



July 8, 2013

Mr. Miguel Lugo  
Southeast Regional Office  
NOAA Fisheries Service  
263 13<sup>th</sup> Ave. South  
St. Petersburg, FL 33701

**RE: Development of Island-Based Fishery Management Plans in the U.S. Caribbean**

Dear Mr. Lugo,

On behalf of The Pew Charitable Trusts, please accept these comments for consideration on the transition from species-based to island-based fishery management in the U.S. Caribbean.<sup>1</sup> The development of three island-specific fishery management plans (FMPs) represents a major shift in how resources are managed by the Caribbean Fishery Management Council (Council) and a unique opportunity to pursue an ecosystem-based approach that could improve the sustainability of these multi-species fisheries. Broadly speaking, the goal of such an approach should be to manage the fisheries to maintain healthy ecosystems and preserve the natural diversity of populations, species, and biological communities so as not to jeopardize a wide range of goods and services provided by the ecosystem, including food, revenue, and recreation for humans.<sup>2</sup>

The motivation to pursue island-based FMPs stems from differences in local environment, culture, markets, gear, and seafood preferences,<sup>3</sup> which define how each community fishes in Puerto Rico, St. Croix, or St. Thomas and St. John. Already, the Council has taken a step in this direction by establishing island-specific annual catch limits (ACLs) through the Comprehensive ACL Amendment.<sup>4</sup> However, many other operational details of how island-specific FMPs would work have not yet been determined.<sup>5</sup> While they could provide opportunities to tailor management measures to better match the needs of local fisheries, the existing legal requirements for FMPs under the Magnuson-Stevens Act (MSA) still apply. The MSA's core standards and objectives for preventing overfishing, rebuilding overfished stocks, minimizing bycatch and waste, and identifying and protecting essential fish habitat (EFH) provide a solid foundation upon which the Council should build to address island-specific fisheries sustainability that is based on the unique characteristics of each island platform and compatible with local ecosystem production.

Managing fisheries within the limits of local ecosystem production is crucial for island-based FMPs to work. These FMPs should ensure that their respective regulatory frameworks are designed to:

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<sup>1</sup> NOAA Fisheries Service. 2013. Southeast Fishery Bulletin FB13-48 (St. Croix); FB13-49 (Puerto Rico); FB13-50 (St. Thomas/St. John): [http://sero.nmfs.noaa.gov/sustainable\\_fisheries/caribbean/island\\_based/index.html](http://sero.nmfs.noaa.gov/sustainable_fisheries/caribbean/island_based/index.html).

<sup>2</sup> NRC (National Research Council). 1999. *Sustaining Marine Fisheries*. Washington, DC: National Academy Press, 164 pp.

<sup>3</sup> CFMC. 2013. *Development of Island-Based Fishery Management Plans in the U.S. Caribbean: Transition from Species-Based FMPs to Island-Based FMPs*, p2.

<sup>4</sup> 76 FR 82414.

<sup>5</sup> See CFMC 143<sup>rd</sup> Meeting Transcription draft, pp. 52-79.

- 1) avoid degradation of essential ecosystems and minimize the risk of irreversible change to the underlying ecosystem functions; and
- 2) maintain long-term socioeconomic benefits without compromising the health and productivity of the marine environment.

To achieve these ecosystem-level policy goals, island-based FMPs should include specific operational objectives designed to protect the well-known ecological functions of key reef taxa including top predators (e.g., groupers), grazers (e.g., parrot fish), forage fish (e.g., scad), and habitat builders (e.g., corals). For each of these objectives, the FMP should establish measurable indicators, reference points, and performance measures to monitor and evaluate the performance of management in achieving these objectives and policy goals.

Maintaining a healthy environment is the critical basis for sustaining island-specific fisheries, as most tropical marine habitats are already highly stressed and at risk of degradation.<sup>6</sup> The loss of tropical marine ecosystems is not easily replaced.<sup>7</sup> Foremost, island-based FMPs need to identify and protect EFH, the cornerstone of a productive fishery and healthy reef community. Coral reefs provide adult habitat for many fish species and important settlement signals to newly-spawned larval fish.<sup>8</sup> The differences in community structure on a healthy reef versus a diseased, damaged, or dying reef are dramatic<sup>9</sup> and have long-term implications for the productivity and sustainability of a fishery reliant upon it. Other EFH includes seagrass beds and mangroves, which serve as fish nurseries. The loss of any one of these habitats jeopardizes the productivity and future of the entire system. And while some threats to EFH are not caused by fishing,<sup>10</sup> an island-based FMP can explicitly limit or eliminate those that are, such as anchor scarring or reef-damaging fishing gears. For size-limited, potentially isolated fisheries like those seen across the U.S. Caribbean, healthy habitats are key to fishery productivity.

Island-based FMPs should include tools that allow managers to maintain ecosystem services alongside fishery demands. Spawning protections are among the most valuable tools available. Fully protecting spawning grounds and seasons provides broad benefits to a number of commercially-valuable reef fish populations<sup>11</sup> and to their associated fisheries.<sup>12</sup> Also important, though currently unaddressed in the region, is the forage fish community, the foundation of the tropical marine food web.<sup>13</sup> Losing these large schools of small, short-lived fishes negatively impacts populations of targeted forage fish predators,<sup>14</sup> and depletes ecosystem services, often in unanticipated ways.<sup>15</sup> Commercially valuable fishes also provide ecosystem services that are not easily reproduced should their numbers be eroded. For example, parrotfish are the principal algal grazers on coral reefs in the Caribbean and a healthy parrotfish community is necessary to maintain

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<sup>6</sup> Burke, L. *et al.* 2011. *Reefs at Risk Revisited*. Washington, DC: World Resources Institute, 114 pp.

<sup>7</sup> Mangel, M. and P.S. Levin. 2005. Regime, phase and paradigm shifts: making community ecology the basic science for fisheries. *Phil. Trans. Royal Soc. B* **360**: 95-105.

<sup>8</sup> Lecchini, D. *et al.* 2005. Larval sensory abilities and mechanisms of habitat selection of a coral reef fish during settlement. *Oecologia* **143**: 326-334.

<sup>9</sup> Hughes, T.P. 1994. Catastrophes, phase shifts, and large-scale degradation of a Caribbean coral reef. *Science* **265**: 1547-1551.

<sup>10</sup> Burke, L. *et al.* 2011.

<sup>11</sup> Kadison, E. *et al.* 2006. Temporal and spatial dynamics of *Lutjanus cyanopterus* (Pisces: Lutjanidae) and *L. jocu* spawning aggregations in the United States Virgin Islands. *Revista de Biología Tropical* **54**: S69-78.

<sup>12</sup> Nemeth, R.S.. 2005. Population characteristics of a recovering US Virgin Islands red hind spawning aggregation following protection, *Mar. Ecol. Prog. Ser.* **286**: 81-97.

<sup>13</sup> Pikitch, E.K. *et al.* 2012. The global contribution of forage fish to marine fisheries and ecosystems. *Fish & Fisheries* doi:10.1111/faf.12004, 22pp.

<sup>14</sup> Pikitch, E.K. *et al.* 2004. Ecosystem-based fishery management. *Science* **305**: 346-347.

<sup>15</sup> Essington, T.E. *et al.* 2006. Fishing through marine food webs *PNAS* **103**: 3171-3175.

coral health.<sup>16</sup> Large predators like snappers, groupers, and sharks remove sick fish and keep population distributions balanced.<sup>17</sup> Of particular importance in the Caribbean, large groupers may prey upon lionfish,<sup>18</sup> and as such would be the first, and only known, bio-control of this devastatingly invasive fish.<sup>19</sup> Currently unmanaged but targeted pelagic species, like dolphin, wahoo, and mackerel, will also need to be brought under federal management and accounted for, as they too serve important ecosystem roles.

Island-based FMPs must include sound data collection, monitoring and reporting programs to support conservation and management. Establishing and maintaining such programs in the U.S. Caribbean region has been an ongoing challenge and information needs will only increase with the newly-designed FMPs. Recognizing that federal funds are limited, creative and cost-effective solutions that engage local island fishermen in data collection should be a high priority. Catch sampling and reporting programs need to establish clear standards and protocols so that data are useful for management and comply with the MSA's requirement for use of "best available science,"<sup>20</sup> but an island-based approach should provide mechanisms for incorporating fishermen's knowledge and observations as well as scientific studies. Both sources provide valuable insight into ecosystem functions and processes at the relevant island scale and in fishery-useful terms.<sup>21</sup>

The ecosystem approach we outline here is consistent with the MSA and its FMP requirements. The Act charges Councils to "promote domestic commercial and recreational fishing *under sound conservation and management principles*,"<sup>22</sup> further defining "conservation and management" as all regulations that "build, restore or maintain any fishery resource and the marine environment [so as to] assure irreversible or long-term adverse effects on fishery resources and the marine environment are avoided."<sup>23</sup> The definition of Optimum Yield (OY) authorizes reductions in fishing levels from the maximum allowable level to account for ecological factors and authorizes Councils to account for those factors when specifying OY.<sup>24</sup> Concerning ecological factors, the National Standard 1 regulatory guidelines also give the Councils latitude to reduce the allowable fishing rates from the maximum allowable level to address impacts on ecosystem component species, forage fish populations, predator-prey dynamics, competitive interactions, interactions with marine mammals and seabirds, and endangered, threatened and protected species.<sup>25</sup>

The regulatory guidelines for EFH conservation require Councils to consider ecological relationships and take an ecosystem approach, where possible, in determining the EFH of a managed species.<sup>26</sup> In addition, the MSRA of 2006 gave new authority to the Councils "to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations."<sup>27</sup> By incorporating such considerations explicitly in the design of each island-

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<sup>16</sup> Mumby, P.J. 2006. The impact of exploiting grazers (Scaridae) on the dynamics of Caribbean coral reefs, *Ecol. App.* **16**: 747-769.

<sup>17</sup> Raffaelli, D. and A.M. Friedlander. 2012. Biodiversity and ecosystem functioning: an ecosystem-level approach, *In: Marine Biodiversity and Ecosystem Functioning: Frameworks, Methodologies, and Integration*, 149-163.

<sup>18</sup> Mumby, P.J. *et al.* 2012. Grouper as a natural biocontrol of invasive lionfish. *PLoS ONE* **6**: e21510.

<sup>19</sup> Green, S.J. *et al.* 2012. Invasive lionfish drive Atlantic coral reef fish declines. *PLoS ONE* **7**: e32596.

<sup>20</sup> See 16 U.S.C. § 1851(a)(2) and National Standard Guidelines at 50 CFR 600.315.

<sup>21</sup> Carr, L.M. and W.D. Heyman. 2012. "It's about seeing what's actually out there": quantifying fishers' ecological knowledge and biases in a small-scale commercial fishery as a path toward co-management. *Ocean & Coastal Mngt.* **69**: 118-132.

<sup>22</sup> 16 USC § 1801(b)(3).

<sup>23</sup> 16 USC § 1802(5)(B)(ii).

<sup>24</sup> 16 USC § 1802(33)(B).

<sup>25</sup> 50 CFR 600.310(e)(3)(iv)(C).

<sup>26</sup> 50 CFR 600.815(a)(1)(iv)(E).

<sup>27</sup> 16 USC § 1853(b)(12).

based FMP, local ecosystem services can be protected proactively to provide a firm basis for the long-term sustainability of local fisheries.

In closing, we wish to highlight the important opportunity afforded by the transition to island-based FMPs to pursue an ecosystem-based fishery management (EBFM) approach. This paradigm shift will be challenging, requiring sustained commitment, input and efforts of agencies, scientists, and fishing communities throughout the region. Existing data deficiencies<sup>28</sup> cannot be ignored, and “transitioning to a finer scale ecosystem approach to management”<sup>29</sup> will necessitate island-specific science, catch data, and monitoring. Conducting a NEPA-mandated environmental review<sup>30</sup> will help guide any transition, identifying critical island-scale management areas, including the role and impacts of the fishing community in an ecosystem perspective. We believe that applying an EBFM framework to the development of island-based FMPs can improve upon existing management regimes across the U.S. Caribbean, and help achieve and maintain sustainability while strengthening the important place that each fishery has in its island community.

Thank you for considering these comments. We look forward to working with you at this historic junction in U.S. Caribbean fisheries management.

Sincerely,



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The Pew Charitable Trusts

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<sup>28</sup> CFMC. 2012. 142<sup>nd</sup> Regular Council Meeting Transcript, cf. 48-92.

<http://www.caribbeanfmc.com/meetings/CFMC%20MEETINGS/142%20cfmc%20meeting%20docs%20APRIL%2010-11%202012/142%20Meeting%20results/142nd%20draft%20%20Verbatim%20Transcription%20not%20signed.pdf>

<sup>29</sup> NOAA Fisheries Service. 2012. U.S. Caribbean Island-Specific Fisheries Management Plans, p.18.

<sup>30</sup> 42 USC § 4321 *et seq.*