Getting real about ecosystem based management
FishNet USA – February 1, 2008

> *"Ecosystem Based Management looks at all the links among living and nonliving resources, rather than considering single issues in isolation . . . Instead of developing a management plan for one issue . . .. EBM focuses on the multiple activities occurring within specific areas that are defined by ecosystem, rather than political, boundaries."*
> — US Ocean Commission Report, 2004

The operative words here, which are echoed in most other definitions and discussions of Ecosystem Based Management, are *"all the links among living and nonliving resources."* Obviously this should be a huge departure from what we'll call traditional fisheries management, which has always been focused on the impacts of one activity – fishing – on one or a limited complex of several species of fish or shellfish.

It isn't just fishing

As should be obvious to just about anyone with a rudimentary knowledge of our oceans, there are a host of factors that can, and do, impact on our inshore and offshore ecosystems. From the conceptually simple to the extremely complicated, these factors directly or indirectly affect fish stocks. Conceptually simple, for example, is the Gulf of Mexico "Dead Zone," caused by the excess nutrients in the agricultural runoff from farms in the Mississippi drainage. Extremely complicated are the myriad effects of climate change, which can impact and have impacted far more than the latitudinal distribution of fish.

However, about the only thing that fisheries managers can control is fishing. Natural factors are for the most part beyond anyone's control and virtually all anthropogenic factors save fishing have historically been far beyond the administrative grasp of fisheries managers. Hence, the complete focus of fisheries management has been on fishing, in spite of the fact that in fishery after fishery there's no conclusive proof that fishing is what's "driving the system."

A relationship between increased biofuel production and more dead fish in the Gulf of Mexico?

In the past several years the price of corn, which is one of the "most leaky" commercial crops from a nutrient perspective, has doubled, the acres of corn under cultivation has increased proportionally, and the nutrient runoff into the Gulf of Mexico has done likewise. It seems doubtful that the demand for gasohol is taken into consideration during discussions of snapper/grouper management in the Gulf of Mexico, but couldn't a 7,000 square mile (and growing) annual anoxic zone in what was once a highly productive part of the Gulf be as relevant or even more so to those fisheries as is fishing? Yet year after year, and in spite of the cost in terms of dollars and human suffering, the snapper/grouper fishery is cut back in order to "restore" the stocks, which don't "recover" as the fishing cutbacks would – in terms of traditional fisheries management – dictate that they should.

http://www.cop.noaa.gov/stressors/extremeevents/hab/features/hypoxiafs_report1206.html

And we can't leave out climate

As far as climate change is concerned, we don't have to get anywhere near as complicated as the currently voguish "global warming crisis" would require. A tremendous amount of research has been devoted to the decadal regime shifts in the Pacific and Atlantic that are associated with the El Niño/La Niña cycles. These regime shifts have dramatic impacts on the affected ecosystems that have been tracked far back in history.

> *"The term ecosystem regime shift refers to low frequency, high amplitude variation in marine ecosystems involving changes in community composition, species abundances, and trophic structure. Changes occur in the abundance of both exploited and unexploited populations. Temporally coherent changes often occur in other spatially separated ecosystems. Ecosystem regime shifts are thought to be a response to shifts in the ocean and atmosphere climate and hence are relatively coherent with climate changes." (J.J. Polovina,* ***Climate variation, regime shifts, and implications for sustainable fisheries****, Bulletin of Marine Science 76[2]: 233–244, 2005).*

There are also climate-induced effects on fisheries that aren't on the grand scale of regime shifts but yet have profound effects on fisheries. As reported in a recent (January 18, 2008) **Science Daily**:

> *"In a new article Joan B. Company and colleagues at the Institut de Ciències del Mar (CSIC) in Spain describe a mechanism of interaction across ecosystems showing how a climate-driven phenomenon originated in shelf environments controls the biological processes of a deep-sea living resource. The progressive depletion of world fisheries is one of the key socio-economical issues of the forthcoming century. However, amid this worrying scenario, Company's study demonstrates how a climate-induced phenomenon occurring at a decadal time-scale, such as the formation of dense shelf waters and its subsequent downslope cascading can repeatedly reverse the general trend of overexploitation of a deep-sea living resource. Strong downslope currents associated with intense cascading events displace the population of the shrimp* ***Aristeus antennatus*** *from the fishing grounds, producing a temporary fishery collapse. However, nutritive particles brought by cascading waters to deep regions cause an enhancement of its recruitment process and an increase of its total landings during the following years. These new findings resolve the paradox of a long-overexploited fishery that has not collapsed after 70 years of intense deep-sea trawling. The results will have a high socio-economic impact, since this species is the most valuable deep-sea living resource in the Mediterranean Sea. Because the cascading of dense water from continental shelves is a global phenomenon whose effects on biological processes were not considered in the past, it is hypothesized that its influence on deep-sea ecosystems and fisheries worldwide should be more important than previously thought."*

There are myriad other natural and anthropogenic factors as well, some of which are without question having profound impacts on our fisheries while having little or no impact on how we manage our fish. Consider endocrine disruptors, urban and suburban runoff, accidentally introduced exotic species, wetland loss, intra-specific competition, and entrainment by generating stations and desalination plants, to name a few.

What are "Ecosystem Based Managers" actually managing?

Apparently what is meant by Ecosystem Based Management is even beyond the ken of its major proponents. The most recent edition of **"Marine Ecosystems and Management – International news and analysis on marine ecosystem-based management,"** states on the first page that such management scales up *"from looking at isolated drivers of change to considering all environmental and human impacts."* Yet on a later page, in a discussion of Australia's Great Barrier Reef Marine Park, which is described as *"one of the better working examples of* ***E****(cosystem)* ***B****(ased)* ***M****(anagement),"* we read that one of the directors of the park says *"while the Marine Park is largely confined to the 'wee' bits, the integrated management approach extends well outside those areas to include all the islands, all the tidal lands/tidal waters,* ***and even some activities in the catchments*** (emphasis added)*."*

That's quite a plummet: from "all environmental and human impacts" to "even some activities in the catchments" in the space of three pages. But you can bet they're doing a bang-up job on managing the fishing.

Unfortunately, but purposefully, as is clearly illustrated by the above statement of a director of what is supposedly one of the better applications of ecosystem based management, its supporters are shying far away from these other factors and are carrying on a campaign to continue the myopic focus on fishing effects. They are also broadening the scope of the fishing effects being considered to include the supposed impacts of fishing gear on habitat, the supposed impacts of harvesting prey species on predator species, the supposed impacts of harvesting predator species on ecosystems, in fact the supposed impacts of harvesting anything on everything, with virtually no recognition of any factors other than fishing. Doesn't sound like ecosystem based management, does it? Just more targeted anti-fishing campaigning, impacting the fishermen but not necessarily helping the fish.

Regardless of the anti-fishing claque's well-funded attempts to convince anyone who will listen that it's all about fishing, in the next several issues of FishNet we will be exploring some of these other factors, with the goal of putting the impacts of fishing into a realistic relative context. This isn't to imply that harvesting fish doesn't have any effects on the ecosystem. It would be nonsensical to do so. Anything that kills fish or anything that alters their habitat is going to have some effect. However, in many instances our singular focus on fishing is unquestionably counter-productive, counterproductive to the fishermen, counterproductive to the seafood consumers, and counter-productive to the fish.

Who's eating whom?

One of the most important factors when considering the health on any fish stock is the complex of predator/prey relationships that affect it. Or written in more understandable terms, what the fish being considered eat, and what eats them. While it's not immediately apparent, this can be a tremendously complex issue.

As an illustration, and because the fishery is in the news of late as the subject of yet another lawsuit by an "environmental" organization bankrolled with tens millions of dollars from the Pew Charitable Trusts, we'll look at the trophic relationships of the Atlantic herring in the northwest Atlantic in general and the Gulf of Maine/Georges Bank areas in particular. (The information here is from *Consumption impacts by marine mammals, fish, and seabirds on the Gulf of Maine–Georges Bank Atlantic herring [Clupea harengus] complex during the years 1977–2002* by W. J. Overholtz and J. S. Link in the ICES Journal of Marine Science, 2006, and *Considering Other Consumers: Fisheries, Predators, and Atlantic Herring in the Gulf of Maine* by Andrew J. Read and Carrie R. Brownstein in Ecology and Society, 2003.)

Gulf of Maine/Georges Bank Herring

The Atlantic herring is one of the most important, and numerous, fish in the north Atlantic. Supporting several important commercial fisheries – the herring fisheries provide most of the canned "sardines" and lobster (historically, New England's most valuable fishery) bait, as well as many other seafood products – and providing forage for many other species of fish, marine mammals and sea birds, the species has been the subject of a large amount of research, much of it focused on the role of herring as a food source. Overholtz and Link write *"Atlantic herring are a keystone prey species found in abundance in the Gulf of Maine–Georges Bank ecosystem, and they are common in the diets of many marine mammals, piscivorous fish, seabirds, and large pelagic fish of the region."*

In their discussion of what eats herring in the Gulf of Maine/Georges Bank area, they found that *"total consumption by demersal fish* (cod, hake, dogfish, etc.) *ranged from a few thousand tonnes in the early 1980s, peaked at >200,000 t during the period 1991–1994, then stabilized at an average of 135,000 t from 1998 onwards."* Additionally, "*herring consumption by all marine mammals increased steadily over the time horizon 1977–2002, peaking in 2002. Fin whales and humpback whales consumed the greatest quantities, and by 2002, these two species were eating 41,000 t and 34,000 t, respectively, of herring. Harbour porpoise, white-sided dolphin, harbour seals, and minke whales consumed large amounts of herring during the same period. Estimates of total consumption of herring by marine mammals increased from 19,000 t in 1977 to 153,000 t in 2002."* Con-

sumption by large pelagic fish (sharks, tuna, etc.) *"increased during the study period…. Total consumption by this predatory group ranged from 8,000 to 26,000 t during the period 1977–2002, a relatively small value compared with demersal fish and marine mammals."*

According to Read and Brownstein *"the estimated total annual consumption of Atlantic herring by all eight marine mammal species ranged from 93,802 to 189,898 metric tons (mt), using the low and high estimates of abundance respectively. Using the best estimates of population size, we estimated total annual consumption as 141,341 mt. It is important to note that most estimates of the abundance of marine mammals were generated prior to 1997 and that many of these populations are growing; hence, this estimate of predation is likely to be negatively biased."*

Since 1995 the Atlantic herring biomass in the Gulf of Maine/Georges Bank complex has ranged from 1.0 to 1.3 million metric tons. The annual catch (Canada and U.S.) has averaged about 10% of that.

Herring catch from the Gulf of Maine/Georges Bank complex (in thousands of metric tons, from NMFS http://www.nefsc.noaa.gov/sos/spsyn/pp/herring/)

Category	1986-95 Average	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
U.S. Recreational	-	-	-	-	-	-	-	-	-	-	-
Commercial											
United States	53	109	99	106	106	109	108	93	101	94	92
Canada	30	18	21	20	19	17	24	13	11	21	13
Other	-	-	-	-	-	-	-	-	-	-	-
Total Nominal Catch	83	127	120	126	125	126	132	106	112	115	105

The catch of herring, while it can be made to look ecologically devastating to the uninformed (particularly when it is done by the large, easily demonized, vessels necessitated by the nature of the modern fishery), isn't all that significant when compared to other sources of herring mortality. In fact, harvest levels of 20% to 40% of the total biomass are considered acceptable in other fisheries worldwide.

Spiny Dogfish predation

We've written previously on the impacts of spiny dogfish predation on other, far more valuable fish stocks off the Mid-Atlantic and Southern New England coast (see The Dogfish Follies at http://www.fishnet-usa.com/dogfishfollies.html). Since the late 1990s this voracious, yet protected, species of small shark has comprised about half of the total weight of fish caught in the various NMFS Northeast Regional Bottom Trawl Surveys. The spiny dogfish biomass has been steadily increasing, the landings of the more valuable species that they either prey upon or compete with have steadily decreased, and yet they are still protected (though a very limited commercial fishery is allowed in some states) and fishing effort on the other species has been and continues to be ratcheted downward.

Marine mammals and fish stocks

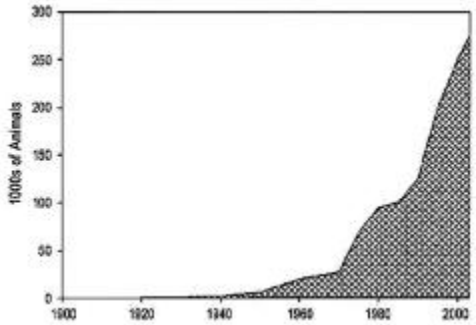
> *"Concerns about the consequences for fisheries of an increasing marine mammal population have already been expressed in southern Africa, for example, where in 1990 South African fur seals (Arctocephalus pusillus pusillus) were estimated to consume some two million tons of food a year. Considering that this amount just about equals the annual human catch of fish in the region and that the fur seal population was then expected to increase further, the reason for cocern and potential for conflict are obvious." (Marine Mammal Research: Conservation Beyond Crisis, by John Elliott Reynolds, Timothy J. Ragen, 2005)*

If you spend any time fishing, either recreationally or commercially, in our coastal waters, you know that there are more marine mammals in our oceans and estuaries today than there have been in recent memory. If you are a surf fisherman in New England you aren't surprised to hear of anglers loosing hooked fish to seals. If you are a gill netter in the Pacific Northwest, you are used to hauling back and having salmon after salmon in your nets missing various parts of their anatomy because of sea lion bites. We've all seen the pictures of marinas in California that have been "invaded," and literally taken over by those same sea lions. Florida anglers routinely move away from productive fishing spots after they are discovered by fish-grabbing porpoises. The grey whale, despite strenuous objections from activists, has responded so well to various protective measures that it has been taken off the endangered species list. We wouldn't be too far off if we wrote that many folks are suffering from an overabundance of heretofore-rare marine mammals.

Since the passage of the Marine Mammal Protection Act in 1972, the populations of cetaceans (whales, dolphins, etc.) and pinnipeds (seals, sea lions, etc.) have benefited from a complex of legislative, judicial and administrative actions that have paid off in increases in the populations of most of these charismatic critters. With the exception of a few species, stocks are increasing, and some are increasing dramatically. For example, in the 2006 assessment for the Gulf of Maine and the Bay of Fundy, the harbor porpoise population increased from 37,500 in 1991 to 89,700 in 1999, an increase of approximately 10% a year (http://www.nmfs.noaa.gov/pr/pdfs/sars/ao2006_poha-gme.pdf). As the following graph shows, California sea lions have increased even more dramatically since the passage of the MMPA.

(We must emphasize here that we aren't advocating any position here *vis* à *vis* provisions of the Marine Mammal Protection Act or the Endangered Species Act, but simply pointing out the very significant –perhaps in some instances overwhelming – impact of marine mammal predation on fisheries stocks under management, and of the management system's apparent inability or unwillingness to consider them, rather continuing to focus solely on fishing mortality.)

Population increase of California sea lions in U.S. and Mexican waters throughout the twentieth century



From: The "Invasion" of Sea Lions in Monterey Bay (Monterey Bay National Marine Sanctuary)
http://montereybay.noaa.gov/reports/2003/eco/mammals.html

Much of the diet of these marine mammals is fish and crustaceans. Many of their prey species are the same ones that fishermen target, and others are part of the food base of those targeted species. Focusing on the Northwest Atlantic, the dietary preferences of some of the common marine mammals are detailed below:

> **Humpback Whales – "***Humpback whales are frequently piscivorus when in New England waters, feeding on herring (Clupea harengus), sand lance (Ammodytes spp.), and other small fishes."* (NMFS 2006) *Humpback whales feed on krill, small shrimp-like crustaceans, and various kinds of small fish. Each whale eats up to 1 and 1/2 tons (1,361 kg) of food a day."* (American Cetacean Society)

Fin Whales – *"While much remains unknown, the magnitude of the ecological role of the fin whale is impressive. In this region, fin whales are probably the dominant large cetacean species during all seasons, having the largest standing stock, the largest food requirements, and therefore the largest impact on the ecosystem of any cetacean species."* (Kenney et al.1997; Hain et al. 1992). (NMFS 2006) *"Fin whales feed mainly on small shrimp-like creatures called krill or euphausiids and schooling fish."* (American Cetacean Society)

Sperm Whale – *"Its main source of food is medium-sized deep water squid, but it also feeds on species of fish, skate, octopus, and smaller squid. A sperm whale consumes about one ton (907 kg) of food each day."* (American Cetacean Society)

Risso's Dolphin *- Reflecting the offshore distribution of this species, primary prey appears to be squid, although they have also been known to feed on a number of fish species. While the size of their squid prey is unknown, squid beaks from species that grow up to 12 feet in length have been found in the stomachs of stranded Risso's dolphins."* (American Cetacean Society)

Pilot Whale – *"The pilot whale feeds primarily on squid, although it's known to eat octopus, cuttlefish, herring and other small fish when squid is unavailable."* (American Cetacean Society)

Common Dolphin – "*The common dolphin feeds on squid and small schooling fish."*

Harbor porpoise – *"Eats non-spiny fishes such as herring, cod, whiting, squid, pollock, and sardines. It seems to require large amounts of food, consuming approximately 10% of its body weight each day."* (American Cetacean Society)

Bottlenose dolphin – *"May consume 15-30 pounds (8-15 kg) of food each day. Bottlenose dolphins eat a wide variety of food, including primarily fishes, and sometimes squid, and crustaceans."* (American Cetacean Society)

Cuvier's beaked whale – *"Squid is its primary food, though it sometimes eats fish and, rarely, crustaceans.*" (American Cetacean Society)

Spotted Dolphin – *"Feed on many varieties of fish and squid found near the surface of the water."* (American Cetacean Society)

Minke Whales – *"Feed primarily on krill in the southern hemisphere and on small schooling fish (capelin, cod, herring, pollock) or krill in the northern hemisphere."* (American Cetacean Society)

Gray seals – *"Eat a wide variety of fish, squid, octopus, and crustaceans such as shrimp."* (Smithsonian National Zoological Park)

Hooded Seals – *"Their diet consists of mussels, starfish, squid, shrimp, herring, and cod."* (Canadian Museum of Nature)

Harp Seals – *"Harp seals feed on a wide variety of crustaceans and fishes, with more than 130 species reported in their diet. Capelin, arctic cod, and polar cod are preferred fishes. Atlantic cod, which is a mainstay of North Atlantic fisheries and has been severely reduced in numbers, makes up a small percentage of the diet."* (Ocean Biogeographic Information System - Spatial Ecological Analysis of Megavertebrate Populations)

Note: The above information and that in the Table below was taken from The American Cetecean Society's "Fact Packs" (http://www.acsonline.org/factpack/index.html), The National Marine Fisheries Service's U.S. Atlantic and

Gulf of Mexico Marine Mammal Stock Assessments -- 2006 2nd edition (http://www.nefsc.noaa.gov/nefsc/publications/tm/tm201/), The Smithsonian National Zoological Park's Ocean Living Facts (http://nationalzoo.si.edu/Animals/OceanLiving/Facts/), and The Canadian Museum of Nature (http://nature.ca/notebooks/english/harpseal.htm).

Taking the most recent Northwest Atlantic population estimates for each species from the NMFS 2006 marine mammal assessment, and the individual daily food consumption from various sources, we constructed the following chart:

Species	Population	Daily Food Intake/Individual (KG)	Annual food Intake/Individual (MT)	Total Annual Food Intake(MT)
Humpback whale	902	750.0	273,750	**246,923**
Fin whale	2,814	1000.0	365,000	**1,027,110**
Minke whale	2,998	300.0	109,500	**328,281**
Cuvier's beaked whale	3,513	90.0	32,850	**115,402**
Pantropical spotted dolphin	4,439	3.6	1,314	**5,833**
Sperm whale	4,804	500.0	182,500	**876,730**
Clymene dolphin	6,086	2.4	876	**5,331**
Risso's dolphin	20,479	7.0	2,555	**52,324**
Pilot whale	31,139	60.0	21,900	**681,944**
Atlantic spotted dolphin	50,978	8.4	3,066	**156,299**
Atlantic white-sided dolphin	51,640	6.6	2,409	**124,401**
Bottlenose dolphin	54,739	10.0	3,650	**199,797**
Harbor porpoise	89,700	3.6	1,314	**117,866**
Striped dolphin	94,462	4.8	1,752	**165,497**
Harbor seal	99,340	7.0	2,555	**253,814**
Common dolphin	120,743	4.2	1,533	**185,099**
Grey Seal	195,000	12.0	4,380	**854,100**
Hooded Seal	590,000	12.0	4,380	**2,584,200**
Harp Seal	5,900,000	5.4	1,971	**11,628,900**
Total MM Food Intake - NW Atlantic				**19,609,850**

In round numbers, the various marine mammal species in the northwest Atlantic consume 20,000,000 metric tons of food each year. And at an average 3% annual increase, a fairly conservative estimate, each year the amount of food they consume could increase by more than half a million metric tons.

The total commercial landings for all species (finfish and shellfish) from the U.S. East Coast and Atlantic Canada are 680,000 and 870,000 thousand metric tons respectively. (Canadian Division of Fisheries and Oceans - http://www.qc.dfo-mpo.gc.ca/peches/en/statistique/2001_2002/Documents/dfo_adm.pdf and National Marine Fisheries Service http://www.st.nmfs.noaa.gov/st1/commercial/index.html)

In perspective, in the Northwest Atlantic in 2006, marine mammals ate approximately 13 times as much fish and shellfish as commercial fishermen landed, and the annual increase in their total consumption might well have exceeded the U.S. East Coast landings in 2007.

And what are they eating? In large part, it's what the fishermen are catching. If a fisherman wants to catch it, there's an excellent chance that a whale or a dolphin or a seal is going to want to catch it as well. And if a commercial fisherman doesn't want to catch it, then the probability is that something that he or she wants to catch is going to be eating it.

Consider the most numerous species, harp seals. If cod make up only five percent of their diet (it is reported as "a small percentage"), they consume on the order of 500,000 metric tons of this valuable species every year. At the fishery's peak, cod landings for the north coast of Newfoundland, which is in the middle of the harp seals' range, didn't quite reach 800,000 tons. Capelin, one of the harp seals' preferred foods, is also a preferred food of cod. This single species could be eating as much cod as Newfoundland's commercial fishermen were once catching, and are

undoubtedly eating far more of the cod's preferred food, the cod have been declining as the harp seal population has been increasing, and yet overfishing is considered to be the reason for the decline.

In view of the massive levels of marine mammal predation, and remembering that much of it is either on the species that fishermen target or the food of those species, from any rational perspective it seems incredible that our fisheries management systems and our fisheries managers are still exclusively focused on fishing. And we haven't yet considered the other factors, human-induced and natural, that will be the subject of subsequent Fishnet's. But that's what we've done and that's what we're doing, and because of the slavish devotion to that view, the concept of Ecosystem Based Management has been distorted into just another iteration of the failed "blame it all on fishing" philosophy.

The Oil Slick

All the news that's fit to spin – In reporting on the "merger" of the Pew Charitable Trusts environmental program and the Pew-created and funded National Environmental Trust into the Pew Environment Group, Washington Post staff writer Juliet Eilperin emphasized that William O'Keefe, board member of the George C. Marshall Institute, who she quoted as being skeptical of the benefits of the merger, used to work for the American Petroleum Institute. But when she used the favorable words of the "prominent environmentalist" Kevin Knobloch, president of the Union of Concerned Scientists, she failed to report that the Union of Concerned Scientists has received over $2 million of Pew's largesse.

Ms. Eilperin has used her position at the Washington Post to act as an unabashed cheerleader for just about every Pew-supported initiative that's come along. According to SeaSpan, the "marine conservation" newsletter from the Pew Institute for Ocean Sciences at the University of Miami, Ms. Eilperin *"accompanied Dr. Ellen Pikitch, executive director of the Pew Institute for Ocean Science, on a scuba dive trip to Glover's Reef off the coast of Belize to research an upcoming book about sharks."* She has also attended *"a one-week intensive scientific and reporting workshop"* at the Punta Cana Resort and Club in the Dominican Republic, sponsored by Columbia University's Center for Environmental Research and Conservation and the NY Times. It should come as no surprise that Columbia has received over $20 million from Pew, with well over half of that going to the School of Journalism, or that the University of Miami, it's Institute of Ocean Science and Dr. Pikitch have received over $12 million from Pew. The Pew folks sure seem to be getting their money's worth from Ms. Eilperin.

And floating natural gas terminals in our future (and in our ocean) – Jad Mouawad reported in the NY Times (Wary of Protests, Exxon Plans Natural Gas Terminal in the Atlantic, Dec. 12, 2007) that EXXON Mobil *"would like to build a $1 billion floating terminal for liquefied natural gas about 20 miles off the coast of New Jersey, a move meant to deflect safety and environmental concerns about proximity to populated areas."* Later in the article he writes *"Exxon's project is the third offshore terminal proposed for the greater New York region in recent years. One proposal, to build a gas terminal in the middle of Long Island Sound, has aroused concern since its announcement in 2004 because of the impact it might have on fishing and boating; it is strongly opposed by shore communities and politicians. That opposition could intensify in coming months as the project, which is known as Broadwater and is a joint venture by Royal Dutch Shell and Trans Canade, is expected to receive notice about federal and state permits. Another company, the Atlantic Sea Island Group, plans to build a terminal for liquefied natural gas on an artificial island about 14 miles south of Long Island, a project called Safe Harbor Energy."*

We're not questioning the safety – from either a human or an environmental perspective – of these plants or the necessity to place them as far from "civilization" as possible, yet the positions of one of the most concerned and most impacted user groups, the local fishermen, have been largely marginalized by a successful "demonization" campaign funded almost totally with Big Energy (used to be Big Oil) dollars. It seems hard to imagine that there isn't a connection or two in the mix somewhere.