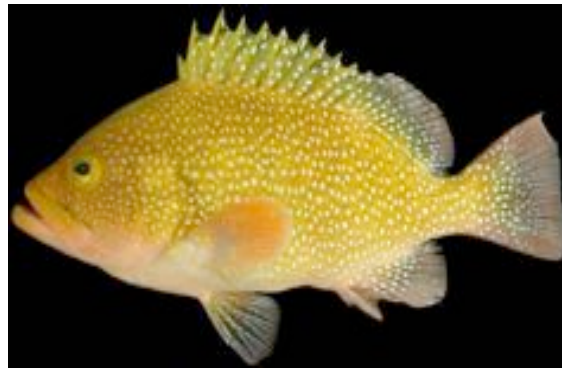


**PETITION TO LIST THE
Goliath Grouper (*Epinephelus itajara*), Nassau Grouper (*Epinephelus striatus*), and Speckled Hind (*Epinephelus drummondhayi*)
UNDER THE U.S. ENDANGERED SPECIES ACT**



Goliath Grouper Photo (Left), Speckled Hind (Right) and Nassau Grouper (Below):
NOAA & U.S. Geological Survey



**Petition Submitted to the U.S. Secretary of Commerce, Acting Through the National
Oceanic and Atmospheric Administration Fisheries Service & the U.S. Secretary of
Interior, Acting through the U.S. Fish and Wildlife Service**

Petitioner:
WildEarth Guardians
312 Montezuma Ave.
Santa Fe, New Mexico 87501
(505) 988-9126

Submitted August 31, 2010



Introduction

The Goliath Grouper (*Epinephelus itajara*), Nassau Grouper (*Epinephelus striatus*), and Speckled Hind (*Epinephelus drummondhayi*), ranging from the coastal waters of the southeastern United States to the Gulf of Mexico and the Caribbean, are becoming increasingly rare and imperiled. Overfishing has taken a devastating toll on these grouper. These species are commercially valuable and are historically and currently overfished by both recreational and commercial fishers, whether intentionally or as bycatch. The plight of these three species is emblematic of the larger problem of grouper imperilment. The International Union for Conservation of Nature (IUCN) characterizes grouper as “a particularly vulnerable group of fishes” (Polidoro et al. 2009: 58).

Accordingly, WildEarth Guardians hereby petitions the Secretary of Commerce, acting through the National Marine Fisheries Service (NMFS) within the National Oceanic and Atmospheric Administration (NOAA), and the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service, to list and thereby protect under the Endangered Species Act (ESA) the Goliath Grouper (*Epinephelus itajara*), the Nassau Grouper (*Epinephelus striatus*), and the Speckled Hind (*Epinephelus drummondhayi*).

NMFS has designated the Nassau Grouper and Speckled Hind as “species of concern” (NMFS 2010a,b). While the NMFS no longer lists the Goliath Grouper as a “species of concern” due to juvenile population resurgence, the IUCN currently ranks the Goliath Grouper as Critically Endangered (Chan Tak-Chuen & Padovani Ferrera 2006). The IUCN also ranks the Speckled Hind as Critically Endangered (Chuen & Huntsman 2006); and the Nassau Grouper as Endangered (Cornish & Eklund 2003). The American Fisheries Society (AFS) currently considers Goliath Grouper as Conservation Dependent (NMFS 2006); the Nassau Grouper as Threatened; and the Speckled Hind as Endangered (NMFS 2010b). NatureServe ranks the Speckled Hind as Vulnerable, and the Nassau and Goliath Grouper as Imperiled (NatureServe 2009a,b,c). By all accounts, these fish are facing extinction absent ESA protection.

These species’ endangerment is part of a pattern of imperilment of many grouper species (Morris et al. 2000), as well as large-bodied predatory fishes more broadly (Koenig et al. 2000; Stallings 2009). State Morris et al. (2000: 937):

The rapidity of the decline of many grouper species is of extreme concern. Local populations can be extirpated in a matter of a few years. If steps are not taken to halt these declines, normal spawning behavior could be affected, genetic diversity will be lost, and global population densities could fall below the critical levels needed for the eventual recovery of the species. Extinction of even widespread species is possible unless the threats facing groupers are recognized and addressed. It will likely prove impossible to protect individual grouper species from extinction without implementing broader schemes such as no-take marine reserves, which focus on ecosystem protection and protect all species within them from fishing pressure and habitat destruction.

The primary threat to these grouper is overfishing, whether intentionally or as bycatch, from gill-nets, long-lines, bottom trawls, and other fishing activities (NMFS 2010a,b). Recreational fishers from the U.S. likely play an important role in endangering these species. Historically, each of these species has been exploited by fishermen during spawning aggregations. The majority of these fish are caught with either hook-and-line or by spear fishing. Due to large size of these fish, ranging up to 680 pounds, they are valuable as trophy fish (Sadovy & Eklund 1999). Additionally, the biological makeup of these deepwater fishes cause them to be susceptible to barotrauma (the bends) as they are pulled from deeper waters (Chuen & Huntsman 2006; Cornish & Eklund 2006; Sadovy & Eklund 1999).

An underlying driver of the fishing threat is high human population density and growth (Stallings 2009). This population growth is also likely to spawn more habitat destruction, including more energy development and specifically near and offshore oil drilling, which could have a devastating impact on the habitats of these grouper.

The most recent threat to grouper habitat has been the Deepwater Horizon oil spill disaster. Although the well has been plugged, the oil remains fugitive, moving from place to place possibly covering the entire range and habitat of these fish (*See* Figure 11), and destroying the reefs that are so essential to these species. As human populations continue to grow there will be a continued need and demand for energy resources, including oil. Without a fundamental shift in energy policy, reckless oil drilling may continue. As a result, these fish urgently need protection from overfishing, increasing human populations, and reckless energy development.

Despite broad acknowledgment of these species' imperilment, current regulations are not safeguarding them from extinction. With millions of recreational fishers ranging from the Gulf of Mexico to North Carolina (the range of these grouper), even a limit of one fish per vessel is an inadequate safeguard. Even where fishing for these grouper has been prohibited altogether, it is impossible for any fisher to know what is on the other end of his or her line (or net) before reeling them in. Once they are brought to the surface, the threat of barotrauma can cause significant harm or death (and the fish are unlikely to be released due to their high value). Similarly, as some current management regulations have forced fishers to deeper waters, the threat of barotrauma increases, thereby harming these deep-water fish.

In light of the imperilment of the Goliath Grouper, Nassau Grouper, and Speckled Hind, WildEarth Guardians requests listing of these species under the U.S. Endangered Species Act (ESA). Federal protection will give these fish the best chance of survival. Over 99 percent of the species listed under the ESA still exist.¹ Prompt ESA listing is the Goliath Grouper's, Nassau Grouper's, and Speckled Hind's best hedge against extinction.

¹Compare the number of species currently listed under the ESA (1,959) with the species that have been delisted due to extinction (9). *See* http://ecos.fws.gov/tess_public/pub/boxScore.jsp and http://ecos.fws.gov/tess_public/pub/delistingReport.jsp [Accessed August 2010].

Applicability of the Endangered Species Act

In light of the Groupers' imperilment, Petitioner requests listing of these three species under the ESA as either threatened or endangered, throughout their historic and current range. Taxa eligible for ESA listing include "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" (16 U.S.C. § 1532(16)).² Both the statute (16 U.S.C. § 1532) and regulations implementing the Endangered Species Act (50 C.F.R. § 424) are applicable to this petition. Subsections that concern the formal listing of the Groupers as Endangered or Threatened species are:

"Endangered species means a species that is in danger of extinction throughout all or a significant portion of its range."... (k) "species" includes any species or subspecies that interbreeds when mature. *See* 16 U.S.C § 1532(6), 50 C.F.R. § 424.02(e).

"Threatened species means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." *See also* 16 U.S.C § 1532(20), 50 C.F.R. § 424.02(m).

This Petition demonstrates that the Groupers are imperiled to the extent that they warrant listing as either Endangered or Threatened under the ESA.

ESA Section 4 (16 U.S.C. § 1533(a)(1)) sets forth listing factors under which a species can qualify for ESA protection (see also 50 C.F.R. § 424.11(c)):

- A. The present or threatened destruction, modification, or curtailment of habitat or range;
- B. Overutilization for commercial, recreational, scientific, or educational purposes;
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; and
- E. Other natural or manmade factors affecting its continued existence.

At least four factors set forth in ESA Section 4 (16 U.S.C. § 1533(a)(1)) and 50 C.F.R. § 424.11(c) have resulted in the continued decline of the Goliath Grouper, Nassau Grouper, and Speckled Hind and are causing these species to face extinction or endangerment in the foreseeable future. These fishes are presently faced with habitat destruction as a result of the Deepwater Horizon oil spill (Factor A). They have also declined and continue to decline due to overfishing (Factor B). They are inadequately protected by existing regulations from the threats they face (Factor D). Lastly, these species have

²The sole exclusion is for "a species of the Class Insecta determined by the Secretary to constitute a pest whose protection... would present an overwhelming and overriding risk to man." 16 U.S.C. § 1532(6). It is difficult to imagine an insect so imperiled as to warrant ESA protection that presents a grave risk to humans.

biological constraints that increase susceptibility to extinction (Factor E). A taxon needs to meet only one of these listing factors outlined in the ESA to qualify for federal listing.

Description of Petitioner

WildEarth Guardians is a non-profit environmental organization with over 4,500 members throughout the United States. WildEarth Guardians has an active endangered species protection campaign. As part of this campaign, Guardians works to obtain ESA protection for a wide variety of imperiled wildlife and plants and the ecosystems on which they depend.

GOLIATH GROUPEr

Classification and Nomenclature

Common Name: *Epinephelus itajara* is known by its common names “Goliath Grouper,” “Mero,” “Mero Guasa,” “Cherne,” and “Guasa” (Tak-Cheun & Ferrera 2006). Throughout the petition, we refer to this species as the Goliath Grouper.

Taxonomy: The petitioned species is *Epinephelus itajara* (Lichtenstein 1822). The taxonomic classification for this species is shown in Table 1.

Table 1. Taxonomy of *Epinephelus itajara*.

Phylum	Chordata
Class	Actinopterygii
Order	Perciformes
Family	Seranidae
Genus	<i>Epinephelus</i>
Species	<i>Epinephelus itajara</i>

Description

The Goliath Grouper is large, with a maximum size approximately 8 ft (2.4 m) and 680 lbs (310 kg). NMFS provides the following description:

... the largest of the western North Atlantic groupers, readily distinguishable from all other species by its nearly terete shape, short dorsal spines, short canine teeth and distinctive coloration... Body color is brownish yellow, or may be grey or greenish. The head and the dorsal part of the body and fins have small black spots, which get smaller with growth. (Sadovy & Eklund 1999).

See Figure 1.

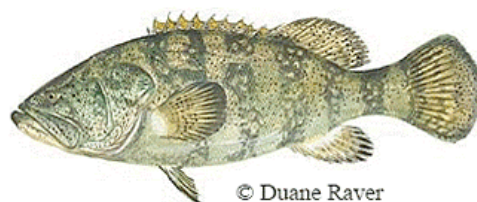


Figure 1: Goliath Grouper.
Source: NMFS.

Geographic Distribution: Historic and Current

The Goliath Grouper is found in tropical and subtropical waters of the Atlantic and eastern Pacific Oceans. In the western Atlantic, the species ranges from North Carolina (USA) to southeast Brazil and is caught widely in the Gulf of Mexico and throughout most of the Caribbean. It is also reported in the eastern Atlantic from Senegal to Congo. In the Pacific, it occurs from the Gulf of California to Peru. IUCN (2010) defines the species as Critically Endangered throughout its entire range, including and with special attention on, southern Florida and the Gulf of Mexico (Figure 2).

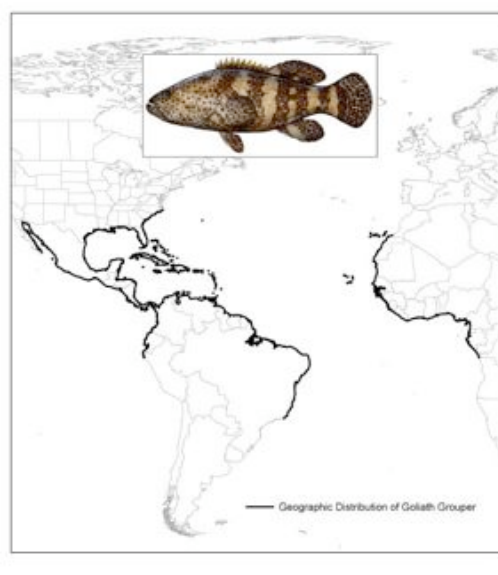


Figure 2: The Goliath Grouper's Distribution.
Source: NMFS (2006).

Habitat Requirements

Goliath Grouper primarily occur as solitary individuals or in groups of up to one hundred (when spawning) in shallow water, typically less than 40 m (132 ft) water depth. However, they have often been observed up to 90 m (297 ft) deep in caves. Large adults are sedentary and exhibit little inter-reef movement, while young goliath grouper have

been found in brackish estuaries and canals. In Florida and the Caribbean, the species is often taken around docks and bridges and on set-lines made fast to mangrove trees (Sadovy & Eklund 1999).

Life History

Goliath Grouper are extremely long-lived, with a life span of 30-50 years. The species has a slow maturation and growth rate (Sadovy & Eklund 1999).

Diet

This species feeds on a wide variety of fishes and invertebrates. It is a classic apex predator: large, rare, and only a few individuals occur on any given reef unit (Huntsman et al. 1999).

Reproduction & Dispersal

Evidence leads most researchers to the conclusion that the Goliath Grouper is a protogynous hermaphrodite, and therefore all individuals are female at birth (Sadovy & Eklund 1999). The females reach sexual maturity between the ages of 6-7 years, at which point some females transition to males. *Id.* The Goliath Grouper spawns in relatively shallow waters just off the coastline. Juveniles are typically found in brackish estuaries and mangrove swamps, while adults tend to stay in deeper waters near reefs and ship wreckage. *Id.* and Figure 3.



Figure 3: Life Cycle for Species in the Serranidae Family.

Source: http://www.bio.fsu.edu/coleman_lab/grouper_ecology.php [Accessed June 2010].

Up to one hundred individuals, sometimes more, aggregate to spawn at specific times and locations. Its peak reproductive activity takes place between the months of July and September in the Gulf of Mexico (Chan Tak-Chuen & Padovani Ferrera 2009; Sadovy and Eklund 1999). Heavy fishing has had such a severe impact on many of these

aggregations that about one-third (1/3) no longer form at traditional sites and one-quarter (1/4) no longer form at all (Sadovy & Eklund 1999).

Historic and Current Population Trends

NatureServe (2009b) describes the range and imperilment of the Goliath Grouper:

Global abundance is unknown. Absent, disappearing, or becoming increasingly rare throughout range; especially true for larger individuals (Sobel 1996). Historically, the majority of these fish are caught along the gulf coast of Florida. Most severely impacted grouper in the western Atlantic; over fishing led to severe reductions in populations (Sadovy 1990). Presently scarce throughout the Gulf of Mexico; no longer abundant in any part of range (Caribbean Fisheries Management Council 1993).

The life history characteristics of the Goliath Grouper make this species highly vulnerable to over-fishing (Chan Tak-Chuen & Padovani Ferrera 2006; Bullock et al. 1992). One estimate of its global abundance is 2,500 to 10,000 individuals (presumably adults) (NatureServe 2009b). Scientists indicate that the U.S. population of the Goliath Grouper is biologically endangered as catches, sizes, and CPUE (Catch Per Unit Effort) have fallen sharply since the 1970s (Sadovy & Eckland 1999). The IUCN currently lists the Goliath grouper as Critically Endangered (Chan Tak-Chuen & Padovani Ferrera 2006). NatureServe currently lists the species as Imperiled (NatureServe 2009b).

Recently, there has been some population resurgence in the Gulf of Mexico due to fishery closings in 1990, as evidenced by increasing juvenile populations in the Florida mangroves. However, this number could plummet once again with the effects of the Deepwater Horizon oil spill.³

Goliath Grouper are vulnerable to stresses caused by cold water or red tide. During an outbreak of red tide in Florida, several dead Goliath Grouper washed ashore (Chan Tak-Chuen & Padovani Ferrera 2006; Gilmore et al. 1978; Smith 1976). As the oil from the damaged rig continues to flow across the fish's habitat, killing its food sources and blocking needed sunlight and causing a drastic drop in water temperature, the Goliath Grouper's chance of survival and recovery becomes increasingly low.⁴

The best available data indicate the Goliath Grouper will remain imperiled and will likely be faced with extinction in the near future without ESA protection.

³See Oil Spills in Mangroves, planning and response considerations; Rebecca Hoff, Philippe Hensel, Edward C. Proffitt, Patricia Delgado, Gary Shigenaka, Ruth Yender, Alan Mearns (January 2002).

⁴See Wildlife Management Institute's report: "Gulf Oil Spill Could Have Major Impacts on Region's Fish and Wildlife." Online at: www.wildlifemanagementinstitute.org/index.php?option=com_content&view=article&id=446:gulf-oil-spill-could-have-impacts-on-fish-and-wildlife&catid=34:ONB_Articles&Itemid=54 [Accessed July 2010].

NASSAU GROUPE

Classification and Nomenclature

Common Name: *Epinephelus striatus* is known by the common names of “Nassau Grouper,” “Cherna,” and “Cherna Criolla” (Cornish & Eklund 2003). Throughout the petition, we refer to this species as the Nassau Grouper.

Taxonomy: The petitioned species is *Epinephelus striatus* (Bloch 1792). The taxonomic classification for this species is shown in Table 2.

Table 2. Taxonomy of *Epinephelus striatus*.

Phylum	Chordata
Class	Actinopterygii
Order	Perciformes
Family	Seranidae
Genus	<i>Epinephelus</i>
Species	<i>Epinephelus striatus</i>

Description

The Nassau Grouper is fairly large, with a maximum size of approximately 3.2 ft (39 in) and 55 lbs (25 kg). NMFS (2010a) provides the following description:

... characterized by five dark brown vertical bars on pale tan or gray body, black dots around the eye, a large black saddle-blotch on the caudal peduncle, and a wide “tuning fork” pattern on their forehead. However, they can greatly lighten or darken this overall pattern within minutes.

See Figure 4.



Figure 4: Sketch of Nassau Grouper.
Source: NOAA.

Geographic Distribution: Historical and Current

The Nassau Grouper is found from Bermuda and Florida throughout the Bahamas and Caribbean Sea, including the Gulf of Mexico and up the Atlantic coast to North Carolina (Cornish & Eklund 2003). The NMFS defines the Species of Concern range for the Nassau Grouper as including the U.S. Atlantic Coast and Gulf of Mexico (Figure 5).

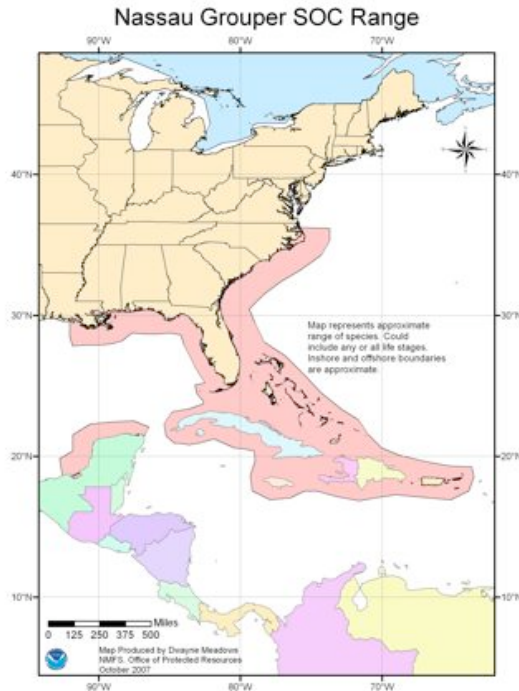


Figure 5: The Nassau Grouper’s Species of Concern Range.
Source: NMFS (2010a).

Habitat Requirements

The Nassau Grouper is historically found from inshore to about 330 feet (100 m) depth in the Caribbean and South Atlantic (*see* Figure 6). Adults are generally found near high-relief coral reefs and rocky bottoms. They are often near caves or large overhangs. Juveniles are found at shallower depths in and around coral clumps covered with microalgae and over seagrass beds (NMFS 2010a).

Life History

Nassau Grouper are fairly long-lived, reaching ages of up to 29 years and have slow maturation and growth rates. *Id.*

Diet

The Nassau Grouper is a top-level predator whose diet consists mainly of fish and crabs. They are ambush suction foragers: they lie and wait for prey and then entirely engulf the organism. *Id.*

Reproduction & Dispersal

Nassau Groupers are primarily gonochoristic (separate sexes); however, protogynous hermaphroditism has not been disproven. The species reaches sexual maturity between the ages of 4-7. It has a low resilience to fishing, with a generation time estimated at 9-10 years (Cornish & Eklund 2003; NMFS 2010a). This species spawns offshore, juveniles are often in near shore areas, and adults are usually deeper, whether on the rocky bottoms, or near reefs (Sadovy & Eklund 1999 and Figure 3, above). Nassau grouper are known to assemble in very large spawning aggregation with numbers ranging from a few dozen to thousands. These spawning aggregations occur in very site and time specific locations. In the Gulf and Caribbean, the aggregations take place from November to February (NatureServe 2009c; Sadovy & Eklund 1999).

Historic and Current Population Status & Trends

NatureServe (2009c) describes the range and imperilment of the Nassau Grouper:

Widely distributed in the tropical western Atlantic; considered extremely threatened throughout most of its range, particularly from intense fishing of spawning aggregations, despite management measures in the U.S.; life history characteristics make this species particularly vulnerable to exploitation.

The Nassau Grouper's global abundance has been estimated as low as 10,000⁵ worldwide, with numbers still declining. *Id.* Scientists indicate that the U.S. population of the Nassau Grouper is endangered and is suffering from a "high rate of decline in population size" (Cornish & Eklund 2003). The species is listed as Endangered by the IUCN. *Id.* NatureServe currently rank the fish as Imperiled (NatureServe 2009c). NMFS, as previously stated, lists the Nassau Grouper as a "Species of Concern" (NMFS 2010a).

The Florida and Caribbean populations of the Nassau Grouper are considered "overfished" by the NMFS (2010a). NMFS further states,

Nassau grouper are overfished and overfishing is occurring in the Caribbean. In waters off the continental U.S., population levels are low

⁵Petitioner assumes 10,000 adults, but NatureServe (2009c) does not specify.

relative to historical levels, having shown little response to a fishing moratorium established in 1992.⁶

The IUCN estimates that the population has declined by approximately 60% over the last three generations (Cornish & Eklund 2003). See Figure 6.

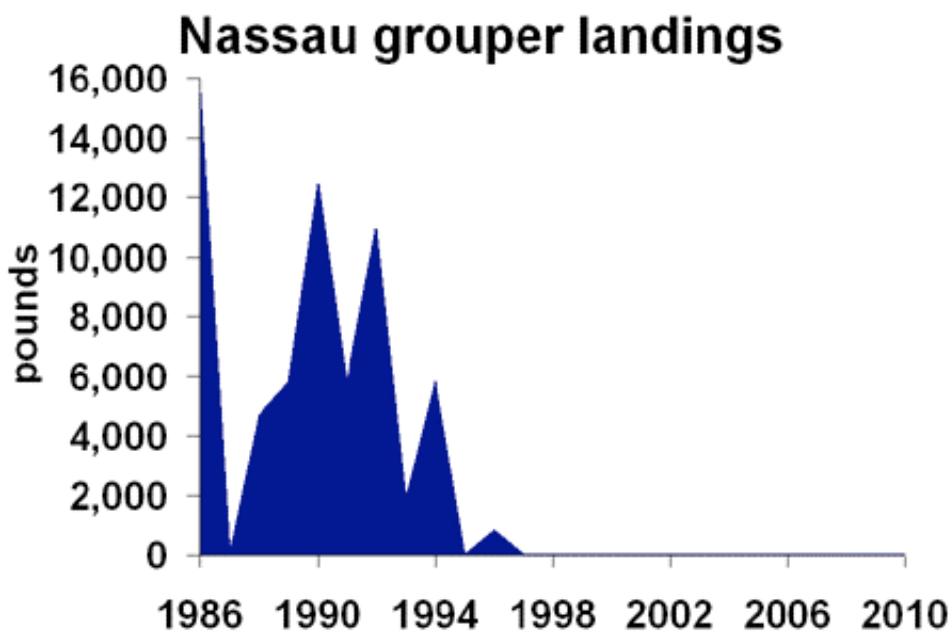


Figure 6: Nassau Grouper Landings off the coast of the U.S. since 1986.

Source: http://www.nmfs.noaa.gov/fishwatch/species/nassau_grouper.htm [Accessed August 2010].

NMFS further stated:

Commercial and recreational landings data from 1986-1991 indicate that the Nassau grouper harvests have decreased in both pounds landed and average size. As a result of this decrease in yield, the Caribbean (1990), South Atlantic (1991) and the Gulf of Mexico (1996) Fisher Management Councils (FMC), and the State of Florida (1993) prohibited the take and possession of Nassau Grouper. All three FMC's currently classify them as overfished (NMFS 2010a).

In a 2009 report, the IUCN stated:

In the tropical western Atlantic, the Nassau Grouper *Epinephelus striatus*, once the most important of all groupers in the landings of Caribbean islands, is now considered Endangered. Living for several decades and taking about five years to become sexually mature and spawning in

⁶See http://www.nmfs.noaa.gov/fishwatch/species/nassau_grouper.htm [Accessed August 2010].

aggregations, this species has proven biologically unable to withstand decades of heavy and uncontrolled fishing and is severely reduced throughout most of its range...More than anything, a greater awareness is needed on the plight of this species.

See Polidoro et al. (2009: 59). Like the Goliath Grouper, the evidence clearly shows that Nassau Grouper are endangered, based on their sharp decline in population, and are in grave need of protection under the ESA.

SPECKLED HIND

Classification and Nomenclature

Common Name: *Epinephelus drummondhayi* is known by the common names of “Speckled Hind,” “Calico Grouper,” “Kitty Mitchell,” “Strawberry Grouper,” “Mérrou Grivelé,” and “Mero Pintarroja” (Chuen & Huntsman 2006). Throughout this petition, we refer to this species as the Speckled Hind.

Taxonomy: The petitioned species is *Epinephelus drummondhayi* (Goode & Bean 1878). The taxonomic classification for this species is shown in Table 3.

Table 3. Taxonomy of *Epinephelus drummondhayi*.

Phylum	Chordata
Class	Actinopterygii
Order	Perciformes
Family	Seranidae
Genus	<i>Epinephelus</i>
Species	<i>Epinephelus drummondhayi</i>

Description

The Speckled Hind is moderately large, with a maximum size approximately 3.6 ft (110 cm) and 66 lbs (30 kg). NMFS (2010b) provides the following description:

Speckled Hind derive their name from the multitude of tiny white spots that cover their reddish-brown head, body and fins. Juvenile specimens tend to have yellow body color with white spots.

See Figure 7.



Figure 7: Speckled Hind Juvenile.
Source: U.S. Geological Survey.

Geographic Distribution

The Speckled Hind occurs in the waters around Bermuda and along the coast of the U.S. from North Carolina to the Florida Keys and in the northern and eastern Gulf of Mexico (Chuen & Huntsman 2006). NMFS defines the Species of Concern Range for the Speckled Hind as including the U.S. Atlantic Coast and Gulf of Mexico (Figure 8).



Figure 8: The Speckled Hind's Species of Concern Range.
Source: NMFS (2010b).

Habitat Requirements

The Speckled Hind is a deep-sea grouper. Adults inhabit offshore rocky ledges and sea mounts with strong current in waters that are 80 to 1300 feet (25 to 400 m) but are most common between 200 and 400 feet (60 and 120 m) in many areas of the western Atlantic (NMFS 2010b).

Life History

The Speckled Hind is moderately long lived, reaching a maximum age of 25 years. It also has low maturation and growth rates. *Id.*

Diet

The Speckled Hind engulfs its prey whole, feeding mainly on fish, crabs, shrimp, lobsters, and mollusks, including squid (Chuen & Huntsman 2006; NMFS 2010b).

Reproduction & Dispersal

Like most grouper, the Speckled Hind is a protogynous hermaphrodite. Females mature at 4 or 5 years of age and 18-24 inches in length, and transition to male at ages 7 to 14 (Chuen & Huntsman 2006; NMFS 2010). It has a low resilience to fishing with a minimum population doubling time of 4.5 – 14 years (Chuen & Huntsman 2006; citing Froese and Pauly 2005).

The Speckled Hind spawns offshore in large site- and time-specific spawning aggregations. These aggregations occur from May to October in specific sites throughout their range (NMFS 2010b). This species may migrate over 100 miles to spawn.⁷

Historic and Current Population Status and Trends

NatureServe (2009a) describes the range and imperilment of the Speckled Hind:

Range-wide population is not known. The number of occurrences is not known, but may be limited due to intense fishing throughout at least much of the U.S. western Atlantic. Absent, disappearing, or becoming increasingly rare throughout range; considered extremely threatened by recreational and commercial fishing throughout most of range.

The Speckled Hind's global abundance has been estimated between 2,500 to 10,000 (NatureServe 2009a).⁸ Scientists indicate that the U.S. population of the Speckled Hind is endangered, and "the species has a suite of life history characteristics that are often associated with higher extinction risk" (Chuen & Huntsman 2006). The IUCN lists the

⁷See http://www.nmfs.noaa.gov/fishwatch/species/nassau_grouper.htm [August 2010].

⁸Petitioner assumes this estimate is of adults; NatureServe (2009a) does not specify.

Speckled Hind as Critically Endangered. *Id.* The American Fisheries Society currently lists the species as Endangered (NMFS 2010b). The Speckled Hind is considered a “Species of Concern” by the NMFS (2010b), and according to NatureServe the Speckled Hind is listed as Vulnerable (NatureServe 2009a).

NMFS (2010b) reports that the species’ population has declined sharply since the mid 1980s (Figure 9) and further notes:

Available information suggests there has been a decline mean size, mean age, and percentage of males in the south Atlantic.

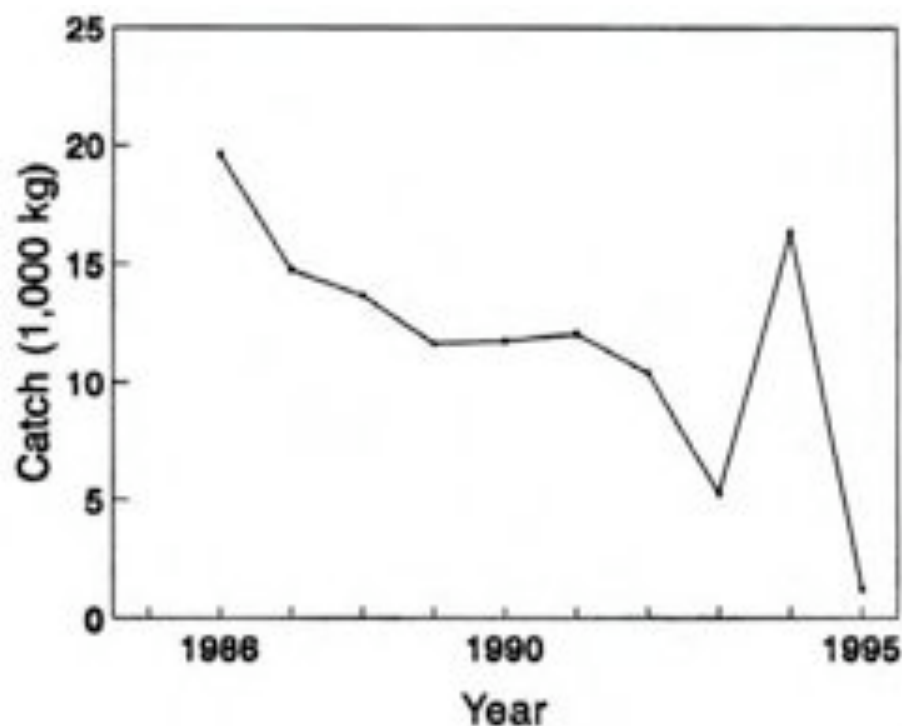


Figure 9: Speckled Hind catches in SE USA from 1986–1995.

Source: NMFS (2010b).

Personal observations by Dr. Gene Huntsman, a scientist familiar with the species and its fishing history, suggest steady and drastic declines in abundance (Chuen and Huntsman 2006). In a study in North Carolina, Rudershausen et al. (2008) found that, while Speckled Hind were caught in the 1970s, they were not caught in 2005-2006. Like the other petitioned groupers, the best available information shows that this species is imperiled and likely declining.

Ecology

Grouper play important roles as apex predators in the marine food chain, but the heavy fishing that has already occurred has likely reduced the groupers’ ecological effectiveness. Write Koenig et al. (2000: 594):

...because marine benthic fisheries focus most intensely on apex predators (e.g., groupers, snappers, amberjacks, sharks), these species are commonly reduced or absent in heavily fished systems. The complete extent of ecosystem changes is unknown in most cases because virtually all areas have been fished for so many years that society has lost any historical perspective (Jackson, 1997). The condition of the habitat now considered 'normal' is probably far from the original baseline.

The reversal of these groupers' current imperilment and population declines is therefore vitally important from an ecological standpoint. Groupers are ecologically important, and their protection requires the establishment of no-take marine reserves that can help safeguard spawning aggregations as well as whole ecosystems (Morris et al. 2000). Given the ecosystem protection purpose of the ESA,⁹ it is especially imperative that these vital ecosystem actors be safeguarded under the Act.

Qualification as Distinct Population Segment for the Goliath Grouper

Substantial evidence suggests that the continental U.S. population of the Goliath Grouper (ranging from North Carolina to the Gulf of Mexico) qualifies as a Distinct Population Segment (DPS) under the ESA. The ESA specifies that a DPS can only be designated for vertebrates (16 U.S.C. § 1532(16)). NMFS (and the U.S. Fish and Wildlife Service) established a set of guiding principles¹⁰ for defining a DPS. 61 FR 4722. To qualify as a DPS, a population must be *discrete* from other populations of the species and *significant* to the species:

Discreteness: A population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions:

1. It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.
2. It is delimited by international government boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4 (a)(1)(D) of the act.

Significance: If a population segment is considered discrete under one or more of the above conditions, its biological and ecological significance will then be considered in light of Congressional guidance...that the authority to list DPS's be used... "sparingly" while encouraging the

⁹The ESA states: "The purposes of this act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species..." 16 U.S.C. § 1531 (b).

¹⁰The Service describes the policy as "non-regulatory in nature" (61 FR 4722 at p. 4723) and "guiding principles" (*Id.* at p. 4725), and they therefore should be considered policy guidance, rather than regulation.

conservation of genetic diversity. In carrying out this examination, the Services will consider available scientific evidence of the discrete population segment's importance to the taxon to which it belongs. This consideration may include, but is not limited to the following:

1. Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon,
2. Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon,
3. Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range, or
4. Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

Id. at p 4725. Notably, the policy does not require absolute reproductive isolation nor does it require genetic evidence of differentiation.

Discreteness: NMFS considers the continental U.S. Goliath Grouper population (ranging from North Carolina to the Gulf of Mexico) as geographically distinct from other Goliath Grouper populations, primarily due to the influence of the Gulf Loop and Gulf Stream currents (NMFS 2006).

Significance: The continental U.S. Goliath Grouper population is significant for several reasons. The loss of the continental U.S. Goliath Grouper population would represent a significant gap in the range of the species, as the coastline along which Goliath Grouper occurs extends throughout the Gulf of Mexico to Cape Hatteras, North Carolina, a length of approximately 4,500 km. The loss of the Goliath Grouper, a high trophic-level predator within marine communities, would represent a direct loss of species diversity and could potentially present significant, yet unforeseeable, ecological ramifications (e.g., changes within existing predator-prey relationships). Therefore, the continental U.S. Goliath Grouper population is considered biologically, ecologically, and culturally significant (NMFS 2006).

After meeting the discreteness and significance tests, the final question is whether this DPS warrants ESA protection. We outlined evidence earlier in this petition that the Western Atlantic and Gulf populations of this species have declined drastically from historical levels. Further, as we demonstrate below, these populations meet at least four ESA listing factors (even though they need only meet one), and therefore warrant protection as Threatened or Endangered DPS's under the ESA.

In its 1996 DPS policy, FWS provided a compelling reason to protect these populations:

Listing, delisting, or reclassifying distinct vertebrate population segments may allow the Services to protect and conserve species and the ecosystems upon which they depend before large scale decline occurs that would necessitate listing a species or subspecies throughout its entire range. This

may allow protection and recovery of declining organisms in a more timely and less costly manner, and on a smaller scale than the more costly and extensive efforts that might be needed to recover an entire species or subspecies. The Services' ability to address local issues (without the need to list, recover, and consult range wide) will result in a more effective program.

61 FR 4722 at p. 4725. All of the threats discussed below apply to both the DPS and full species level.

Our petition presents NMFS with the opportunity to take swift action to protect these fishes. We believe each of these species warrants listing across its range, as each is considered Endangered (in the case of the Nassau Grouper) or Critically Endangered (in the Goliath Grouper and Speckled Hind) by the IUCN range-wide. In the alternative, with respect to the Goliath Grouper, we request listing for the continental U.S. population (ranging from North Carolina to the Gulf of Mexico), as this is a significant portion of the fish's range where it is most threatened by the risk of extinction from the listing factors described below. Lack of protective action will all but ensure costly measures that may come too late for these remarkable fish. We further request an inquiry into the validity of a DPS for both the Nassau Grouper and Speckled Hind.

**Identified Threats to the Petitioned Species:
Criteria for Listing**

The petitioned groupers meet at least four of the criteria for listing under the ESA (bolded):

- A. Present and threatened destruction, modification, and curtailment of habitat or range;**
- B. Overutilization for commercial and recreational purposes;**
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; and**
- E. Other natural or manmade factors affecting its continued existence.**

The recent Deepwater Horizon oil spill has had, and will continue to have, a detrimental effect on the habitats and ranges of these grouper (Factor A). Historic and continued overfishing of these commercially and recreationally valuable grouper is an important threat (Factor B). A lack of adequate legal protections in the U.S. and elsewhere is an additional threat (Factor D). The biological constraints of these grouper include their susceptibility to barotraumas, along with their slow growth and maturation rates, hindering their ability to recover from historic and continued overutilization and other perils (Factor E). A driver of the fishing and habitat threat is rapid human population growth (Factor E).

A. Present and Threatened Destruction, Modification, or Curtailment of Habitat or Range.

Habitat loss and degradation is a very real threat to these species, ranging from declining coral reef ecosystems to the devastating impacts of the Deepwater Horizon oil spill tragedy.

Declining Coral Reef Ecosystems: As NMFS considers coral reef habitat to be important for these species, habitat degradation in the form of coral reef destruction should be considered a serious threat. There are several factors leading to the destruction of the oceans coral reefs in Florida and the Gulf including coral bleaching caused by cooling water temperatures, disease, tropical storms, costal development and pollution, overfishing, ship groundings, and offshore oil and gas exploration and development (NMFS 2008).

In the Gulf of Mexico, Hickerson et al. (2008) report widespread coral disease and two major hurricanes (Katrina and Rita), which caused not only direct destruction but also gave way to cooler waters, occurring at the same time as the onset of the most severe Caribbean coral bleaching event on record. Donahue et al. (2008) describe the peril of the coral reef system in the Florida Keys as a result of bleaching, stemming from tropical storms and disease.

Additionally, a major influence on the damage to the coral reefs in the Florida Keys is water pollution, caused by coastal development and tourism. Andrews et al. (2005) discussed the reefs of southeast Florida and the critical need to implement actions that address conservation and threats to reef health. In a 2008 study, Collier et al. (2008) described the major threats to the southeastern Florida reefs as tropical storms, and costal pollution due to the increased development in the region. Currently, the coastal region of southeast Florida contains one third of Florida's entire population of nearly 16 million. These reefs are also threatened due to overfishing, which can impact coral reefs by eliminating and killing of species essential to the ecology of the reef system (Collier et al. 2008; Donahue et al. 2008; Hickerson et al. 2008).

The latest U.S. report on coral reef ecosystems, which includes analysis of southeast Florida, the Florida Keys, and the Gulf of Mexico notes that, in general:

... coral reef condition is declining in many locations while threats to them are increasing. Coral reef ecosystems in the U.S. and FAS [Freely Associated States] continue to be beset by a number of serious threats stemming from natural and anthropogenic factors, which stress and degrade the living marine resources inhabiting coral reef ecosystems in addition to the corals themselves (Waddell and Clarke 2008: 3).

This broad-ranging problem of declining coral ecosystems adversely impacts the Goliath Grouper, Nassau Grouper, and Speckled Hind.

Energy Development: These grouper therefore have the misfortune of range overlap with rampant and escalating off-shore oil drilling. NMFS et al. (2010) describes the energy exploration and development in the Gulf region in the recent Kemp's Ridley Sea Turtle Recovery Plan:

Oil and gas exploration and production have occurred in the Gulf of Mexico for over 100 years. Activities associated with exploration and development include, but are not limited to, construction of support facilities including refineries and waste management, increased traffic and construction in ports, installation of pipelines and oil platforms, and the use of explosives and sonar. Oil and gas exploration will likely increase as existing sources are depleted (NMFS 2010).¹¹

The recent Deepwater Horizon oil spill in the Gulf of Mexico, one of the worst environmental disasters in our nation's history, spotlights this danger. Indeed, NOAA considers the mangroves, the major habitat for each of these groupers' juvenile stages in the Gulf, to be highly susceptible to oil exposure, and oil may kill them within a few weeks or months.¹² FWS describes the potential effects the Deepwater Horizon oil spill will have on wildlife:

Fish can be impacted directly through uptake by the gills, ingestion of oil or oiled prey, effects on eggs and larval survival, or changes in the ecosystem that support the fish. Adult fish may experience reduced growth, enlarged livers, changes in heart and respiration rates, fin erosion, and reproductive impairment when exposed to oil. Oil has the potential to impact spawning success as eggs and larvae of many fish species are highly sensitive to oil toxins.¹³

FWS also describes the potential lasting effects the oil will have on the various habitats in the Gulf of Mexico:

Oil has the potential to persist in the environment long after a spill event and has been detected in sediment 30 years after a spill. On sandy beaches, oil can sink deep into the sediments. In tidal flats and salt marshes, oil may seep into the muddy bottoms. Effects of oil in these systems have the potential to have long-term impacts on fish and wildlife populations.¹⁴

¹¹See also Oil Drilling: Risks and Rewards; Robert Nixon (25 June 2008). Available online at www.livescience.com/environment/080625-oil-drilling.html [Accessed July 2010].

¹²See Oil Spills in Mangroves, planning and response considerations; Rebecca Hoff, Philippe Hensel, Edward C. Proffitt, Patricia Delgado, Gary Shigenaka, Ruth Yender, Alan Mearns (January 2002). Online at: http://response.restoration.noaa.gov/book_shelf/34_mangrove_complete.pdf [Accessed August 2010].

¹³Effects of Oil on Wildlife and Habitat; Drew Wirwa, U.S. Fish and Wildlife Service (May 2010). Online at:

http://www.deepwaterhorizonresponse.com/posted/2931/DH_JIC_Cleared_FWS_Oil_Impacts_Wildlife_Fact_Sheet_05072010.542699.pdf [Accessed August 2010].

¹⁴*Id.*

Additionally, scientists and government officials estimate that these types of spills have wide-ranging and long-term implications, both economically and ecologically.¹⁵ With the habitats for these fish already threatened as a result of coral bleaching, global warming, and human activities, the Deepwater Horizon oil spill underscores the need to provide them with federal ESA safeguards.¹⁶

See Figure 10 (note the correlation between the Deepwater Horizon spill range, and the ranges for the Goliath Grouper, Nassau Grouper, and Speckled Hind above).



Figure 10: The Estimated Range Impacted by the Deepwater Horizon Oil Spill.

Source: National Center for Atmospheric Research (NCAR).

As a result of this imminent habitat destruction, ESA protection is essential to ensure the survival of these species.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

The primary threat to these grouper species is overfishing, both commercially and recreationally (NMFS 2010a,b; Cornish & Eklund 2003; Sadovy & Eklund 1999; Chuen & Huntsman 2006; Chan Tak-Chuen & Padovani Ferrera 2006; NatureServe 2009a,b,c). Their slow rate of maturation and growth, large size, and aggregation at specific times

¹⁵See Long-Term Ecosystem Response to the Exxon Valdez Oil Spill; Charles H. Peterson, Stanley D. Rice, Jeffrey W. Short, Daniel Esler, James L. Bodkin, Brenda E. Ballachey, and David B. Irons (19 December 2003); *Science* 302 (5653), 2082. See <http://www.nytimes.com/2010/06/08/us/08spill.html?ref=global-home> [Accessed June 2010].

¹⁶See Wildlife Management Institute's report: "Gulf Oil Spill Could Have Major Impacts on Region's Fish and Wildlife." Online at: www.wildlifemanagementinstitute.org/index.php?option=com_content&view=article&id=446:gulf-oil-spill-could-have-impacts-on-fish-and-wildlife&catid=34:ONB_Articles&Itemid=54 [Accessed July 2010].

and sites for spawning (discussed under Listing Factor E), combined with their high commercial value and value as trophy fish, make them particularly susceptible to depletion from fishers. Polidoro et al. (2009: 58) discuss these dynamics as problems for groupers in general. Available data shows that heavy fishing activity can quickly deplete populations due to their existing biological constraints (discussed under Listing Factor E) (Sadovy 1990). See Figure 11.



Figure 11: Caught Goliath Grouper.

Source: NMFS.

They are threatened not just by target fishing, but also as “bycatch.” Most are caught by hand-line, long-line, fish traps, spear guns and gillnets (Cornish & Eklund 2003; Chuen & Huntsman 2006; Sadovy & Eklund 1999). While these species are wide-ranging, they are considered overfished in the southeastern Atlantic, Caribbean and Gulf of Mexico (NMFS 2010a,b). According to the IUCN, the Nassau Grouper is considered to be “commercially extinct” (Cornish & Eklund 2003).

Like most grouper, even if these species are released once landed, there is a high probability that they will suffer from barotrauma (e.g. the bends and hemorrhaging) and perish (Chuen & Huntsman 2006; Cornish & Eklund 2006; Sadovy & Eklund 1999). Rudershausen et al. (2008: 1402) described groupers as “among the first reef fish to be depleted from overfishing.”

While the Goliath Grouper had made some strides towards recovery in the Gulf, that may no longer be the case given the harm from the Deepwater Horizon spill. The Nassau Grouper and Speckled Hind are still considered to be “overfished” throughout their respective ranges (NMFS 2010a,b).

C. Disease or Predation

Disease or predation is not known to be a threat to these species, but NMFS should analyze it fully during a status review.

D. The Inadequacy of Existing Regulatory Mechanisms

The Goliath Grouper, Nassau Grouper, and Speckled Hind are not adequately protected by federal, state, or international laws or policies to prevent their endangerment or extinction.

Scientific Rankings

The IUCN ranks the Goliath Grouper and Speckled Hind as Critically Endangered, defined as “considered to be facing a high risk of extinction in the wild” (Chuen & Huntsman 2006; Chan Tak-Chuen & Padovani Ferrera 2006).¹⁷ The Nassau Grouper is currently listed as Endangered by the IUCN which is defined as “considered to be facing a very high risk of extinction in the wild” (Cornish & Eklund 2003).¹⁸ Although these designations are important for flagging the extinction risks to these fish, they confer no regulatory protections.

U.S. Federal Status

NMFS (2010) currently list the Nassau Grouper and the Specked Hind as “Species of Concern,” and while the Goliath Grouper is no longer a “species of concern”, it remains listed as “overfished.” Similarly, the American Fisheries Society (AFS 2005) ranks the Goliath Grouper as Threatened, and the U.S. Fish and Wildlife Service (USFWS 2000) considers the Goliath Grouper biologically Endangered (Chan Tak-Chuen & Padovani Ferrera 2006).

According to NMFS:

Species of concern are those species about which NOAA’s National Marine Fisheries Service (NMFS) has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endanger Species Act (ESA). We wish to draw proactive attention and conservation action to these species. ‘Species of Concern’ status does not carry any procedural or substantive protections under the ESA.¹⁹

Fishing Regulations

Fishing regulations are not adequate to protect these species. As previously mentioned, the Nassau Grouper has reached a level of “commercial extinction” and there are currently fishing bans in U.S. federal waters, which have been in place since 1990 (Cornish & Eklund 2003). Regardless of fishing bans, studies indicate that the global population of Nassau Grouper will continue to decline over the foreseeable future. *Id.* As

¹⁷See <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria#categories> [Accessed June 2010]

¹⁸*Id.*

¹⁹See <http://www.nmfs.noaa.gov/pr/species/concern/#list> [Accessed June 2010].

discussed earlier, NMFS itself recognizes that this species has shown little response to a long-time fishing moratorium.

There has also been a harvest ban on the Goliath Grouper since 1990, which has yielded some signs of recovery, as evident by increases in observed juveniles in mangrove swamps. Despite this apparent upswing, most scientists are reluctant to recommend removing the fishing ban until further evidence is collected (Sadovy & Eklund 1999; Cornish & Eklund 2003). Additionally, with the effects of the oil spill in the Gulf (which provides key habitat for the Goliath Grouper) this recovery will likely be setback.

Both recreational and commercial fisheries for Speckled Hind are currently regulated in the south Atlantic, with a one fish per vessel trip limit. There is a one fish per vessel limit for recreational fishers in the Gulf of Mexico with no limit for commercial fishers. However, considering the millions of licensed fisherpeople in the southeastern U.S. and Gulf, and the numerous trips these fishers are likely to make during a given season, the vessel limit does little to actually protect this species.

While there are some protections provided for these fish internationally, the degree to which they receive protection through no-take marine protected areas is unknown (Cornish & Eklund 2003; Sadovy & Eklund 1999).

IUCN (2010) notes that the *management* of fishing is itself posing a threat to these species of grouper:

An immediate threat to [these] species is related to management of the commercial bottom long-lined fishery of the southeastern US. The management trend has been to restrict such indiscriminate gear to deeper waters. If this management trend continues, [these grouper] and other deep water species like [them] will experience an even greater impact than they do now because barotrauma (expansion of enclosed gases in the swim bladder-embolism) results in hemorrhage and eventual death as these deepwater fish are brought to the surface. (Coleman and Williams 2002; Coleman *et al.* 2004; *See also* Sadovy & Eklund 1999).

There is also a trend for the recreational fishery to operate in deeper water as shallow stocks become depleted. Even though there is a daily bag limit for groupers, there are so many recreational fishermen (over 1 million in Florida alone) that the potential impact on [these already depleted populations] is serious.

In 2005, NMFS published an amendment to the Fishery Management Plans of the U.S. Caribbean, implementing regulations to manage fishing in the South Atlantic and Caribbean. Among the fish covered by this management plan were the Goliath Grouper and Nassau Grouper. In an effort to protect these species from overfishing, NMFS recommended additional efforts to protect these fishes in federal waters where they aggregate to spawn. NMFS also prohibited filleting fish at sea to help reduce illegal

catches of these species among other management strategies such as seasonal closures. See 70 Fed. Reg. 62073-62084 (October 28, 2005). Additional safeguards such as these are important, but federal ESA listing will provide the best hope for these species' survival and recovery.

Despite regulations on fishing, there continues to be killing of these species in bycatch which is likely to go unreported (Chuen & Huntsman 2006). Additionally, at least with respect to the Nassau Grouper, other nations in the Gulf, particularly Mexico and the Bahamas, do not have sufficient regulatory protections to safeguard these fishes (Cornish & Ecklund 2003).

There is an urgent need for upgraded protections for these species. For each species, NatureServe (2009a,b,c) recommends that:

Occurrences should be protected to ensure long-term survival. Stocks should be managed to maintain adequate reproduction (spawning) stock biomass to sustain recruitment. Serious consideration be given to protection of spawning aggregations, at a minimum by prohibiting spear guns and fish traps and by permitting only low levels of exploitation at most. The introduction of no-fishing zones in critical areas also needs to be considered as a management option to address the problem of overfishing (and bycatch/barotraumas) (Sadovy, in press).

Koenig et al. (2000) likewise recommended year-round, no-take reserves to protect spawning aggregations of species such as the grouper, as do Morris et al. (2000).

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Biological Vulnerability

As previously discussed, these species have a number of biological constraints that make them more susceptible to extinction: they are slow to grow and mature, with individuals reaching maturity anywhere from 4 to 9 years of age; if caught they are extremely susceptible to barotrauma; and they aggregate at specific sites at specific times for spawning (Chuen & Huntsman 2006; Cornish & Ecklund 2003; Chan Tak-Chuen & Padovani Ferrera 2006; Polidoro et al. 2009; NMFS 2010). These factors, coupled with their slow population doubling sizes, give these fishes a low resiliency to fishing. *Id.* Additionally, their large size (as previously mentioned) makes them more susceptible to overfishing either as trophy fish or for commercial value. *Id.*

Researchers have documented these biological constraints as significant for the conservation status of groupers in general (Morris et al. 2000; Koenig et al. 2000). Koenig et al. (2000: 610) elaborate on threats from fishers targeting spawning aggregations:

Fishers concentrate on spawning aggregations because the aggregations are predictable... and because doing so greatly increases catch per unit effort... Acute effects of aggregation fishing include the total loss of aggregations; chronic effects may include deterioration of reproductive capacity and altered genetic composition of the stock. In either case, ample evidence shows that aggregation fishing rapidly undermines sustained fishery production...

Similarly, these researchers find that “the synergy of the life history traits of protogyny and aggregation spawning appears to increase dramatically the vulnerability of reef species to overfishing when effort is concentrated on spawning fish...” *Id.* Rudershausen et al. (2008) discuss how removing large individuals of protogynous hermaphrodites will result in skewed sex ratios. Therefore, the protogynous traits of these species make them even more susceptible to extinction from overfishing.

Indeed, NMFS (2010a,b) has considered these types of biological factors to be threats to grouper, which therefore make them more susceptible to overfishing, given that they are targeted by fishers and killed as bycatch, and that fishers have great success at killing groups of these fish during spawning aggregations.

These grouper also suffer from diminishing and small populations of adults, and with the exception of the Goliath Grouper (which has lower population numbers than any other grouper species), there doesn't appear to be any evidence of recovery (NMFS 2010a,b). The USFWS has routinely recognized that small population size increases the likelihood of extinction.²⁰ See WildEarth Guardians (2010) petition to list the Warsaw grouper for documentation of the correlation between small populations and extinction.

While NMFS (2006) estimates the juvenile population of Goliath Grouper in the tens of thousands, this number is likely much lower today due to poor water quality in the Gulf, resulting from the Deepwater Horizon oil spill coupled with an ever increasing human population, discussed below. Additionally, because the Goliath Grouper is so late to mature, also discussed above, they are particularly vulnerable to fishing before they are able to reproduce, which adds to the difficulties of increasing the overall population (Sadovy 2007). According to NatureServe (2009a,b,c), the Goliath Grouper and Speckled Hind's global abundance has been estimated as little as 2,500, and the Nassau Grouper's global abundance has been estimated as low as 10,000, with numbers still declining.²¹

²⁰See, e.g., FWS candidate assessment forms for *Doryopteris takeuchii*, *Huperzia stemmermanniae*, *Melicope hiiakae*, *Ostodes strigatus*, *Partula langfordi*, *Peperomia subpetiolata*, *Phyllostegia bracteata*, and *Tryonia circumstriata*. Accessible via FWS website at <http://www.fws.gov/angered> [Accessed August 2010].

²¹As noted previously, Petitioner assumes these units are of adult fish.

Human Population Growth

Human population growth within the range of these grouper is a threat to the survival of their species. Stallings (2009) has documented that as human population densities increase, there is a resultant decline or extirpation of large predatory fish such as groupers. NOAA has described the threat of growing human populations to near shore marine ecosystems:

As the global population continues to increase and demographic shifts toward coastal areas persist, even greater pressures will be placed on nearshore resources to satisfy human desires for food, culture, tourism, recreation and profit (Waddell and Clarke 2008: 8).

A World Wildlife Fund report similarly states:

Nearly 40 percent of the global population no lives within 100 kilometers of a coast, and many of these people depend on the productivity of the sea. As coastal populations soar, pressure on marine resources has become unsustainable in many places.²²

Dulvy et al. (2003: 26) write:

... more than half of the world's human population lives within the coastal zone and depends on fish for the bulk of their protein intake. This proportion could reach 75% by the year 2020...

The U.S has a higher population growth rate than almost every other developed country (United Nations 2007). Moreover, some of the coastal states in whose water these grouper species are found have experienced exponential human population increases. For example, Florida's and North Carolina's populations have skyrocketed (Figures 12-13).

²²See World Wildlife Fund report, "Marine protected areas: Providing a future for fish and people." Online at: <http://assets.panda.org/downloads/marineprotectedareas.pdf> [Accessed June 2010]. This report was focused on the role of Marine Protected Areas in safeguarding marine biodiversity and sustaining fisheries.

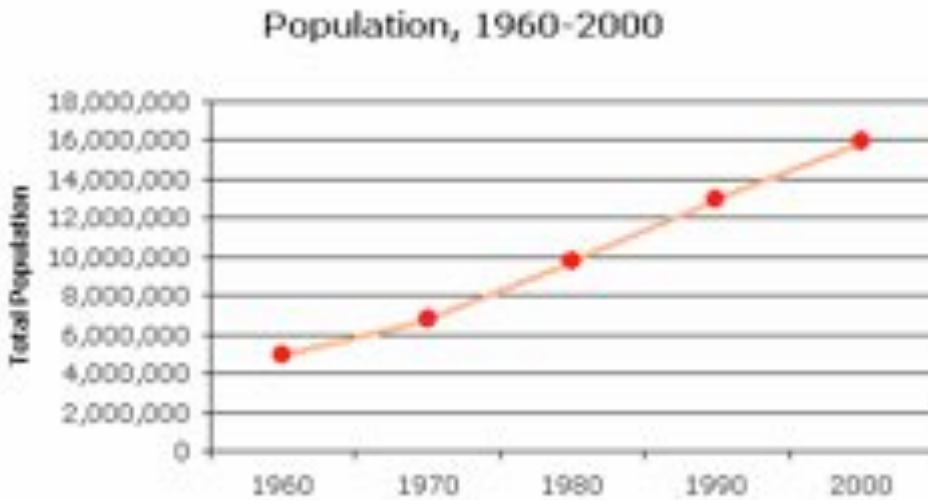


Figure 12: Human Population Growth in Florida.

Source: http://www.censusscope.org/us/s12/chart_popl.html [Accessed June 2010].



Figure 13: Human Population Growth in North Carolina.

Source: http://www.censusscope.org/us/s37/chart_popl.html [Accessed June 2010].

Similarly, as America's demand for oil continues to increase, it is likely that the habitats for these grouper will be further invaded by oil rigs, increasing the chance for environmental and ecological disaster, such as the Deepwater Horizon oil spill, which occurred in the center of these groupers' ranges, further limiting their chance of survival or recovery. NMFS should therefore consider human population growth as a threat to the Goliath Grouper, Nassau Grouper, and Speckled Hind.

Cumulative Impacts

The Goliath Grouper, Nassau Grouper, and Speckled Hind are threatened by multiple factors. The overutilization pressure, driven by human population increases and a lack of adequate fishing restrictions, combined with destruction of habitat, late maturity and other biological constraints should be considered a cumulative threat to the species. NMFS should assess the synergistic effects of multiple factors in a formal status review for these species.

Value of ESA Listing

Although these grouper are moderately wide-ranging fish, most occurrences of these grouper are likely to occur in U.S. waters (Chuen and Huntsman 2006; Sadovy and Eklund 1999). Federal listing of these species would help ensure (for example):

- Adequate habitat protections, restrictions on take, recovery planning, and funding for these species in U.S. waters;
- Prohibition of take of these species within U.S. waters;
- Prohibition on import, export, or possession of these species by U.S. individuals and corporations; and
- Consultation by U.S. agencies on federal permitting or funding of activities by U.S. and foreign entities that may jeopardize this species.

Moreover, NOAA has previously recognized that ESA protections for Elkhorn (*Acropora palmata*) and Staghorn Coral (*A. cervicornis*) would benefit these species even though the majority of their ranges existed in other countries: through the recovery planning process, the U.S. can encourage international conservation measures (Clarke et al. 2008). Likewise, U.S. listing of the Goliath Grouper, Nassau Grouper, and Speckled Hind under the ESA can help recover these species in the U.S. and other nations.

Summary

The Goliath Grouper, Nassau Grouper, and Speckled Hind each merit listing as Endangered or Threatened species under the Endangered Species Act. As a result of human activity and more recently the Deepwater Horizon oil spill tragedy, these species are losing their habitat. They face threats from historic and continued overfishing, as well as slow maturation and other biological constraints that hinder their recovery. The threats from fishing and habitat destruction are driven by human population increases. Lastly, the current regulations do not sufficiently protect these species from extinction. These grouper are wide-ranging, occurring along the southeastern coast of the U.S to the Gulf of Mexico, and the Caribbean. They are increasingly rare in this range, and absent ESA protection these declines are likely to continue. This petition is submitted with the hope that federal protection will be granted and will prevent these species' extinction. We believe ESA listing is vital to preserving and recovering the Goliath Grouper, Nassau Grouper, and Speckled Hind.

Requested Designation

WildEarth Guardians hereby petitions the National Marine Fisheries Service within the U.S. Department of Commerce and the U.S. Fish and Wildlife Service within the Department of the Interior to list the Goliath Grouper (*Epinephelus itajara*); Nassau Grouper (*Epinephelus striatus*); and Speckled Hind (*Epinephelus drummondhayi*) as Endangered or Threatened species pursuant to the Endangered Species Act. These listing actions are warranted, given the threats these species face, as well as their decline in numbers. These grouper are threatened by at least four listing factors: habitat destruction; overutilization; the inadequacy of existing regulatory mechanisms; and other natural or manmade factors affecting its continued existence. ESA listing will permit the development of proactive regulations outside the scope of the present designation of two of these grouper as NMFS Species of Concern. In addition, we suggest that these three grouper species could be listed in one listing rule.

Critical Habitat

Petitioner requests that critical habitat be designated for these species concurrent with final ESA listing. Such critical habitat for these species should include areas in the western Atlantic (from North Carolina to southern Florida), the Gulf of Mexico, and the Caribbean where each of these species were historically documented, or which still provide appropriate grouper habitat. The constituent elements should include coral reef systems in the Gulf of Mexico and along the eastern coast of the United States, as well as estuarine habitats (for juveniles) and offshore rocky ledges providing deeper water habitats (for adults) at depths ranging from 40 to 100 meters along these coasts.

If NMFS fails to provide critical habitats for these grouper, it will deprive these species of one of the ESA's key protections. The legislative history of the ESA is evidence of Congress' understanding of the importance of designating critical habitats to endangered or threatened species:

It is the committee's view that classifying a species as endangered or threatened is only the first step in insuring its survival. *Of equal or more importance is the determination of the habitat necessary for the species' continued existence.* Once a habitat is so designated, the Act requires that proposed Federal Actions not adversely affect the habitat. If the protection of endangered and threatened species depends in large measure of the species' habitat, *then the ultimate effectiveness of the Endangered Species Act will depend on the designation of critical habitats.*

H.R. Rep. No. 94-887, at 3 (1976), cited (with emphasis) in *Center for Biological Diversity v. Norton*, 240 F.Supp.2d at 1098.

The primary conservation benefit of critical habitat designation is that it provides a separate basis, in addition to species listing, for federal agencies to consult under Section 7, 16 U.S.C. § 1536(a)(2), with NMFS regarding actions they perform or permit. If a

federal action threatens to destroy or adversely modify a species' critical habitat, consultation must occur even if the action will not jeopardize the continued existence of the species. 16 U.S.C. § 1536(a)(2). However, without critical habitat designation, this consultation requirement "becomes unenforceable." *Forest Guardians v. Babbitt*, 174 F.3d 1178, 1185-86 (10th Cir. 1999).

It is on these grounds that we also request critical habitat designation, in addition to ESA listing, for the Goliath Grouper, Nassau Grouper, and Speckled Hind.

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