

August 27, 2012

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5601 Sunnyside Ave, Room 4-2106
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Re: RIN0648-XC007
National Aquaculture Research and Development Strategic Plan

The Environmental Law Institute (“ELI”), The Ocean Foundation (“TOF”), and the Emmett Environmental Law & Policy Clinic welcome the opportunity to comment on the draft National Aquaculture Research and Development Strategic Plan (“strategic plan” or “plan”). ELI is an independent environmental research and education organization based in Washington, DC with extensive experience in aquaculture, including in the areas of regulation and certification. The Ocean Foundation is an international public foundation long engaged in the issue of sustainable aquaculture, including global grantmaking to support reform of harmful and unsustainable aquaculture, as well as project consulting on community-based, small scale, sustainable aquaculture.

As discussed in the draft plan, aquaculture is an important and growing element of the domestic and international food supply. Government-supported research and development can help the sector “develop in concert with natural ecosystems,” as expressed in the vision statement of the draft plan. This vision is reasonable, and the effort to identify the research needs to achieve it is welcome. In addition, we applaud the inclusion of provisions on aquatic plant recovery, monitoring and assessment of effects of climate change and ocean acidification, and aquaculture for ecosystem restoration.

However, the draft plan can be substantially improved through the following changes in emphasis and additional items:

1. Comments on regulatory matters are beyond the appropriate scope of a research and development plan.

The draft strategic plan characterizes federal, state, and local aquaculture regulatory regimes as “onerous and restrictive” and suggests they bar effective aquaculture development. While we certainly agree that developing scientific and management insights can and should be integrated into regulatory processes, we believe that NOAA and USDA are ill-served by criticizing regulatory regimes in this context, particularly when the agencies responsible for regulating industry are not members of the Joint Subcommittee on Aquaculture Research and Development. While NOAA and USDA can surely criticize **or change** their own regulations, it seems unlikely that other implicated **federal** regulatory agencies would agree with this characterization. Rather, these agencies, such as the Environmental Protection Agency (“EPA”) and Food and Drug Administration (“FDA”), would likely point to the

substantial public benefits of their regulations (as well as their duty to carry out their congressional mandates).

Rather than stating a nebulous criticism of aquaculture regulation that is unconnected to the specific goals of the strategic plan, **we believe it would be more appropriate for the plan to indicate that the joint subcommittee will engage with other regulatory agencies** to determine the scientific, technical, and economic data and other information needed to adequately implement an effective regulatory system.

2. The plan should not presume that open water or net pen technologies are the future of aquaculture in the United States.

In strategic goal 7, the plan calls generally for the introduction of innovative production systems, but in this section and elsewhere, the strategy does not specifically identify several significant new production systems, including land-based recirculating aquaculture systems (RAS), multi-trophic aquaculture facilities, and closed-containment systems. By not referring to such systems, the plan appears to endorse the basic structures of aquaculture facilities currently in use in the United States – primarily, open pen, flow-through, and open water (oysters and hatcheries) aquaculture. The plan could be improved by including explicit references to and focus on new technologies that can prevent certain environmental harms associated with current aquaculture production (e.g., escapes, parasites and disease, discharge of nitrogenous wastes, excess food or antibiotics).

Research is needed to advance and determine the feasibility of such technologies and identify best available technologies for different species. Consultation with EPA and state environment agencies can ensure that such research be implemented in regulatory regimes. In addition, to the extent that aquatic animal health can be improved through improved technologies, this focus would similarly improve outcomes under strategic goal 3 and avoid disease outbreaks and transfers into wild populations. As a result, we suggest the incorporation of production system design as a factor in strategic goal 3, and as noted below, in strategic goal 2 (to minimize escape).

3. The strategy should not pursue development of genetically modified finfish or other genetically modified aquaculture products.

In strategic goal 2, the joint subcommittee proposes research and development of domesticated strains of aquaculture species. We have two concerns related to this agronomic process. While the plan does not explicitly support or rely on the development of genetically modified organisms for aquaculture, it appears to endorse techniques associated with genetic modification (e.g., “apply genomic advances to agronomic improvement”). To the extent that support for the development of genetically modified strains is contemplated, the joint committee should consult and obtain approval from all agencies with regulatory authority over genetically modified seafood – most notably, FDA. Moreover, we note that no genetically modified animal product has ever been approved, and we would advise against government support for such activity at this juncture. To the contrary, the strategic plan

should clarify that strategic goal 2 contemplates support for solely conventional agronomic improvement, and not the creation of genetically modified strains.

Development of agronomically-improved strains, as contemplated by strategic goal 2, may result in harm to naturally occurring fish stocks. Conventional aquaculture facilities are associated with substantial levels of escapes for both finfish and shellfish. These escapes may result from storm events, predation, equipment failure, or other causes. Agronomic improvements (and genetic modifications) result in genetic changes that distinguish species from wild populations; as a result, escape of the “improved” strains may result in increased risk of genetic changes to wild stocks (as well as competition for resources and other types of harm). As a result, agronomic research efforts should be associated with support for the development of methods to prevent future release and escape of cultured organisms, and strategic goal 2 should make this relationship explicit.

4. The strategy can be improved through an increased focus on production of native species that do not rely on fish meal and oil in addition to finding novel sources of nutrition for cultivated species.

Strategic goal 5 seeks to “improve nutrition and develop novel feeds” to address the scarcity of fish meal and fish oil. While determination of alternatives to these ingredients is worthwhile, the plan does not address alternative species selection to address this scarcity. Herbivore aquaculture inherently reduces the fish meal and oil needed to produce finfish in aquaculture, and the culture of aquatic plants and shellfish is generally fully independent of meal and oil. Focusing research and development on such species therefore can maximize production with a minimum reliance on fish meal and fish oil, and the plan should seek development of highly efficient species for this purpose.

Such an action would also support and should be reflected in strategic goal 6, which seeks increased seafood supplies. One proposed outcome of goal 6 is improved understanding of consumer demand drivers; we suggest supplementing this goal to identify how to drive consumer preferences towards species with superior performance, not only in terms of fish meal and oil demand, but also other performance criteria.

5. The strategic plan should contain a strategic goal of reducing climate change impacts and planning for adaptive management under changing conditions.

In coming years, climate change will increasingly affect resource availability, environmental conditions, and aquatic ecosystems and habitats. Aquaculture production relies upon and affects the natural environment and will be affected by these changes – sometimes in unpredictable ways. However, it is already clear that issues such as ocean acidification, increased storm frequency and severity, and cyclical changes in ocean productivity will influence aquaculture production practices. For example, we will need decentralized facilities to spread risk and resilient facilities to survive storms.

While the strategic plan does consider acidification, a consideration of issues related to climate change is warranted as a main strategic goal. This goal should envisage research on

how climate change will likely affect aquaculture and how to avoid negative impacts. In addition, it should call for research on how to minimize the carbon footprint associated with production, such as by determination of the environmental benefits of developing domestic secondary seafood processing capacity.

We appreciate the Joint Subcommittee's efforts in identifying research and development needs to support domestic aquaculture and ensure that it exists "in concert with natural systems." However, we believe that the draft strategy can be improved to ensure that aquaculture development does not come at the expense of the environment, other agencies, or other stakeholders. We look forward to future engagement with NOAA and USDA on this matter. If you have any questions regarding these comments, please contact us.

Sincerely,

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