

Comments on the Proposed Rule for NE Multispecies Amendment 16
0648-AW72
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We, an ad hoc group of scientists advising fishermen and fishing communities in New England, are writing because we feel **the Proposed Rule for NE Multispecies Amendment 16** has serious scientific shortcomings. Specifically, we believe the Amendment fails to recognize the best available science, which implies the need for fishery management (fishing restraints/quotas) to be implemented at a local, fine scale as well as the single broad scale proposed by the Amendment. We understand the difficulty of making a transition from our current broad scale of management, however, we feel the scientific problems ignored by Amendment 16 and the resulting biological, economic and social consequences are too important to hide under the rug.

We support the general direction towards sectors and stricter controls; however, like any policy, the devil is in the details. Policies that appear good in principle can have unintended consequences that thoroughly defeat their primary purpose. In the case of amendment 16, there is a very large scientific problem that we believe will confound its intended economic and conservation effects. One of the fundamental principles of resource management is the need to match the spatial organization of management with the spatial structure of the ecology being managed. This matching is important because it allows us to directly connect the biological results of fishing activity to the ongoing evaluation of specific management practices and to improvements in the science. Stewardship is equally dependent on this same connection. But this feedback is largely lost when regulations are implemented at a single broad scale while ignoring the multiple scales relevant to the demographics of groundfish ecology.

In the last decade a series of studies in New England, Atlantic Canada and many other locations around the world have revealed localized stock structures that occur at a much finer scale than has been assumed for purposes of assessment and management. Here in New England, the Council has known for a long time and has tried to adapt management to multiple spawning areas for cod in the Gulf of Maine; just this last month, a report from the Massachusetts DMF revealed very localized cod spawning areas and concluded like so many other studies that many groundfish populations are loyal to particular spawning grounds in a way that is very much like salmon. [We have attached to this letter a partial, but still substantial, bibliography of scientific publications relevant to the finer scale aspects of fish populations.]

This new scientific evidence about local stocks is really evidence that ocean populations and ecosystems operate at multiple scales — from very local to very broad. We would contend that all the evidence we have about the ocean populations and all our theoretical knowledge of ecosystems is consistent with the organization of populations at multiple spatial and temporal scales. In practice, the important implication is that we have to

manage fisheries at multiple scales, not just a single large scale, if we hope to be able to learn, adapt and conserve the resource.

The most important negative aspect of overly broad, single scale management is that individual or group quotas simply shift the so-called 'race to fish' from a race in time to a race in space. Amendment 16 will give fishermen strong incentives to allocate their fishing activity to times and places that yield the best (private) economic result. With multiple stocks governed by a single quota, and management rules operating on a large scale, the biological results of these allocations will be very hard to predict. While at times, the results will probably be benign, there will be other times, depending on the local peculiarities of fish aggregations and the timing of fishing, when populations (spawning groups) may be driven below viable thresholds and lost, just as has happened in the past. Even if this occurs only occasionally, it is still a long-term and very serious form of overfishing.

Amendment 16 does nothing to prevent and may, in fact, encourage this kind of outcome. This is because the same strong incentives that will drive the spatial allocation of fishing effort also will push fishermen towards large scale technology appropriate for fishing over the broad extent of management boundaries. Large scale technology combined with efficient search capabilities is a sure fire recipe for the quick 'cropping' of local stocks in the early stages of recovery and may be one of the reasons why broad scale catch shares have had such a dismal biological record elsewhere. Two recent studies, one in *Science* (Costello, et al.) and one in the *Publications of the National Academy of Science* (Essington), both of which surveyed mostly broad scale fisheries, indicated that even with rigorous catch share policies there is little or no evidence of biological recovery. One need only look next door at the fate of Canada's Bay of Fundy cod stock, and the fishermen that depended on it, for evidence here. All of this will not only produce conservation problems but will lead, rather quickly, to fleet consolidation and the concentration of landings and markets in two or three ports. The communities and economic infrastructure necessary to support conservative harvesting technology appropriate for finer-scale ecology will have no economic base.

When fisheries science operates at a single broad scale it is misled by noisy feedback, which obscures all but the broadest long-term trends. Similarly, when fishermen operate at a broad scale, the feedback they receive about the results of their actions is noisy and incomplete. While, in principle, fishermen with catch shares should have strong stewardship incentives, the reality is that because management is not organized to provide appropriate feedback, they will be unable to act upon those incentives. For all practical purposes the benefits will not exist. Basically, fishermen will only be able to respond to the threat of penalties if they exceed their quota. Unfortunately, a single quota applied to multiple stocks of the same species will yield haphazard results that threaten to extirpate local stocks.

While the evidence for multiple scales is not completely certain, neither is the scientific evidence for managing at a single broad scale. The current practice is really more a scientific or management habit, one that dates back to the late 1940s (Halliday and Pinhorn). Nevertheless, we expect proponents of Amendment 16 would

argue that the uncertainty about finer scale stock structure is one reason why we have to continue managing at a single broad scale. In fact, this uncertainty is precisely why there is a need for a different approach. When confronted with scientific uncertainty the law requires a precautionary policy, i.e., one that minimizes the damage of being wrong. Multi-scale area management is far more precautionary than broad scale management because if the science behind it turns out to be wrong we will have lost little. Multi-scale management preserves ecological feedback about our actions and allows it to be aggregated to a broader scale; it does not stop us from learning; it does not foreclose a transition to larger scale technology and it does not artificially preserve markets and communities that might stand in the way of both economic efficiency and resource conservation. On the other hand, if the assumptions about broad, single scale management are false, as current developments in science certainly suggest, management will not acquire meaningful fine-scale feedback and, consequently, will seriously impair its scientific ability to adapt, learn and manage in a way that is consistent with the aspirations of the law. In short, from a precautionary perspective, Amendment 16 is an extraordinarily risky and legally vulnerable approach to fisheries management. This vulnerability will hang like a threatening cloud over regulatory processes and the economic decisions of the industry.

We understand the difficulty of moving to multi-scale management. Current data series and survey practices are adapted to broad scale management and will be difficult to decompose in a way that is appropriate to multi-scale management. Managing stocks that cross boundaries is difficult and a transition to multi-scale management will be costly for both the industry and management. Nevertheless, the cost of continuing to manage at a broad scale are very high — persistent stock depletion as has occurred elsewhere and the economic and social consequences that flow from depletion.

In summary, over the years management at a single broad scale has had disastrous biological, economic and social results in New England. Amendment 16 does nothing to address these problems. At the same time, it puts in place economic mechanisms in the form of sectors and transferable quotas that will accelerate the use of broad scale technology and fleet consolidation; this will set up conditions for the continued depletion of the groundfish resource, the on-going loss of jobs and economic opportunities and the continuing erosion of the once vibrant fishing communities of New England.

We emphasize that these pessimistic conclusions are not mere speculation, but flow directly from the new scientific evidence that has verified the presence of salmon-like spawning site fidelity in many, if not most, groundfish populations. If that evidence is correct, Amendment 16 violates a fundamental principle of fisheries management and all the dire consequences we list above are likely to follow. We also want to make it clear that the scientific concerns about scale that we raise here are not meant as an objection in principle to catch shares or sectors; nevertheless, when sectors and shares are implemented at a single broad scale the evidence is that their potential benefits will be squandered.

It may be too late at this stage for the Council and/or NMFS to take steps to bring Amendment 16 into conformance with what is rapidly becoming ‘best available science’, but it is crucial for the Council to immediately

signal its intention to quickly address the scale issue — that is, to move to multi-scale area management — in order to forestall the personal, business and scientific investments that will lock us into a perpetually depleted fishery. In order to give substance to those intentions we request the council (1) to ask the scientific and statistical committee to address (a) the issue of multi-scale ecology and management from both a biological and social perspective and (b) from the perspective of available data and survey methodology, and (2) that the Council begin the process of designing one or several pilot management programs for the purpose of learning about the practical issues of multi-scale management.

Sincerely,

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**A partial bibliography of scientific publications relevant to the
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