

Puerto Rico Fishery Management Plan – Draft Actions and Alternatives

Table of Contents

Proposed Actions and Alternatives.....	4
1.1 Action 1: Determine species to be included for management in the Puerto Rico Fishery Management Plan (FMP).....	4
Proposed Alternatives for Action 1.....	4
1.2 Action 2:	

DRAFT

Establish stock complexes in the Puerto Rico Fishery Management Unit (FMU).....	15
Proposed Alternatives for Action 2.....	15
1.3 Action 3: Define management reference points for species within the Puerto Rico Fishery Management Unit (FMU)	17
1.3.1. Action 3(a): Establish a year sequence for determining mean or median annual landings for each stock within the Puerto Rico FMU.....	17
Proposed Alternatives for Action 3(a).....	17
1.3.2. Action 3(b): Establish management reference points for stocks in the Puerto Rico FMU.....	18
Proposed Alternatives for Action 3(b).....	18
Appendix A. List of Coral Species	21

List of Tables

Table 1.1.1. Draft list of species proposed to be included in the Puerto Rico Fishery Management Plan based on Alternative 2, <i>Criterion A</i>	4
Table 1.1.2. Draft list of species proposed to be excluded from the Puerto Rico Fishery Management Plan based on Alternative 2, <i>Criterion B</i>	5
Table 1.1.3. Draft list of species proposed to be included in the Puerto Rico Fishery Management Plan based on Alternative 2, <i>Criterion C</i>	9
Table 1.1.4. Draft list of species proposed to be included in the Puerto Rico Fishery Management Plan based on Alternative 2, <i>Criterion D</i>	10
Table 1.1.5. Consolidated list of species under Alternative 2 recommended for inclusion in the Puerto Rico Fishery Management Plan.....	11
Table 1.2.1. Species proposed to be managed under the Puerto Rico FMP based on Alternative 2 of Action 1 that: (1) are currently included in the Puerto Rico FMU and (2) are managed in a stock/stock complex.....	15
Table 1.2.2. New species proposed to be managed under the Puerto Rico FMP based on Alternative 2 of Action 1 that would have no groupings under Alternative 1 in Action 2.....	16
Table 1.3.1.1. Year sequences under Alternatives 1, 2, and 3 in Action 3(a).....	17
Table 1.3.2.1. Possible options to establish management reference points for stocks in the Puerto Rico fishery management unit.	19
Table A. List of species of corals currently included in the Corals and Reef Associated Plants and Invertebrates Fishery Management Plan (FMP).	21

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Proposed Actions and Alternatives

1.1 Action 1: Determine species to be included for management in the Puerto Rico Fishery Management Plan (FMP)

Proposed Alternatives for Action 1

Alternative 1. No action. The Puerto Rico FMP is composed of all species within the fishery management units (FMUs) presently managed under the Spiny Lobster FMP, Reef Fish FMP, Queen Conch FMP, and the Corals and Reef Associated Plants and Invertebrates (Coral) FMP.

Alternative 2¹ (*previously Alternative 3). For those species for which landings data are available, indicating the species is in the fishery, the Caribbean Fishery Management Council (Council) will follow a stepwise application of a set of criteria to determine if a species should be managed under the Puerto Rico FMP. The criteria under consideration include, in order:

Criterion A. Include for management those species that are presently classified as overfished in U.S. Caribbean federal waters based on NMFS determination, or for which historically identified harvest is now prohibited due to their ecological importance as habitat (corals presently included in the Corals and Reef Associated Plants and Invertebrates FMP) or habitat engineers (midnight, blue, rainbow parrotfish), or those species for which seasonal closures or size limits apply.

Table 1.1.1. Draft list of species proposed to be included in the Puerto Rico Fishery Management Plan based on **Alternative 2, Criterion A.**

Family	Scientific Name	Common Name
Lutjanidae -- Snappers	<i>Apsilus dentatus</i>	Black snapper
	<i>Lutjanus buccanella</i>	Blackfin snapper
	<i>Lutjanus vivanus</i>	Silk snapper
	<i>Rhomboplites aurorubens</i>	Vermilion snapper
	<i>Lutjanus synagris</i>	Lane snapper
	<i>Lutjanus analis</i>	Mutton snapper
	<i>Ocyurus chrysurus</i>	Yellowtail snapper
Serranidae -- Groupers	<i>Epinephelus striatus</i>	Nassau Grouper
	<i>Epinephelus itajara</i>	Goliath grouper
	<i>Epinephelus guttatus</i>	Red hind

¹ The Interdisciplinary Planning Team for this action recommended on its 9/4/2015 meeting, interchanging the order of Alternatives 2 and 3 to facilitate discussion and analysis of each of the alternatives. This change will be recommended to the Council at the 154th Regular Meeting in December 2015.

Family	Scientific Name	Common Name
	<i>Mycteroperca bonaci</i>	Black grouper
	<i>Epinephelus morio</i>	Red grouper
	<i>Mycteroperca tigris</i>	Tiger grouper
	<i>Mycteroperca venenosa</i>	Yellowfin grouper
	<i>Epinephelus flavolimbatus</i>	Yellowedge grouper
Scaridae -- Parrotfishes	<i>Scarus coeruleus</i>	Blue parrotfish
	<i>Scarus coelestinus</i>	Midnight parrotfish
	<i>Scarus guacamaia</i>	Rainbow parrotfish
Strombidae -- True conchs	<i>Lobatus gigas</i>	Queen conch
Palinuridae -- Spiny lobsters	<i>Panulirus argus</i>	Caribbean spiny lobster
All Coral Species (soft, hard, mesophotic, deep water)	<i>See Appendix A</i>	Corals

Criterion B. From the remainder species, exclude from federal management those species that have been determined to infrequently occur in federal waters based on expert analysis guided by available data.

Table 1.1.2. Draft list of species proposed to be excluded from the Puerto Rico Fishery Management Plan based on **Alternative 2, Criterion B.**

Family	Scientific Name	Common Name
Lutjanidae -- Snappers	<i>Lutjanus griseus</i>	Gray snapper
	<i>Lutjanus mahogani</i>	Mahogany snapper
Haemulidae -- Grunts	<i>Haemulon album</i>	Margate
	<i>Haemulon aurolineatum</i>	Tomtate
	<i>Haemulon sciurus</i>	Bluestriped grunt
	<i>Haemulon flavolineatum</i>	French grunt
	<i>Anisotremus virginicus</i>	Porkfish
Mullidae -- Goatfishes	<i>Pseudupeneus maculatus</i>	Spotted goatfish
	<i>Mulloidichthys martinicus</i>	Yellow goatfish
Sparidae -- Porgies	<i>Calamus bajonado</i>	Jolthead porgy
	<i>Archosargus rhomboidalis</i>	Sea bream
	<i>Calamus penna</i>	Sheepshead porgy
	<i>Calamus pennatula</i>	Pluma
Holocentridae -- Squirrelfishes	<i>Myripristis jacobus</i>	Blackbar soldierfish
	<i>Priacanthus arenatus</i>	Bigeye
	<i>Holocentrus rufus</i>	Longspine squirrelfish
	<i>Holocentrus adscensionis</i>	Squirrelfish
Malacanthidae -- Tilefishes	<i>Caulolatilus cyanops</i>	Blackline tilefish

Family	Scientific Name	Common Name
	<i>Malacanthus plumieri</i>	Sand tilefish
Carangidae -- Jacks	<i>Caranx crysos</i>	Blue runner
	<i>Caranx latus</i>	Horse-eye jack
	<i>Caranx lugubris</i>	Black jack
	<i>Seriola rivoliana</i>	Almaco jack
	<i>Caranx ruber</i>	Bar jack
	<i>Seriola dumerili</i>	Greater amberjack
	<i>Caranx bartholomaei</i>	Yellow jack
Scaridae -- Parrotfish	<i>Sparisoma rubripinne</i>	Redfin parrotfish
Balistidae -- Triggerfishes	<i>Xanthichthys rigens</i>	Sargassum triggerfish
Monacanthidae -- Filefishes	<i>Aluterus scriptus</i>	Scrawled filefish
	<i>Cantherhines macrocerus</i>	Whitespotted filefish
	<i>Melichthys niger</i>	Black durgon
Ostraciidae -- Boxfishes	<i>Lactophrys polygonia</i>	Honeycomb cowfish
	<i>Lactophrys quadricornis</i>	Scrawled cowfish
	<i>Lactophrys trigonus</i>	Trunkfish
	<i>Lactophrys bicaudalis</i>	Spotted trunkfish
	<i>Lactophrys triqueter</i>	Smooth trunkfish
Aquarium Trade Fish Species FMU -- Reef Fish FMP		
	<i>Antennarius spp.</i>	Frogfish
	<i>Apogon maculatus</i>	Flamefish
	<i>Astrapogen stellatus</i>	Conchfish
	<i>Ophioblennius atlanticus</i>	Redlip blenny
	<i>Bothus lunatus</i>	Peacock flounder
	<i>Chaetodon aculeatus</i>	Longsnout butterflyfish
	<i>Chaetodon capistratus</i>	Foureyeye butterflyfish
	<i>Chaetodon ocellatus</i>	Spotfin butterflyfish
	<i>Chaetodon striatus</i>	Banded butterflyfish
	<i>Amblycirrhitis pinos</i>	Redspotted hawkfish
	<i>Dactylopterus volitans</i>	Flying gurnard
	<i>Chaetodipterus faber</i>	Atlantic spadefish
	<i>Gobiosoma oceanops</i>	Neon goby
	<i>Priolepis hipoliti</i>	Rusty goby
	<i>Gramma loreto</i>	Royal gramma
	<i>Clepticus parrae</i>	Creole wrasse
	<i>Halichoeres cyanocephalus</i>	Yellowcheek wrasse
	<i>Halichoeres garnoti</i>	Yellowhead wrasse
	<i>Halichoeres maculipinna</i>	Clown wrasse

Family	Scientific Name	Common Name
	<i>Hemipteronotus novacula</i>	Pearly razorfish
	<i>Hemipteronotus splendens</i>	Green razorfish
	<i>Thalassoma bifasciatum</i>	Bluehead wrasse
	<i>Echidna catenata</i>	Chain moray
	<i>Gymnothorax funebris</i>	Green moray
	<i>Gymnothorax miliaris</i>	Goldentail moray
	<i>Ogcocephalus spp.</i>	Batfish
	<i>Myrichthys ocellatus</i>	Goldspotted eel
	<i>Opistognathus aurifrons</i>	Yellowhead jawfish
	<i>Opistognathus whitehursti</i>	Dusky jawfish
	<i>Centropyge argi</i>	Cherubfish
	<i>Holacanthus tricolor</i>	Rock beauty
	<i>Abudefduf saxatilis</i>	Sergeant major
	<i>Chromis cyanea</i>	Blue chromis
	<i>Chromis insolata</i>	Sunshinefish
	<i>Microspathodon chrysurus</i>	Yellowtail damselfish
	<i>Pomacentrus fuscus</i>	Dusky damselfish
	<i>Pomacentrus leucostictus</i>	Beaugregory
	<i>Pomacentrus partitus</i>	Bicolor damselfish
	<i>Pomacentrus planifrons</i>	Threespot damselfish
	<i>Priacanthus cruentatus</i>	Glasseye snapper
	<i>Equetus acuminatus</i>	High-hat
	<i>Equetus lanceolatus</i>	Jackknife-fish
	<i>Equetus punctatus</i>	Spotted drum
	<i>Scorpaenidae</i>	Scorpionfishes
	<i>Hypoplectrus unicolor</i>	Butter hamlet
	<i>Liopropoma rubre</i>	Swissguard basslet
	<i>Rypticus saponaceus</i>	Greater soapfish
	<i>Serranus annularis</i>	Orangeback bass
	<i>Serranus baldwini</i>	Lantern bass
	<i>Serranus tabacarius</i>	Tobaccofish
	<i>Serranus tigrinus</i>	Harlequin bass
	<i>Serranus tortugarum</i>	Chalk bass
	<i>Symphurus arawak</i>	Caribbean tonguefish
	<i>Hippocampus spp.</i>	Seahorses
	<i>Syngnathus spp.</i>	Pipefishes
	<i>Synodus intermedius</i>	Sand diver
	<i>Canthigaster rostrata</i>	Sharpnose puffer
	<i>Diodon hystrix</i>	Porcupinefish

Family	Scientific Name	Common Name
Aquarium Trade Fish Species (FMU) -- Coral Reef FMP		
	<i>Aphimedes compressa</i>	Erect rope sponge
	<i>Chondrilla nucula</i>	Chicken liver sponge
	<i>Cynachirella alloclada</i>	
	<i>Geodia neptuni</i>	Potato sponge
	<i>Haliclona</i> spp.	Finger sponge
	<i>Myriastras</i> spp.	
	<i>Niphates digitalis</i>	Pink vase sponge
	<i>N. erecta</i>	Lavender rope sponge
	<i>Spinosella polycifera</i>	
	<i>S. vaginalis</i>	
	<i>Tethya crypta</i>	
	<i>Aiptasia tagetes</i>	Pale anemone
	<i>Bartholomea annulata</i>	Corkscrew anemone
	<i>Condylactis gigantea</i>	Giant pink-tipped anemone
	<i>Hereractis lucida</i>	Knobby anemone
	<i>Lebrunia</i> spp.	Staghorn anemone
	<i>Stichodactyla helianthus</i>	Sun anemone
	<i>Zoanthus</i> spp.	Sea mat
	<i>Discosoma</i> spp. (formerly Rhodactis)	False coral
	<i>Ricordia florida</i>	Florida false coral
	<i>Sabellastarte</i> spp.	Tube worms
	<i>S. magnifica</i>	Magnificent duster
	<i>Spirobranchus giganteus</i>	Christmas tree worm
	<i>Tridachia crispata</i>	Lettuce sea slug
	<i>Oliva reticularis</i>	Netted olive
	<i>Cyphoma gibbosum</i>	Flamingo tongue
	<i>Lima</i> spp.	Fileclams
	<i>L. scabra</i>	Rough fileclam
	<i>Spondylus americanus</i>	Atlantic thorny oyster
	<i>Octopus</i> spp. (except the Common octopus, <i>O. vulgaris</i>)	
	<i>Alpheus armatus</i>	Snapping shrimp
	<i>Paguristes</i> spp.	Hermit crabs
	<i>P. cadenati</i>	Red reef hermit
	<i>Percnon gibbesi</i>	Nimble spray crab
	<i>Lysmata</i> spp.	Peppermint shrimp
	<i>Thor amboinensis</i>	Anemone shrimp

Family	Scientific Name	Common Name
	<i>Mithrax</i> spp.	Clinging crabs
	<i>M. cinctimanus</i>	Banded clinging
	<i>M. sculptus</i>	Green clinging
	<i>Stenorhynchus seticornis</i>	Yellowline arrow
	<i>Periclimenes</i> spp.	Cleaner shrimp
	<i>Gonodactylus</i> spp.	
	<i>Lysiosquilla</i> spp.	
	<i>Stenopus hispidus</i>	Banded shrimp
	<i>S. scutellatus</i>	Golden shrimp
	<i>Analcidometra armata</i>	Swimming crinoid
	<i>Davidaster</i> spp.	Crinoids
	<i>Nemaster</i> spp.	Crinoids
	<i>Astropecten</i> spp.	Sand stars
	<i>Linckia guildingii</i>	Common comet star
	<i>Ophidiaster guildingii</i>	Comet star
	<i>Oreaster reticulatus</i>	Cushion sea star
	<i>Astrophyton muricatum</i>	Giant basket star
	<i>Ophiocoma</i> spp.	Brittlestars
	<i>Ophioderma</i> spp.	Brittlestars
	<i>O. rubicundum</i>	Ruby brittlestar

Criterion C. From the remainder species, include for management those species that are biologically vulnerable, constrained to a specific habitat that renders them particularly vulnerable, or have an essential ecological value, as determined by expert analysis.

Table 1.1.3. Draft list of species proposed to be included in the Puerto Rico Fishery Management Plan based on **Alternative 2, Criterion C.**

Family	Scientific Name	Common Name
Lutjanidae -- Snappers	<i>Lutjanus jocu</i>	Dog snapper
	<i>Lutjanus apodus</i>	Schoolmaster
	<i>Lutjanus cyanopterus</i>	Cubera snapper
Serranidae -- Groupers	<i>Epinephelus fulvus</i>	Coney
	<i>Epinephelus cruentatus</i>	Graysby
	<i>Epinephelus adscensionis</i>	Rock hind
	<i>Epinephelus mystacinus</i>	Misty grouper
	<i>Mycteroperca interstitialis</i>	Yellowmouth grouper
Scaridae -- Parrotfishes¹	<i>Scarus vetula</i>	Queen parrotfish

Family	Scientific Name	Common Name
	<i>Scarus taeniopterus</i>	Princess parrotfish
	<i>Sparisoma chrysopterus</i>	Redtail parrotfish
	<i>Sparisoma viride</i>	Stoplight parrotfish
	<i>Sparisoma aurofrenatum</i>	Redband parrotfish
	<i>Scarus croicensis</i>	Striped parrotfish
Acanthuridae -- Surgeonfishes	<i>Acanthurus coeruleus</i>	Blue tang
	<i>Acanthurus bahianus</i>	Ocean surgeonfish
	<i>Acanthurus chirurgus</i>	Doctorfish
Balistidae -- Triggerfishes	<i>Canthidermis sufflamen</i>	Ocean triggerfish
	<i>Balistes vetula</i>	Queen triggerfish (Old Wife)
	<i>Balistes capriscus</i>	Gray triggerfish
Labridae -- Wrasses	<i>Lachnolaimus maximus</i>	Hogfish
	<i>Halichoeres radiatus</i>	Puddingwife
	<i>Bodianus rufus</i>	Spanish hogfish
Pomacanthidae -- Angelfishes	<i>Holacanthus ciliaris</i>	Queen angelfish
	<i>Pomacanthus arcuatus</i>	Gray angelfish
	<i>Pomacanthus paru</i>	French angelfish
Sphyraenidae -- Barracudas	<i>Sphyraena guachancho</i>	Guaguanehe
	<i>Sphyraena barracuda</i>	Great barracuda
Lobotidae -- Tripletail	<i>Lobotes surinamensis</i>	Tripletail
Myliobatidae -- Eagle and Manta	<i>Manta birostris</i>	Manta
	<i>Aetobatus narinari</i>	Spotted eagle ray (chucho)
	<i>Dasyatis americana</i>	Sting ray

¹ The Council added the parrotfish species for all the islands in their first motion at the 153rd Council Meeting, but they correspond to this Criterion.

Criterion D. From the remainder species, include those species possessing economic importance to the nation or regional economy based on a threshold of landings or value separately determined for each of the recreational, commercial, and aquarium trade sectors as appropriate (e.g., top 90%) and those representing an important component of bycatch, as established by expert analysis.

Table 1.1.4. Draft list of species proposed to be included in the Puerto Rico Fishery Management Plan based on **Alternative 2, Criterion D.**

Family	Scientific Name	Common Name
Lutjanidae - Snappers	<i>Pristipomoides aquilonaris</i>	Wenchman
	<i>Pristipomoides macrophthalmus</i>	Cardinal

Family	Scientific Name	Common Name
	<i>Etelis oculatus</i>	Queen snapper
Haemulidae--Grunts	<i>Haemulon plumieri</i>	White grunt
Carangidae--Jacks	<i>Caranx hippos</i>	Crevalle jack
	<i>Alectis ciliaris</i>	African pompano
	<i>Elagatis bipinnulata</i>	Rainbow runner
Coryphaenidae - Dolphin fish	<i>Coryphaena hippurus</i>	Dolphin
	<i>Coryphaena equiselis</i>	Pompano dolphin
Scombridae -- Mackerels and tunas	<i>Euthynnus alletteratus</i>	Little tunny
	<i>Thunnus atlanticus</i>	Blackfin tuna
	<i>Scomberomorus cavalla</i>	King mackerel
	<i>Scomberomorus regalis</i>	Cero
	<i>Acanthocybium solandri</i>	Wahoo

Table 1.1.5 below summarizes the resulting species from all criteria.

Table 1.1.5. Consolidated list of species under **Alternative 2** recommended for inclusion in the Puerto Rico Fishery Management Plan. The Caribbean Fishery Management Council proposed these species at their 153rd Regular Meeting, held in August 2015. The Puerto Rico FMP draft list of species includes queen conch (1 species), spiny lobster (1 species), 64 finfish, sea cucumbers, sea urchins, and all species of coral.

Family or Class	#	Species Name	Common Name	Criterion
Strombidae -- True conchs	1	<i>Lobatus (Strombus) gigas</i>	Queen conch	A
Palinuridae -- Spiny lobster	2	<i>Panulirus argus</i>	Caribbean spiny lobster	A
Lutjanidae -- Snappers	3	<i>Apsilus dentatus</i>	Black snapper	A
	4	<i>Lutjanus buccanella</i>	Blackfin snapper	A
	5	<i>Lutjanus vivanus</i>	Silk snapper	A
	6	<i>Rhomboplites aurorubens</i>	Vermilion snapper	A
	7	<i>Lutjanus synagris</i>	Lane snapper	A
	8	<i>Lutjanus analis</i>	Mutton snapper	A
	9	<i>Ocyurus chrysurus</i>	Yellowtail snapper	A
	10	<i>Pristipomoides aquilonaris</i>	Wenchman	D
	11	<i>Pristipomoides macrophthalmus</i>	Cardinal snapper	D
	12	<i>Etelis oculatus</i>	Queen snapper	D
	13	<i>Lutjanus jocu</i>	Dog snapper	C
	14	<i>Lutjanus apodus</i>	Schoolmaster	C
	15	<i>Lutjanus cyanopterus</i>	Cubera snapper	C

Family or Class	#	Species Name	Common Name	Criterion
Serranidae -- Groupers	16	<i>Epinephelus striatus</i>	Nassau Grouper	A
	17	<i>Epinephelus itajara</i>	Goliath grouper	A
	18	<i>Epinephelus guttatus</i>	Red hind	A
	19	<i>Mycteroperca bonaci</i>	Black grouper	A
	20	<i>Epinephelus morio</i>	Red grouper	A
	21	<i>Mycteroperca tigris</i>	Tiger grouper	A
	22	<i>Mycteroperca venenosa</i>	Yellowfin grouper	A
	23	<i>Epinephelus flavolimbatus</i>	Yellowedge grouper	A
	24	<i>Epinephelus fulvus</i>	Coney	C
	25	<i>Epinephelus cruentatus</i>	Graysby	C
	26	<i>Epinephelus adscensionis</i>	Rock hind	C
	27	<i>Epinephelus mystacinus</i>	Misty grouper	C
	28	<i>Mycteroperca interstitialis</i>	Yellowmouth grouper	C
Scaridae -- Parrotfishes	29	<i>Scarus coeruleus</i>	Blue parrotfish	A
	30	<i>Scarus coelestinus</i>	Midnight parrotfish	A
	31	<i>Scarus guacamaia</i>	Rainbow parrotfish	A
	32	<i>Scarus vetula</i>	Queen parrotfish	C
	33	<i>Scarus taeniopterus</i>	Princess parrotfish	C
	34	<i>Sparisoma chrysopterygum</i>	Redtail parrotfish	C
	35	<i>Sparisoma viride</i>	Stoplight parrotfish	C
	36	<i>Sparisoma aurofrenatum</i>	Redband parrotfish	C
	37	<i>Scarus croicensis</i>	Striped parrotfish	C
Acanthuridae -- Surgeonfishes	38	<i>Acanthurus coeruleus</i>	Blue tang	C
	39	<i>Acanthurus bahianus</i>	Ocean surgeonfish	C
	40	<i>Acanthurus chirurgus</i>	Doctorfish	C
Balistidae -- Triggerfishes	41	<i>Canthidermis sufflamen</i>	Ocean triggerfish	C
	42	<i>Balistes vetula</i>	Queen triggerfish	C
	43	<i>Balistes capriscus</i>	Gray triggerfish	C
Labridae -- Wrasses	44	<i>Lachnolaimus maximus</i>	Hogfish	C
	45	<i>Halichoeres radiatus</i>	Puddingwife	C
	46	<i>Bodianus rufus</i>	Spanish hogfish	C
Pomacanthidae -- Angelfishes	47	<i>Holacanthus ciliaris</i>	Queen angelfish	C
	48	<i>Pomacanthus arcuatus</i>	Gray angelfish	C
	49	<i>Pomacanthus paru</i>	French angelfish	C
Sphyraenidae -- Barracudas	50	<i>Sphyraena guachancho</i>	Guaguanche	C
	51	<i>Sphyraena barracuda</i>	Great barracuda	C
Lobotidae -- Tripletail	52	<i>Lobotes surinamensis</i>	Tripletail	C
Myliobatidae -- Eagle and	53	<i>Manta birostris</i>	Manta	C

Family or Class	#	Species Name	Common Name	Criterion
Manta	54	<i>Aetobatus narinari</i>	Spotted eagle ray (chucho)	C
	55	<i>Dasyatis americana</i>	Sting ray	C
Haemulidae -- Grunts	56	<i>Haemulon plumieri</i>	White grunt	D
Carangidae -- Jacks	57	<i>Caranx hippos</i>	Crevalle jack	D
	58	<i>Alectis ciliaris</i>	African pompano	D
	59	<i>Elagatis bipinnulata</i>	Rainbow runner	D
Coryphaenidae -- Dolphin fish	60	<i>Coryphaena hippurus</i>	Dolphin	D
	61	<i>Coryphaena equiselis</i>	Pompano dolphin	D
Scombridae -- Mackerels and tunas	62	<i>Euthynnus alletteratus</i>	Little tunny	D
	63	<i>Thunnus atlanticus</i>	Blackfin tuna	D
	64	<i>Scomberomorus cavalla</i>	King mackerel	D
	65	<i>Scomberomorus regalis</i>	Cero	D
	66	<i>Acanthocybium solandri</i>	Wahoo	D
Class Holothuroidea -- Sea Cucumbers	67	All (several families and species)	Sea cucumbers	Council Motion
Class Echinoidea -- Sea Urchins	68	All (several families and species)	Sea urchins	Council Motion
All Corals (soft, hard, mesophotic, deep-water)	69	Several families and species (see Appendix A)	Corals	A

Alternative 3² (*previously Alternative 2). Identify species to be managed by the Council in waters of the exclusive economic zone (EEZ) off Puerto Rico using all or some of the criteria listed below. For those species for which landings data are available, indicating the species is in the fishery, the Council will choose a set of criteria to determine if a species should be managed under the Puerto Rico FMP. The criteria under consideration include, (A) the status of the stock and/or if it currently has a harvest prohibition, size limit, or seasonal closure in federal waters, (B) the degree to which the species occurs in state rather than in federal waters and can therefore be affected by federal management, (C) the ecological importance of a species within the coral reef ecosystem, and (D) the extent of harvest relative to a pre-established threshold. The selected criteria will identify the species to be managed.

Criterion A. Include for management those species that are presently classified as overfished in U.S. Caribbean waters based on National Marine Fisheries Service (NMFS) determination, or for which historically identified harvest is now prohibited due to their ecological importance as habitat (corals presently included in the Corals and Reef Associated Plants and Invertebrates

² The Interdisciplinary Planning Team for this action recommended on its 9/4/2015 meeting, interchanging the order of Alternatives 2 and 3 to facilitate discussion and analysis of each of the alternatives. This change will be recommended to the Council at the 154th Regular Meeting in December 2015.

FMP) or habitat engineers (midnight, blue, rainbow parrotfish), or those species for which seasonal closures or size limits apply.

Criterion B. Exclude from federal management those species that have been determined to infrequently occur in federal waters based on expert analysis guided by available data.

Criterion C. Include for management those species that are biologically vulnerable, constrained to a specific habitat that renders them particularly vulnerable, or have an essential ecological value, as determined by expert analysis.

Criterion D. Include those species possessing economic importance to the nation or regional economy based on a threshold of landings or value separately determined for each of the recreational, commercial, and aquarium trade sectors as appropriate (e.g., top 90%) and those representing an important component of bycatch, as established by expert analysis.

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1.2 Action 2: Establish stock complexes in the Puerto Rico Fishery Management Unit (FMU)

Proposed Alternatives for Action 2

Alternative 1. No Action. In the Puerto Rico FMU, retain the stocks/stock complexes presently managed under the Reef Fish, Spiny Lobster, Queen Conch, and Coral and Reef Associated Plants and Invertebrates (Coral) FMPs.

Table 1.2.1. Species proposed to be managed under the Puerto Rico FMP based on Alternative 2 of Action 1 that: (1) are currently included in the Puerto Rico FMU and (2) are managed in a stock/stock complex.

Stocks/Stock complexes	Species included in the Council FMPs
Snappers	
Snapper Unit 1	Black, blackfin, silk, vermillion, wenchman
Snapper Unit 2	Cardinal, queen
Snapper Unit 3 ¹	Lane, mutton, dog, schoolmaster
Snapper Unit 4	Yellowtail
Groupers	
Grouper Unit 1	Nassau
Grouper Unit 2	Goliath
Grouper Unit 3	Red hind, coney, graysby, rock hind
Grouper Unit 4	Black, red, tiger, yellowfin
Grouper Unit 5	Misty, yellowedge
Acanthuridae – Surgeonfishes	Blue tang, Ocean surgeonfish, Doctorfish
Balistidae – Triggerfishes²	Ocean triggerfish Queen triggerfish
Haemulidae – Grunts³	White grunt
Labridae – Wrasses	Hogfish, Puddingwife, Spanish hogfish
Pomacanthidae - Angelfishes	Queen, gray, French
Scaridae – Parrotfishes⁴	Blue, Midnight, Rainbow, Queen Princess, Redtail, Stoplight, Redband, Striped
Class Holothuroidea - Sea Cucumbers⁵	All (several species)
Class Echinoidea - Sea Urchins⁵	All (several species)
Queen conch	Queen conch
Spiny lobster	Spiny lobster
Corals	Corals

¹The SU3 currently also includes gray and mahogany snapper. These species were proposed to be removed from management in Action 1.

²Triggerfish currently also includes sargassum triggerfish and the black durgon. These species were proposed to be removed from management in Action 1.

³Grunts currently also include margate, tomtate, bluestriped, and the French porkfish. These species were proposed to be removed from management in Action 1.

⁴Parrotfish currently also include redfin parrotfish. This species was proposed to be removed from management in Action 1.

⁵Sea cucumbers and sea urchins (some species) are currently included in the Coral FMP as part of the aquarium trade FMU, which was proposed to be removed from management. Sea cucumbers and sea urchins are proposed to remain under management in the Island-Based FMPs.

Table 1.2.2. New species proposed to be managed under the Puerto Rico FMP based on Alternative 2 of Action 1 that would have no groupings under **Alternative 1** in Action 2.

Family	Species common name
Snappers	Cubera snapper
Groupers	Yellowmouth
Triggerfishes	Gray triggerfish
Jacks	Creville jack, African pompano, Rainbow runner
Eagle and Manta	Manta, spotted eagle ray, sting ray
Mackerels and Tunas	Little tunny, Blackfin tuna, King mackerel, Cero, Wahoo, Tripletail
Barracudas	Guaguanche, Great barracuda
Dolphin fishes	Dolphin, Pompano dolphin

Alternative 2. Do not organize the stocks in the Puerto Rico FMU in stock complexes. Management of the stocks will be in an individual basis.

Alternative 3. Organize stocks in the Puerto Rico FMU into stock complexes based on criteria developed by the Council and its Scientific and Statistical Committee (SSC) in cooperation with NMFS' Southeast Fisheries Science Center and Southeast Regional Office. (TBD)

Sub-Alternative 3a. Organize stocks in the Puerto Rico FMU based on X (e.g., landings patterns, life history, others) (*Note: this is the result of the cluster analysis).

Sub-Alternative 3b. Organize stocks in the Puerto Rico FMU based on another approach (TBD).

1.3 Action 3: Define management reference points for species within the Puerto Rico Fishery Management Unit (FMU)

1.3.1. Action 3(a): Establish a year sequence for determining mean or median annual landings for each stock within the Puerto Rico FMU.

Proposed Alternatives for Action 3(a)

Alternative 1. No Action. Use the time series used in the Caribbean 2010 Annual Catch Limit (ACL) Amendment or the 2011 Caribbean 2011 ACL Amendment to establish management reference points or proxies for stocks in the Puerto Rico FMU.

Alternative 2. Use the longest year sequence of reliable landings data to establish management reference points or proxies for stocks in the Puerto Rico FMU.

Alternative 3. Use the most recent three years of available landings data to establish management reference points or proxies for stocks in the Puerto Rico FMU.

Table 1.3.1.1. Year sequences under **Alternatives 1, 2, and 3** in Action 3(a).

Alternatives	Description	Puerto Rico Commercial Sector	Puerto Rico Recreational Sector
Alternative 1	Years used in the 2010 and 2011 Caribbean ACL Amendments to determine current management reference points or proxies	1999-2005 for stocks addressed in the 2010 Caribbean ACL Amendment 1988-2009 for stocks addressed in the 2011 Caribbean ACL Amendment	2000-2005 for stocks addressed in the 2010 Caribbean ACL Amendment 2000-2009 for stocks addressed in the 2011 Caribbean ACL Amendment
Alternative 2	Longest year sequence reliable data	1988-2014	2000-2014
Alternative 3	Most recent three years of available data	2012-2014	2012-2014

1.3.2. Action 3(b): Establish management reference points for stocks in the Puerto Rico FMU.

Proposed Alternatives for Action 3(b)

Alternative 1. No Action. For stocks in the Puerto Rico FMU, retain the management reference points or proxies presently used for stock or stock complexes within the Reef Fish, Spiny Lobster, Queen Conch, and Coral and Reef Associated Plants and Invertebrates FMPs.

Alternative 2. For stocks in the Puerto Rico FMU, establish the maximum sustainable yield (MSY) based on the year sequence of landings data defined in Action 3(a).

Sub-Alternative 2a. MSY proxy = Median annual landings selected by the Council in Action 3(a).

Sub-Alternative 2b. MSY proxy = Mean annual landings selected by Council in Action 3(a).

Alternative 3. For stocks in the Puerto Rico FMU, establish an overfishing limit (OFL) based on the MSY established in **Alternative 2**.

Sub-Alternative 3a. $OFL = MSY \text{ proxy} \text{ adjusted using the ORCS scalar}$; overfishing occurs when the average of the three most recent years of landings exceeds the OFL, unless NMFS' Southeast Fisheries Science Center (SEFSC) (in consultation with the Council and it's SSC) determines the overage occurred because data collection/monitoring improved, rather than because landings actually increased.

Sub-Alternative 3b. $OFL = MSY \text{ proxy}$; overfishing occurs when the average of the three most recent years of landings exceeds the OFL, unless NMFS' SEFSC (in consultation with the Council and it's SSC) determines the overage occurred because data collection/monitoring improved, rather than because landings actually increased.

Alternative 4. For stocks in the Puerto Rico FMU, establish an acceptable biological catch (ABC) control rule based on the OFL established in **Alternative 3**.

Sub-Alternative 4a. $ABC = OFL$

Sub-Alternative 4b. $ABC = OFL \times 0.90$

Sub-Alternative 4c. $ABC = OFL \times 0.85$

Sub-Alternative 4d. $ABC = OFL \times 0.75$

Alternative 5. For stocks in the Puerto Rico FMU, establish an optimum yield (OY) and annual catch limit (ACL) based on the ABC established in **Alternative 4**.

Sub-Alternative 5a. $OY = ACL = ABC$

Sub-Alternative 5b. $OY = ACL = ABC \times 0.90$

Sub-Alternative 5c. $OY = ACL = ABC \times 0.85$

Sub-Alternative 5d. $OY = ACL = ABC \times 0.75$

Sub-Alternative 5e. $OY = ACL = 0$

Table 1.3.2.1. Possible options to establish management reference points for stocks in the Puerto Rico fishery management unit.

REFERENCE POINT	DEFINITION
ALTERNATIVE 2: MAXIMUM SUSTAINABLE YIELD (MSY)	
Alternative 2(a)	MSY proxy = Median annual landings selected by Council in Action 3(a).
Alternative 2(b)	MSY proxy = Mean annual landings selected by Council in Action 3(a).
ALTERNATIVE 3: OVERFISHING LIMIT (OFL)	
Alternative 3(a)	OFL = MSY proxy adjusted using the ORCS scalar; overfishing occurs when the average of the three most recent years of landings exceeds the OFL, unless NMFS' Southeast Fisheries Science Center (in consultation with the Caribbean Fishery Management Council and it's SSC) determines the overage occurred because data collection/monitoring improved, rather than because landings actually increased.
Alternative 3(b)	OFL = MSY proxy; overfishing occurs when the average of the three most recent years of landings exceeds the OFL, unless NMFS' Southeast Fisheries Science Center (in consultation with the Caribbean Fishery Management Council and it's SSC) determines the overage occurred because data collection/monitoring improved, rather than because landings actually increased.
ALTERNATIVE 4: ACCEPTABLE BIOLOGICAL CATCH (ABC) CONTROL RULE	
Alternative 4(a)	$ABC = OFL$
Alternative 4(b)	$ABC = OFL \times 0.90$
Alternative 4(c)	$ABC = OFL \times 0.85$

REFERENCE POINT	DEFINITION
Alternative 4(d)	$ABC = OFL \times 0.75$
ALTERNATIVE 5: OPTIMUM YIELD (OY)/ANNUAL CATCH LIMIT (ACL)	
Alternative 5(a)	$OY = ACL = ABC$
Alternative 5(b)	$OY = ACL = ABC \times 0.90$
Alternative 5(c)	$OY = ACL = ABC \times 0.85$
Alternative 5(d)	$OY = ACL = ABC \times 0.75$
Alternative 5(e)	$OY = ACL = 0$

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Appendix A. List of Coral Species

Table A. List of species of corals currently included in the Corals and Reef Associated Plants and Invertebrates Fishery Management Plan (FMP). The proposed list of corals for each Island-Based FMP would include all corals – soft, hard, mesophotic, and deep-water corals.

I. Coelenterates--Phylum Coelenterata		Family	Scientific Name	Common Name
A. Hydrocorals -- Class Hydrozoa				
Hydroids -- Order Athecatae	1	Milleporidae	<i>Millepora</i> spp.	Fire corals
	2	Stylasteridae	<i>Stylaster roseus</i>	Rose lace corals
B. Anthozoans -- Class Anthozoa				
Soft corals -- Order Alcyonacea	3	Anthothelidae	<i>Erythropodium caribaeorum</i>	Encrusting gorgonian
	4		<i>Iciligorgia schrammi</i>	Deep-water sea fan
	5	Briaridae	<i>Briareum asbestinum</i>	Corky sea finger
	6	Clavulariidae	<i>Carijoa riisei</i>	
	7		<i>Telesto</i> spp.	
Gorgonian corals -- Order Gorgonacea	8	Ellisellidae	<i>Ellisella</i> spp.	Sea whips
	9	Gorgoniidae	<i>Gorgonia flabellum</i>	Venus sea fan
	10		<i>G. mariae</i>	Venus sea fan
	11		<i>G. ventalina</i>	Common sea fan
	12		<i>Pseudopterogorgia acerosa</i>	Venus sea fan
	13		<i>P. albatrossae</i>	
	14		<i>P. americana</i>	Slimy sea plume
	15		<i>P. bipinnata</i>	Bipinnate plume
	16		<i>P. rigida</i>	
	17		<i>Pterogorgia anceps</i>	Angular sea whip
	18		<i>P. citrina</i>	Yellow sea whip
	19	Plexauridae	<i>Eunicea calyculata</i>	Warty sea rod
	20		<i>E. clavigera</i>	
	21		<i>E. fusca</i>	Doughnut sea rod
	22		<i>E. knighti</i>	
	23		<i>E. laciniata</i>	
	24		<i>E. laxispica</i>	
25		<i>E. mammosa</i>	Swollen-knob	
26		<i>E. succinea</i>	Shelf-knob sea rod	
27		<i>E. touneforti</i>		
28		<i>Muricea atlantica</i>		
29		<i>M. elongata</i>	Orange spiny rod	

I. Coelenterates--Phylum Coelenterata		Family	Scientific Name	Common Name
	30		<i>M. laxa</i>	Delicate spiny rod
	31		<i>M. muricata</i>	Spiny sea fan
	32		<i>M. pinnata</i>	Long spine sea fan
	33		<i>Muriceopsis</i> spp.	
	34		<i>M. flavida</i>	Rough sea plume
	35		<i>M. sulphurea</i>	
	36		<i>Plexaura flexuosa</i>	Bent sea rod
	37		<i>P. homomalla</i>	Black sea rod
	38		<i>Plexaurella dichotoma</i>	Slit-pore sea rod
	39		<i>P. fusifera</i>	
	40		<i>P. grandiflora</i>	
	41		<i>P. grisea</i>	
	42		<i>P. nutans</i>	Giant slit-pore
	43		<i>Pseudoplexaura crucis</i>	
	44		<i>P. flagellosa</i>	
	45		<i>P. porosa</i>	Porous sea rod
	46		<i>P. wagnaari</i>	
Hard Corals--Order Scleractinia	47	Acroporidae	<i>Acropora cervicornis</i>	Staghorn coral
	48		<i>A. palmata</i>	Elkhorn coral
	49		<i>A. prolifera</i>	Fused staghorn
	50		<i>Agaricia agaricities</i>	Lettuce leaf coral
	51		<i>A. fragilis</i>	Fragile saucer
	52		<i>A. lamarcki</i>	Lamarck's sheet
	53		<i>A. tenuifolia</i>	Thin leaf lettuce
	54		<i>Leptoseris cucullata</i>	Sunray lettuce
	55	Astrocoeniidae	<i>Stephanocoenia michelinii</i>	Blushing star
	56	Caryophyllidae	<i>Eusmilia fastigiata</i>	Flower coral
	57		<i>Tubastrea aurea</i>	Cup coral
	58	Faviidae	<i>Cladocora arbuscula</i>	Tube coral
	59		<i>Colpophyllia natans</i>	Boulder coral
	60		<i>Diploria clivosa</i>	Knobby brain coral
	61		<i>D. labyrinthiformis</i>	Grooved brain
	62		<i>D. strigosa</i>	Symmetrical brain
	63		<i>Favia fragum</i>	Golfball coral
	64		<i>Manicina areolata</i>	Rose coral

I. Coelenterates--Phylum Coelenterata		Family	Scientific Name	Common Name
	65		<i>M. mayori</i>	Tortugas rose coral
	66		<i>Montastrea annularis</i>	Boulder star coral
	67		<i>M. cavernosa</i>	Great star coral
	68		<i>Solenastrea bournoni</i>	Smooth star coral
	69	Meandrinidae	<i>Dendrogyra cylindrus</i>	Pillar coral
	70		<i>Dichocoenia stellaris</i>	Pancake star
	71		<i>D. stokesi</i>	Elliptical star
	72		<i>Meandrina meandrites</i>	Maze coral
	73	Mussidae	<i>Isophyllastrea rigida</i>	Rough star coral
	74		<i>Isophyllia sinuosa</i>	Sinuuous cactus
	75		<i>Mussa angulosa</i>	Large flower coral
	76		<i>Mycetophyllia aliciae</i>	Thin fungus coral
	77		<i>M. danae</i>	Fat fungus coral
	78		<i>M. ferox</i>	Grooved fungus
	79		<i>M. lamarckiana</i>	Fungus coral
	80		<i>Scolymia cubensis</i>	Artichoke coral
	81		<i>S. lacera</i>	Solitary disk
	82	Oculinidae	<i>Oculina diffusa</i>	Ivory bush coral
	83	Pocilloporidae	<i>Madracis decactis</i>	Ten-ray star coral
	84		<i>M. mirabilis</i>	Yellow pencil
	85	Poritidae	<i>Porites astreoides</i>	Mustard hill coral
	86		<i>P. branneri</i>	Blue crust coral
	87		<i>P. divaricata</i>	Small finger coral
	88		<i>P. porites</i>	Finger coral
	89	Rhizangiidae	<i>Astrangia solitaria</i>	Dwarf cup coral
	90		<i>Phyllangia americana</i>	Hidden cup coral
	91	Siderastreidae	<i>Siderastrea radians</i>	Lesser starlet
	92		<i>S. siderea</i>	Massive starlet
Black Corals -- Order Antipatharia	93		<i>Antipathes</i> spp.	Bushy black coral
	94		<i>Stichopathes</i> spp.	Wire coral