

July 17, 2019

Florida Fish and Wildlife Conservation Commission  
620 S. Meridian St.  
Tallahassee, FL 32399

Dear Chairman Spottswood and Florida Fish and Wildlife Conservation Commissioners,

As ardent supporters of Biscayne National Park (BNP) and the future of fishing in Florida, we write to express our support for the implementation of BNP's Fishery Management Plan (FMP). We are deeply concerned about the future of BNP's fisheries and marine wildlife and greatly appreciate the work of the Florida Fish and Wildlife Conservation Commission (FWC), in coordination with the National Park Service (NPS), to develop park-specific regulations for Biscayne. In the interest of protecting one of America's most treasured national parks, and the health and sustainability of the broader marine ecosystem, we strongly support the implementation of science-based regulations and enhanced education and enforcement activities aimed at achieving sustainable fish populations in BNP.

BNP is a national treasure and protects an integral part of the third largest barrier reef ecosystem in the world. BNP is our largest marine national park, created to protect "a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty" for present and future generations.<sup>1</sup> The park is also a significant economic driver, supporting a variety of economic and recreation activities, such as sportfishing, diving, snorkeling, and boating. According to a National Park Service report, in 2018, more than 450,000 visitors to BNP spent nearly \$30.5 million, supporting 398 local jobs and generating more than \$42 million for the local economy.<sup>2</sup>

BNP protects many different fishes and macroinvertebrates, often at different points in their life cycles. Species such as mutton snapper, hogfish, black grouper, spiny lobster, pink shrimp, and stone crab are ecologically *and* economically important, supporting a vibrant recreational boating and fishing industry. Unfortunately, decades of intensive fishing, prey reduction, habitat degradation, and pollution have taken a heavy toll. As a result, many reef fish populations are severely overfished, some currently have less than 5% of their historical spawning stock biomass, literally on the verge of collapse.<sup>3</sup> Black grouper, for instance, are at less than 1% of historical abundance and most species barely reach the minimum size of sexual maturity before they are subjected to intensive fishing, meaning they have little or no chance to spawn. Of the 12 species of reef fish identified in the FMP Science Plan, all are currently being overfished at unsustainable levels, with fishing pressures far exceeding levels required for sustainability.

**While the initial proposals made by FWC staff to increase size limits for certain species are a good first step, on their own these proposed regulations will not achieve sustainability for nearly all the species under consideration. Thus, we urge you to consider not only changes to size limits and habitat protections, but also decreasing intensive fishing pressures by implementing spatial closures (i.e. no-take marine reserves) that are based on sound science. Moreover, we encourage increased investments in education and enforcement, which are critical to the successful implementation of regulations.**

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<sup>1</sup> 16 U.S.C. 410gg

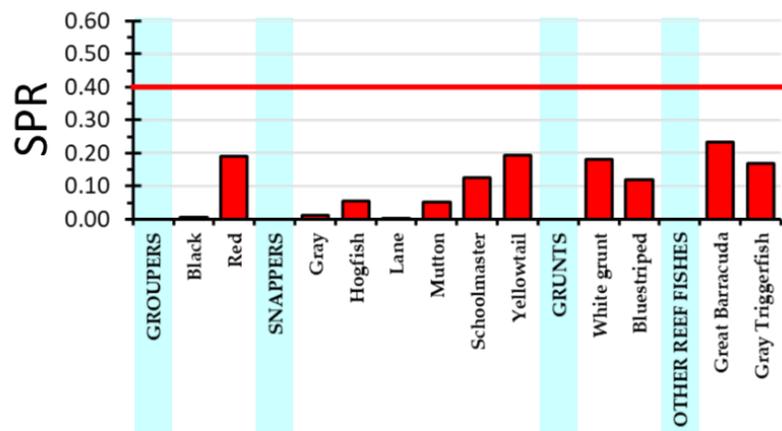
<sup>2</sup> Cullinane Thomas, C., Koontz, L., & Cornachione, E. 2018. *National Park Visitor Spending Effects: Economic Contributions to Local Communities, States, and the Nation*. Natural Resource Report NPS/NRSS/EQD/NRR—2019/1922. National Park Service, Fort Collins, Colorado.

<sup>3</sup> Ault, J.S., Smith, S.G., Bohnsack, J.A., Luo, J., Stevens, M.H., Johnson, M.W., Bryan, D.R., DiNardo, G.T. 2019. Length-based risk analysis for assessing sustainability of data-limited tropical reef fisheries. *ICES Journal of Marine Science* 76(1): 165-180.

### Current Status of Reef Fish Populations in Biscayne National Park

To provide an accurate assessment of the current status of reef fish species in Biscayne, we analyzed<sup>4</sup> available fisheries-dependent and -independent data for BNP for the 12 reef fish species identified in the FMP Science Plan.<sup>5</sup> To be considered minimally sustainable, the Spawning Potential Ratio (SPR)<sup>6</sup> of a given species should exceed 0.40 or 40% of the unfished spawning stock biomass, depicted in Figure 1 below as the horizontal red line.<sup>7</sup> **We found that all 12 species identified in the Science Plan are currently overfished in BNP** (and throughout the entirety of the Florida Keys for that matter). Not one of the stocks analyzed were close to the standard for sustainability. Black grouper and gray snapper, for instance, are so seriously overfished that they barely register on the Figure 1 graph.

**Figure 1. Spawning Potential Ratio for Select Reef Fish in Biscayne National Park<sup>8</sup>**



Another way of assessing sustainability is by looking at fishing effort and fishing pressure on fish stocks.<sup>9</sup> Figure 2 shows the ratio of current fishing effort to the fishing effort required for sustainability (i.e., 40% SPR) for each of the 12 species under consideration. For resource sustainability, this ratio should be less than or equal to a value of 1.0 (depicted by the horizontal green line). **Figure 2 shows that fishing pressure**

<sup>4</sup> We analyzed the Biscayne National Park Creel database and compared that data to the Reef Fish Visual Census (RVC) data for Biscayne National Park. We ran the LBAR/REEFS risk analysis algorithmic methods for data limited stocks (Ault, J.S., Smith, S.G., Bohnsack, J.A., Luo, J., Stevens, M.H., Johnson, M.W., Bryan, D.R., DiNardo, G.T. 2019. Length-based risk analysis for assessing sustainability of data-limited tropical reef fisheries. *ICES Journal of Marine Science* 76(1): 165-180.) for the 12 species identified in the FWC/NPS Science Plan along with new demographic data (Stevens, M.H., Smith, S.G., Ault, J.S. 2019. Life history demographic parameter synthesis for Florida and Caribbean reef fishes. *Fish and Fisheries, in press*).

<sup>5</sup> McDonough, V., Hunt, J., Atkinson, A., & Feeley M.W. 2018. *Assessing the Efficacy of the Biscayne National Park Fishery Management Plan*. National Park Service.

<sup>6</sup> Spawning Potential Ratio is the ratio of fished to unfished spawning biomass.

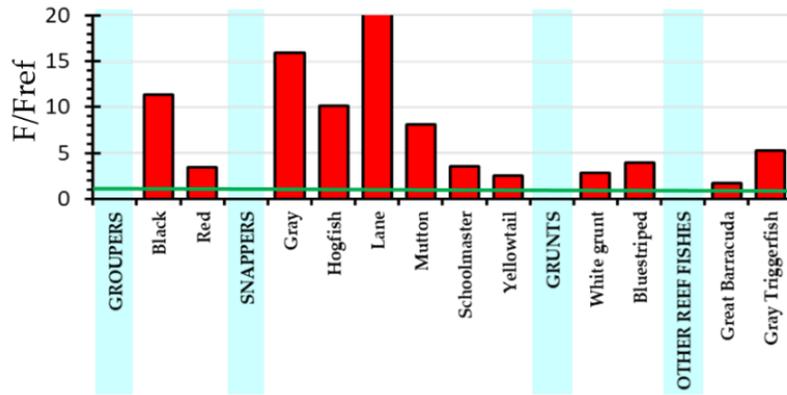
<sup>7</sup> Ault, J.S., Smith, S.G., Browder, J.A., Nuttle, W., Franklin, E.C., Luo, J., DiNardo, G.T., Bohnsack, J.A. 2014. Indicators for assessing the ecological and sustainability dynamics of southern Florida's coral reef and coastal fisheries. *Ecological Indicators* 44 (2014): 164-172; Ault, J.S., Smith, S.G., Bohnsack, J.A., Luo, J., Stevens, M.H., Johnson, M.W., Bryan, D.R., DiNardo, G.T. 2019. Length-based risk analysis for assessing sustainability of data-limited tropical reef fisheries. *ICES Journal of Marine Science* 76(1): 165-180.

<sup>8</sup> Ault, J.S. 2019. *Assessment of Biscayne National Park Reef Fishery Dynamics*. To be published by National Parks Conservation Association.

<sup>9</sup> To evaluate fishing effort or fishing mortality (F), we considered the ratio of current fishing (F) to the reference fishing mortality required to achieve an SPR of 40% ( $F_{ref}$ ). For resource sustainability, this ratio should be  $\leq 1.0$  (horizontal green line).

on all fish species exceeds the maximum threshold for sustainability, and there is far too much fishing intensity on reef fish stocks in BNP. Excessive fishing pressure has dramatically reduced the average size and abundance of species such as lane and gray snapper and black grouper.

Figure 1. Fishing Pressure on Select Reef Fish Species in Biscayne National Park<sup>10</sup>



Over the years, excessive fishing pressure combined with inadequate fisheries regulations have led to substantial reductions in the average size of reef fish captured in BNP. Figure 3 illustrates the significant declines in the average weight of reef fish species, comparing the current average weight of fish caught now to what was caught historically. The average weight of species like hogfish and gray snapper has declined by 80% compared to historical values.

Figure 2. Average Weight of Current vs. Historical Fish Catches in Biscayne National Park<sup>11</sup>

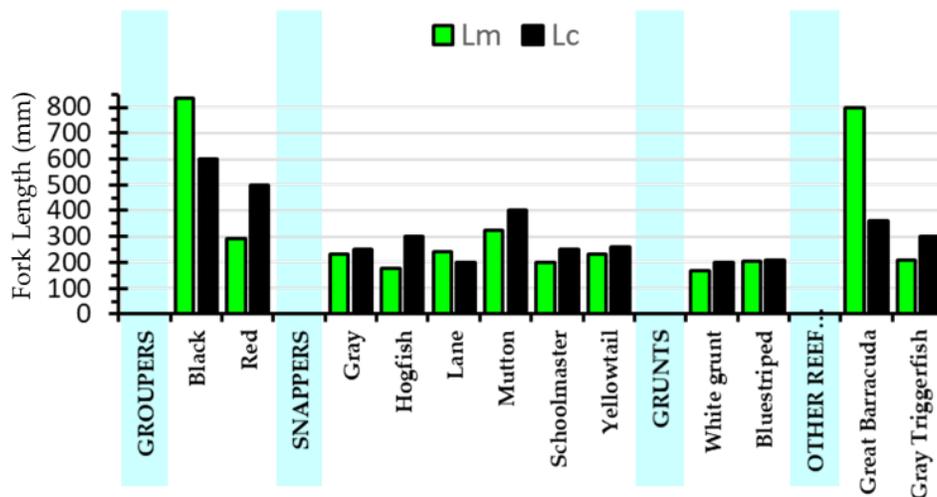
	Average Weight (pounds)		Percent Decline
	Historical	Current	
<b>GROUPERS</b>			
Black	35.0	11.0	68.6%
Red	20.0	6.0	70.0%
<b>SNAPPERS</b>			
Gray	5.0	1.0	80.0%
Hogfish	5.0	1.0	80.0%
Lane	1.0	0.3	70.0%
Mutton	10.0	3.0	70.0%
Schoolmaster	1.9	0.9	52.6%
Yellowtail	2.0	1.0	50.0%
<b>GRUNTS</b>			
White	0.5	0.4	20.0%
Bluestriped	0.7	0.4	42.9%
<b>OTHER REEF FISHES</b>			
Great Barracuda	24.0	13.0	45.8%
Gray Triggerfish	2.0	1.0	50.0%

<sup>10</sup> Ault, Jerald S. 2019. *Assessment of Biscayne National Park Reef Fishery Dynamics*. To be published by National Parks Conservation Association.

<sup>11</sup> Ibid.

One of the major factors driving the decline of fish populations in BNP is the fact that most reef fish get little or no chance to spawn in their lifetime. Figure 4 illustrates that the minimum size of sexual maturity ( $L_m$ ) is close to or greater than the minimum size of first capture ( $L_c$ ), (determined by minimum size limits) for nearly all reef fish species under consideration. This means that most fish in BNP barely reach the size of sexual maturity and get little or no chance to spawn and reproduce, obviating any opportunity for fish stocks to reach sustainable levels.

**Figure 4. Minimum Size of Sexual Maturity vs. Minimum Size of First Capture for Select Reef Fish Species in Biscayne National Park<sup>12</sup>**



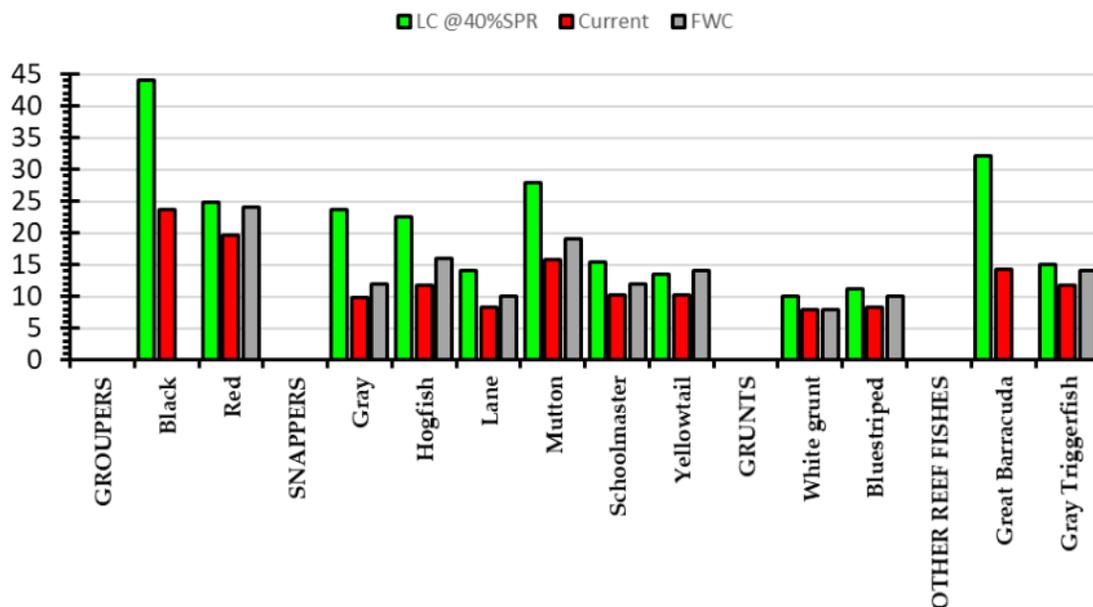
### Initial FWC Proposals to Increase Size Limits Will Not Achieve Sustainability

FWC and NPS staff propose an increase in the minimum size limits by 20% for some reef fish species in BNP. While this is a good first step to improving the health of fish populations, **on their own the proposed regulations are insufficient to achieve sustainability for nearly all species under consideration.** Figure 5 compares the length of species required for sustainability (depicted by the green bars), the current length of species (red bars), and length of species proposed by FWC's regulations (gray bars).<sup>13</sup> While the proposed regulations will move some populations, such as red grouper, much closer to sustainability, Figure 5 shows that FWC's proposed regulations are insufficient to produce sustainable populations of species like mutton and gray snapper. Indeed, the FWC proposes no regulations for black grouper and great barracuda, even though they are some of the most overfished species in the park.

<sup>12</sup> Ault, Jerry, 2019. *Assessment of Biscayne National Park Reef Fishery Dynamics*. To be published by National Parks Conservation Association.

<sup>13</sup> FWC and NPS staff propose fisheries regulations that raise the average size (in length) in the catch ( $\bar{L}$ ) by 20%. To accomplish this, without controlling for fishing effort, requires raising the minimum size of first capture ( $L_c$ ). Figure 4 is a summary graph of the current  $L_c$  (red bars), the minimum setting of  $L_c$  for the stock to be sustainable (green bars), and the  $L_c$  proposed by FWC in the plan (gray bars).

**Figure 5. Comparison of Length of Reef Fish Species Required for Sustainability, Current Length, and Length Proposed by FWC Regulations<sup>14</sup>**



Overall, proposals put forth by staff, which include an increase in size limits and possible habitat protection measures, represent a step forward in addressing the substantial overfishing and subsequent decline in fisheries occurring in BNP. However, if we are genuinely committed to creating sustainable fish populations in BNP over the long-term, the most practical solution includes a combination of increasing size limits *and* placing limits on fishing effort and stock fishing mortality rates through spatial closures (i.e. marine reserve areas), as recommended by NPS in Biscayne National Park's General Management Plan, finalized in 2015. If marine reserves are off the table, minimum size limits will need to be dramatically increased, even above what has been proposed, to allow enough spawning required to achieve sustainability. **While the position of the FWC regarding marine reserves has been that they are overly restrictive and should only be tried unless less restrictive measures have been tried and failed, we argue that less restrictive measures (i.e., fishing regulations specifically set by the FWC) have been tried for more than 25 years and have clearly failed to address the pervasive problem of overfishing in Biscayne National Park.**

In order to achieve sustainable fish populations in Biscayne, we urge the Commission to consider the full range of options laid out in the Fishery Management Plan. We support the implementation of regulations that include science-based size limits, marine reserve areas, and habitat protection methods, including the strategic placement of no-trawl zones for commercial rollerframe trawls, which are extremely damaging to benthic habitat and result in significant bycatch of juvenile reef fishes.<sup>15</sup> To ensure that changes in regulations are actually effective, significant investments must also be made in education and enforcement activities. Moreover, it is important to consider that problems associated with overfishing

<sup>14</sup> Ault, Jerald S. 2019. *Assessment of Biscayne National Park Reef Fishery Dynamics*. To be published by National Parks Conservation Association.

<sup>15</sup> Ault, J.S., Diaz, G.A., Smith, S.G., Luo, J., Serafy, J.E. 1999. An efficient sampling survey design to estimate pink shrimp population abundance in Biscayne Bay, Florida. *North American Journal of Fisheries Management* 19(3): 696-712.

are not unique to Biscayne. Rather, overfishing and declining fish populations are systemic along the entire Florida Reef Tract, a problem that must be addressed now to prevent collapses in ecologically and economically vital fish populations throughout South Florida.

It is also critical to ensure that the FMP Science Plan lays out a cost-effective, statistically reliable monitoring program that will enable managers to accurately assess the efficacy of the regulations that are implemented. We recommend incorporating an adaptive management approach into the FMP Science Plan, involving an increase in sampling that is conducted annually, and an annual review of these results and the regulations. The impacts of the regulations must be assessed more frequently than every seven years, as is currently recommended. Moreover, sufficient financial resources must be invested into the monitoring and review to ensure the success of FMP regulations.

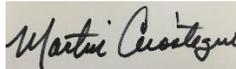
**The implementation of effective, science-based fishery management regulations is key to protecting and restoring Biscayne's economically and ecologically valuable fisheries and marine wildlife.** Biscayne National Park's FMP finalized back in 2014 set a clear objective of increasing the average size and abundance of target reef fish species in the park by 20%, while also mitigating fishing-related habitat degradation. However, that 20% increase may not be enough to lead to sustainable fish populations that are viable over the long-term. As you move forward in the development of fisheries regulations for Biscayne, we encourage you to craft science-based regulations focused on rebuilding sustainable fish populations in BNP and implement enhanced education and enforcement activities. These protections will ultimately preserve biodiversity, stimulate recreational and economic opportunities, build resource resilience to climate change, and strengthen the deep connections between our human communities and their maritime heritage. We must work together expeditiously to protect BNP and its valuable fisheries as we are currently at risk of losing these natural assets.

We welcome the opportunity to meet with you personally to discuss these important issues of preserving BNP's marine fisheries and wildlife through science-based regulations focused on sustainability. Thank you for your consideration and for all of your work in support of protecting BNP's marine fisheries and wildlife for many generations to come.

Sincerely,



Caroline McLaughlin  
Associate Director, Sun Coast  
National Parks Conservation Association



Martin Arostegui, M.D.



Jerald S. Ault, Ph.D.

**About National Parks Conservation Association:** Since 1919, NPCA has been the leading voice of the American people in protecting and enhancing our National Park System and preserving our nation's natural, historical, and cultural heritage for our children and grandchildren. With more than 1.3 million members and supporters around the globe, NPCA cares deeply about healthy marine ecosystems, the protection of marine biodiversity, and maintaining the quality of visitor experiences for which our national parks are renowned. For nearly 20 years, NPCA has been advocating for enhanced protections for Biscayne's imperiled coral reef ecosystems and marine wildlife.

**About Jerald S. Ault, Ph.D.:** Dr. Ault is a distinguished Professor and Chair of the Department of Marine Ecosystems and Society at the University of Miami and serves as the Director of the *Tarpon & Bonefish Center*. Dr. Ault is an internationally renowned fisheries scientist specializing in population dynamics, predictive analytics, sampling design, risk assessment, and ecosystem modeling. His particularly novel research involves development of dynamic ocean ecosystem simulation models to assess sustainability risks of marine fishery resources from exploitation and environmental changes. He has more than 35 years of scientific experience in Biscayne National Park and the Florida Keys coral reef ecosystem. Ault's *fishery systems science* approach is the recognized national standard for U.S. coral reef ecosystems in Florida, Caribbean Sea and tropical Pacific Ocean. Dr. Ault regularly provides expert testimony to U.S. Fishery Management Councils, Florida Governors (Chiles, Bush and Crist) & Cabinet, U.S. House Committee on Natural Resources, NOAA Fisheries, National Park Service, International Council for Exploration of the Seas (ICES), International Union for Conservation of Nature (IUCN), and International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

**About Martin Arostegui, M.D.:** Marty has served on the International Game Fish Association's (IGFA) Board of Trustees since 2012 and was inducted into the IGFA Fishing Hall of Fame in 2018. In 2004, Marty became the third person in history to attain 100 International Game Fish Association (IGFA) World Records. Since that time, he has achieved over 400 world records—more than any other angler in the world. In addition to being a skilled angler, Marty is an ardent conservationist who has witnessed firsthand the decline of South Florida's fisheries, particularly in Biscayne National Park. Recognizing the importance of marine reserves and marine conservation, Marty teamed up with local charter boat captains Bouncer Smith and Gil Muratori to design a presentation focused on the need to preserve South Florida's fisheries. Marty and his colleagues have made more than 20 presentations to civic groups, schools, fishing clubs, and staff at Biscayne and Everglades National Parks.