

12 August 2004



Mr. Rolland A. Schmitten,
Director, Office of Habitat Conservation,
NOAA National Marine Fisheries Service, F/HC,
1315 East-West Highway,
Silver Spring,
MD 20910, U.S.A.

Re: Petition to Protect Deep-Sea Coral and Sponge Habitat

Dear Mr. Schmitten,

By this letter, I am commenting on the petition for rulemaking to protect deep-sea coral and sponge habitat that was filed with the Department of Commerce by Oceana on March 24, 2004. I am a consultant fisheries scientist and, during the past five years, I have worked for a number of interests in the U.S. commercial fishing industry, including grouper fishermen in the Gulf of Mexico region, groundfish interests in New England, California and Alaska, but especially the sea-scallop sector in the northeast. However, while the comments which follow have been informed by my experience with those clients, I am commenting on my own behalf as a scientist who has been concerned about the conservation of cold-water corals and its implication for fisheries management for nearly 15 years¹. My remarks have not been specifically endorsed by any of my present or former clients, though I hope that my general message is supported by many of them.

My comments are particularly directed to the northeast region, since that is where most of my experience lies. They may, or may not, be less applicable elsewhere. I confine myself to technical issues. The petition deals at some length with points of law but those I must leave to better-qualified commentators.

¹ Reporting the concerns of some Nova Scotian fishermen, I was the first scientist to alert the Government of Canada to the threats confronting the corals in their Atlantic waters (cf. Kenchington & Halliday 1994) – a warning which, through the efforts of many others, has eventually led to a number of protective closures.

Dr. Trevor J. Kenchington, BSc (Wales), MSc, PhD (Dalhousie), Certified Fisheries Scientist

GADUS ASSOCIATES

R.R.#1, Musquodoboit Harbour, Nova Scotia, CANADA B0J 2L0
Tel: (902) 889-9250 Fax: (902) 889-9251 Home (902) 889-3555

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

Overview

Certain of the deep-living, cold-water corals and sponges are very long-lived (with maximum ages of centuries in some cases), are correspondingly slow-growing, and are also highly vulnerable to physical impacts, including the physical impacts of fishing gear. Because of their long lives, their slow growth and their high vulnerability, the impacts of even low intensities of bottom fishing or other human activities can overwhelm the ability of such species to recover from damage, potentially leading to severe declines in their local abundance. While it is doubtful whether such declines have significant effects on many (if any) managed fish species, loss of the corals and sponges would be tragic of itself, and would have serious implications for those benthic species which occur primarily in, on or near the structure-forming corals and sponges. I would therefore urge the Secretary of Commerce to take reasoned and reasonable steps to protect areas with rich growths of long-lived, highly-vulnerable corals and sponges from the full range of anthropogenic physical impacts (laying of pipelines and cables, anchoring of ships and buoys, dumping of assorted materials, as well as all forms of bottom fishing – commercial, recreational and research). Protective measures should be developed through a disciplined scientific approach and implemented through a legally-tenable process, led by the Regional Fishery Management Councils.

Despite fully supporting the protection of these long-lived, highly-vulnerable species, however, I cannot endorse the petition since it fails to adequately define the types of corals and sponges requiring special protection, misrepresents the nature of the threats to those organisms and thus seeks inappropriate remedies, and appears to call for actions under the Magnuson-Stevens Act that exceed the mandate provided by that legislation. Worse, by seeking far more extensive restrictions on one sector of the fishing industry than can possibly be justified by the special cases of the long-lived species, the petition risks delaying the protections, from a range of human activities, that are needed by those few exceptional corals and sponges.

Definitions

The petition speaks repeatedly of “deep-sea coral and sponge habitat”, though sometimes also of “deep-sea corals and sponges”, and “coral and sponge ecosystems” or “communities”. It specifically (its footnote #2) defines “deep-sea coral and sponge habitat” as linking the “deep-sea” descriptor to sponges as well as corals (thus perhaps excluding shallow-water sponges) and as involving areas with “high concentrations” of these organisms. However, it does not define “deep-sea”, “high concentration”, nor “coral”. Nor is the petition sufficiently clear about which issues relate to the corals and sponges as organisms and which to the habitat that they form for other species – a distinction of little import in the water, perhaps, but of great significance to the legal mandates available for their protection. The resulting lack of clarity leads the petitioners to request restrictions on fishing activity that have nothing to do with the protection of the long-lived, highly-vulnerable types of corals and sponges.

There are no taxa recognized by science as “deep-sea corals” (or “deep-sea sponges”). The term is merely a descriptor and one not much used by the professional community, to whom it seems to mean little more than that the corals in question are species other than

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

those found on tropical reefs in the photic zone². Before such a term is introduced to the management regime, it requires a much clearer definition. In particular, there needs to be clarification of whether “deep-sea” means occurring below some depth in the sea (and, if so, what depth) or whether it has its meaning in common English of occurring in a sea that is somewhere deep. This is especially important because sponges of various kinds, and to a lesser extent also corals, can be found at any depth in the ocean, even above the low-tide line³. Without a clear definition of “deep-sea”, therefore, the actions requested by the petitioners could extend to broad closures of traditional fishing grounds at continental-shelf depths, even though the case made for such closures relates only to areas occupied by particular long-lived species, most of which live at considerable depth⁴.

Meanwhile, the term “coral” is notorious among zoologists for meaning so many different things that it means almost nothing. Almost any benthic animal species which forms colonies with rigid skeletons can be termed a “coral”, as can some non-colonial types and some which are not rigid. Examples can be found within several phyla. The petitioners appear to intend a rather narrower meaning but they do not define it, leaving the potential for their proposed actions to result in closures of extensive areas occupied by quite other species than those which merit special protection.

Even if the meaning of “coral” were to be limited to members of the phylum Cnidaria other than the sea anemones, the jellyfish and perhaps the smaller hydrozoa (as the petitioners appear to intend), the petition would still be seriously misleading. It lays out the case for particular protection for “deep-sea corals” with reference to the long lives, slow growth and high vulnerability of such types as the stony coral *Lophelia pertusa* and the gorgonians *Primnoa* spp. and *Paragorgia* spp. For such species, the argument as presented is a reasonable one. However, the petition then proceeds to imply that the same protective measures are needed for every member of the ill-defined group of “deep-sea corals”, while they draw attention to, for example, “Twenty five species of hard and soft coral” along the edges of Georges Bank (their p. 7) and include (their Fig. 6) maps extracted from Theroux and Wigley (1998), which actually show the distribution of a combination of the soft corals (Alcyonacea), the gorgonian sea fans (Gorgonacea)⁵ and the sea pens (Pennatulacea). Of that complex, only certain members of the Gorgonacea show the key characteristics of long life, slow growth and high vulnerability to physical impacts. The petition likewise illustrates, in its Figure 7, an area supposedly meriting closure, yet that figure presents data on the alcyonacean soft corals, not the gorgonians to which the case for special protection applies.

² The *Oculina* banks off Florida are hardly “deep” by any standards save those of SCUBA divers, yet their corals have been discussed at scientific conferences dedicated to “deep-sea corals” – as the petitioners have included them in their petition (its p. 9).

³ There are very many species of inter-tidal and shallow sub-littoral sponges. Among the Cnidaria, the soft coral *Gersemia rubiformis*, for one example, is common on fishing grounds in the northwest Atlantic, its depth range extending down to 3600 metres, but also, in the Gulf of Maine, up into immediately-subtidal depths (Henry *et al.* 2003).

⁴ To complicate matters, some types of corals normally found at depths of hundreds of metres reach upwards to only a few tens of metres in parts of Alaska (as they also do in some places in Norway).

⁵ To add to the confusion, Theroux and Wigley (1998) chose to use the term “soft coral” for the combination of the Alcyonacea and the Gorgonacea. That is not conventional usage and, in the case of the Gorgoneans, is misleading. They are not soft.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

This is not a trivial distinction. As the petition makes clear, maximal ages for *Lophelia pertusa*, *Primnoa* spp., *Paragorgia* spp. and some other type of coral are measured in centuries. They will have correspondingly low rates of recovery from damage, while certain of them are also highly vulnerable to physical impacts – even a single pass of a trawl causing significant (though not total) loss (Krieger 2001). It is this long-life/slow-recovery and high vulnerability which justify the petitioners' concern. Those are not, however, characteristics shared by such species as *Gersemia* spp., which may be the most abundant soft corals on the northwest Atlantic fishing grounds as they are in the Bering Sea. The potential longevity and growth rate of *Gersemia* spp. remain unknown, save for one observation of rather rapid development of new colonies (Henry *et al.* 2003), but there is certainly no reason to suppose that their colonies can last decades, let alone centuries. Nor do they appear particularly vulnerable to the impacts of fishing gear. Henry *et al.* (2003), following a laboratory experiment, concluded that their simulated trawling disturbances appeared only to “minimally impact *G. rubiformis*” – that minimal impact comprising a temporary contraction of the colony, which lasted a number of hours, and the possibly-premature release of larvae. In a field experiment, trawling in a closed area on Grand Bank, Prena *et al.* (1999) detected an apparent decrease in biomass of *G. rubiformis*⁶ but the species proved substantially less vulnerable to trawling than were sand dollars or brittle stars. Similarly, following an experiment in Australia, Burridge *et al.* (2003) ranked the Nephtheid soft corals tenth of 16 taxa for vulnerability to trawling (in contrast to the gorgonian corals, which ranked 2nd of the 16). Soft corals were deemed less vulnerable than crustaceans, gastropod molluscs, sea urchins and brittle stars, among other groups.

Even for the scleractinian stony corals, matters are not as simple as the petition implies. Its page 7 notes that Cairns and Chapman (2001) listed 17 species of the Scleractinia living between Cape Hatteras and the Gulf of Maine. Those authors actually showed 15 such species as recorded between Hatteras and the Canadian line but, of the 15, eight are solitary corals – by no means invulnerable to trawling but (lying close to the seabed) likely very much less vulnerable than the erect colonial types. Only for one of the remaining seven, *Lophelia pertusa*, has extreme age and extreme vulnerability been demonstrated⁷.

In short, not all (and perhaps only a small minority) of the “deep-sea corals” that the petitioners cite in support of their requests actually have the characteristics of high longevity and vulnerability which justify those requests. We suggest that their petition should be read, not with regard to “deep-sea corals” in general, but specifically for the very long-lived, highly-vulnerable types. That sub-group needs a clear definition before their requests could be acted upon.

For its part, the term “sponge” can at least be understood as meaning a member of the phylum Porifera. However, that group includes organisms with very wide ranges of body morphology and life history. The large, erect, long-lived species which the petitioners seem concerned about (with their vulnerability to physical impacts and their potential for forming three-dimensional structure as habitat for managed fish species) represent only a very small selection of all of the sponges (even of all of the “deep-sea sponges”). Other species, such

⁶ Not a statistically significant decrease, after appropriate Bonferroni adjustment.

⁷ The petition (its p. 14) further claims that a recent ICES report concluded that the loss of structure-forming organisms caused by trawling may be permanent. In reality, that report (ICES 2002) addressed the impacts of fishing gear only on the reef-forming, stony coral *Lophelia pertusa* – an extreme case of vulnerability.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

as the encrusting sponges, likely have very low vulnerability to fishing gear, yet the petition does not draw any such distinction. It calls for the same restrictions to protect low-vulnerability, short-lived types as for the highly-vulnerable and moderately long-lived vase sponges. By doing so, it calls for vastly larger closures than its own argument can justify – closures which, if they were ever implemented, could only dilute protections for those species which might merit them.

The meaning of “high concentrations” of coral and sponge habitat is equally critical and equally unclear. Some of the long-lived, highly-vulnerable organisms form extensive, dense growths, such as the reefs of the stony coral *Lophelia pertusa*. Most, however, usually exist at very low densities. Even in the coral-rich Northeast Channel, between Georges and Browns banks, there is an average of only about five gorgonian colonies per 100 m², with a maximum, averaged across a single observed transect, of around 20 per 100 m² (Mortensen & Buhl-Mortensen 2004). If that is the typical distribution of such organisms, with most colonies standing rather far from any others, then protecting only those areas that have dense masses of corals may fail to maintain viable populations, while protecting everywhere that contains even one colony per hectare could involve closing huge swaths of ocean to little purpose. Somewhere in between, there is an appropriate density of these organisms which should trigger special measures for their protection. The petitioners, however, have neither defined that density nor suggested how it might be determined. They have not apparently considered whether it should be a universal constant, nation-wide, or should be tailored to the species and circumstances in each region.

This question of how concentrated a “concentration” must be is intimately linked to the spatial precision of management. In a perfect world, it would be possible to map each individual coral or sponge colony and to direct fishing gear and other anthropogenic activity away from the mapped points. In practical reality, areas where concentrations of colonies are suspected to occur will need to be closed, along with buffer zones around them, plus sufficient additional area to allow the closure boundaries to form reasonably-enforceable polygons. If the costs of such closures are to remain commensurate with their benefits (taking both costs and benefits in their widest senses), then the wider the buffer the higher the concentration of colonies in the center that will be needed to justify a closure. The petition displays no comprehension of such real-world management concerns, yet they must be addressed before its requests could be implemented.

In summary, while I could agree with the petitioners that the long-lived, highly-vulnerable deep-living corals and sponges merit special protection, by failing to define the variety of species that it targets, their petition paints with far too broad a brush. If its requests were granted as they stand, they would lead directly to massive closures of traditional fishing grounds that cannot be justified by any evidence presented in the petition, nor by any logic external to it.

Threats

The petition consistently treats the threat to the long-lived, vulnerable corals and sponges as coming from bottom-tending mobile gear (“dredges, beam trawls and otter trawls, and other mobile fishing gear that is dragged along the ocean floor”), which the petitioners confusingly, if conveniently, term “bottom trawling” (their p. 1). They also imply that the threat is imminent and urgent. Neither contention is realistic, neither is supported by any

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

evidence or logic presented in the petition, and in consequence the petitioners' proposed remedies are inappropriate.

The primary threat to these emergent and relatively-brittle organisms comes from physical impacts, specifically rates of physical impacts exceeding their very low rates of recovery⁸. Since natural physical impacts are beyond management control (and are anyway within the environmental parameters to which the corals and sponges are adapted), the issue is anthropogenic impacts. In the deep, offshore areas where the species of concern primarily occur, the only extensive anthropogenic physical impacts are caused by fishing gear but that should not blind management to other impacts, such as the laying of pipelines, fiber-optic cables or moorings of various kinds. Coral and sponge areas rich enough to merit fishery closures are likely to be sufficiently small to justify their avoidance by all such non-fishing activities.

Among the fishing-gear impacts, the petitioners are simply wrong to focus exclusively on mobile gears. Even the petition (its pp. 16-17) admits that longlines and gillnets can be harmful to corals while, although there seems to be no direct observational evidence, trap gear is unlikely to be harmless either. It could be argued that the mobile gears are more harmful per hour of fishing or per set of the gear (though a gillnet set on gorgonian corals might do as much damage). However, it is not clear that per-hour or per-set are the relevant standards. Per ton of fish harvested, per dollar earned or per person-day of employment generated, any of the bottom-tending gear types could prove the most harmful to the long-lived, highly-vulnerable corals and sponges. More to the point, the issue should not be one of which gear can be used in an area of dense coral with the least degree of damage but rather whether any gear type can be used there without imposing a rate of physical impacts which exceeds the recovery rate of the organisms. To date, it is not clear that even longlines can be so used. Deepwater longlining may only remove a few coral colonies per set but even removal or fatal damage to 1% of the colonies per year should be unacceptable when their life expectancy is measured in centuries.

Further, any area that has historically been of much interest to the mobile-gear fleets will have been denuded of its corals already. Locations selected under the petitioners' criteria as "known areas containing high concentrations of deep-sea coral and sponge habitat" will thus be outside the established trawling and dredging grounds, such that any immediate threat from fishing gear must (in most cases) involve the slow removals resulting from fixed-gear fishing. Management responses limited to restrictions on "bottom trawling", such as the petition proposes, will therefore miss the boat. What are needed are reasonable and appropriate measures to protect the long-lived, highly-vulnerable types of corals and sponges from all fishing impacts (as well as relevant non-fishing ones), not partisan attacks on selected sectors of the fishing industry.

Indeed, the petition borders on being a call for anti-trawling action masquerading as a call for pro-coral protections. Not only do the petitioners seek to close areas of "high concentrations of deep-sea coral and sponge habitat" only to "bottom trawling", they also call for all areas which have not been fished in the past three years with bottom-tending

⁸ Non-physical impacts, such as those which might result from chemical pollution, should not be ignored within the general topic of coral and sponge conservation but there is no particular reason to suppose that such impacts pose a special threat to those particular species which have long lives and high vulnerability to "trawling".

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

mobile gear to be indefinitely closed to such gear – without regard to whether or not there are any of the species of present concern in those areas. The petitioners do not advance any reasoning for such a closure, aside from the groundless claim (their pp. 27-28) that “Many undisturbed areas ... contain pristine coral and sponge habitat”. Besides the complete lack of evidence for such an improbable contention, if the types of habitats in question were as widespread as it implies, much of the special concern for their conservation would evaporate.

The other important (indeed, for management, critical) aspect of the threat is its urgency. The petitioners specifically declare (their p. 25) that “The threat to coral and sponge habitat is immediate and urgent”, justifying that contention only by the claim⁹ that a single pass of a bottom trawl “can create devastating damage to these sensitive and long-lived species”. To the extent that a few passes of mobile gear do greatly damage previously-rich concentrations of such organisms (though it takes many passes to eradicate them), any established trawling ground will already have been degraded. Because of the very slow growth rates of the corals, recovery of such an area will not happen within meaningful human time scales. Meanwhile, longline and trap gear seems to only impose a much lower rate of impact: important over the several-century life-cycle of a long-lived gorgonian colony but usually insignificant over the several years of even a protracted Council management action. Thus, neither on established trawling grounds nor in areas impacted by fixed-gear fisheries can fishing gear present any imminent risk to the long-lived, highly-vulnerable species. Hence, only expansions of intensive mobile-gear (and perhaps gillnet) fishing into areas containing “high concentrations of deep-sea coral and sponge habitat” poses any “immediate and urgent” threat. Such expansions may be occurring in specific U.S. fisheries but they are not a general feature, such as might justify the immediate national actions requested by the petitioners.

The petition seeks to create an impression of expanding trawling (its pp. 15-16) by citing the late-20th century fishing practices of some other nations, but they present no evidence that the U.S. bottom-tending mobile-gear fisheries are currently moving into deeper or rougher areas than those fished in recent decades. Experience in New England suggests that they are not. Rather, tight restrictions on fishing effort are causing a contraction onto the best of the known grounds and, for the groundfish industry specifically, onto inshore areas where time lost to steaming is minimized.

There are solid grounds for concern over expansion (whether in either area or intensity) of fishing of all kinds which might impact on long-lived, highly-vulnerable corals and sponges. Hence, the Councils could well be alerted to nip such expansion in the bud, while selecting management measures for existing fisheries which tend to discourage expansion, rather than those which tend to force fishing effort outwards and deeper. However, the lack of evidence for any widespread movement into deep water or onto rougher seabeds suggests that precipitate, national action, as requested by the petitioners, would be unnecessary and inappropriate. There may, perhaps, be particular cases which justify emergency action by the Secretary but, in general, there is time for the Councils to act as appropriate under the existing EFH regulations. The problem is a long-term one, driven by the very long life expectancies of the species in question. While that requires management to think about time scales quite outside the range that fishery decision-makers usually juggle with, it also allows sufficient thinking time for the Councils to develop workable solutions.

⁹ Itself not fully supported by the available field observations: see Krieger (2001).

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

Ecological Role

The petition also seeks to represent coral and sponge areas as critical to the functioning of the ocean ecosystem, describing the colonies as “ecologically-important” and stating that they “support entire ecosystems of fish and invertebrates, including commercially-managed species” (p. 1). Elsewhere, the petitioners claim that the corals and sponges “serve important ecological functions” (their p. 10), and that corals provide “functions ... crucial to individual species’ survival and long-term sustainability of fish populations and fisheries” (their p. 11), while they devote much of their pages 12 to 14 to expanding on the theme. Certain types of corals and sponges no doubt do provide superior habitat for some species – though, inevitably, that must be poor habitat for others (such being the way that marine ecosystems function). The petitioners are, however, at best misleading in their implication that the coral and sponge habitats are in some way essential for the continued productivity of resource species.

No species (save for a few of exceptional individual value) can become a viable fishery resource unless it is abundant. No species can achieve such abundance if it is dependent on a rare habitat type, such as that provided in most regions by the long-lived, vulnerable corals and sponges (cf. p. 17 of the petition). Small patches of corals may provide, say, ten times “better” habitat, per unit area, for some resource species than does the rest of its distributional range but, if those corals only occurred over 0.1% of that range, their complete loss would only reduce resource production by an insignificant 1%. It may be that “deep-sea coral and sponge habitats” are abundant enough in some regions, perhaps including the Aleutian Islands and the Gulf of Alaska, for coral-dependent fish species to have become viable fishery resources but, if so, the petitioners have not advanced any evidence to that effect¹⁰. Meanwhile, it is clear that none of the managed species in other regions, such as New England, are dependent on coral habitats even though they may be particularly favorable for a one or two (e.g. redfish, *Sebastes fasciatus*).

The long-lived, erect corals and sponges merit conservation concern for themselves and for the biotic communities which live in, on and around them, including a few species which occur nowhere else. They doubly merit such concern because they are vulnerable to anthropogenic impacts and, in most regions, are rare. But that very rarity makes their conservation, in general, only a minor issue for resource production and hence for fisheries. It is grossly misleading for the petitioners to claim (their p. 14) that “deep-sea coral and sponge communities” are “essential, indeed irreplaceable, components of their ecosystems, upon which thousands of fish and invertebrates depend for feeding, breeding, and protection.” Thousands of small, non-resource invertebrates may indeed be entirely dependent on the corals and sponges, while large resource populations certainly are dependent on ecosystems of which corals and sponges are components. But (perhaps with exceptions in some regions) it is simply false to imply that those resources depend for feeding, breeding and protection on corals and sponges.

¹⁰ If these habitats are indeed sufficiently common in some regions that they support resources dependent on them, it would remove a major plank in the petitioners’ argument. That is, abundant “deep-sea corals and sponges” could merit special protection over the long term, to prevent them from slowly declining into rarity, but there can be little justification for precipitate action by NOAA to protect a habitat type which is abundant and has remained so despite a few decades of intensive fishing in surrounding areas.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

Process

The petitioners seek extraordinary, rapid action to address what they regard as an “imminent peril” (their p. 22). The lack of any general, immediate threat to “deep-sea coral and sponge habitats” in U.S. waters has been noted above. Thus, while there may be specific examples which require rapid responses through Secretarial action, the task of addressing the coral and sponge issue (serious as it is) can be left to the Councils. That is well since, any coral-specific closures which may be required should be integrated with the remainder of fisheries management. For example, in any region where such coral-specific closures were extensive, other forms of closure might need to be reduced in size to keep the total closed area within practicable limits. Such integration of management measures requires a common decision-maker and hence Council authority over actions to protect corals and sponges. It also requires that measures to protect corals be considered alongside the whole spectrum of fisheries-management issues and particularly the protection of other habitat types, as an integral part of ongoing FMP development and amendment actions.

While the petition seeks to demand that “deep-sea coral and sponge habitats” be simply declared as EFH, any such designation should of course only follow from a NEPA-compliant analysis and only if that analysis shows that those habitats meet the criteria for EFH for one or more managed species. If analysis of the best scientific information available does not show that particular coral and sponge areas are utilized as EFH by any managed species then, regretfully, formal conservation measures may have to await Congressional action and a new mandate. The petitioners’ (and my own concern) for the fate of the long-lived corals and sponges cannot justify the Secretary or the Councils proceeding by extra-legal means.

Conclusion

The petition makes eight specific requests for immediate action by the Secretary. My comments on each are as below:

- 1. Identify, map, and list all known areas containing high concentrations of deep-sea coral and sponge habitat*

For too long, these corals and sponges have received little scientific attention. Within the constraints of available budgets and the many other urgent demands upon them, I would endorse the petitioners’ request and urge NOAA to increase its support for cataloging “deep-sea coral and sponge habitats”, beginning with mapping and listing such areas using existing data. I would, however, refer to my comments above about definitions and would suggest that the cataloguing should focus on the long-lived, highly-vulnerable species and should not be drawn into coloring in a map of the entire EEZ, simply because sponges of one type or another are almost universal in the sea.

- 2. Designate all known areas containing high concentrations of deep-sea coral and sponge habitat both as EFH and HAPC, and close HAPC to bottom trawling*

Rather than the ill-considered, blanket designation requested by the petitioners, I would suggest that the Councils should be tasked with preparing Environmental Impact Statements containing analyses of NEPA-compliant ranges of alternatives, including ones that would designate as EFH and HAPC for appropriate managed species areas of high concentrations

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

of long-lived, highly vulnerable corals and sponges. The alternatives could include a range of definitions of “high concentration”, while they could also include various options for closure of any resulting HAPCs to one or more gear types, with appropriate closure boundaries designed to accommodate necessary buffer zones, so as to provide effective protection to the corals and sponges without undue burdens on fisheries operating nearby. I would further suggest that these closure alternatives should include ones for all-bottom-gears closures, not simply mobile-gear closures.

In the event that any areas are closed to protect “deep-sea coral and sponge habitats”, I would also suggest that NOAA should use such authority as it has, including through the habitat consultation process, to prevent (or at least strongly discourage) non-fishing physical impacts with the seabed and benthic organisms within such closures.

Only where there is an identified, on-going or imminent expansion of a bottom-tending mobile-gear fishery into areas suspected of containing long-lived, highly-vulnerable corals and sponges could I endorse the petitioners’ call for immediate Secretarial action.

3. Identify all areas not fished within the past three years with bottom-tending mobile fishing gear, and close such areas to bottom trawling

I cannot see that this request bears any relationship to their case for protecting “deep-sea coral and sponge habitats”. Rather, it is an attempt to introduce a trawling closure in non-coral areas on the back of a petition to protect corals and sponges. Thus, I strongly suggest that this request be rejected.

It is misleading to claim (as the petition does: p. 28) that “Many undisturbed areas ... contain pristine coral and sponge habitat”, at least if an “undisturbed area” is defined as one not trawled for only three years. Recovery times for these species are so long that only areas never intensively trawled or dredged can be expected to contain any reasonable amount of long-lived, highly-vulnerable corals or sponges, let alone pristine stands of them. Meanwhile, much of the untrawled bottom is at continental-shelf depths, where the long-lived, highly-vulnerable species very rarely occur. Further, it is also misleading for the petition to claim (its p. 28) that the Secretary has information on where bottom trawling occurs. With the exception of a few fisheries that are required to carry either 100% observer coverage or VMS equipment, the available data on fishing locations has such low precision as to be useless for the suggested purpose. Finally, the petitioners are wrong to conclude that their requested closures “will cause little if any economic harm” (their p. 28). Along much of the coast, there are untrawled areas between the fishing grounds and either home ports or points of shelter, compelling frequent transits of the proposed closures by fishing vessels. The costs of monitoring, enforcing and complying with transit provisions would be considerable. Far more seriously, fisheries are highly dynamic systems, with the distribution of fishing effort continually changing in response to resource conditions, resource distributions, market prices, fuel prices and more. Areas that have not been fished for three years may have been before then and may be needed again in the future. Denying that future access through the proposed closures would have very high costs. Other areas have only not been fished recently because of regulatory closures, such as the large closed areas on Georges Bank (the imminent reopening of portions of which this petition seeks to subvert). The Councils should not be tied to the past through a requirement to fossilize the closures of the 2002–2004 period.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

- 4. Monitor bycatch to identify areas of deep-sea coral and sponge habitat that are currently being fished, establish appropriate limits or caps on bycatch of deep-sea coral and sponge habitat, and immediately close to bottom trawling areas where these limits of caps are reached until such time as the areas can be mapped, identified as EFH and HAPC, and permanently protected*

I would agree with the petitioners that steps should be taken to identify on-going and future cases of removal of long-lived, slow-growing species of corals and sponges, with swift action being justified to halt such damage where and when it occurs, followed by longer-term Council actions to confirm the emergency measures. Monitoring bycatches is one way to make such identification, though it is likely to need at-sea observers once fishermen become aware that having corals on deck when at the wharf may lead to your fishing ground being closed.

I do not, however, see the utility of caps on coral and sponge bycatches for most fisheries. Without 100% observer coverage, those could be neither monitored nor enforced. Nor is it clear what value they would have. Recovery rates in these species are so low that there is no meaningful “sustainable” harvest of them. Their long-term protection requires areas set aside from any physical impacts, not annual limits on the extent of those impacts.

- 5. Establish a program to identify new areas containing high concentrations of deep-sea coral and sponge habitat through bycatch monitoring, surveys, and other methods, designate these newly discovered areas as EFH and HAPC, and close them to bottom trawling*

I agree with the petitioners that such a program is needed, subject to the constraints of available budgets and the other demands on them. I would, however, suggest that when new areas are discovered, other than through the medium of the corals and sponges being taken in fishing gear, the potential for their designation as EFH, HAPC and/or closures to one or more gear types should be considered by the Councils on the basis of a NEPA-compliant analysis, not simply assumed as the petitioners demand.

- 6. Enhance monitoring infrastructure, including observer coverage, vessel monitoring systems, and electronic logbooks for vessels fishing in areas where they might encounter high concentrations of deep-sea coral and sponge habitat (including encountering HAPC)*

Increased and, particularly, more efficient and effective monitoring of all fisheries is surely needed, within the constraints of practical fishing operations and reasonable costs. However, in addition to coral and sponge concerns, the limited observer pool and restricted available funds for observer programs have to address other urgent demands, which extend not only to fisheries-management issues but also to monitoring of various endangered species. Further, while electronic logbooks have many virtues, I do not see their relevance to the petitioners’ current concern over corals and sponges. (It is most unlikely that fishermen would keep accurate log records of discarded benthos, particularly if those records were likely to be used to close fishing grounds.) Rather, this request seems to be another case of the petitioners pursuing one of their wider goals under the guise of a concern for coral conservation.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

Less formally, the petitioners (their p. 28) insist that “Observers on bottom trawling vessels must be increased to levels approaching 100%”. I would strongly urge NOAA to reject that demand. The information-gathering and enforcement advantages of 100% (or near-100%) observer coverage are obvious but they must be balanced against consideration of the costs, for any vessel smaller than a large factory trawler. To date, every Council analysis of the question has led to the conclusion that such high coverage is not justified.

7. Increase enforcement and penalties to prevent deliberate destruction of deep-sea coral and sponge habitat and illegal fishing in already closed areas

I would hope that all responsible commentators fully support increased efforts to enforce existing closures, along with other regulations, as well as meaningful penalties for flagrant disregard of all fisheries regulations, including area closures – provided that due credit is given by enforcement personnel and the courts to the realities of working at sea and the inadvertent violations which can result.

It is not clear how “deliberate” destruction of “deep-sea coral and sponge habitat” could be defined, nor whether the petitioners intend to include as “deliberate” any towing through such habitat without regard for the consequences for the corals and sponges (as distinct from towing with the intent of removing those organisms). However, there may well be justification for regulations (with severe penalties for their violation) that would forbid the former practice of deliberately clearing corals from an area by towing some form of non-fishing gear, such as a chain sweep without an attached net.

8. Fund and initiate research to identify, protect, and restore damaged deep-sea coral and sponge habitat

Within the usual budgetary constraints, I fully support the petitioners’ call for further research on these corals and sponges. However, the prospect of their restoration does not appear practical for the foreseeable future and I would recommend focusing limited resources on other aspects of the general issue.

Finally, the case for conservation measures to protect the very long-lived, highly-vulnerable coral species for their own sakes is so clear that a remarkably broad consensus in favor of appropriate action is coalescing. It is most unfortunate that the petitioners should have attempted to misappropriate this unifying issue as a means to advance Oceana’s divisive campaign against mobile-gear fishing, thus fracturing the consensus and risking delaying necessary coral conservation measures. If NOAA were now to grant the petition’s requests, as they were stated in the petition, not only would it further the division and build opposition to coral protection, but attention would be drawn towards precipitately closing traditional fishing grounds on the continental shelves and away from the deeper waters where the species of genuine concern occur. The resulting wave of extensive new closures would make it harder to subsequently exclude human activities from the few places where special protection is genuinely needed. Indeed, they could well drive fishing effort into the deeper, marginal areas where the long-lived corals are found.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

I therefore most strongly urge NOAA to deny the petitioners' requests, with the partial exceptions noted above, in the interests of conserving the long-lived, highly-vulnerable species.

Thank you for considering these comments.

Yours sincerely,

A handwritten signature in black ink that reads "Trevor Kenchington". The signature is written in a cursive style with a large, sweeping flourish at the end of the name.

Comments on Deep-Sea Coral & Sponge Habitat Petition

Trevor J. Kenchington Gadus Associates

Cited References

- Burridge, C.Y., C.R. Pitcher, T.J. Wassenberg, I.R. Poiner & B.J. Hill (2003) Measurement of the rate of depletion of benthic fauna by prawn (shrimp) otter trawls: an experiment in the Great Barrier Reef, Australia. *Fish.Res.* 60: 237-253.
- Cairns, S.D. & R.E. Chapman (2001) Biogeographic affinities of the North Atlantic deep-water Scleractinia. In: J.H.M. Willison, J. Hall, S.E. Gass, E.L.R. Kenchington, M. Butler & P. Doherty (eds.) *Proceedings of the First International Symposium on Deep-Sea Corals*, Ecology Action Centre & Nova Scotia Museum, Halifax: 30-57.
- Henry, L.-A., E.L.R. Kenchington & A. Silvaggio (2003) Effects of mechanical experimental disturbance on aspects of colony responses, reproduction, and regeneration in the cold-water octocoral *Gersemia rubiformis*. *Can.J.Zool.* 81: 1691-1701.
- International Council for the Exploration of the Sea (ICES) (2002) Report of the Study Group on Mapping the Occurrence of Cold Water Corals. *ICES CM* 2002/ACE:05.
- Kenchington, T.J. & R.G. Halliday (1994) A survey of fishing practices in the Scotia-Fundy Region groundfish longline fisheries. *Can.MS Rep.Fish.Aquat.Sci.* 2225: 642p.
- Krieger, K.J. (2001) Coral (*Primnoa*) impacted by fishing gear in the Gulf of Alaska. In: J.H.M. Willison, J. Hall, S.E. Gass, E.L.R. Kenchington, M. Butler & P. Doherty (eds.) *Proceedings of the First International Symposium on Deep-Sea Corals*, Ecology Action Centre & Nova Scotia Museum, Halifax: 106-116.
- Mortensen, P.B. & L. Buhl-Mortensen (2004) Distribution of deep-water gorgonian corals in relation to benthic habitat features in the Northeast Channel (Atlantic Canada). *Mar.Biol.* 144: 1223-1238.
- Prena, J., P. Schwingamer, T.W. Rowell, D.C. Gordon, K.D. Gilkenson, W.P. Vass & D.L. McKeown (1999) Experimental otter trawling on a sandy bottom ecosystem of the Grand Banks of Newfoundland: analysis of trawl bycatch and effect on epifauna. *Mar.Ecol.Prog.Ser.* 181: 107-124.
- Theroux, R.B. & R.L. Wigley (1998) Quantitative composition and distribution of the macrobenthic invertebrate fauna of the continental shelf ecosystems of the northeastern United States. *NOAA Tech.Rep. NMFS* 140: 240 p.