Offshine windpower extraction and the future of Maine's lobster fishery
Like all extractive industries, windpower extraction has consequences for nature.
By Ron Huber, executive director, Penobscot Bay Watch.

Those who have studied our state's lobster community – the wild creatures themselves - know that many if not most of the tasty crustaceans we haul from our traps are Canadian in origin, just as those in Massachusetts' Cape Cod Bay may have hatched in Maine waters.

The great currents and tides that power the Gulf of Maine have been exploited for thousands of years by the young of lobsters and myriad other sea animals, linking them with the food and habitat they need to grow to adulthood.

Of particular importance is the Eastern Maine Coastal Current. Rising in the Bay of Fundy, this marine river transports a wealth of lobster larvae down the length of Maine's coast to its terminus off Penobscot Bay, which is, unsurprisingly, New England's richest lobster ground.

Becoming then the Western Maine Coastal Current, and laden with Penobscot Bay's own lobster progeny, this great plume of water, mixed with the outpourings of the Penobscot River, wends its way south to Cape Cod Bay, replenishing the lobster fisheries of Southern Maine, New Hampshire and Massachusetts along the way

But, according to research coming from windfarming nations around the Atlantic, this annual reseeding of New England's lobster grounds could be severely reduced if plans move ahead to build deepwater ocean windfarms directly within the Eastern Maine Coastal Current.

How? By interfering with the amazing natural process that scientists call “Ekman Transport”, in which unobstructed seawinds striking the sea surface impart their energy deep into the water column, giving the passing currents additional momentum, keeping those lobster larvae on the move.

Researchers studying Europes ocean windmills over the past deacde have found that each offshore ocean windfarm's constant removal of millions of watts of kinetic wind energy creates its own local low energy “dead zone” of drastically slowed winds, where Ekman Transport is likewise negligible to non existent.

This has consequences. Nature abhors a vacuum. Those chronic low pressure zones trigger immense upwellings of seafloor waters, which rise like vast chimneys of cold dense water beneath the operating ocean windmills to fill the energy void. Sea currents transitting offshore windfarms are decelerated and even deflected by these slow but

miles-broad vertical water bodies also called induced stratifications, rising beneath the ocean wind turbines.

If, as currently proposed, ocean windfarm builders set up their operations within the Eastern Maine Coastal Current, it is very likely that many millions of lobster larvae will never reach Penobscot Bay and points south along the coast.

Instead, during their journey down from Canadian waters they will encounter these kilometers-wide columns of upwelling cold water beneath one or more large ocean windfarms and be diverted out to the deep basins of the Central Gulf of Maine, never to be seen again!

The existence of these diminished energy upwell zones was discovered by European scientists examining a decade of data from ocean windfarms off Norway,and the United Kingdom. In 2008 Dr Goran Brostrom of the Norwegian Meteorological Agency published a groundbreaking study, ”On the Influence of large windfarms on the upper ocean circulation.” The report notes that *“a wind speed of 5–10 m/s may generate upwelling velocities exceeding 1 m/day.....The generated upwelling is sufficiently enough that the local ecosystem will most likely be strongly influenced by the presence of a wind farm.”*

Brostrom's work, which has been corrorborated by researchers at MIT, the University of Maryland and elsewhere strongly suggests that to avoid harming the lobster resource, Gulf of Maine offshore wind developers will need to place their windfarms at least 25 miles from shore.

Until now, many feared that the expense of transferring the power ashore from such a distance would make distant water offshore wind power non competitive. However, according to Heather Dietz, a senior marine programs director at the Island Institute, offshore windpower from the DeepCwind project, or the other project under review by the federal Bureau of Ocean Energy Management, may never go to Maine anyway!

Responding to a questioner at the Island Institute's July11, 2011 Offshore Wind Energy In Maine webinar, Dietz cited plans to install an offshore wind backbone cable off New York and New Jersey, and said: *"There are developers interested in building a similar offshore connection line from somewhere along the Maine coast to somewhere off Boston, in order to pick up and carry power from offshore wind turbine facilities south."*

If this is the case – and for reasons of simple economics it probably is – then there is absolutely no reason to anchor deepwater floating windmills close to the Maine coast. Indeed, Dr Habiib Dagher, leader of the DeepCwind Consortium, has repeatedly expressed his preference for siting the consortium's ambitous operations from 25 to 40

miles offshore.

But unless Dr Dagher and others, like Maine's lobster industry, are able to convince the state of Maine and the Federal Government to reject any offshore wind proposals closer than 25 miles from shore, the future of Maine's lobster fishery remains uncertain. For Big Energy has its sights on the Gulf of Maine, and will not lightly be turned aside.

If big offshore windpower extraction is to come to the Gulf of Maine, let's require these windfarms to be promoted and subsidized only beyond the Eastern Maine Coastal Current. Maine's lobster industry, and the reviving groundfisheries are too important to risk needless damage. Let us err on the side of caution, here.

For more information, go to www.penbay.org