

Ascension Island Species Action Plan

ROCK HIND (GROUPEL)



SUMMARY

Taxonomy: Kingdom: Animalia; Phylum: Chordata; Class: Actinopterygii; Order: Perciformes; Family: Epinephelidae; Species: *Epinephelus adscensionis*

Nativeness: Native, breeding

Description: A moderate sized demersal fish species reaching a maximum recorded size on Ascension of 60.6 cm. Males and females display cryptic camouflage colouration of white, brown and red spots, colour and pattern can change rapidly. Associated with shallow reef and boulder habitat, rock hind are abundant in the shallow sub-littoral surrounding Ascension. Juveniles are morphologically indistinct from adults and are often found in rock pools. Believed to feed on crabs, fishes and squid

Threats: The major threat to rock hind is overfishing; secondary threats include climate change-induced habitat and prey alteration.

IUCN Red List status: Least concern



Local trend: Stable but vulnerable to over-exploitation





Distribution	
Amphi-Atlantic	
Rock hind are widely distributed across the Atlantic, with a range that extends from Bermuda to southern Brazil in the west and from Morocco to the Gulf of Guinea in the east, along with the isolated mid-Atlantic islands of St Helena and Ascension. [1]	
Local	
<p>Habitat: Commonly associated with rocky reef and boulder habitat in the near shore with a distribution around the entire island. Usually quite cryptic, hiding in crevices and holes. Regularly seen by divers between 0 and 30 m and caught by hand-and-line in depths up to 40 m. Known to have a depth range of up to 120 m [2]</p> <p>Spawning: Thought to be aggregate spawners there is anecdotal evidence that rock hind move off shore to spawn, however the exact location and timing of spawning is still unknown. Juveniles (<10cm) can be seen all year round. Evidence suggests that rock hind on Ascension spawn from June through to November with a peak in August (Ascension Island Government, unpublished data). Other epinephelid groupers are known to spawn during periods of seasonal low or declining water temperature, within a range of approximately 25 – 27 °C [3,4]. This is remarkably consistent with the inferred seasonality of <i>E. adscensionis</i> at Ascension Island, where average water temperatures during the putative peak in July and August are approximately 24.5 – 25.5 °C and declining towards the annual minimum in September of 23.8 °C (data for 2015).</p>	<p>Figure 1: Inferred distribution of <i>E. adscensionis</i> at Ascension based on the verified (area in red) and unverified (area in orange) occurrence of rocky boulder or reef habitat in the inshore marine environment (AIG Conservation, unpublished data) surrounding Ascension. 1km grid indicated on Island to show scale.</p>

Status		
GLOBAL	Population estimate: Unknown	IUCN status: Least concern
The species is listed as least concern as it is widespread and abundant in many parts of its range. Rock hind are however known to experience localised depletion in fished areas and are targeted by fisheries throughout their range [5–7]. Abundance declines are recorded even under relatively low fishing pressure [6,8].		
LOCAL	Population estimate: Unknown	Local trend: Stable
Sub-littoral abundance surveys were carried out by Choat and Robertson (2006) [8] and by the Marine and Fisheries Unit of the AIG conservation department (2015) for comparison. There was a significant increase in density estimates between years 2006 (mean ± SE; 0.078 ± 0.005 m ⁻²) and 2015 (mean ± SE; 0.205 ± 0.02 m ⁻² .) (P<0.001, Mann-Whitney U test). However, it should be noted that surveys took place during a fry event, where squirrelfish were abundant in the inshore, and so this may not be an accurate representation of true density.		

Ecology	
Habitat & diet	
Rock hind are a demersal fish species and are generally found only in shallow sub-littoral rocky reef and boulder habitat on Ascension. Their diet on Ascension has not been studied but they are known to eat crabs, fish and squid. It	



is thought they also eat green turtle (<i>Chelonia mydas</i>) hatchlings during the turtle nesting season.
Reproduction & life history
On Ascension, the maximum estimated age is 25 years (Ascension Island Government, unpublished data) which sits within the range reported for this species across its distribution (12 years from the Atlantic waters of the South-Eastern United States[7]; 33 years from the Gulf of Mexico [5]). Ageing was determined using sectioned sagittal otoliths which display annual zonation. Reproductive studies are extremely limited, however sequential protogynous sexual development has been observed in <i>E. adscensionis</i> [8,9] and appears to be behaviourally-mediated, with sexual transition of the largest female within a harem triggered by the death or removal of the dominant, territory holding male[9]. Estimates of length at sex change have been determined at approx. 43 cm. There is evidence of spawning from June through to November with a peak in August, aggregate spawning has not been directly observed on Ascension. Size at maturity is estimated at 27.8 cm for females (Ascension Island Government, unpublished data).
Taxonomy & population structure
The Ascension Island population of rock hind is morphological and genetically indistinct from other Atlantic populations. With larvae capable of crossing oceanic expanses of 2000 km, Ascension may act as a stepping stone for transoceanic colonisation of <i>E. adscensionis</i> but with the possibility of the population being isolated for long periods [10].

Threats*		
5.4.1 Fishing & harvesting aquatic resources. Intentional use: Subsistence/small scale (species being assessed is the target) [harvest]	Impact:	HIGH
Rock hind are targeted in the recreational and sport fishery on Ascension for both local consumption and export. Fishing is primarily by hand-and-line from rocky outcrops or small pleasure craft (within 1nm from shore from the NE to SW) along with occasional spearfishing. Boat fishing trips can result in up to 150 rock hind extracted on a single occasion. The species is not currently managed, licenced or monitored. Whilst current fishing pressure on Ascension is un-quantified, around 2000 kg (filleted weight) of rock hind are known to be exported annually to the United Kingdom, the Falklands, the United States of America and St Helena. Exports are monitored through the sale of fish export permits which allow 10 kg per person for personal consumption. A further approximate 700 kg of rock hind fillets per year are sold to the United States military base on Ascension Island with unknown quantities sold to restaurants and bars and locally consumed (data supplied by Director of Fisheries, AIG Conservation Department for 2015. Unpublished data). Although the population of Ascension is relatively low (approx. 800 people), factors such as the limited reef habitat available, the isolated nature of the island and hence lack of recruitment from other populations make <i>E. adscensionis</i> at Ascension vulnerable to overexploitation.		
8.1.2 Invasive non-native/alien species/diseases: Unspecified species	Impact:	MEDIUM
Accidental or unintentional movement of non-native, invasive or alien marine organisms through pathways such as bio-fouling, ballast water, flotsam, intentional releases or through natural spread would undoubtedly affect Ascension’s marine biodiversity[11,12]. These changes would likely have impacts on rock hind ecology and distribution although any likely impacts are difficult to determine. Invasive alien species can cause irreparable damage to marine environments and once established are near impossible to eradicate.		
9.2.3 Industrial & military effluents (type unknown)	Impact:	LOW
Petrochemicals are pumped to shore via a tanker to holding tanks located close to the shore line at English Bay, Catherine Point and the Ascension Island Air Base. The likelihood of a spill occurring during offloading or storage is minimal but if a spill did occur it would likely result in detrimental consequences for the marine environment including rock hind habitat and distribution.		
11.1 Climate change & severe weather: habitat shifting and alteration	Impact:	UNKNOWN
A natural result of global warming includes sea surface temperature increase and changes to sea currents which would without doubt alter the ecology and distribution of marine species at Ascension. Changes to ocean currents are likely to affect the natural dispersion of rock hind larvae to and from Ascension, and may negatively affect the		



genetic variability of the population. Invasive species introductions are likely to increase with global warming [13].

*Threats are classified and scored according to the [IUCN-CMP Unified Classification of Direct Threats](#) [14]

5. Relevant policies and legislation

International

None

Local

Ascension Island Government Fisheries (Conservation and Management) Ordinance, 2015

6. Management notes

An assessment of fishing pressure on the rock hind population is urgently required in order to understand if fishing is sustainable at current levels. Insights into life history such as ageing, growth and reproductive strategies have been improved through ad hoc sampling of *E. adscensionis* caught by the local sport and recreational fishermen when brought to the pier head (Georgetown) for filleting. Fishing pressure has also been recorded on an ad hoc basis by AIG Conservation dept., Marine and Fisheries Unit (MFU). This data has greatly improved understanding of the species for effective management actions which consider aspects of *E. adscensionis* life history. A combination of on-going sampling to establish and monitor size-frequency structure of the fished population and detailed catch effort data collected through implementation of a fishing licence scheme is likely to be the most effective approach to assessing fishing pressure. Spawning timings and locations should also be further studied and may provide valuable insight from which management actions can be taken. A sampling plan should be established by the MFU which involves collection of length frequency data from the fishery, along-side continued monitoring of reproductive seasonality and investigations to determine spawning sites.

Fishing for rock hind does not take place on the South coast of the island and it is assumed by fishermen that anything fished on the North of the island will be replaced by fish from the South. Implementation of an acoustic tagging scheme including a number of acoustic monitors strategically located around the island, supplemented by deployment of mechanical tags would answer the question of rock hind ranges, movement and distribution on Ascension. Annual sub-littoral abundance surveys for rock hind, including size-estimations to establish biomass levels in order to monitor long-term changes to the population and discern any difference between similar habitat types on both the North and South coasts would be beneficial.

SPECIES ACTION PLAN**OBJECTIVES**

1. Ensure the sustainable management of fish stocks in Ascension Island's maritime zone through robust fisheries science, legislation and enforcement, including the creation of closed areas where appropriate.
2. Promote awareness of the importance of Ascension Island's flora and fauna, both locally and internationally.

PROPOSED ACTION	OUTCOME(S)	TIMEFRAME	PROPOSED START	PRIORITY	LEAD*
Policy & Legislation					
Fishery Limits (Licensing of Fishing) (Inshore) Order under the Fisheries (Conservation and Management) Ordinance, 2015 is enacted. Associated inshore fisheries licensing established.	Enactment of legislation	1 year	September 2016	HIGH	Director of Fisheries (AIG)
Develop, approve and implement a policy document for fishing licences in the inshore fishery	1 policy document	1 year	September 2016	HIGH	Director of Fisheries (AIG)
Management					
Designate trial closed areas to fishing within the inshore marine environment to provide refuge and enable continued research and monitoring.	3 near shore protected areas determined and trialled	1 year	September 2016	MEDIUM	Head of Conservation (AIG)
Implementation of compulsory inshore fishery reporting scheme through fishing licences to improve fisheries data	Reporting scheme implemented; Catch effort data obtained to allow for long-term monitoring	1 year	December 2016	HIGH	Head of Conservation (AIG)
Research & monitoring					

PROPOSED ACTION	OUTCOME(S)	TIMEFRAME	PROPOSED START	PRIORITY	LEAD*
Monthly monitoring of length-frequency distribution of the fished population	24 fishing events monitored (2 each month where possible); 1 report produced	1 year	July 2016	HIGH	Marine & Fisheries Scientist (AIG)
Monitor reproductive seasonality	10 rock hind assessed each month for reproductive status and determination spawning times; 1 report produced	1 year	July 2016	LOW	Marine & Fisheries Scientist (AIG)
Map the movements of rock hind caught within Ascension Island's inshore fishing zone using tracking technologies such as acoustic monitoring and the deployment and recovery of mechanical tags. Monitor effectiveness of trial closed areas.	10 Acoustic receivers deployed; 50 acoustic tags deployed; 500 mechanical tags deployed	2 years	April 2017	MEDIUM	Marine & Fisheries Unit (AIG)
Characterise the diets of rock hind through opportunistic sampling of stomach contents and stable isotope analysis	100 Stomach contents collected and analysed; 30 samples for stable isotope analyses collected	1 year	July 2016	LOW	Marine & Fisheries Unit (AIG)
Conduct sub-littoral abundance and size- estimation surveys for rock hind both inside and outside closed areas and on the North and South coasts	Dive surveys completed; 1 report produced	1 year	April 2017	MEDIUM	Marine & Fisheries Unit (AIG)
Communication & Awareness Raising					
Erect visitor fishing information boards at access points and key fishing hot spots, establishing a strong sustainable fishing awareness on Ascension Island.	10 signs installed	1 year	April 2017	MEDIUM	Marine & Fisheries Unit (AIG)
Produce an awareness leaflet on fishing licences so it is easily accessible and understandable, make the document available at the post office, on the AIG website, social media outlets and the Conservation Department	1 document produced and disseminated	1 year	April 2017	HIGH	Marine & Fisheries Unit (AIG)

PROPOSED ACTION	OUTCOME(S)	TIMEFRAME	PROPOSED START	PRIORITY	LEAD*
Celebrate World Ocean's Day as a focus for awareness raising activities associated with Ascension Island's marine environment.	1 event organised	1 day	June 2017	MEDIUM	Head of Conservation (AIG)
Present a talk on the inshore marine environment of Ascension to the school and the general public as an awareness raising exercise	2 presentations given	1 month	April 2017	MEDIUM	Marine & Fisheries Unit (AIG)
Continued collaboration with Royal Air Force expedition divers to obtain survey data	Data improved on rock hind abundance and distribution	1 year	July 2016	LOW	Marine & Fisheries Unit (AIG)

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