- Consider complete exclusion around wind farms (turbines) or partial inclusion and what is good for the ecosystem
- Need information at all trophic levels e.g. detrital cycle, currents, pathways of production, etc.
- Recognize that not everything will be “right” from the beginning, be adaptable but recognize critical issues, e.g., managing nutrient levels
- Marine mammals, endangered species are topics of concern
- Need to think holistically
- Impacts to communities, e.g., fisheries
- Space is limited, need to consider a 3-dimensional environment

Research Needs

- Regulatory hurdles
- Financial considerations
- Social implications and perceptions
- Biological/ecological studies
- Physical oceanographic studies
- Scenarios that evaluate outcomes, e.g. fishing or not fishing with wind farms, etc.
- Monitoring before and after pilot projects are implemented
- Noise generation and impacts on fish and ecosystem
- Mitigation of construction process needs to be addressed
- Scalar issues are huge and require special attention
- Ecosystem goods and services are still poorly understood and accounted for with new projects
- Role of biofuels in meeting future energy needs

The general consensus was that more needs to be done in several areas. The lack of wind farm (and turbine) industry representatives during the workshop limited discussion of how the multi-use approach could be integrated with wind farms.