# Federal Environmental Permitting of Offshore Aquaculture: Coverage and Challenges

by Read Porter and Rebecca Kihslinger

Read Porter is a Senior Attorney with the Environmental Law Institute (ELI). Rebecca Kihslinger is a Science and Policy Analyst at ELI.

## – Summary -

Aquaculture is an important and growing element of the domestic and international food supply; however, the industry has grown slowly in the United States, where offshore facilities remain rare despite recent interest in deploying new facilities. Commentators have blamed this situation on a complex regulatory environment and unsettled regulatory practice. The authors argue, to the contrary, that the existing statutory and regulatory framework is sufficiently robust to effectively manage the environmental impacts of offshore aquaculture, and sufficiently flexible to enable agencies to address critical impacts. On the other hand, implementation is a primary challenge affecting offshore aquaculture permitting and sustainability. Implementation issues may currently constrain the industry, but can be overcome through institutional development and capacity-building.

## I. Introduction

The global aquaculture industry is growing rapidly due to increasing demand for seafood to feed a growing population. Globally, animal aquaculture increased at an annual rate of 6.2% between 2000 and 2012, reaching an all-time high of \$137.7 billion (66.6 million metric tons) in 2012.<sup>1</sup> Aquaculture now provides 42% of the seafood produced worldwide,<sup>2</sup> and its share of both the global market and total production continues to increase. The World Bank predicts that aquaculture will reach parity with capture fisheries by 2030, providing 60% of edible seafood on a global basis.<sup>3</sup>

The U.S. aquaculture experience contrasts with the global story of consistent and ongoing growth, as domestic production has declined since 2005.4 The government, including the National Oceanic and Atmospheric Administration (NOAA) Office of Aquaculture, continues to seek new models and approaches to reverse this decline and stimulate growth of the sector. Federal policies, including the National Ocean Policy Implementation Plan and NOAA's Aquaculture Policy, outline goals and directives aimed at encouraging and fostering the development of sustainable marine aquaculture within NOAA's stewardship mission and broader environmental, social, and economic goals.<sup>5</sup> These policies substantially focus on development of an offshore aquaculture sector, and are allied with recent policy developments to facilitate offshore aquaculture of both shellfish and finfish.<sup>6</sup>

Notably, NOAA has issued proposed regulations to implement the Fishery Management Plan for Regulating Offshore Marine Aquaculture in the Gulf of Mexico, the first comprehensive regional approach to authorizing aquaculture in federal waters—with final regulations expected during the second half of 2015; the federal Inter-

- 1. United Nations Food & Agric. Org., The State of World Fisheries and Aquaculture: Opportunities and Challenges 18 (2014).
- 2. Id. at 19. This percentage includes marine fish captured for nonfood use.
- World Bank, Fish to 2030: Prospects for Fisheries and Aquaculture, World Bank Report No. 83177-GLB xiv-xv (2013).

Authors' Note: This Article builds upon three white papers released by ELI and its partners providing detailed review of regulation of offshore aquaculture by the National Marine Fisheries Service, the U.S. Army Corps of Engineers, and the U.S. Environmental Protection Agency. These sources are available at www.eli-ocean.org/ fish/offshore-aquaculture.

<sup>4.</sup> *Id.* at 20.

See NATIONAL OCEAN COUNCIL, NATIONAL OCEAN POLICY IMPLEMENTA-TION PLAN 6-8 (2013) (detailing implementation of the National Ocean Policy, Exec. Order No. 13547, 75 Fed. Reg. 43023 (July 22, 2010)); NA-TIONAL OCEANIC & ATMOSPHERIC ADMIN. (NOAA), MARINE AQUACUL-TURE POLICY (2011) (expanding on U.S. Department of Commerce Aquaculture Policy).

<sup>6.</sup> In this Article, we define "offshore" to include ocean waters beyond state boundaries—generally, waters 3-200 miles from shore.

agency Working Group on Aquaculture is working to streamline permitting for aquaculture in federal waters; and state and federal government partners in the Northeast Regional Ocean Council have established a working group on aquaculture, focused on applying regional data to aquaculture permitting in federal waters.<sup>7</sup> These policy initiatives are moving hand-in-hand with industry interest in moving offshore, as evidenced by the recent issuance of necessary permits for offshore production facilities in federal waters off California, Hawaii, and Massachusetts for blue mussel (*Mytilus edulis*) and almaco jack (*Seriola rivoliana*) finfish aquaculture.<sup>8</sup>

As a new industry in the United States, offshore aquaculture production promises environmental and economic benefits and costs. Aquaculture production can produce edible protein with little environmental impact. For example, the culture of native shellfish to feed local markets produces little waste and requires no feed, and it can displace airlifted product from far-away locations (and the attendant carbon emissions). However, offshore production may result in a variety of environmental impacts. For example, shellfish lines may entangle marine mammals, and marine finfish aquaculture has been associated with a range of impacts, such as consumption of high levels of fish meal and oil sourced from unsustainable wild capture fisheries; water pollution due to discharges of excess feed, wastes, parasiticides, and other chemicals; and impacts to protected species and wild stocks due to naturalization of escaped stocks or disease transmission.9

From an economic perspective, producers offshore can avoid user conflicts and enjoy reduced regulatory burdens in comparison to coastal areas and state waters, and they may enjoy enhanced production as a result of favorable ocean conditions. However, offshore production has higher costs for transportation and facility design and maintenance, and it may be difficult to raise capital without a proven economic model or secure property rights. Offshore aquaculture can also raise its own use conflicts, most notably with navigation and capture fisheries, and neither agencies nor producers or other stakeholders yet have the experience or decision framework necessary to effectively predict or proactively avoid or manage these impacts.<sup>10</sup>

Agencies are on the front lines of efforts to balance the benefits and costs in order to ensure sustainable management of offshore aquaculture, as increased offshore activity requires them to determine how to apply their existing legislative and regulatory frameworks. While sources have identified as many as 120 statutory programs with direct or indirect application to offshore aquaculture,<sup>11</sup> responsibility for permitting falls primarily on the U.S. Army Corps of Engineers (the Corps), NOAA, and/or the U.S. Environmental Protection Agency (EPA), which apply the Rivers and Harbors Act (RHA), Magnuson-Stevens Fishery Conservation and Management Act (MSA), and Clean Water Act (CWA), respectively.<sup>12</sup>

As permitting agencies, these programs also manage consultation under a bevy of other statutes central to environmental considerations during the permitting process—notably, the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Coastal Zone Management Act (CZMA), and National Environmental Policy Act (NEPA).<sup>13</sup> Unlike in state waters, where regulatory systems have long been in place to lease and manage bottomlands for aquaculture through a consistent lead agency, federal permitting to date has been conducted on a caseby-case basis. By locating in federal waters, producers can often avoid state oversight, but they also enter an uncertain world, one that is based on permits rather than leases.

Many commentators have concluded that this complex regulatory environment, in combination with unsettled regulatory practice, has created an "unfinished patchwork" that is a primary hindrance to offshore aquaculture development<sup>14</sup>—or as the National Ocean Policy Implementation Plan argues, "[g]overnment inefficiency in the siting, permitting and approval processes for aquaculture may be hindering the domestic aquaculture

<sup>7.</sup> See NATIONAL OCEAN COUNCIL, REPORT ON THE IMPLEMENTATION OF THE NATIONAL OCEAN POLICY 2-3 (2015) (highlighting aquaculture policy initiatives); Northeast Reg'l Ocean Council, Agenda: Feb. 5, 2015: Portsmouth, NH, at 5 (2015) (announcing formation of working group); Fisheries of the Caribbean, Gulf, and South Atlantic; Aquaculture, 79 Fed. Reg. 51424 (proposed Aug. 28, 2014) [hereinafter Gulf of Mexico Aquaculture Proposed Regulations]; INTERAGENCY WORKING GRP. ON AQUACULTURE, INFORMATION FOR SHELLFISH GROWERS: LEASES, PERMITS, AND OTHER AUTHORIZATIONS REQUIRED FOR SHELLFISH AQUACULTURE GEAR, SEEDING, REARING, CULTIVATING, TRANSPLANTING, AND HARVEST-ING (2015), available at http://www.nmfs.noaa.gov/aquaculture/docs/ guide.pdf.

<sup>8.</sup> ENVIRONMENTAL LAW INST., U.S. ARMY CORPS OF ENGINEERS REGULATION OF OFFSHORE AQUACULTURE 20-26 (2015) (reviewing permitting case studies) [hereinafter ELI CORPS REPORT], *available at* http://www.eli.org/research-report/us-army-corps-engineersregulation-offshore-aquaculture.

<sup>9.</sup> See generally Marine Aquaculture Task Force: Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks (2007).

See Biliana Cicin-Sain et al., Univ. of Delaware Ctr. for Study of Marine Policy, Development of a Policy Framework for Offshore Marine Aquaculture in the 3-200 Mile U.S. Ocean Zone 17-20 (2001) (reviewing obstacles and challenges facing offshore aquaculture).

<sup>11.</sup> *Id.* at 70.

<sup>12.</sup> Rivers and Harbors Act (RHA), 33 U.S.C. §403; Magnuson-Stevens Fishery Conservation and Management Act (MSA), 16 U.S.C. §§1801-1884; Clean Water Act (CWA), 33 U.S.C. §§1251-1387, ELR STAT. FWPCA §§101-607. See generally EMMETT ENVTL. LAW & POLICY CLINIC, ENVIRONMENTAL LAW INST. & OCEAN FOUND., OFFSHORE AQUACULTURE REGULATION UNDER THE CLEAN WATER ACT 4 (2012) [hereinafter CWA REPORT], available at http://eli-ocean.org/wp-content/blogs.dir/3/files/CWA-aquaculture.pdf; EMMETT ENVTL. LAW & POLICY CLINIC, ENVIRONMENTAL LAW INST. & OCEAN FOUND., OFFSHORE AQUACULTURE REGULATION UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT 5 (2013) [hereinafter MSA REPORT], available at https://www.eli.org/sites/default/files/docs/msa-aquaculture.pdf; ELI CORPS REPORT, supra note 8.

Endangered Species Act (ESA), 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18; Marine Mammal Protection Act (MMPA), 16 U.S.C. §§1361-1421h, ELR STAT. MMPA §§2-410; Coastal Zone Management Act (CZMA),16 U.S.C. §§1451-1466, ELR STAT. CZMA §§302-319; National Environmental Policy Act (NEPA), 42 U.S.C. §§4321-4370f, ELR STAT. NEPA §§2-209.

D. Douglas Hopkins et al., An Environmental Critique of Government Regulations and Policies for Open Ocean Aquaculture, 2 OCEAN & COASTAL L.J. 235, 239 (1997); see also Cicin-Sain et al., supra note 10, at 19-21 (collecting sources).

**NEWS & ANALYSIS** 

industry's growth."<sup>15</sup> Despite the criticism and numerous attempts at legislation, the U.S. Congress has at least a 20-year history of inaction, such that a comprehensive legislative framework for offshore aquaculture permitting or regulation is more mirage than reality.<sup>16</sup> In this light, effective implementation of existing laws is an imperative for effective governance and sustainable development of this emerging sector.

This Article provides an overview of how critical environmental laws work with each other and with other related programs to regulate offshore aquaculture. We argue, contrary to the received wisdom, that the existing statutory and regulatory framework is sufficiently robust to effectively manage the environmental impacts of offshore aquaculture, and that current statutes provide sufficient flexibility to enable agencies to address critical impacts. Thus, while legislative and administrative changes could clarify regulation and permitting of offshore aquaculture in some respects, comprehensive legislation may not be needed, nor could it fully address existing permitting challenges without creating unwarranted exceptions from critical environmental laws.

On the other hand, implementation remains a primary challenge affecting offshore aquaculture permitting and sustainability. Agencies face substantial institutional challenges arising from the lack of aquaculture expertise within permitting agencies; a dearth of existing or past permits or models for regulators to consider or consult when evaluating offshore aquaculture; and limited history of interagency consultation and cooperation in this context. In addition, agencies have not yet effectively implemented their authority to develop the technical and scientific basis for robust and effective management. For example, while the lack of available legal, technical, and scientific information hinders agency development of effective permit conditions, few aquaculture facilities even have robust data production and disclosure requirements built into their permits. These challenges may currently constrain sustainable development of the industry, but can be overcome without a comprehensive legislative solution, largely through institutional development and capacity-building.

We first review the permitting programs and consultation requirements most critical to aquaculture permitting, before presenting case studies illustrating how these programs and statutes operate in practice. We then highlight our conclusions about the emerging offshore aquaculture regulation process and opportunities for improving current programs and processes.

#### II. Current Regulatory Framework

## A. Key Permitting Programs

## I. Section 10 of the RHA

The Corps regulates offshore aquaculture facilities pursuant to RHA §10 as extended by the Outer Continental Shelf Lands Act (OCSLA), which prohibits the construction of any anchored structure in offshore waters without Corps authorization.<sup>17</sup> The Corps implements other authorities, notably including CWA §404, but these do not apply in offshore waters and are not considered here.

While the Corps uses a variety of tools to authorize activities, including general permits and letters of permission, none of these are currently applied to offshore aquaculture, and prospective offshore producers are required to obtain individual permits prior to installing any anchored infrastructure—including net pens and mussel lines—in offshore waters.<sup>18</sup> Section 10 permitting occurs in parallel with other permitting requirements, and the Corps will not delay its decision because another agency (for example, NOAA) has not yet granted authorization, unless that authorization is a prerequisite to its own decision.<sup>19</sup> Because the Corps is highly decentralized, its District Offices carry out most §10 permitting independently.<sup>20</sup>

The Corps bases its eventual permitting decisions on "the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest,"<sup>21</sup> a standard assessed by balancing the benefits of the proposal against its "reasonably foreseeable detriments" in a way that reflects the "national concern for both protection and utilization of important resources."<sup>22</sup> The Corps must consider general and specific criteria when evaluating

<sup>15.</sup> NATIONAL OCEAN COUNCIL, *supra* note 5, at 6, *citing* Marine Fisheries Advisory Comm., Vision 2020: The Future of U.S. Marine Fisheries (2007).

Both industry and environmental groups have supported a number of bills to regulate offshore aquaculture, including the National Sustainable Offshore Aquaculture Act, H.R. 2373, 112th Cong. (2011), National Offshore Aquaculture Act, H.R. 2010, 111th Cong. (2007), H.R. 1195, 109th Cong. (2005), and Marine Aquaculture Act of 1995, S.1192, 104th Cong. (1995).

RHA, 33 U.S.C. §403; Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. §§1331-1356. While the RHA is limited to "navigable waters" within three nautical miles of shore, the OCSLA extended Corps jurisdiction to the outer continental shelf for certain purposes, including to prevent obstructions to navigation caused by "installations and other devices permanently or temporarily attached to the seabed." 43 U.S.C. §1333(a)(1), (e). The OCSLA did not extend the Corps' authority with respect to devices *not* attached to the seabed, however, so unmoored facilities are not currently required to obtain a permit from the Corps. *See* ELI CORPS REPORT, *supra* note 8, at 6-7 (discussing the statutory and regulatory basis for Corps permitting authority in offshore waters).

<sup>18.</sup> Currently, letters of permission and general permits are not appropriate for offshore aquaculture activities because offshore aquaculture is a novel activity with poorly characterized impacts and a likelihood of generating substantial public comment during the permitting process. *See* ELI CORPS REPORT, *supra* note 8, at 8, 13-16.

<sup>19. 33</sup> C.F.R. §325.2(d)(4).

<sup>20.</sup> Id. §325.8 (authorizing Corps District engineers to issue and deny permits, except in certain conditions when applications must be referred to the Division Engineer or Chief of Engineers). To date, offshore aquaculture applications have been uniformly decided by District staff.

<sup>21.</sup> Id. §320.4(a)(1).

<sup>22.</sup> Id. §320.4(a)(1); see also Town of Norfolk v. U.S. Army Corps of Engrs, 968 F.2d 1438, 1454, 22 ELR 21337 (1st Cir. 1992) ("Under the 'public interest' review, the Corps conducts a general balancing of a number of economic and environmental factors . . . ."); Audubon Naturalist Soc'y of Central Atl. States, Inc. v. U.S. Dep't of Transp., 524 F. Supp. 2d 642, 691 (D. Md. 2007) (noting that the Corps is required to "consider the [relevant] factors and make a determination based from that analysis").

a permit application,<sup>23</sup> but enjoys substantial discretion in deciding whether and how to apply this standard.<sup>24</sup>

The Corps engineer's permit decision includes the engineer's public interest determination and any special conditions required to protect the public interest.<sup>25</sup> Conditions must be "directly related to the impacts of the proposal, appropriate to the scope and degree of . . . impacts, and reasonably enforceable."<sup>26</sup> In general, conditions in offshore aquaculture have been relatively limited and focused on construction, rather than operation, of facilities. However, consultation and consistency review requirements have resulted in the issuance of one offshore aquaculture permit—for Catalina Sea Ranch in California—containing extensive and stringent conditions.<sup>27</sup> If early experience is any indication, the Corps will consider a wide variety of conditions to be appropriate and reasonably enforceable, especially as the alternative is permit denial.<sup>28</sup>

The permitting process may include pre-application consultation, in which Corps staff are available to assist parties with preparation for the permitting process.<sup>29</sup> Once it receives an application, generally accompanied by an environmental assessment (EA) as required by NEPA,<sup>30</sup> the Corps conducts a public notice-and-comment process<sup>31</sup> and consults with other agencies.

In the aquaculture context, permitting so far has often included a relatively condensed initial Corps review and public notice process resulting in little public comment, followed by extensive consultation as required by the essential fish habitat (EFH) provisions of the MSA,<sup>32</sup> §304(d) of the National Marine Sanctuaries Act,<sup>33</sup> §7 of the ESA,<sup>34</sup> and consistency review provisions in the CZMA.<sup>35</sup> Other consultations, such as with the U.S. Coast Guard or the U.S. Food and Drug Administration, have also arisen during §10 permitting.

These consultations have resulted in more thorough consideration by subject matter experts and the public that has identified conflicts and environmental impacts (for example, marine mammal entanglement, seafood safety, commercial fishing, commercial shipping, and oil and gas development) that were not brought to the Corps' attention during initial public comment. These discussions have resulted in substantial changes in project design, size, and location to avoid and minimize conflicts, and have enabled the Corps to further address such issues through special conditions to its final RHA permits. Resulting changes in project design highlight the central value of interagency and intergovernmental processes in ensuring that Corps permits consider, avoid, and mitigate the full range of environmental impacts associated with proposed activities.

## 2. Section 402 of the CWA

EPA regulates offshore aquaculture under the CWA pursuant to §402 of the Act, which prohibits pollutant discharges from many sources, including most commercial offshore finfish aquaculture facilities, without a national pollutant discharge elimination system (NPDES) permit from EPA.<sup>36</sup> "Discharge" is defined, in relevant part, as "any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft."<sup>37</sup> Offshore aquaculture facilities are subject to this requirement if they are considered "point sources," and only if their discharges are considered an "addition" of a "pollutant" to the ocean.

Most aquaculture facilities are plainly point sources, including facilities like floating, towed, or self-propelled net pens.<sup>38</sup> At present, however, EPA only regulates aquaculture facilities as point sources if they qualify as concentrated aquatic animal production (CAAP) facilities.<sup>39</sup> A facility can qualify as a CAAP facility if it meets certain size thresholds<sup>40</sup> or on a case-by-case basis if EPA deter-

35. 16 U.S.C. §1456.

- 39. 40 C.F.R. §122.24(a).
- 40. Concentrated aquatic animal production (CAAP) facilities include coldwater facilities that discharge at least 30 days per year, produce more than 20,000 pounds of fish per year, and use 5,000 pounds or more of feed per

<sup>23. 33</sup> C.F.R. §320.4(a) (providing that the specific weight given to each factor will be determined by its "importance and relevance" but "full consideration and appropriate weight will be given to all comments").

<sup>24.</sup> Ohio Valley Envtl. Coal. v. Aracoma Coal Co., 556 F.3d 177, 201 (4th Cir. 2009) ("[C]ourts must generally defer to the agency evaluation because 'an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive." (quoting Marsh v. Oregon Natural Res. Council, 490 U.S. 360, 378, 19 ELR 20749 (1989))); Hoosier Envtl. Council, Inc. v. U.S. Army Corps of Eng'rs, 105 F. Supp. 2d 953, 1003, 30 ELR 20786 (S.D. Ind. 2000) (stating that to overcome the Corps' decision, alternative or contrary evidence must be concrete, must be readily available to the Corps during the decisionmaking process, and must show that the Corps "relied on a materially distorted picture when making its decision" (quoting Alschuler v. Dep't of Housing & Urban Dev., 686 F.2d 472, 484 (7th Cir. 1982))).

 <sup>33</sup> C.F.R. §325.2(a)(6). Special conditions must be "necessary to satisfy legal requirements or to otherwise satisfy the public interest requirement." *Id.* §325.4(a).

Id. §325.4(a). The District Engineer may require compliance with "controls imposed under other federal, state, or local programs" (e.g., a discharge permit issued by EPA) in lieu of imposing additional conditions in a Corps permit. Id. §325.4(a)(2).

<sup>27.</sup> See ELI CORPS REPORT, *supra* note 8, at 23-25 (describing permitting for Catalina Sea Ranch).

The Corps will deny a permit if special conditions are required for the proposed activity to be in the public interest "but those conditions would not be reasonably implementable or enforceable." 33 C.F.R. §325.4(c).

 <sup>33</sup> C.F.R. §325.1(b) (providing that staff "shall be available to advise potential applicants of studies or other information foreseeable required for later federal action").

Id. §325.2(a)(4) (noting EA and/or impact statement required prior to permitting decision unless covered by a categorical exclusion). In most cases, Corps permits require only an EA, *id.* §230.7, most often prepared by the applicant. 40 C.F.R. §1506.5.

 <sup>33</sup> C.F.R. §325.3 (describing public notice requirements). The engineer must consider all comments before deciding whether to issue the permit. *Id.* §325.2(a)(3).

<sup>32. 16</sup> U.S.C. §1855(b).

<sup>33.</sup> Id. §1434(d).

<sup>34.</sup> Id. §1536.

<sup>36. 33</sup> U.S.C. §1311(a) (prohibiting "the discharge of any pollutant by any person," except in compliance with the Act); *id.* at §1342(a) (prohibiting discharge without a permit). For a detailed consideration of the application of the CWA to offshore aquaculture facilities, see CWA REPORT, *supra* note 12.

<sup>37. 33</sup> U.S.C. §1362(12)(B) (defining "discharge").

<sup>38.</sup> Id. §1362(14) (defining "point source" as "any discernible, confined and discrete conveyance, including but not limited to any . . . concentrated animal feeding operation, or vessel or other floating craft, . . . from which pollutants are or may be discharged").

**NEWS & ANALYSIS** 

mines that it is a "significant contributor of pollution to waters of the United States."<sup>41</sup> Any aquaculture facility not regulated as a CAAP facility is not regulated as a point source by EPA and does not need an NPDES permit.

Most discharges from offshore aquaculture facilities similarly constitute "addition" of a "pollutant." Offshore aquaculture facilities will normally discharge various materials that fall within the broad definition of "pollutant,"42 such as hormones, antibiotics, fecal matter, excess feed, pesticides, parasites, and antifoulants. These discharges are also, plainly, added to the water. The regulatory status of cultured species and their byproducts (for example, as a result of escapes) is less certain and depends on a factbased consideration of differences between cultured and native stocks and whether they were "redistributed." In general, cultured finfish are likely to be considered pollutants because they are physiologically and behaviorally distinct from wild stocks; however, wild-sourced stocks indistinguishable from wild specimens may not be considered pollutants.43

Similarly, if organisms are moved from one body of water to another—particularly to a location where they would not otherwise exist—an addition has likely occurred, but if the discharge can be characterized as "redistribution," it may not constitute an addition.<sup>44</sup> Most cultured stocks with the possible exception of "ocean ranching" facilities that use wild-sourced stock—are produced in large numbers through controlled life cycles, such that they are distinguishable from wild organisms and would not be present in the water but for the aquaculture facility. Under these conditions, escapes of cultured species, and their feces and other byproducts, are likely but by no means certain to constitute an addition of a pollutant subject to the CWA.<sup>45</sup>

NPDES permits require point sources to comply with technology-based limitations set out in effluent limitation guidelines (ELGs) and water quality-based effluent limitations needed to meet water quality standards (WQS) and ocean discharge criteria (ODC).<sup>46</sup> While EPA established ELGs for aquaculture facilities in 2004, it has not issued WQS that apply to federal ocean waters to date, and the current ODCs provide little guidance for discharges.<sup>47</sup> As a result, the ELGs currently provide the basis for most NPDES permitting for CAAP facilities in federal ocean waters. The ELGs apply to flow-through, recirculating, and net-pen facilities, other than hatcheries producing native fish, producing at least 100,000 pounds of fish per year.<sup>48</sup> If a CAAP facility is not covered by the ELGs, it must acquire an NPDES permit with effluent limitations based on the best professional judgment of the permit writer.<sup>49</sup>

While ELGs can include numeric and/or narrative limitations, the CAAP facility ELGs include only "narrative effluent limitations requiring implementation of effective operational measures to achieve reduced discharges of solids and other materials" and "narrative limitations that will address a number of other pollutants potentially present in CAAP wastewater."<sup>50</sup> For example, the CAAP ELGs require use of "efficient feed management and feeding strategies,"<sup>51</sup> "proper storage of drugs, pesticides, and feed in a manner designed to prevent spills,"<sup>52</sup> and routine inspection and regular maintenance.<sup>53</sup> Facilities subject to the ELGs are required to develop and maintain a best management practices plan describing how they will achieve these and other requirements. The ELGs do not, however, explicitly address fish escapes.<sup>54</sup>

Although the CAAP ELGs do not impose numeric standards and limitations, they also do not "restrict a permit writer's authority to impose site-specific permit numeric effluent limits on the discharge" of pollutants from CAAP

- 50. Id. at 51899.
- 51. 40 C.F.R. §451.11(a)(1).
- 52. Id. §451.11(b)(1).
- 53. Id. §451.11(c).

month, as well as warm-water facilities that discharge at least 30 days per year and produce at least 100,000 pounds of fish annually (not including closed ponds that discharge only during periods of excess runoff). 40 C.F.R. 122.24(a), 122.24(a), 222.4(a), 222.2(a), 222.4(a), 222.

<sup>41.</sup> Id. §122.24(c). While EPA has made limited use of its authority to regulate smaller facilities, a district court has upheld EPA's definition of CAAP facility in part due to the case-by-case regulatory authority. See Wild Fish Conservancy v. Quilcene Nat'l Fish Hatchery, No. C08-5585BHS, 2009 WL 3380655 (W.D. Wash. Oct. 19, 2009) (holding that EPA can exclude a fish hatchery not meeting the CAAP limits from regulation as a point source because it retained the ability to designate a CAAP below the size threshold as a point source on a case-by-case basis); cf. Association to Protect Hammersley, Eld, & Totten Inlets v. Taylor Res., Inc., 299 F.3d 1007, 1018-19 (9th Cir. 2002) (upholding EPA's determination that mussel-harvesting rafts below the CAAP threshold were not point sources).

<sup>42. 33</sup> U.S.C. §1362(6) (defining pollutant to include, inter alia, "solid waste, ... sewage, garbage, ... chemical wastes, biological materials, ... wrecked or discarded equipment, ... and industrial ... and agricultural waste"); see also National Cotton Council v. EPA, 553 F.3d 927, 39 ELR 20006 (6th Cir. 2009) (holding that discharges of pesticides into waters of the United States are pollutant discharges and subject to the CWA).

<sup>43.</sup> See CWA REPORT, supra note 12, at 7-8.

Id., citing National Wildlife Fed'n v. Consumers Power Co., 862 F.2d 580, 583, 586, 19 ELR 20235 (6th Cir. 1988) (holding that entrained fish from a dam's turbine system were not "added" because they originally came from the lake and were merely "redistributed" by the turbine system); Friends of the Everglades v. South Fla. Water Mgmt. Dist., 570 F.3d 1210, 1217 (11th Cir. 2009) (holding under unitary waters theory that an addition occurs "only when pollutants first enter navigable waters from a point source, not when they are moved between navigable waters."); Catskill Mtns. Chapter of Trout Unlimited, Inc. v. City of New York, 273 F.3d 481, 491, 32 ELR 20229 (2d Cir. 2001) (distinguishing Consumers Power and concluding that a pollutant transfer from "any place outside the particular water body to which pollutants are introduced," including to a different watershed, "is plainly an addition and thus a 'discharge'" that demands a permit); Northern Plains Res. Council v. Fidelity Exploration & Dev. Co., 325 F.3d 1155, 1163 (9th Cir. 2003) (holding that transport of water from a deep aquifer and discharge of that (unaltered) water into the surface water of a river was an "addition"); Dubois v. U.S. Dept. of Agric., 102 F.3d 1273, 1298, 27 ELR 20622 (1st Cir. 1996) (holding that the transfer of water from a downstream river to an upstream pond was an "addition").

<sup>45.</sup> See USPIRG v. Atlantic Salmon of Maine, LLC, 215 F. Supp. 2d 239, 247 (D. Me. 2002) (holding that the release of non-native salmon constitutes addition of a pollutant); *Hammersley, Eld, & Totten Inlets*, 299 F.3d at 1009 (holding mussel pseudofeces do not constitute addition of a pollutant).

<sup>46. 33</sup> U.S.C. §1343(c); 40 C.F.R. §125.122 (the "director shall determine whether a discharge will cause unreasonable degradation of the marine environment").

<sup>47.</sup> See CWA REPORT, supra note 12, at 12-14.

<sup>48. 40</sup> C.F.R. §451.20.

<sup>49. 69</sup> Fed. Reg. at 51906.

<sup>54.</sup> EPA's proposed aquaculture ELG rule did address escapes of non-native species. See Jeremy Firestone & Robert Barber, Fish as Pollutants: Limitations and Crosscurrents in Law, Science, Management, and Policy, 78 WASH. L. REV. 693, 730-32 (2003) (discussing proposed ELGs for escape). However, the final rule eliminated all explicit related requirements. 69 Fed. Reg. at 51913.

facilities "in appropriate circumstances."<sup>55</sup> In promulgating the regulations, EPA recognized that a number of states had already established "numeric limits tailored to the specific production systems, species raised, and environmental conditions in the state."<sup>56</sup> Permit writers can use these numeric limits to establish permit conditions and, of course, tighten them as appropriate.

The CWA provides the best opportunity for controlling the water quality impacts of aquaculture facilities offshore, especially where the MSA does not apply and where the Corps permit conditions have focused on construction, rather than operation, of facilities. However, EPA's implementation of this program is limited by its focus on technological criteria rather than water quality, and on narrative rather than numerical limitations in its aquaculture ELG. Generation of sufficient data on which to base meaningful numerical limitations could serve as a focus for EPA in this area, but the Agency is limited because pilot-scale offshore facilities are not considered point sources and need not obtain a discharge permit. The program may also shift in the future as a result of clarification of when escapes and the byproducts of cultured organisms are considered pollutants-an issue of substantial interest for both business and environmental reasons.

#### 3. The MSA

The MSA creates the nation's regulatory structure for management of federal fisheries. Although the MSA was drafted to regulate the harvest of fish from the wild, the National Marine Fisheries Service (NMFS, also known as NOAA-Fisheries) has taken the position that aquaculture is "fishing" and is thus subject to management under the Act.<sup>57</sup> While some provisions allowing aquaculture are already in force, NMFS is also in the process of deploying a groundbreaking set of regulations that specifically regulate aquaculture, and future MSA implementation will substantially determine where and how offshore aquaculture develops in the United States.

Determination of how the MSA applies to an aquaculture project depends on whether an existing fishery management plan (FMP) applies to the species and region under consideration.<sup>58</sup> Projects to culture species not managed under (or proscribed by) an FMP, such as species managed under state law or non-native species, generally can proceed after notice to the relevant Fishery Management Council 90 days before deployment.<sup>59</sup> On the other hand, projects to culture species managed by an FMP must comply with any restrictions in the relevant FMP.

Regardless of whether aquaculture is regulated under the MSA, the Act will be relevant due to its consultation requirements protecting EFH. Under these provisions, an acting agency must consult with NOAA whenever an agency action or proposed action may adversely affect EFH, and it must consider recommended permit conditions or other measures to conserve EFH.<sup>60</sup> For example, blue mussel aquaculture in New England is not managed under the MSA, but NMFS reviews §10 permits for these projects with respect to their impacts on EFH, and this consultation may result in changes to the project or conditions to the permit.

In practice, most FMPs are developed for wild capture fisheries and contain limitations that essentially bar the development of aquaculture projects without special authorization, whether through prohibitions on the use of unapproved gear or restrictions that effectively limit aquaculture.<sup>61</sup> In such cases, regulatory action may be needed for aquaculture activity to proceed. This action may take the form of an FMP amendment, which can enable a category of aquaculture project, or a special permit authorizing a single (pilot) project.

Both approaches have been used—for example, the New England Regional Council has established a framework adjustment process to expedite necessary FMP modifications to enable aquaculture projects<sup>62</sup>; NOAA issued

<sup>55. 69</sup> Fed. Reg. at 51899.

<sup>56.</sup> Id.

<sup>57.</sup> See MSA REPORT, supra note 12, at 10-11. In a 2013 case, the U.S. Court of Appeals for the Ninth Circuit affirmed that the MSA gave NOAA authority to issue a permit for an offshore aquaculture project in the Western Pacific. Kahea v. National Marine Fisheries Serv., 544 Fed. Appx. 675, 675 (Mem.) (9th Cir. 2013). A case in the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit raised the same issue before it was dismissed as unripe and for lack of standing. Gulf Restoration Network, Inc. v. National Marine Fisheries Serv., 730 F. Supp. 2d 157 (D.C. Cir. 2010).

<sup>58.</sup> Fishery management plans (FMPs) are developed on a regional basis by eight Regional Fishery Management Councils, 16 U.S.C. §1852(b), "for each fishery... that requires conservation and management." *id.* §1852(h) (1). FMPs are not required for every fishery, but are required in "overfished fisheries and ... other fisheries where regulation would serve some useful purpose and where the present or future benefits of regulation would justify the costs." 50 C.F.R. §600.340. Once completed, NOAA issues regulations to implement each FMP that complies with the MSA.

<sup>59.</sup> Notice is required for any fishery or fishing gear not on the list maintained by NOAA, which currently does not include any aquaculture fisheries or gear other than live rock aquaculture. 50 C.F.R. §600.725(v). After receiving notice, NOAA can issue emergency regulations prohibiting, for a limited time, a fishing activity that is not otherwise covered by an FMP. See 16 U.S.C. §§1855(c); 1855(a)(5) (councils may request that the Secretary issue emergency regulations in response to a notice). The emergency regulations provide time for the Council to develop or modify an FMP if the new gear or fishery requires management. NOAA's proposed regulations to implement the Gulf of Mexico Aquaculture FMP will add "offshore aquaculture" as a fishery and "cages and net pens" as gear in that fishery to the list of authorized fisheries and gear. NOAA, Proposed Regulations to Amend 50 C.F.R. parts 600 and 622, at 2 (pre-publication regulations deemed "necessary and appropriate" by Gulf of Mexico Council in Feb. 2013).

<sup>60. 50</sup> C.F.R. §600.920. NOAA must issue recommendations when it receives information or otherwise determines that an activity would adversely affect EFH. *Id.* §600.920(i)(5), (k). While the acting agency need not adopt those recommendations, it must provide a written response to the relevant council within 30 days, detailing its proposed measures in response to the recommendations. *Id.* 

<sup>61.</sup> For example, Northeast FMPs create presumptions that fish found on a fishing vessel that do not meet regulatory standards (e.g., are below the minimum size) were caught in violation of the FMP. See, e.g., 50 C.F.R. §648.14(k)(17) (presumption for minimum size in Northeast multispecies fishery). Aquaculture operators cannot land smaller fish (as often desired for market reasons) without provisions enabling them to rebut this presumption. See id. §648.40 (specifying that evidence that Atlantic salmon were harvested from an aquaculture enterprise is sufficient to rebut this presumption).

<sup>62.</sup> See MSA REPORT, supra note 12, at 20-21 (reviewing history and operation of New England process).

**NEWS & ANALYSIS** 

an exempted fishing permit<sup>63</sup> in 1997 authorizing a pilot red drum (*Sciaenops ocellatus*) cultivation project in the Gulf of Mexico, a project that otherwise would have violated the red drum FMP<sup>64</sup>; and NOAA issued a Special Coral Reef Ecosystem Fishing Permit (SCREFP), a permit authorized by the relevant FMP, for *Seriola rivoliana* culture near Hawaii in 2011.<sup>65</sup> While these special permits enable pilot aquaculture projects to proceed, they impose costs in the form of NEPA compliance and development of permits and conditions. Past EAs have found minimal environmental impacts of proposed pilot projects, particularly when native organisms are used,<sup>66</sup> and eventual permits have contained relatively few conditions.<sup>67</sup>

The Gulf of Mexico Regional Council has taken the ambitious step of developing an FMP specific to finfish aquaculture,<sup>68</sup> and NOAA has now issued proposed amendments to implement the FMP.<sup>69</sup> The regulations will require prospective producers of any eligible species<sup>70</sup> to obtain a renewable permit from NMFS, which will evaluate each application on a case-by-case basis instead of identifying a set of allowable aquaculture systems or practices.<sup>71</sup> Permit applications must include a baseline EA of the site and other information to allow NOAA to determine potential risks to "essential fish habitat, endangered or threatened marine species, marine mammals, wild fish or invertebrate stocks, public health, or safety."<sup>72</sup> Once issued, permits would allow their holders to deploy or operate an offshore aquaculture facility, sell cultured fish, harvest wild live broodstock, and possess or transport cultured fish or invertebrates.<sup>73</sup>

The Gulf of Mexico Aquaculture FMP was required to comply with all of the FMP requirements set out in the MSA, including some that are an awkward fit as applied to aquaculture. FMPs must contain mandatory provisions, including overfishing thresholds, annual catch targets, optimum yield (OY) assessments, and EFH conservation measures<sup>74</sup>; and may contain discretionary provisions, such as catch limitations or restrictions on gear.<sup>75</sup> Although the concepts of yield and catch targets are relevant to aquaculture,<sup>76</sup> determination of these provisions is based on definitions and methodologies developed for management of wild stocks that cannot be directly applied to aquaculture.<sup>77</sup> As a result, FMPs for aquaculture must incorporate alternative means of satisfying these requirements.<sup>78</sup>

The Gulf FMP addressed these questions by setting the expected production from all aquaculture facilities in the Gulf as a proxy for OY and providing a framework adjustment process for OY revisions (upward or downward) based on ongoing monitoring of permitted operations, to determine whether the industry is adversely affecting wild stocks or other managed resources.<sup>79</sup> Determination of whether this methodology complies with the MSA is likely to be finally resolved in court, as environmental organizations have previously challenged the FMP.<sup>80</sup> If so, NOAA will likely use the Gulf of Mexico Aquaculture FMP as a national model and seek to work with other regional councils to develop further FMPs for aquaculture.

<sup>63.</sup> Exempted fishing permits are one-year, renewable permits that allow their holders to use otherwise-prohibited methods to harvest managed species for specific reasons, including "limited testing." 50 C.F.R. §600.745(b)(1).

<sup>64.</sup> Red Drum Fishery and Reef Fish Resources of the Gulf of Mexico, 62 Fed. Reg. 37034 (July 10, 1997) (indicating intent to approve exempted fishing permit); Gulf of Mexico Fishery Mgmt. Council, Economic Impacts of Gulf Aquaculture, amend. 10 (undated), *available at* http://www.gulfcouncil.org/Beta/GMFMCWeb/Aquaculture/Economic%20Effects%20of%20 Gulf%20Aquaculture%20Amendment.doc (reviewing history of SeaFish project); GULF oF MEXICO FISHERY MGMT. COUNCIL, FINAL SECRETARIAL FISHERY MANAGEMENT PLAN REGULATORY IMPACT REVIEW REGULATORY FLEXIBILITY ANALYSIS FOR THE RED DRUM FISHERY OF THE GULF OF MEX-ICO (1986) (indicating commercial red drum fishing prohibited).

<sup>65.</sup> NOAA, Proposed Issuance of a Permit to Authorize the Culture and Harvest of a Managed Coral Reef Fish Species (*Seriola rivoliana*) in Federal Waters West of the Island of Hawaii, State of Hawaii 37-38 (2011), *available at* http://www.fpir.noaa.gov/SFD/pdfs/EA%20&C%20FONSI%20Kona%20 Blue%20%282011-07-06%29.pdf. This permit was authorized by the Western Pacific Council's Hawaii Fishery Ecosystem Plan, which allows the agency to permit take of managed coral reef species with new gear not expressly listed in the management plan. 50 C.F.R. §665.224(a).

<sup>66.</sup> See, e.g., NOAA, Finding of No Significant Impact, Issuance of a Permit to Authorize the Culture and Harvest of a Managed Coral Reef Fish Species (Seriola rivoliana) in Federal Waters Off the West Coast of the Island of Hawaii, State of Hawaii (July 6, 2011), available at http://www.fpir.noaa. gov/SFD/pdfs/EA%20&%20FONSI%20Kona%20Blue%20%282011-07-06%29.pdf.

<sup>67.</sup> See NOAA, Special Coral Reef Ecosystem Fishing Permit, WP-CRSP-01 (2011), available at http://www.fpir.noaa.gov/SFD/pdfs/Permit%20 WPCRSP01%20Kona%20Blue%20Water%20Farms%20%282011-07-08%29.pdf (containing conditions restricting the length of the permit, species in use, stocking densities, gear, project area, and other conditions but not requiring systematic data collection or disclosure ).

Gulf of Mexico Fishery Mgmt. Council, Fishery Management Plan for Regulating Offshore Marine Aquaculture in the Gulf of Mexico (2009).

<sup>69.</sup> Gulf of Mexico Aquaculture Proposed Regulations, supra note 7, 79 Fed. Reg. 51424.

Eligible species include all species managed by the Council, except shrimp and warm-water corals. Culture of non-managed species is prohibited. *Id.* at 51428.

<sup>72.</sup> Id.

<sup>73.</sup> Id. at 51438.

<sup>74. 16</sup> U.S.C. §1853(a).

<sup>75.</sup> *Id.* §1853(b)(3), (4).

<sup>76.</sup> There exists a maximum production level above which the sector's long-term health would be undermined or other social, economic, or ecological harm would occur. *See Gulf of Mexico Aquaculture Proposed Regulations, supra* note 7, 79 Fed. Reg. at 51427 ("It is conceivable that some level of aquaculture in the Gulf could result in adverse impacts to wild stocks, which could result in overfishing of wild stocks and depletion of wild stocks.").

<sup>77.</sup> OY is maximum sustainable yield (MSY), reduced by any relevant social, economic, or ecological factors, to provide the greatest overall benefit to the nation with respect to food production, recreation, and ecosystem protection. 16 U.S.C. §1802(33); 50 C.F.R. §600.310(b)(2). MSY, in turn, is defined in NOAA's regulations (but not in the MSA itself) as the largest long-term average catch or yield for the stock, based on mortality rate and stock size under prevailing ecological, environmental, and technological conditions, and catch distribution. 50 C.F.R. §600.310(e)(1)(i)(A).

<sup>78.</sup> GULF OF MEXICO FISHERY MGMT. COUNCIL, *supra* note 68, at 88 ("Many [MSA] legal requirements do not fit well or are difficult to satisfy with respect to aquaculture, thereby making them seem less useful or even unnecessary. This is particularly true for yield targets and stock status parameters around which management of wild fisheries is based. Regardless, they are legal requirements, and until additional legal authority specifically suited for management of at *[sic]* sea aquaculture operations is established, all such requirements must be satisfied.").

<sup>79.</sup> *Id.* at 97; *Gulf of Mexico Aquaculture Proposed Regulations, supra* note 7, 79 Fed. Reg. at 51427 (discussing OY and catch limit determinations); *id.* at 51429 (discussing framework adjustment for OY and other criteria).

Gulf Restoration Network, Inc. v. National Marine Fisheries Serv., 730 F. Supp. 2d 157 (D.C. Cir. 2010). This challenge may be refiled upon issuance of regulations to implement the Gulf of Mexico Aquaculture FMP.

The MSA is an important link in protecting the environment from the impacts of offshore aquaculture because it authorizes NMFS to deploy management measures and permit conditions, such as siting restrictions and habitat protections, that are not adequately addressed by other regulatory programs. As described above, for most existing FMPs for capture fisheries, these measures currently prohibit aquaculture development in practice. However, when created and applied with aquaculture in mind (as in the Gulf of Mexico Aquaculture FMP), MSA management measures can also allow development while minimizing the environmental impacts of aquaculture facilities and enabling the collection of information needed to determine their individual and cumulative impacts and effects on wild fisheries. Still, NMFS' exercise of its authority can be improved by requiring mandatory evaluation criteria and permit requirements, including assessment and monitoring procedures and mandatory performance measures.

## III. Key Statutes Requiring Consultation During Permitting

#### A. The CZMA

The CZMA authorizes states to influence activities in federal ocean waters, including by identifying substantive conditions for inclusion in federal permits to enforce consistency with state law. As a result, the CZMA can have a substantial—or even a central—role in offshore aquaculture permitting, but only when its consistency review provisions are triggered.

States with NOAA-approved Coastal Management Programs (CMPs)<sup>81</sup> can review federal activities that affect land or water use or natural resources of their coastal zones,<sup>82</sup> and these activities must be consistent with the enforceable policies<sup>83</sup> of their approved CMPs.<sup>84</sup> In particular, activities requiring a federal license or permit are subject to federal consistency review (FCR) when they will have a reasonably foreseeable effect on a state's coastal zone.<sup>85</sup>

CMPs must list the activities with reasonably foreseeable effects that the state wishes to review for consistency.<sup>86</sup> The state can list activities beyond state waters by providing a general geographic location description (GLD) of the area where an activity could cause reasonably foreseeable effects.<sup>87</sup> States can review permitting activities that are not listed in their CMPs or are sited outside the GLD with the approval of NOAA's Office of Ocean and Coastal Resource Management (OCRM),<sup>88</sup> which determines whether to approve requests for consistency review based solely on whether a proposed activity's effects on the state coastal zone are reasonably foreseeable.<sup>89</sup>

If FCR is triggered, any applicant for a federal license or permit subject to review must certify in its application that its proposed activity complies with relevant state enforceable policies and will be conducted in a manner consistent with those policies.<sup>90</sup> The applicant must also furnish the necessary data, information, and an evaluation to support the certification.<sup>91</sup> Once a state receives a certification, it has six months to review the material,<sup>92</sup> and its review may include a public participation process.93 Based on its review, the state can concur, with or without conditions, that the project is consistent with its enforceable policies,<sup>94</sup> or it can object to the proposed activity.95 No permit or license can issue until the state concurs, unless the Secretary of Commerce finds after a reasonable opportunity for comment from the state and federal agency that the activity is consistent with the objectives or purposes of the CZMA or necessary for national security purposes.<sup>96</sup>

While federal permitting of offshore aquaculture remains in its infancy, it has already become clear that the CZMA is playing an important role in permitting decisions. As offshore aquaculture will generally occur outside a state's coastal zone, states have needed to obtain OCRM approval for FCR. California and Massachusetts have recently requested approval for FCR of separate proposed mussel farm RHA §10 permits.<sup>97</sup> While California's request was granted, Massachusetts' was not, as the state did not show that the farm would cause reasonably foreseeable effects on the coastal zone. In California, FCR resulted in a substantial public participation process that engaged the commercial wetfish industry and other stakeholders, resulting in a dramatic

97. ELI CORPS REPORT, supra note 8, at 20-26.

<sup>81. 16</sup> U.S.C. §§1451-1464.

<sup>82.</sup> The four types of federal actions subject to consistency requirements are federal agency activities, federal license or permit activities, outer continental shelf oil and gas plans, and federal financial assistance activities. 15 C.F.R. part 930, subparts C-F. Actions other than licensing and permitting activities have limited applicability to offshore aquaculture.

An "enforceable policy" is a legally binding state policy used to exert control over land and water uses and natural resources. 16 U.S.C. §§1453(6a), 1456.

Enforceable policies must be approved as part of the state CMP by NOAA's Office of Ocean and Coastal Resource Management (OCRM). 16 U.S.C. §\$1454, 1455.

<sup>85.</sup> Id. §1456(c). "Coastal zone" is defined as "the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, [including] islands, transitional and intertidal areas, salt marshes, wetlands, and beaches." Id. §1453(1).

 <sup>15</sup> C.F.R. §930.53(a). Recall that NOAA must approve the state's CMP, so the state does not have unlimited discretion in listing activities.

<sup>87.</sup> Id. §930.53(a)(1).

<sup>89.</sup> Id. §930.54(c).

<sup>90. 16</sup> U.S.C. §1456(c)(3)(A); 15 C.F.R. §930.57. The applicant must also deliver a copy of the certification to the state along with all necessary supporting data; each state, in turn, must provide public notice upon receipt of a certification. *Id.* Approval of an unlisted licensing or permitting activity requires the federal agency and applicant to comply with the certification requirements. 15 C.F.R. §930.54(d).

<sup>91. 15</sup> C.F.R. §930.58.

<sup>92.</sup> The time for review may be stayed by mutual agreement between the state agency and applicant. *Id.* §930.60(b).

<sup>93.</sup> Id. §930.61.

<sup>94. 16</sup> U.S.C. §1456(c)(3)(A).

<sup>95.</sup> Id.

<sup>96.</sup> *Id.* 

**NEWS & ANALYSIS** 

45 ELR 10883

expansion of conditions in comparison to the Corps' provisional RHA §10 permit.<sup>98</sup>

While aquaculture stakeholders may debate the specifics of the terms and conditions included in the California permit, this example illustrates how FCR can strengthen stakeholder engagement and provide perspective and expertise that is otherwise lacking, particularly where NOAA lacks direct permitting authority and there is no agency with fisheries or aquaculture expertise with responsibility for developing or reviewing substantive conditions in a permit.

#### B. NEPA

NEPA requires any federal agency undertaking a "major federal action[] significantly affecting the quality of the human environment"—a definition ranging from individual permitting decisions to adoption of programs or official policy (for example, regulations)—to analyze the environmental impacts of the proposed action.<sup>99</sup> NEPA requires agencies to consider the implications of their actions, but does not require them to take particular substantive actions in response to that analysis. A single lead agency will take primary responsibility for NEPA compliance, with input from cooperating agencies.<sup>100</sup> In the offshore aquaculture context, federal regulations and permitting both trigger NEPA, so agencies are obligated to consider the environmental implications of a project before issuing a permit for a particular project or for a category of projects.

When triggered, NEPA requires the acting agency to prepare a formal environmental impact statement (EIS) analyzing direct, indirect, and cumulative effects resulting from the proposed action.<sup>101</sup> An EIS may be for a specific project or programmatic, covering a range of future projects-both approaches have been used for offshore aquaculture. Before preparing an EIS, agencies will prepare an EA, a concise but formal document providing sufficient evidence and analysis to determine whether an EIS is necessary.<sup>102</sup> If the agency concludes, based on an EA, that the action will not have a significant effect on the human environment, the agency will make a finding of no significant impact (FONSI) that presents the reasons for its decision.<sup>103</sup> Where an agency finds that a category of actions have no individual or cumulative significant effect on the environment, it may issue a rule categorically excluding these actions from the requirement to conduct an EA or EIS.<sup>104</sup> Failure to comply with NEPA requirements can give rise to litigation challenging the legality of the entire project.<sup>105</sup>

104. Id. §1508.4.

Each of the federal offshore aquaculture permitting agencies applies NEPA, but in different ways. The Corps applies NEPA on a project-by-project basis, often requiring individual permit applicants to prepare and submit an EA for their projects as part of a completed application for an RHA \$10 permit.<sup>106</sup> Consultation in the context of a Corps permitting decision results in additional input and environmental analysis on the part of cooperating agencies, like NOAA's Office of Protected Resources, which may require revision of the EA. To date, the NEPA process for individual \$10 permits has generally resulted in the issuance of a FONSI, after sometimes substantial amendment of project proposals.<sup>107</sup>

Issuance of NPDES permits for new sources requires EPA to follow the NEPA process. NPDES permitting authorities in a variety of states have issued 17 general permits for aquaculture production; projects meeting the terms of such a permit need not obtain an individual permit and trigger no additional NEPA process.<sup>108</sup> However, no general permit applies to facilities located in federal offshore waters, and as a result, projects will be required to obtain individual permits after NEPA process, provided they are point sources subject to the CWA and will discharge pollutants.

NEPA is triggered under the MSA for both regulatory programs and specific projects. A programmatic EIS may be required when developing or amending an FMP that covers aquaculture; for example, the Gulf of Mexico Fishery Management Council produced a programmatic EIS for its aquaculture FMP, and NMFS is relying on that EIS, as amended, for its related regulations to implement the FMP.<sup>109</sup> Individual fishermen are not normally required to conduct an EA to obtain a permit for fishing under an FMP, and while offshore aquaculture producers under the rules proposed in the Gulf of Mexico will be required to provide more information than capture fishermen, these requirements do not explicitly include production of an EA that would meet NEPA requirements.<sup>110</sup> On the other hand, NMFS may produce or require production of an EA

- 107. See ELI CORPS REPORT, *supra* note 8, at 20-26 (reviewing case studies on offshore aquaculture permitting process).
- U.S. EPA, NPDES General Permit Inventory, *at* http://cfpub.epa.gov/ npdes/permitissuance/genpermits.cfm (permit category: aquaculture) (last visited July 12, 2015).
- 109. GULF OF MEXICO FISHERY MGMT. COUNCIL, supra note 68; NMFS, Draft Supplement to the Final Environmental Impact Statement for the Fishery Management Plan for Regulating Offshore Marine Aquaculture in the Gulf of Mexico (2014) (updating PEIS to consider effects of Deepwater Horizon explosion, among other developments); *Gulf of Mexico Aquaculture Proposed Regulations, supra* note 7, 79 Fed. Reg. at 51429 (reviewing NEPA process for proposed rule).
- 110. Applicants will need to submit a "baseline environmental assessment" of the proposed site pursuant to guidelines to be developed by NMFS, but this requirement as described does not require consideration of the impacts of the facility on the environment and the rule thus does not appear envisage an EA sufficient for NEPA compliance. *Gulf of Mexico Aquaculture Proposed*

<sup>98.</sup> See id. at 23-25.

<sup>99. 42</sup> U.S.C. §4332(c).

<sup>100. 40</sup> C.F.R. §1508.16 (defining lead agency), §1508.5 (defining cooperating agency), §1501.6 (describing selection and responsibilities of cooperating agencies).

<sup>101.</sup> See 40 C.F.R. §1508.25.

<sup>102.</sup> Id. §1508.9.

<sup>103.</sup> Id. §1508.13.

<sup>105.</sup> See, e.g., Kahea v. National Marine Fisheries Serv., No. CIV. 11-00474 SOM, 2012 WL 1537442 (D. Haw. Apr. 27, 2012), affd in part, 544 Fed.

Appx. 675 (Mem.) (9th Cir. 2013) (involving NEPA challenge to permit for offshore aquaculture project).

<sup>106.</sup> See 33 C.F.R. §325.2(a)(4) (noting that NEPA will apply to Corps permitting decisions including RHA §10). In most cases, Corps permits require only an EA rather than a full EIS. Id. §230.7. EAs may be prepared by the applicant, but the agency must make its own evaluation. 40 C.F.R. §1506.5. Based on this evaluation, it will determine whether to prepare an EIS or issue a FONSI. Id. §1501.4.

(and if required, an EIS) where no FMP applies to the permitted activity, such as for an aquaculture project approved pursuant to an exempted fishing permit or the recent issuance of a SCREFP for finfish aquaculture in Hawaii.<sup>111</sup>

Because multiple federal agencies may have concurrent permitting requirements for offshore aquaculture, the identity of the lead and cooperating agency for NEPA process may differ depending on the type and location of project under consideration. NOAA has commonly sought to serve as the lead agency in permitting processes (including for NEPA compliance) where it has permitting responsibilities, but the Corps has been the lead agency in other recent cases.<sup>112</sup> EPA can be expected to serve as lead agency only in the very rare cases where neither NOAA nor the Corps has authority but an NPDES permit is required.

## C. The MMPA

The MMPA is one of two acts protecting marine species with particular relevance for offshore aquaculture. The U.S. Fish and Wildlife Service (FWS) and NOAA implement the MMPA with help from the Marine Mammal Commission. NOAA administers the Act with respect to members of the order *Cetacea* (whales, dolphins, and porpoises) and *Pinnipedia* (for example, sea lions and seals) other than walruses. FWS administers the Act with respect to all other marine mammals covered by the Act (otters, walruses, polar bears, manatees, and dugong).

While the MMPA prohibits the "taking" of marine mammals in U.S. waters,<sup>113</sup> it authorizes the limited incidental take of marine mammals as a result of commercial fishing operations—explicitly including aquaculture activities.<sup>114</sup> The Act directs the Secretary of Commerce to issue regulations aimed at reducing to the lowest possible amount the number of marine mammal takings incidental to commercial fishing operations.<sup>115</sup>

In order to facilitate this reduction, NOAA regulations divide fisheries into three categories, and a list categorizing all fisheries (by location, target species, and gear) is published each year.<sup>116</sup> Category I and II fisheries cause "frequent and occasional incidental mortality and serious injury," respectively,<sup>117</sup> while Category III fisheries have "a remote likelihood of, or no known incidental mortality and serious injury of marine mammals."<sup>118</sup> If a commercial fishery is not specifically listed in any category, it is deemed a Category II fishery until a new list of fisheries specifically identifying it is published.<sup>119</sup> Owners of vessels or gear operating in a Category I or II fishery are subject to restrictions intended to reduce take, such as registration, authorization, observer coverage, and mandatory take reduction requirements,<sup>120</sup> which are not applicable to Category III fisheries.<sup>121</sup>

The list of fisheries includes several very broad and very specific categories of aquaculture operations, including offshore aquaculture categories such as Hawaii "offshore pen culture," California "marine shellfish aquaculture," and "finfish aquaculture" and "shellfish aquaculture" in the Atlantic Ocean, Gulf of Mexico, and Caribbean—all of which are listed in Category III.<sup>122</sup> The list covers all recently proposed activities, in part due to the very broad listing of aquaculture in the Atlantic and Gulf of Mexico.

As a result, aquaculture producers do not currently need to obtain a certificate of authorization except in the rare case that their activities are not included on the list of fisheries a limitation that would likely apply for only one year after project issuance. As a result, MMPA authorization currently imposes minimal limitations on offshore aquaculture development. However, documented take of marine mammals by aquaculture facilities could alter this in the future.

### D. The ESA

Offshore aquaculture generally will intersect with the ESA as a result of consultation during permitting. Section 7 of the ESA requires that any federal agency undertaking or authorizing an action (including permitting) must consult with an expert agency (FWS or NOAA's Office of Protected Resources, depending on the species at issue)<sup>123</sup> to ensure that the action will not jeopardize the continued survival of a listed threatened or endangered species or adversely affect its critical habitat.<sup>124</sup> Consultation often proceeds concurrently and as part of the NEPA process.<sup>125</sup>

119. Id.

*Regulations, supra* note 7, at 51436 (to be codified at 50 C.F.R. §622.101(a) (2)(v)].

<sup>111.</sup> See NMFS, Finding of No Significant Impact: Issuance of a Permit to Authorize the Culture and Harvest of a Managed Coral Reef Fish Species (*Seriola rivoliana*) in Federal Waters Off the West Coast of the Island of Hawaii, State of Hawaii (July 6, 2011).

<sup>112.</sup> See ELI CORPS REPORT, supra note 8, at 20-26 (reviewing recent cases).

<sup>113. 16</sup> U.S.C. §1372(a). The MMPA defines "take" as "harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." *Id.* §1362(13). The Act defines "harassment" as "any act of pursuit, torment, or annoyance which" could "injure a marine mammal or marine stock in the wild" or "disturb a marine mammal or marine stock in the wild" or "disturb a marine mammal or marine stock in the wild" on behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." *Id.* §1362(12)(A).

<sup>114. 16</sup> U.S.C. §1387(a); 50 C.F.R. §§229.4(j), 229.2 (defining "commercial fishing operation" to include aquaculture).

<sup>115. 16</sup> U.S.C. \$1381(b). For the purposes of the MMPA, "[f]ishing vessel or vessel means any vessel, boat, ship, or other craft that is used for, equipped to be used for, or of a type normally used for, fishing." 50 C.F.R. \$229.2.

<sup>117.</sup> Id. §229.2.

<sup>118.</sup> *Id.* (classifying as Category III those fisheries that, collectively with other fisheries, are annually responsible for "[t]en percent or less of any marine mammal stock's potential biological removal level" or, if collectively responsible for more than ten percent, the fishery is individually "responsible for the annual removal of 1 percent or less of that stock's potential biological removal level").

<sup>120. 50</sup> C.F.R. §229.4. "Vessel owner or operator means the owner or operator of: (1) A fishing vessel that engages in a commercial fishing operation; or (2) Fixed or other commercial fishing gear that is used in a nonvessel fishery." *Id.* §229.2.

<sup>121.</sup> Id. §229.5.

<sup>122.</sup> List of Fisheries for 2015, 79 Fed. Reg. 77919 (Dec. 29, 2014) (listing CA white seabass enhancement net pens; WA/OR salmon net pens; CA marine shellfish aquaculture; CA salmon enhancement rearing pen; HI offshore pen culture; OR salmon ranch; WA Shellfish; and Atlantic Ocean, Gulf of Mexico, and Caribbean finfish aquaculture and shellfish aquaculture).

<sup>123.</sup> Generally, FWS is responsible for land and freshwater species and NOAA for marine species.

<sup>124. 16</sup> U.S.C. §1536(a).

<sup>125.</sup> Id. §1536(c)(1).

**NEWS & ANALYSIS** 

The action agency consults with the expert agency first to determine whether a listed species is present in the project area.<sup>126</sup> If so, the action agency prepares a biological assessment (BA) that identifies any listed species that may be affected by the action.<sup>127</sup> If the BA indicates (and the expert agency concurs) that the action is not likely to adversely affect a listed species or its critical habitat, the consultation process ends. However, if the BA indicates that adverse effects are likely, the action agency and expert agency begin formal consultation to determine whether the action will jeopardize the continued survival of a listed species or adversely affect its critical habitat.<sup>128</sup>

Formal consultation results in a biological opinion "detailing how the agency action affects the species or its critical habitat" and, where relevant, reasonable and prudent alternatives to prevent jeopardy or adverse modification.<sup>129</sup> If an opinion finds jeopardy or adverse modification, the proposing agency, in practice, will abandon the proposed action, modify the project and start again with the review process, or implement a recommended alternative. If a biological opinion finds adverse effects but no jeopardy, NOAA or FWS will issue an incidental take statement describing the amount of anticipated harm, ways to minimize that harm, and requirements for implementing those measures.<sup>130</sup>

The ESA prohibits the "taking" of any listed species<sup>131</sup> without authorization. Take includes not only direct actions such as hunting, but also activities that indirectly cause harm to a listed organism.<sup>132</sup> The take prohibition applies to any person under the jurisdiction of the United States and extends to the high seas.<sup>133</sup> However, incidental take that occurs as a result of an action conducted in compliance with restrictions in an incidental take statement will not be considered a prohibited take.<sup>134</sup>

As a practical matter, most offshore aquaculture facilities will be protected from ESA liability through compliance with an incidental take statement, making consultation critical to the design and operation of offshore facilities. For example, a blue mussel project recently permitted in federal waters off Massachusetts was required to substantially change the location, scale, and design of the project to avoid interactions with endangered North Atlantic right whales and other protected species. Early consultation and iterative learning about interactions between aquaculture infrastructure and protected species, such as mammals, sea turtles, and seabirds, is needed if the industry is to develop in a sustainable manner.

- 130. *Id.* §1536(b)(4).
- 131. Id. §1538.

## IV. Case Studies on Offshore Aquaculture Permitting

Viewed in isolation, each of the programs detailed in this report applies to offshore aquaculture in a complex and case-dependent manner. The application of each of these provisions to offshore aquaculture may vary, as may the manner in which the responsible agencies implement their authority to conduct permitting and consultation requirements. In this section, we present case studies on several recent permitting processes to provide a window into how permitting for projects is currently being applied.

#### A. Northeastern Massachusetts Aquaculture Center

In 2012, the Northeastern Massachusetts Aquaculture Center (NEMAC) at Salem State University, with support from NOAA's Office of Aquaculture, applied to the Corps' New England District for a \$10 permit for a 33-acre submerged blue mussel (Mytilus edulis) demonstration farm to be located in federal waters 8.5 miles off Cape Ann, Massachusetts.<sup>135</sup> NEMAC proposed a location one-half mile outside of Stellwagen Bank National Marine Sanctuary (Stellwagen NMS) after consultation with relevant agencies, including NMFS, NOAA's Office of Protected Resources, the Corps, EPA, and the Massachusetts Office of Coastal Zone Management (MA CZM),<sup>136</sup> and consultation with a retired commercial fisherman to avoid conflicts with fishing areas.<sup>137</sup> NEMAC did not need an MSA permit from NMFS as mussels are not a federally managed species.

Preliminary review by the Corps indicated a need for interagency consultation under several federal statutes, as well as creation of an EA.<sup>138</sup> The Corps initiated consultation with NMFS due to potential impacts on EFH and with NOAA's Office of Protected Resources due to potential impacts on endangered Atlantic sturgeon, leatherback sea turtle, loggerhead sea turtle, Kemp's ridley sea turtle, humpback whale, North Atlantic right whale, and fin whale.<sup>139</sup> MA CZM also applied to OCRM for approval to review the project for consistency with state law as authorized by the CZMA; however, OCRM denied the applica-

<sup>126.</sup> Id.

<sup>127.</sup> Id.

<sup>128. 16</sup> U.S.C. §1536(b). 129. *Id.* 

<sup>132. 16</sup> U.S.C. §1532(19) (defining "take" to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct").

<sup>133.</sup> Id. §1538(a)(1).

<sup>134.</sup> Id. §1536(o).

Corps New England Dist., File No. NAE-2012-01598, Pub. Notice: Northeastern Mass. Aquaculture Ctr. (2013), *available at* http://www.nae.usace. army.mil/Portals/74/docs/regulatory/publicnotices/NAE-2012-01598.pdf.

<sup>136.</sup> Authors' Personal Communication with Ted Maney & Mark Fregeau, Salem State Univ. (Oct. 18, 2013). NEMAC initially considered a site in Stellwagen NMS, which is closed to fishing and in which mariculture and artificial reefs are also forbidden due to habitat modification and destruction. *Id.* 

<sup>137.</sup> Vessel trip reports indicated substantially less than 1% of catch landed within two nautical miles of the preferred site. Ted Maney et al., Establishing an Offshore Mussel Farm in Federal Waters in the Gulf of Maine, Presentation to Northeast Fisheries Mgmt. Council (June 2013).

<sup>138.</sup> Corps New England Dist., File No. NAE-2012-01598, *supra* note 135. NEMAC completed and submitted an EA. Authors' Personal Communication with Maney & Fregeau, *supra* note 136. In most cases, permits will only require an EA rather than a full EIS. 33 C.F.R. §230.7.

<sup>139.</sup> Corps New England Dist., File No. NAE-2012-01598, supra note 135.

tion in March 2013.<sup>140</sup> The Corps subsequently issued a public notice for the proposed permit in April 2013.<sup>141</sup>

The Corps received independent comments from numerous agencies as a result of interagency consultation.<sup>142</sup> Several NOAA offices submitted comments with different conclusions. Stellwagen NMS submitted comments expressing concerns about the proximity of the farm site to the sanctuary and about the increased risk of entanglement of endangered whales in an area already replete with vertical lines from lobster traps and gillnets. Separately, NOAA's protected species staff initially indicated that the proposed farm was "not likely to affect" protected species if it adhered to conditions applied to other shellfish farms in the region, but subsequently reversed this determination because the proposed farm site is located in a possible whale migration route, and could result in possible whale entanglement. The comments suggested that reduction in the project from a commercial-scale farm to small-scale test farm (two to three lines) could be required to address these concerns.<sup>143</sup>

The Corps also consulted with the Coast Guard, which must conduct a navigation safety risk assessment for all projects in the open ocean.<sup>144</sup> The Coast Guard review found that deep draft vessels occasionally transit the proposed site, and the farm as designed could cause a safety hazard, leading NEMAC to modify its plans to hold its lines deeper than initially proposed.<sup>145</sup> The EPA also reviewed the project for CWA concerns and cleared the farm to move forward.<sup>146</sup>

NEMAC also faced a unique hurdle in the form of area closures prohibiting shellfish harvest in the proposed site due to historic paralytic shellfish poisoning (PSP) outbreaks. Harvest of bivalves in the closed area is allowed only with and following the terms and conditions of a letter of authorization (LOA) from NOAA's Regional Administrator,<sup>147</sup> which would allow harvest only for scientific purposes.<sup>148</sup> NEMAC planned to proceed with an LOA upon issuance of an RHA permit, as the research scope to be authorized by the LOA is consistent with the reduced project size related to whale entanglement concerns.<sup>149</sup> However, the PSP closure was lifted on October 1, 2014, and therefore an LOA is no longer needed.<sup>150</sup> Following this action, in January 2015, the Corps issued NEMAC an RHA §10 permit with conditions.<sup>151</sup>

More recently, a private applicant, in collaboration with researchers at Woods Hole Marine Biological Laboratory, also sought a §10 permit for blue mussel aquaculture to be conducted at a site located in federal waters on Horseshoe Shoals near the Cape Wind offshore wind development project site.<sup>152</sup> A similar public notice and consultation process produced substantially less complexity, as it was not located near Stellwagen NMS, was not located near a whale migration area, and was not in a PSP closed area. After the comment period ended, the Corps issued a permit with conditions to install the aquaculture facility at this site.<sup>153</sup> The permit will allow three lines on almost 30 acres, to be expanded up to a maximum of 25 lines if the initial test phase is successful.<sup>154</sup>

## B. Catalina Sea Ranch

In 2012, KZO SeaFarms (now Catalina Sea Ranch) submitted an RHA §10 permit application to the Corps' Los Angeles District for a commercial-scale shellfish facility located on the San Pedro shelf offshore from Huntington

- 149. Authors' Personal Communication with Maney & Fregeau, supra note 136.
- 150. Atlantic Surfclam and Ocean Quahog Fishery, 79 Fed. Reg. 59150 (Oct. 1, 2014) (final rule lifting Northern Temporary Paralytic Shellfish Poisoning Closed Area for the harvest of bivalve molluscan shellfish).
- 151. See Corps, Final Individual Permits (2015), http://geo.usace.army.mil/egis/ f?p=340:2:0::NO:RP (filed under New England District, noting issuance of permit with special conditions on Jan. 7, 2015).
- 152. Corps New England Dist., File No. NAE-2013-1584, Pub. Notice: Domenic Santoro (Sept. 13, 2013).
- Corps, August Monthly Permitting Decisions 4 (2014), available at http://www. nae.usace.army.mil/Portals/74/docs/regulatory/PermitsIssued/Aug2014. pdf (noting issuance of permit with special conditions on Aug. 21, 2014).
- 154. See Lonnie Shekhtman, US Waters Create Potential for Shellfish Farming, BOSTON GLOBE, Nov. 23, 2014, available at https://www.bostonglobe.com/ business/2014/11/23/musseling/85M5oCVF8XorWFuAFVVo8M/story. html (describing proposed farm site and production plan).

<sup>140.</sup> Decision Letter from OCRM to MA CZM (Mar. 19, 2013). OCRM denied the request because none of the five impacts cited by Massachusetts would create reasonably foreseeable effects on coastal uses or resources. The cited impacts were: (i) effects on benthic infauna, sediment transport, and sediment scouring; (ii) fisheries, marine mammal and sea turtle interactions; (iii) invasive organism colonization; (iv) commercial and recreational fishing; and (v) increased vessel traffic. *Id.* 

<sup>141.</sup> Corps New England Dist., File No. NAE-2012-01598, supra note 135.

<sup>142.</sup> Authors' Personal Communication with Maney & Fregeau, *supra* note 136. 143. *Id.* 

<sup>144.</sup> Before establishing a structure (including an aquaculture facility) in the ocean, the owner or operator must apply for authorization to mark the structure as a private aid to navigation (PATON). 33 C.F.R. §64.21; *see also id.* §64.06 (defining structure to include any fixed or floating obstruction). The Coast Guard District Commander will determine the appropriate markings for the structure based on factors listed in the regulations. *Id.* §§64.21, 64.31.

<sup>145.</sup> Authors' Personal Communication with Maney & Fregeau, *supra* note 136. The Corps will generally incorporate Coast Guard requirements (e.g., structure marking) as conditions to permits. Kristen M. Fletcher, *Law & Offshore Aquaculture: A True Hurdle or a Speed Bump?*, *in* EFFORTS TO DEVELOP A RESPONSIBLE OFFSHORE AQUACULTURE INDUSTRY IN THE GULF OF MEXICO: A COMPENDIUM OF OFFSHORE AQUACULTURE CONSORTIUM RESEARCH 23, 26 (Christopher J. Bridger ed., 2004).

<sup>146.</sup> Authors' Personal Communication with Maney & Fregeau, *supra* note 136.

<sup>147. 50</sup> C.F.R. §648.14(a)(10):

It is unlawful for any person to . . . [f]ish for, harvest, catch, possess or attempt to fish for, harvest, catch, or possess any bivalve shellfish

<sup>...</sup> unless issued and possessing on board a Letter of Authorization (LOA) from the Regional Administrator authorizing the collection of shellfish for biological sampling and operating under the terms and conditions of said LOA, in [the defined closed areas].

see also Magnuson-Stevens Fishery Conservation and Management Act Provisions; Fisheries of the Northeastern United States; Extension of Emergency Fishery Closure Due to the Presence of the Toxin That Causes Paralytic Shellfish Poisoning (PSP), 78 Fed. Reg. 78783 (Dec. 27, 2013) (extending emergency PSP closures).

<sup>148.</sup> Authors' Personal Communication with David Alves (Jan. 23, 2014). The LOA required for NEMAC would be different than the LOA for harvest of surf clams and ocean quahogs from the Georges Bank Closed Area, which requires a federal fishing permit and adherence to a PSP testing protocol developed with the U.S. Food & Drug Administration through years of research harvest and testing. *See* NOAA, Letter of Authorization (LOA) Request Form 8-9 (2013) (*citing* U.S. Food & Drug Admin., Example of Protocol for Onboard Screening and Dockside Testing for PSP in Closed Federal Waters (n.d.)).

NEWS & ANALYSIS

Beach, California.<sup>155</sup> The project did not require an MSA permit because it will not culture managed species, and it does not qualify as a CAAP facility subject to NPDES permitting. KZO originally proposed to occupy 1,076 acres approximately five miles from the coast, but the project was subsequently modified to cover 100 acres approximately 8.5 miles offshore, where the operator will culture approximately 25,000 pounds of Mediterranean mussels (Mytilus galloprovincialis) and Pacific oysters (Crassostrea gigas) each year on submerged longlines.<sup>156</sup> KZO selected the proposed location and depth of lines in consultation with the Coast Guard in order to avoid conflicts with shipping and nearby oil platforms and pipelines. It also attempted to anticipate and address concerns raised during consultation and enable a more efficient permitting process by developing and submitting substantial scientific information and letters in support of its application.<sup>157</sup>

The Corps' preliminary review indicated that an EIS was not required, that the project would not affect coastal resources or require state water quality certification, and that it would not affect cultural resources or threatened or endangered species. However, the preliminary review did identify potential adverse impacts on EFH, triggering consultation requirements with NMFS pursuant to the MSA.<sup>158</sup> Following pre-consultation and preliminary analysis, the Corps issued the public notice of permit application, which also served as the basis for interagency consultation.<sup>159</sup>

The Corps received a number of comments in response to the public notice, including 10 letters from the public and agency comments from EPA, the Coast Guard, and NOAA.<sup>160</sup> NOAA submitted a single set of comments (combining input from multiple NOAA offices, including NMFS and Protected Resources) on the proposed project. It commented that the project, in general, is consistent with the national shellfish initiative and NOAA's goal of increasing domestic aquaculture production. However, NOAA recommended some project modifications to address adverse impacts on EFH, and raised concerns about marine mammal and endangered species entanglement. Based on project modification, the Corps reissued a revised public notice and again received comment letters, including from the Bureau of Safety and Environmental Enforcement within the U.S. Department of Interior, the Coast Guard, and oil and gas platform operators.<sup>161</sup> Following consultation and public comment on the revised notice, the Corps issued a provisional permit pending the completion of review of the permit for consistency with state law.

The California Coastal Commission requested and received authorization from OCRM to conduct a consistency review of the KZO SeaFarms project pursuant to the CZMA, resulting in both independent review and a second, state-led public comment period.<sup>162</sup> Unlike the Corps process, the state Commission received a variety of public comments from fishing interests, environmental organizations, and the Pacific Fisheries Management Council.<sup>163</sup> Following public comment and after completing its own review, the Commission concurred with the permit pending compliance with 13 special conditions (set out below in Table 1), several of which require KZO to develop plans and obtain approval from the Commission prior to construction and to monitor the site for environmental impacts during and after construction.<sup>164</sup> As KZO accepted all the state Commission's special conditions, the Corps has finalized and issued the permit, and the modified project is expected to go forward once KZO has obtained approval for its plans.<sup>165</sup>

## Table I. Conditions for ConcurrenceWith Catalina Sea Ranch Permit

#### Condition

- I. Offshore Mariculture Monitoring Program
- 2. Marine Wildlife Entanglement
- 3. Lighting and Operations at Night
- 4. Construction Monitor
- 5. Notice to Mariners
- 6. Spill Prevention and Control Plan
- 7. Lost/Damaged Fishing Gear Compensation Program
- 8. Updated NOAA Charts
- 9. Letter of Credit
- Facility Removal
- 11. Discharge of Biological Materials
- 12. Marine Debris
- 13. Invasive Species

<sup>155.</sup> Corps Los Angeles Dist., Pub. Notice No. SPL-2012-00042-DPS, Application for Permit: KZO Mariculture Project (2012) [hereinafter Catalina Application]. The initial application sought a larger project, but reduced the area to 100 acres after initial consultation with NOAA. The proposed species are not regulated by the Pacific Fishery Management Council pursuant to the MSA; as a result, no separate NOAA permit or notice was required that would suggest NOAA should lead the permitting process.

<sup>156.</sup> Memorandum from Cassidy Teufel, to California Coastal Commissioners and Interested Parties 1, 7-8 (Jan. 7, 2014) [hereinafter CCC Staff Report].

<sup>157.</sup> Catalina Application, *supra* note 155.

<sup>158.</sup> *Id.* at 2-3; *see also* MSA REPORT, *supra* note 12.

<sup>159.</sup> Catalina Application, *supra* note 155, at 2-3.

<sup>160.</sup> Authors' Personal Communication with Corps (Nov. 2014). 161. *Id.* 

<sup>162.</sup> Approval was required because the project was outside of the geographical boundaries where consistency review is required by default. CCC Staff Report, *supra* note 156, at 12-13.

<sup>163.</sup> See CCC Staff Report, supra note 156 (compiling comments); PACIFIC FISHERY MGMT. COUNCIL, DECISION SUMMARY DOC. NOV. 1-6, 2013, at 1 (2013); PACIFIC FISHERY MGMT. COUNCIL, AGENDA ITEM D.1.B, SUPPLEMENTAL HABITAT COMM. REP. 2 (Nov. 2013) (directing habitat committee to express concerns to the state Commission "regarding EFH and the necessity of habitat monitoring that can inform decisions on the KZO project, both for the current process and potential future expansion").

<sup>164.</sup> CCC Staff Report, *supra* note 156. Initial review recommended conditional concurrence based on 12 conditions. Commission staff subsequently issued an addendum recommending adding condition 13 and modifying condition 2; the addendum also indicates that KZO accepted all the conditions, resulting in a modified recommendation that the Commission concur. *Id.* at 1. The Commission adopted its staff recommendation in January 2014. *See* California Coastal Comm'n, January 2014 Agenda (Jan. 7, 2014), *available at* http://www.coastal.ca.gov/meetings/mtg-mm14-1.html (last visited Feb. 2, 2015) (noting that Agenda Item No. W16a, "Consistency Certification by KZO SeaFarms," was approved).

<sup>165.</sup> ChrisRichard, California Aquaculture Companies Explore Sustainable Fish Farming, KQED Sci., Sept. 8, 2014, http://blogs.kqed.org/science/2014/09/08/ aquaculture-companies-explore-sustainable-fish-farming/.

ENVIRONMENTAL LAW REPORTER

9-2015

#### C. Kampachi Farms

Kampachi Farms and its predecessor, Kona Blue Water Farms, have operated phased offshore aquaculture projects culturing marine finfish in waters off Hawaii.<sup>166</sup> In 2011, NMFS issued a SCREFP authorizing Kona Blue Water Farms to culture almaco jack (Seriola rivoliana), a reef fish, in untethered pods near Hawaii for one year.<sup>167</sup> The permit issued under the Western Pacific Council's Hawaii FMP,168 which allows NMFS to permit take of managed coral reef species with new gear not expressly listed in the management plan.<sup>169</sup> The SCREFP was the only permit required: The project did not require a \$10 permit because it used a floating cage tethered to a vessel and therefore was not "permanently or temporarily attached to the seabed"; and it did not need an NPDES permit as it was too small to qualify as a CAAP facility.<sup>170</sup> As a result, NMFS led the NEPA process and required consultations, which resulted in issuance of a FONSI based on an EA.<sup>171</sup>

More recently, Kampachi Farms sought permits to raise the same species using an anchored feed barge and cage facility between six and seven miles off the Kona Coast of Hawaii.<sup>172</sup> The facility design consists of a feed barge permanently moored in approximately 1,000 fathoms of water, attached to a "CuPod" in which the hatcherysourced fish would be grown to market size; the barge and CuPod would swing freely about the mooring.<sup>173</sup>

Kampachi Farms applied concurrently for both an RHA §10 permit from the Corps' Honolulu District and a SCREFP from NMFS. NMFS initially took on lead agency permitting and responsibility for NEPA compliance related to the project,<sup>174</sup> and in that role developed an EA that resulted in a FONSI.<sup>175</sup> The Corps issued the required public notice of the application in March 2013, indicating proposed best management practices to minimize impacts to waters, noting that water quality and CZMA consistency certifications were required,<sup>176</sup> and stating that consultation with NMFS regarding potential impacts on EFH and with NOAA's Office of Protected Resources regarding endangered species would be conducted concurrently with issuance of the public comment.<sup>177</sup>

Hawaii declined consistency review, and after carrying out the other required consultations and public comment, the Corps issued a §10 permit in October 2013, completing the process before NMFS made its final SCREFP determination. This allowed Kampachi Farms to install the facility, but not stock it with fish. NMFS issued the SCREFP a month later, in November 2013, allowing the project to go forward.<sup>178</sup>

#### V. Analysis

The foregoing descriptions of relevant statutory and regulatory regimes and their recent implementation lead us to three broad conclusions. First, the current statutory and regulatory regime can provide sufficient authority to address all of the substantial environmental impacts associated with aquaculture. Second, implementation of these authorities to address these impacts in a predictable and consistent manner is a challenge, and not all relevant impacts may currently be addressed in practice without strong consultation. Implementation challenges can be overcome with targeted regulatory and policy development, and additional tools, data, and guidance for regulators. Third, continued development of MSA permitting will change the current landscape and may address some implementation challenges. In combination, these conclusions suggest that governance is not the biggest limitation on offshore aquaculture development, and that other factors-including economic competitiveness-should be more closely scrutinized when seeking to determine why growth of the sector has been limited to date.

#### A. Coverage of Environmental Impacts

While some regulatory or legislative amendments may be needed, current statutes provide a range of authorities that,

<sup>166.</sup> Kampachi Farms is building on prior efforts carried out by Kona Blue Water Farms, an independent entity that has ceased operations.

<sup>167.</sup> NMFS, Proposed Issuance of a Permit to Authorize the Culture and Harvest of a Managed Coral Reef Fish Species (*Seriola rivoliana*) in Federal Waters West of the Island of Hawaii, State of Hawaii 37-38 (2011), *available at* http://www.fpir.noaa.gov/SFD/pdfs/EA%20&t%20FONSI%20Kona%20 Blue%20%282011-07-06%29.pdf.

<sup>168.</sup> Technically, the Western Pacific Council management plans are Fishery Ecosystem Plans (FEPs), not FMPs. The Councils adopted these FEPs in 2010 based on a recommendation from NOAA's Ecosystem Principles Advisory Panel, which was created to recommend steps for moving toward ecosystem-based fisheries management. See Ecosystem PRINCIPLES AD-VISORY PANEL, ECOSYSTEM-BASED FISHERY MANAGEMENT: A REPORT TO CONGRESS (1998); Western Pacific Reg'l Fishery Mgmt. Council, Fishery Plans, Policies, Reports, http://wpcouncil.org/fishery-plans-policies-reports/ (last visited June 7, 2013).

<sup>169. 50</sup> C.F.R. §665.224(a).

<sup>170.</sup> NMFS, Proposed Issuance of Permit to Authorize Culture and Harvest of Managed Coral Reef Fish Species, *supra* note 167, at 5.

<sup>171.</sup> Id.

<sup>172.</sup> Corps Honolulu Dist., Permit File No. POH-2012-00016, Pub. Notice of Application for Permit (2013) [hereinafter Kampachi Farms Pub. Notice]. The Honolulu District has also reviewed a 2010 application by Ahi Aquaculture for a five-year permit to carry out a pilot project to test materials, design, and operation of equipment for tuna cultivation in state waters, 2.6 nautical miles from Hawaii. Corps Honolulu Dist., Permit File No. POH-2009-0263, Pub. Notice of Application for Permit (2010). As this application pertains to state waters, it is not considered in detail here.

<sup>173.</sup> Kampachi Farms Pub. Notice, supra note 172, at 5-6.

<sup>174.</sup> The SCREFP was required because Western Pacific Fishery Management Council manages *Seriola rivoliana* as a reef fish pursuant to the MSA. The company had previously obtained a separate SCREFP for the Velella

beta trial. See MSA REPORT, supra note 12 (discussing prior project and surrounding litigation).

<sup>175.</sup> Fisheries in the Western Pacific; Special Coral Reef Ecosystem Fishing Permit, 78 Fed. Reg. 66683 (Nov. 6, 2013) (*citing* NOAA, Pacific Islands Reg'l Office Doc. No. RIN 0648-XC791, Environmental Assessment for the Issuance of a Special Fishing Permit to Authorize the Use of an Anchored Pod to Culture and Harvest a Coral Reef Ecosystem Management Unit Species, *Seriola rivoliana*, in Federal Waters West of Hawaii Island (Oct. 25, 2013)).

<sup>176.</sup> Hawaii considered conducting a consistency review of the project, but did not do so due to the limited size of the project, while recognizing that larger scale facilities would likely trigger full consistency review. Authors' Personal Communication with Neil Sims (Dec. 2013).

<sup>177.</sup> Kampachi Farms Pub. Notice, supra note 172, at 1-2.

Fisheries in the Western Pacific; Special Coral Reef Ecosystem Fishing Permit, 78 Fed. Reg. 66683 (Nov. 6, 2013).

**NEWS & ANALYSIS** 

alone or in combination, can address the major categories of environmental impacts associated with offshore aquaculture. Two permitting statutes—the RHA and MSA give the implementing agencies broad discretion to include conditions in permits, while the CWA also provides wider authority than commonly recognized.

Further, the consultation authorities that supplement these permitting programs, where they apply, require that permits consider and address broad (CZMA, NEPA) or targeted (ESA, MMPA, MSA) impacts on the environment. In particular, RHA §10 provides authority to consider direct, indirect, and cumulative impacts of offshore aquaculture facility construction and operation and to impose conditions to avoid and mitigate those impacts. And where the MSA applies, management measures included in an FMP can help to minimize the environmental impacts of aquaculture facilities and enable the collection of information needed to determine their individual and cumulative impacts and effects on wild fisheries.

A variety of environmental impacts are commonly associated with marine aquaculture.

- Escapes of cultured organisms or genetic material may result in introduction of non-native species (altering ecosystem dynamics) or contamination of wild stocks (for example, listed runs of wild Atlantic salmon) by breeding with genetically distinct (or modified) cultured strains.
- Discharge of excess feed, sewage, and other pollutants may result in degradation of water quality and benthic habitats.
- Cultured animals may introduce new diseases or parasites and may incubate and spread existing diseases or parasites, and may result in excessive use of antibiotics and parasiticides.
- Aquaculture facilities may interact with and result in harm to protected species and other predators (for example, sharks).

In addition to these impacts, offshore aquaculture is associated with a variety of life-cycle impacts (for example, reliance on unsustainable wild-sourced fish meal and oil) and user conflicts with capture fisheries, navigation, energy projects, and other users of offshore areas.

Proposed and past permits address each of these categories of impacts, as well as manage user conflicts. The MSA permit system proposed to implement the Gulf of Mexico Aquaculture FMP includes elements designed to address each of these impacts, as well as conflicts with other uses and to protect navigation (set out below in Table 2). The recent examples of the Catalina Sea Ranch and NEMAC permits similarly illustrate the breadth of considerations that fall within the Corps' authority under its public interest standard for review and issuance of \$10 permits. In particular, the 13 conditions for concurrence included in the Catalina Sea Ranch permit are wide-ranging and address issues ranging from wildlife entanglement to marine debris. While fewer recent examples of NPDES permitting are in the offshore aquaculture context, the ELGs cover a range of discharges, albeit not escapes. Consultation requirements supplement the primary permitting authorities—notably the CZMA, which produced the conditions in the Catalina Sea Ranch permit—but also the ESA and the MMPA, which produced substantial alteration in the design of the NEMAC permit to address entanglement. While there may be debate regarding the appropriateness and effectiveness of the elements and conditions included in NMFS-proposed regulations in the Gulf of Mexico and recent permits, they illustrate the breadth of NMFS and Corps authority.

#### B. Addressing Implementation Challenges

Sufficiently broad authority is a necessary but not sufficient condition for effective governance of offshore aquaculture. Implementation of these authorities is a significant challenge that requires effective consultation and can be improved by targeted policy development and interagency coordination. Successful implementation will result in permitting outcomes that address all impacts and conflicts in a consistent and predictable manner.

## 1. Process Differences Among Permits May Result in Inconsistency and Incomplete Coverage of Environmental Impacts

The regulatory environment surrounding offshore aquaculture permitting can differ substantially based on the location and design of a particular project due to limited application of each relevant permitting program. For example, RHA §10 does not apply to offshore facilities not connected to the seabed, while the NPDES system excludes shellfish aquaculture and other facilities below certain production size cutoffs. The MSA currently has the largest gaps, as NMFS lacks effective authority to regulate species not covered by an FMP, and the first FMP directed at finfish aquaculture production is only now on the cusp of implementation. These nuances mean that a facility proposed in one location may need permits that are different from those for the same facility proposed elsewhere (for example, a finfish project in the Gulf of Mexico will be subject to MSA permitting, but that project in other regions may not require an MSA permit); and projects culturing different species in a single region may be subject to different permit requirements (for example, a large shellfish farm in New England need not obtain an NPDES or MSA permit, but a finfish farm in the same region may require both an NPDES permit and a framework adjustment or exempted fishing permit).

The differences in governing authority create implementation challenges because the permitting process and lead agency will necessarily differ, as will consultation requirements and the authority for permit conditions. Where an MSA permit is required, NMFS is likely to serve as lead

15 ELR 10890	ENVIRONMENTAL LAW REPORTER	9-2015

Table 2. Management Measures in Gulf of Mexico Aquaculture FMP		
Impact	Protections included as preferred alternatives in Aquaculture FMP	
Use of non-native organisms	<ul> <li>NOAA will allow culture of only native species managed by the Council, except shrimp and corals</li> <li>Applicant must certify all native broodstock, harvested from or progeny of the same population where the facility is located and certify no genetically modified or transgenic organisms</li> <li>Applicant must provide hatchery certification that broodstock are tagged or marked; operator must ensure genetic material is collected and submitted for each individual</li> <li>Operator must provide copies of hatchery permits from which juveniles are collected</li> </ul>	
Escapes	<ul> <li>NOAA will conduct case-by-case analysis of each system based on structural integrity; potential risks to EFH, endangered or threatened marine species, marine mammals, wild fish or invertebrate stocks, public health, or safety</li> <li>Applicant must provide emergency disaster plan and maintain at least one tracking device on each aquaculture system</li> <li>Operator must notify NOAA-Fisheries Service of major escapement, including the cause of escapement and actions being taken to address the escapement</li> </ul>	
Discharge of feed, waste, and other pollutants	<ul> <li>Applicant must provide a copy of applicable NPDES permit</li> <li>Operator must comply with applicable monitoring and reporting requirements in NPDES permit and FMP, including baseline and ongoing monitoring (see siting and habitat protection, <i>infra</i>)</li> <li>Operator must keep purchase invoices for feed on file for three years</li> </ul>	
Fish health and use of antibiotics and parasiticides	<ul> <li>Operator must ensure drugs, pesticides, and biologics comply with Food and Drug Administration, EPA, U.S. Department of Agriculture regulations</li> <li>Applicant must certify a contractual arrangement with aquatic animal health expert; operator must provide certificate that cultured animals are free of reportable pathogens</li> <li>Operator must report all findings of reportable pathogens (including actions taken to address the episode). NOAA may order the removal of infected organisms</li> </ul>	
Predator interactions	<ul> <li>Operator must inspect facilities and report entanglements or interactions with marine mammals, protected species, and migratory birds. Reports must include cause of entanglement or interaction and actions taken to prevent future episodes</li> </ul>	
Illegal fishing	<ul> <li>Operator must land finfish whole with heads and fins intact and spiny lobsters whole with tail intact between 6:00 a.m. and 6:00 p.m. local time</li> <li>Operator must establish a restricted access zone around facility corresponding to an approved Corps permit</li> <li>Operator cannot possess wild organisms except authorized broodstock within facility's restricted access zone or aboard transport or service vessels, vehicles, or aircraft, which must stow fishing gear when transporting cultured organisms</li> <li>Operator must submit sales records and maintain records of fish introduced and removed from each system; records must be maintained for at least three years</li> <li>Operator must notify NOAA of broodstock collection and 72 hours before transport of juveniles from hatchery, harvest of individuals, and landing of cultured fish; harvested individuals require a bill of sale when transported for landing</li> </ul>	
Siting and habitat protection	<ul> <li>NOAA will prohibit facilities in marine protected areas and marine reserves, Habitat Areas of Particular Concern, Special Management Zones, and permitted artificial reef areas</li> <li>Applicant must conduct baseline assessment and ongoing monitoring of facility site, including water quality, in accordance with NOAA Fisheries Service guidance and procedures to be developed</li> <li>NOAA will prohibit facilities within 1.6 nautical miles of another facility and sites must be twice as large as combined area of pens/cages to allow for fallowing and rotation (but fallowing and rotation not required)</li> <li>Regional Administrator will evaluate other siting criteria on a case-by-case basis</li> </ul>	

agency, coordinating the NEPA process and eventually including most substantive elements governing aquaculture facility operations within its permit (allowing the Corps to focus on its core concerns and areas of expertise, notably navigation).<sup>179</sup> On the other hand, the Corps will most often be the lead agency where no MSA permit is required, despite limited or no prior experience with project permitting and no past examples to serve as models. In that capacity, Corps District staff must both manage consultation and, as illustrated in recent shellfish permitting cases in California and Massachusetts, incorporate a wide array of substantive conditions addressing the full array of potential impacts

<sup>179.</sup> Under a robust NMFS-led MSA permitting process, it is possible that the Corps could determine that certain categories or even all forms of offshore aquaculture are subject to a duplicative regulatory mechanism, and thus are appropriate for a programmatic general permit (PGP) under the RHA. *See* 33 C.F.R. §325.5(c)(3). (A PGP is a type of general permit under the RHA that is intended to avoid duplication with existing programs by giving authority to states, tribes, and local governments, or other federal agencies that have regulatory programs comparable to the §10 program.) If so, the Corps would need to ensure that NOAA addresses navigation

concerns and other elements of the public interest inquiry in a manner comparable to the §10 process. In addition, FMPs vary substantially over time and by region and species, so the Corps would need to develop separate PGPs tailored to the provisions of each applicable FMP and update it in response to FMP amendment.

**NEWS & ANALYSIS** 

associated with the proposed activity. Consultation is thus particularly critical where the Corps serves as lead agency, as consistency review and protected species laws, as well as EFH protections, will drive the inclusion and content of environmental permit conditions in the absence of MSA permitting. EPA's potential role as lead agency is murkier, as recent projects have not required an NPDES permit; however, we expect that EPA will serve as lead agency only in rare cases where neither the Corps nor NMFS has permitting authority but where NPDES applies.

Differences in what permitting and consultation laws apply may result in inconsistency in the substantive content of permits. For example, different consultation requirements for similar mussel farm proposals in California and Massachusetts yielded substantially more rigorous conditions in the eventual permit where consistency review authority was approved. While some differences from permit to permit are expected and appropriate given the details of project design, dramatic differences in the conditions for projects with similar impacts are problematic. Consistency may improve with permitting experience; agencies can take steps to improve consistency through interagency coordination and by taking advantage of state and other agency expertise.

Guidance is needed on an agency-specific and interagency basis regarding what impacts to anticipate and consider during permitting and what consultations may be required. Such guidance could substantially improve consistency in the review and resolution of applications and ensure that the consultation process is effective. The agencies are currently working to strengthen and coordinate offshore aquaculture permitting through the federal Interagency Working Group on Aquaculture; this effort is promising and may help to ensure that the content of permits does not diverge substantially based only on the identity of the lead agency.

Reference to and adoption of existing nonfederal models is a second way in which agencies can seek consistency, particularly across the federal-state boundaries. For example, the Corps could look to conditions applicable in state waters, or to NMFS permits required elsewhere, as a default model for its RHA §10 permits in federal waters.<sup>180</sup> Similarly, EPA limited the aquaculture ELGs for CAAP facilities to narrative standards in part to provide flexibility for states that had already created or were considering development of numeric standards for aquaculture facilities. State standards do not govern permits in federal waters, but EPA could apply numeric standards like those applicable in state waters to its permits offshore. Such adoption of default models could assist in development of consistent and effective permits.

## 2. Tools to Assist Site Selection Can Assist in Implementation

While policy development and experience are likely to improve consistency over time, the process may be enhanced for both agencies and the regulated community through development of informational tools. In particular, siting tools that can predict expected environmental impacts and user conflicts would not only facilitate the permitting and consultation process, but also result in project proposals that are designed from the start to avoid conflicts and impacts.

Prudent site selection is critical to avoid and minimize the potential environmental impacts and user conflicts associated with offshore aquaculture. Despite substantial effort by applicants to work proactively with other user groups to select acceptable sites, however, siting has consistently proven to be a major sticking point in recent permitting processes, and it promises to become more so as commercial-scale development leads to increased competition for suitable locations.

As case studies show, it can be difficult to predict the conflicts that will arise in the context of a particular offshore aquaculture proposal. For example, more than 20 gear types regularly use different areas off New England, and applicants may not consider all of them even if they do consult with fishing interests. In many cases, siting recommendations by different stakeholders also may be contradictory, such as where a location does not conflict with fishing interests but does interfere with oil and gas platform servicing. As a result of the complexity of site selection, several recent projects have been relocated and their design substantially altered to address user and environmental conflicts, despite efforts to identify and avoid conflicts in advance.

While conflicts have been identified and addressed during the permitting process, a decision support and planning tool that empowers aquaculture proponents to identify and characterize potential issues at a site-specific level during the project planning stage would enable a better and more efficient approach for agencies and applicants alike. The tool would ideally provide information on the oceanographic conditions, uses, potential impacts, and regulatory conditions in particular areas-thus assisting in identifying good locations for aquaculture production as well as the specific challenges associated with each location. This information would help applicants select sites that are economically sustainable, avoid and minimize impacts on other users and on the environment, and predict what consultations and permits are needed. By identifying applicable site selection and project design criteria and highlighting coordination needs at the beginning of a project, such a tool could reduce conflicts and result in better, faster permitting processes.

<sup>180.</sup> Although more data is needed to better understand and characterize the impacts of aquaculture facilities in the offshore environment, we generally understand that the types of impacts that may result from offshore facilities will be similar in most respects to those produced by nearshore facilities. As such, it makes sense to build on state programs, which are often sophisticated (the Corps defers to state agencies for aquaculture permitting through general permits in many states) and address important conditions to avoid and mitigate the full range of environmental impacts associated with facility siting, design, and operation. *See* ELI CORPS REPORT, *supra* note 8 (arguing for parity in permit conditions in projects located in state and nearby federal waters).

## 3. Data Generation and Disclosure Conditions Can Improve Permit Effectiveness

The lack of experience with and knowledge regarding environmental impacts of offshore aquaculture is another challenge to effective and predictable implementation of offshore aquaculture permitting. The offshore aquaculture industry is new, and its environmental impacts are poorly understood. With only three active permits, industry, stakeholders, and agency staff can rely on few models or data to evaluate and meaningfully address those impacts.

The permitting agencies can substantially improve understanding of the potential direct, indirect, and cumulative environmental impacts of offshore aquaculture by identifying what information is needed, requiring its generation and public disclosure, and ensuring that permits require ongoing monitoring. In turn, the data collected can verify assumptions, support subsequent permitting decisions for similar facilities, and determine whether adverse impacts are occurring. Only with iterative data generation and analysis can permits produce conditions that meaningfully and effectively address environmental impacts, without undermining the feasibility of sustainable projects.

The permitting agencies can provide a strong foundation for offshore aquaculture permitting by providing for generation and disclosure of key information. For example, data on pollutants that may be discharged from offshore facilities would improve EPA's ability to develop NPDES permitting requirements to address facility-specific and cumulative impacts. Similarly, scientific information on the individual and cumulative impacts of offshore aquaculture production will aid the councils in developing accurate yield targets to guide permitting under the Gulf FMP or future aquaculture-specific FMPs. And conditioning RHA permits on public access to data and developing a public, searchable permit database would help the Corps and producers build upon past experience in project siting and design, assist public stakeholders in understanding and reviewing the impacts associated with this new industrial sector, and help agency staff develop more effective permits on shorter time frames by enabling them to quickly identify conditions used in similar projects in the past and to assess the effectiveness of those permit conditions.

The Gulf FMP outlines a process that, if implemented, would be a good start toward increasing data availability by requiring baseline and ongoing monitoring of aquaculture sites and a process for using these data to update management measures. Provided that NOAA issues meaningful guidelines and includes permit conditions that effectively implement the monitoring and reporting criteria, future permit systems should include similar requirements for robust and transparent data generation and reporting. However, permit-specific requirements alone will not provide sufficient data to enable understanding or modeling of the cumulative impacts of offshore aquaculture. In collaboration with other agencies, NOAA should identify what additional information may be needed to supplement sitespecific data and identify how it can be obtained.

## 4. MSA Implementation Is a Critical Driver for the Future of Offshore Aquaculture Governance and Practice

The Gulf Aquaculture FMP represents a watershed moment for offshore aquaculture regulation, as it will be the first permitting system designed specifically for finfish aquaculture under the MSA. Once finalized, it will place NMFS unambiguously in the position of lead agency for offshore aquaculture permitting and will ensure consideration of a broad array of environmental impacts in all such permits, replacing the prior regime based on case-by-case permitting. We have previously identified needed improvements to the Gulf Aquaculture FMP,<sup>181</sup> and the FMP will likely face legal challenge based on its application of OY and catch targets and other claims. However, if upheld, the FMP will improve the consistency and predictability of permits and will enable the collection of critical information needed to determine the individual and cumulative impacts of offshore aquaculture.

The Gulf Aquaculture FMP will likely serve as a model for future development of additional FMPs in other regions that determine that offshore aquaculture is a fishery requiring management. Direct adoption of its provisions in other regions is likely to be unwise, as its prohibition on aquaculture of non-managed species would undermine shellfish aquaculture, which is generally seen to have fewer environmental impacts than many other sources of animal protein, including finfish aquaculture. Other changes may also be required to match desired production methods and potential impacts in different regions, within the constraints of the MSA. Therefore, regional councils seeking to develop future FMPs will need to carefully consider whether and how to adopt the Gulf model.

#### VI. Conclusion

Aquaculture is an important and growing element of the domestic and international food supply. If developed in an environmentally and economically sustainable manner, offshore aquaculture in the United States could increase the supply of fresh seafood and support working waterfronts in this country. However, the industry has grown slowly, and offshore facilities remain rare despite recent interest in deployment of new facilities.

Commentators have argued that governance issues are one reason, or even the main reason, for the limited and halting development of this sector. Our study, however, has found that the regulatory system, while complex, is sufficient to address the environmental impacts associated with offshore aquaculture, and that increased experience with permitting in this context will increase both

<sup>181.</sup> See MSA REPORT, supra note 12.

**NEWS & ANALYSIS** 

the predictability and consistency of offshore aquaculture permits. As a result, comprehensive legislation to create a new federal aquaculture permitting framework is unnecessary, and evolving governance challenges can best be addressed by targeted legislative, regulatory, and policy interventions and through enhanced cooperation and informational tools.

Our conclusion that permitting systems need not be a substantial hindrance to U.S. offshore aquaculture development demands reconsideration of why the industry has developed more on paper than in practice. Economic competitiveness may be a challenge given the wide availability of low-priced imported seafood on the world and U.S. markets, a challenge that has undermined domestic inland aquaculture in the past decade.<sup>182</sup> Lack of secure property rights in the form of leases also undermines security of investment and may hinder capital availability. And other governance issues, such as food safety or other provisions unrelated to environmental impacts, may require resolution. Additional, nuanced consideration of the factors driving development of the aquaculture industry is needed to clarify factors influencing whether, where, and how the sector will develop.

<sup>182.</sup> See Ron Nixon, Catfish Farmers, Seeking Regulation to Fight Foreign Competition, Face Higher Bills, N.Y. TIMES, Mar. 20, 2015, at A12 (noting decline of U.S. catfish production under competition from low-priced imports).