

The Ocean Stewards are a trade association that represents the broader interests of the open ocean aquaculture industry, and that advocate for the best use and management of open ocean resources. We believe that open ocean aquaculture is a key element in improving human health and nutrition, and for improved management and best utilization of our renewable marine resources, and for restoration of seafood-producing industries and vibrant coastal communities.

The Ocean Stewards do not simply advocate for more fish farming ... we advocate for more environmentally sound fish farming. As such, we are keenly interested in the future of feedstuff resources and feed supplies for aquaculture. We hope to see continued sound management of wild fish stocks that supply the world's reduction fisheries (or improvement in management, where necessary). This assures a continued supply of fishmeal and fishoil that make up essential components of our fish feeds.

However, we Stewards also recognize that while these reduction fisheries may currently be sustainable in the sense that they are stable, these fisheries are not sustainable in the sense of being scalable over the long term. If we are to grow open ocean aquaculture to the point where it begins to meet the world's burgeoning demand for high quality seafood, then we need to find more scalable sources of proteins and oils to feed to our fish.

Language has been included in recent State legislation, or been proposed for Federal legislation, that would mandate limitations on the use of fishmeal and fishoil in fish feeds used in open ocean aquaculture. However, we Stewards firmly believe in, and strongly advocate for, more proactive, assertive and positive steps towards this end. We would posit that it is neither possible nor desirable to legislate against biological and technological realities.

We must encourage growth in open ocean aquaculture. The public health imperative demands it, and our ocean's health demands it. But we must then encourage - rather than regulate or mandate - more sustainable practices and feedstuffs.

We Ocean Stewards are therefore most grateful for the opportunity to comment on the NOAA-USDA Alternative Feeds Initiative. There are several key areas where we Stewards believe that Federal research could play a key role, and where Federal government policy could be better used to encourage use of more - and more diverse - alternative feedstuffs.

The most readily achievable means is to identify alternative sources of fishmeal and fish oil from other sustainable sources, beyond reduction fisheries. NOAA should therefore examine ways in which fisheries management policies could be manipulated to encourage the wider retention and better use of by-products from edible seafood processing. This should include assessment of the impacts from realigning fisheries management measures to allow greater storage capacity of by-products from at-sea processing. Around two-thirds of the Alaskan pollock fishery catch, for example, is destined to be processing by-product. Much of the wet 'waste' (sic) is tossed overboard from processing vessels, or the fish oils are burnt in diesel generators. There are clearly better and higher uses - from a societal and an ecological perspective - for these resources. Where vessel capacity or length is currently used as a fisheries management

tool, NOAA should aggressively identify and apply alternative mechanisms, to allow these vessels to retain all of the meal and oil from the trimmings of their catch, and bring them back to port. Where the economic arguments do not adequately incent fishermen or processors to increase vessel holding capacity, Federal financing programs should provide loans or similar programs to increase these incentives.

At the same time, NOAA should examine ways that tax benefits or other economic incentives could be used to encourage wider retention and better use of edible seafood processing by-products from both wild-caught fisheries and from aquaculture. In many instances – notably Alaskan salmon fisheries – the processing facilities are small in scale, scattered over great distances, and seasonal in nature. Because of this, there is not yet the appropriate infrastructure to support retention of these by-products, or the means to economically move them to where they might be incorporated into the aquaculture feeds supply pipeline. Because they are geographically and temporally disparate, the true value to society of these proteins and lipids - as resources – is more than their present economic value. NOAA should identify ways that public policy could be used as a lever to foster development of infrastructure and industry to realize the true value of these meals and oils.

These policy initiatives should also be matched with research funding, through both Federal agencies and through wider competitive grant programs, to develop the meal and oil processing knowledge (including that necessary for removal of environmental contaminants, where necessary), and the feed formulations for optimum utilization of these resources in marine fish feeds.

Equally readily achievable, and more easily harnessed, are land animal processing byproducts. Research funding and public policy measures should address the tremendous opportunity for increased utilization of these resources. Poultry meals and oils, in particular, are nutritionally ideal for marine finfish, and their utilization resolves the perennial problem of waste disposal from processing plants. Some advocates express concern over transfer of prions or other potential disease-causing organisms through use of such feedstuffs. However, the Ocean Stewards believe that on a resource-constrained planet, the precautionary principle must not be overzealously applied. The Federal government may have a facilitatory role to play here in providing a certification system for approval of land-animal processing by-products for use in fish feeds, in much the same way that the government regulates and approves production and processing of land animals as human food. (Indeed, such a program may already exist. If so, we would be grateful if you could please direct us to the regulations and the agency that is so responsible.)

Perhaps the greatest gains in sustainable sources of proteins and oils will come from the established agriculture industry. While public policy initiatives can also be advantageous in increasing the utilization of plant-based proteins and oils, there is already tremendous incentive and infrastructure in place. The primary challenge here, then, is in the research for developing the strains of plants, and the processing technology. Tax benefits or other economic incentives could certainly be applied to encourage the construction and operation of processing facilities where there is already an identified opportunity. One prime example of such a need is the complete absence of any feeds grade plant for production of soy protein concentrates or soy protein isolates in the North American

continent.

However, the primary need is for more research to develop plant strains that are high in proteins, with more balanced amino acid profiles, or that are high in oils, with greater fractions of the preferred omega-3 fatty acids. In addition, the nutritional incompatibilities of some plant-based feedstuffs need to be better understood, and selected strains that reduce these detrimental components need to be brought to commercial scale. Research should also address the opportunities for use of protein byproducts from biofuels production.

Greater federal support is also needed for the research and development of proteins and oils from single-celled sources. As these technologies begin to approach commercial viability, Federal economic incentives should be applied to encourage their wider use in fish feeds. Again, there are great societal benefits to be gained from development of such alternatives, at an industrial scale, and at a more competitive price. It is therefore eminently justifiable for our government to support the development of such facilities, and to encourage their more rapid adoption by the feeds industry, and by aquaculture.

In pursuing these goals, we should employ all of the tools at our disposal, including more sophisticated biotechnology, such as use of GMO protists and grains, unless there is some demonstrable reason for concern. GMO protists and grains are a particularly encouraging source for fish oil replacements. When GMO grains are such a wide component of US agriculture, it would be foolish and irresponsible to hobble our drive towards more sustainable ocean management by restricting the tools available to us.

The resources that the government commits to this research, and to making the public policy changes that we propose, should reflect the government's commitment to sustainable marine resource use, coastal community cohesion, sound public health policy, and innovation in open ocean aquaculture.

These research and policy areas outlined above are not simply goals that we should feel obligated to move towards, to assuage our conscience. They are, rather, opportunities for innovation and economic growth, that stand to benefit the nation. By addressing these opportunities, NOAA and USDA would be able to remove the one remaining constraint to expansion of open ocean aquaculture in a truly environmentally sound manner. That is a goal that we should all be able to collectively and heartily work towards.

Again, we thank you for the opportunity to comment on this initiative, and we applaud and encourage your further ongoing efforts. Please let us know how else we may be of assistance.

Sincerely,

Neil Anthony Sims
Founding Board-member
Ocean Stewards Institute