

Chagos Brain Coral (*Ctenella chagius*)

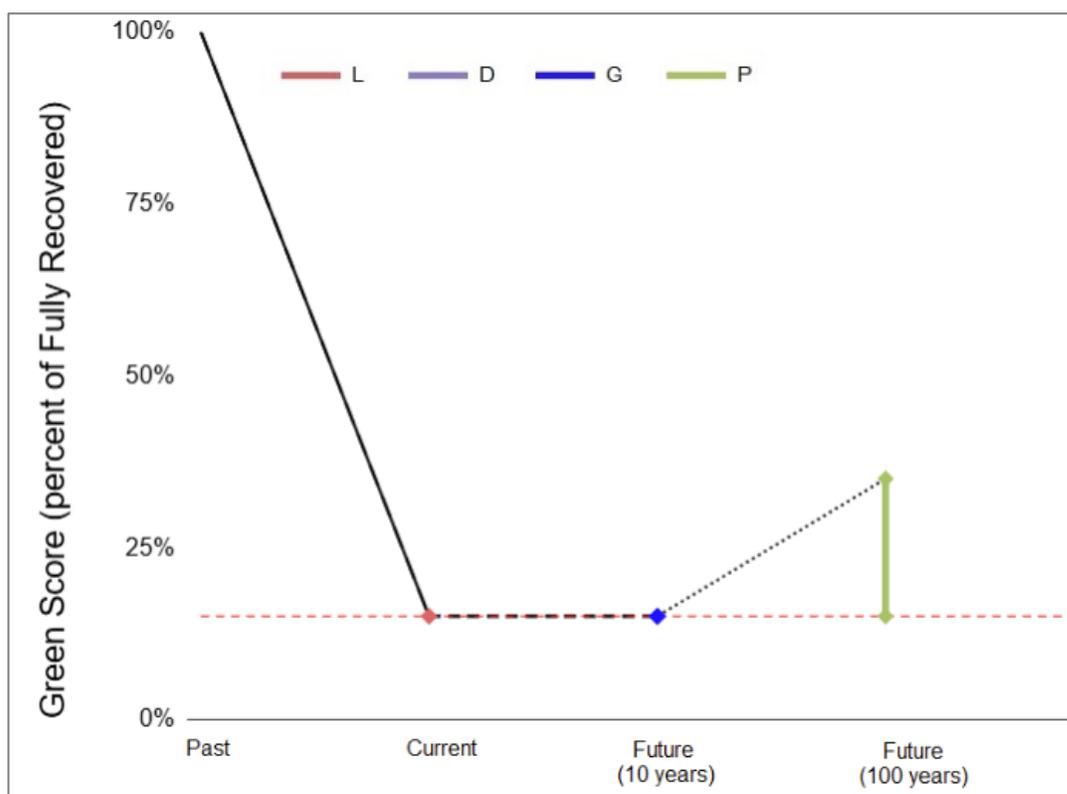


Figure S1. Graphical representation of the conservation metrics based on the Green Scores. Key: Vertical arrows represent the four conservation metrics: L – Conservation Legacy (may not appear if current and counterfactual states are the same); D – Conservation Dependence (may not appear if current and future-without-conservation states are the same); G – Conservation Gain (may not appear if current and future-with-conservation states are the same); P – Recovery Potential (may not appear if current and potential states are the same). Horizontal red dashed line represents the Current Green Score. Solid black line: observed change in the Green Score of the species (ignore it if "Former" state is not specified). Long-dashed black line: (counterfactual) past change expected in the absence of past conservation efforts. Dashed black lines: future scenarios of change expected with and without current and future conservation efforts. Dotted black line: long-term potential change expected with future conservation innovation and efforts.

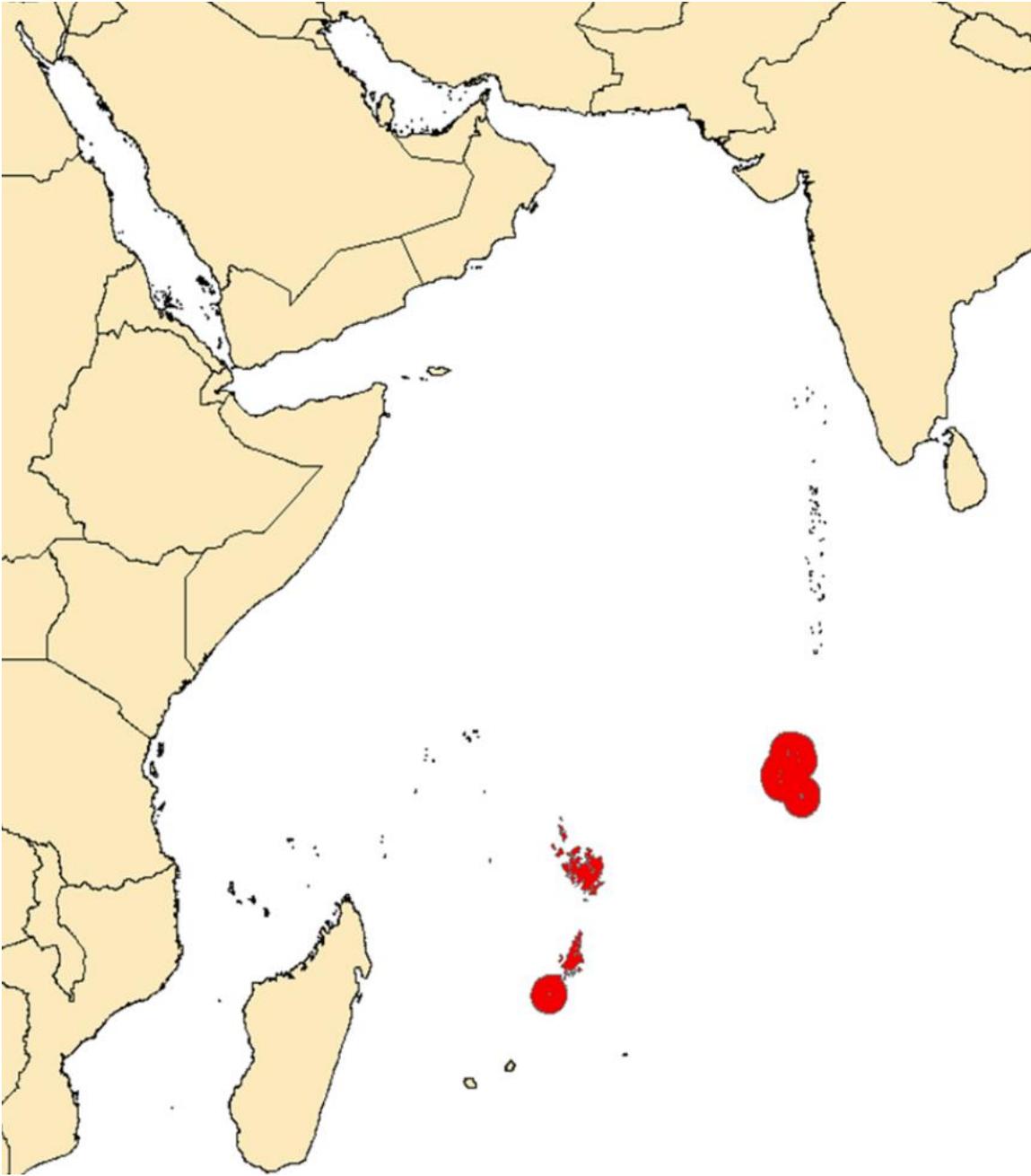


Figure S2. The indigenous range of Chagos Brain Coral shaded in red.

Table S1. Conservation actions relevant to the species in past, present, or future scenarios.

Classification and Description	Past actions (no longer occurring)	Current actions	Actions planned within 10 years	Actions that could be implemented in the long-term aspiration scenario
1.1. Land/water protection: Site/area protection		x Chagos MPA		
1.2. Land/water protection: Resource & habitat protection				
2.1. Land/water management: Site/area management		X Ongoing management of the MPA		
2.2. Land/water management: Invasive/problematic species control				
2.3. Land/water management: Habitat & natural process restoration				
3.1.1. Harvest management				
3.1.2. Trade management		X		
3.1.3. Limiting population growth				
3.2 Species recovery				
3.3.1. Species re-introduction: Reintroduction			X Potential for future translocations from shallower (5-10 m) to deeper waters, or possibly relocating isolated colonies closer to other established colonies	
3.3.2. Species re-introduction: Benign introduction				
3.4.1. Ex-situ conservation: Captive breeding/artificial propagation		X Twelve colonies of the species were successfully translocated from the Archipelago to <i>ex situ</i> aquaria at the Horniman Museum and Gardens (London, UK) in August 2023; fragments of these original colonies have	X Further fragments from original twelve colonies at Horniman Museum and Gardens will be taken and translocated to other global <i>ex situ</i> aquarium facilities, including the World Coral Conservatory, at the Monaco Scientific Centre and Oceanographic Museum. Spawning of	

Classification and Description	Past actions (no longer occurring)	Current actions	Actions planned within 10 years	Actions that could be implemented in the long-term aspiration scenario
		been translocated to <i>ex situ</i> aquaria at Zoological Society of London (London, UK) in February 2024.	fecund colonies is being encouraged and the resulting cross-hybridised larvae will increase genetic heterogeneity within the captive <i>ex situ</i> population. Following <i>ex situ</i> elucidation of <i>Ctenella</i> reproductive strategy and timing, eggs, sperm and/or gamete bundles will be collected <i>in situ</i> from wild colonies to further bolster genetic heterogeneity within the captive <i>ex situ</i> population	
3.4.2. Ex-situ conservation: Genome resource bank		X A metagenome, genome and transcriptome are currently being assembled for a limited number of individuals (N = 3)	X Genomes will be assembled for all captive <i>ex situ</i> colonies, and any wild <i>in situ</i> colonies that can be sampled. Ancient DNA from archive specimens (collected from 1905 onwards) will be sequenced and genomes assembled and compared with contemporary specimens to assess the extent of the population genetic bottleneck since the recent crash in its abundance. Live tissues (from adult colonies, and eggs, sperm and/or gamete bundles and larvae) will be cryopreserved and stored as part of global biobanking efforts.	
4.1. Education and Awareness: Formal education				
4.2. Education and Awareness: Training				
4.3. Education and Awareness: Awareness & communications				
5.1.1. Legislation, International level		X CITES Appendix II		
5.1.2. Legislation, National level				

Classification and Description	Past actions (no longer occurring)	Current actions	Actions planned within 10 years	Actions that could be implemented in the long-term aspiration scenario
5.1.3. Legislation, Sub-national level				
5.1.4. Legislation, scale unspecified				
5.2. Policies and regulations				
5.3. Private sector standards & codes				
5.4.1. Compliance and enforcement- International level				
5.4.2. Compliance and enforcement- National level				
5.4.3. Compliance and enforcement- Sub-national level				
5.4.4. Compliance and enforcement- Scale unspecified				
6.1. Livelihood, economic & other incentives: Linked enterprises & livelihood alternatives				
6.2. Livelihood, economic & other incentives: Substitution				
6.3. Livelihood, economic & other incentives: Market forces				
6.4. Livelihood, economic & other incentives: Conservation payments				
6.5. Livelihood, economic & other incentives: Non-monetary values				

Table S2. Threats relevant to the species in past, present, or future scenarios.

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
1.1 Residential & commercial development: Housing & urban areas				
1.2 Residential & commercial development: Commercial & industrial areas				
1.3 Residential & commercial development: Tourism & recreation areas			X There is a possibility with changes in sovereignty and administrative control that resident populations of people may be introduced and/or tourist facilities developed - potential impacts from inputs of human nutrients locally and fishing of reef species inc. herbivorous fish vital for continued health of coral reef. Also breeding bird colonies likely to be disturbed on islands where there are human populations and the nutrient pathways from pelagic to reef created and sustained by nesting birds would also be disrupted	
2.1.1 Agriculture & aquaculture: Annual & perennial non-timber crops: Shifting agriculture				
2.1.2 Agriculture & aquaculture: Annual & perennial non-timber crops: Small-holder farming				
2.1.3 Agriculture & aquaculture: Annual & perennial non-timber crops: Agro-industry farming				
2.1.4 Agriculture & aquaculture: Annual & perennial non-timber crops: Scale Unknown/Unrecorded				
2.2.1 Agriculture & aquaculture: Wood & pulp				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
plantations: Small-holder plantations				
2.2.2 Agriculture & aquaculture: Wood & pulp plantations: Agro-industry plantations				
2.2.3 Agriculture & aquaculture: Wood & pulp plantations: Scale Unknown/Unrecorded				
2.3.1 Agriculture & aquaculture: Livestock farming & ranching: Nomadic grazing				
2.3.2 Agriculture & aquaculture: Livestock farming & ranching: Small-holder grazing, ranching or farming				
2.3.3 Agriculture & aquaculture: Livestock farming & ranching: Agro-industry grazing, ranching or farming				
2.3.4 Agriculture & aquaculture: Livestock farming & ranching: Scale Unknown/Unrecorded				
2.4.1 Agriculture & aquaculture: Marine & freshwater aquaculture: Subsistence/artisanal aquaculture				
2.4.2 Agriculture & aquaculture: Marine & freshwater aquaculture: Industrial aquaculture				
2.4.3 Agriculture & aquaculture: Scale Unknown/Unrecorded				
3.1 Energy production & mining: Oil & gas drilling				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
3.2 Energy production & mining: Mining & quarrying				
3.3 Energy production & mining: Renewable energy				
4.1 Transportation & service corridors: Roads & railroads				
4.2 Transportation & service corridors: Utility & service lines				
4.3 Transportation & service corridors: Shipping lanes				
4.4 Transportation & service corridors: Flight paths				
5.1.1 Biological resource use: Hunting & collecting terrestrial animals: Intentional use (species being assessed is the target)				
5.1.2 Biological resource use: Hunting & collecting terrestrial animals: Unintentional effects (species being assessed is not the target)				
5.1.3 Biological resource use: Hunting & collecting terrestrial animals: Persecution/control				
5.1.4 Biological resource use: Hunting & collecting terrestrial animals: Motivation Unknown/Unrecorded				
5.2.1 Biological resource use: Gathering terrestrial plants: Intentional use (species being assessed is the target)				
5.2.2 Biological resource use: Gathering terrestrial plants: Unintentional effects				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
(species being assessed is not the target)				
5.2.3 Biological resource use: Gathering terrestrial plants: Persecution/control				
5.2.4 Biological resource use: Gathering terrestrial plants: Motivation Unknown/Unrecorded				
5.3.1 Biological resource use: Logging & wood harvesting: Intentional use: subsistence/small scale (species being assessed is the target [harvest])				
5.3.2 Biological resource use: Logging & wood harvesting: Intentional use: large scale (species being assessed is the target)[harvest]				
5.3.3 Biological resource use: Logging & wood harvesting: Unintentional effects: subsistence/small scale (species being assessed is not the target)[harvest]				
5.3.4 Biological resource use: Logging & wood harvesting: Unintentional effects: large scale (species being assessed is not the target)[harvest]				
5.3.5 Biological resource use: Logging & wood harvesting: Motivation Unknown/Unrecorded				
5.4.1 Biological resource use: Fishing & harvesting aquatic resources: Intentional use: subsistence/small scale (species being assessed is the target)[harvest]				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
5.4.2 Biological resource use: Fishing & harvesting aquatic resources: Intentional use: large scale (species being assessed is the target)[harvest]				
5.4.3 Biological resource use: Fishing & harvesting aquatic resources: Unintentional effects: subsistence/small scale (species being assessed is not the target)[harvest]			X Fishing of reef species can lead to meaningful reduction of certain groups (e.g. herbivorous fish quite quickly in reef habitat)	
5.4.4 Biological resource use: Fishing & harvesting aquatic resources: Unintentional effects: large scale (species being assessed is not the target)[harvest]				
5.4.5 Biological resource use: Fishing & harvesting aquatic resources: Persecution/control				
5.4.6 Biological resource use: Fishing & harvesting aquatic resources: Motivation Unknown/Unrecorded				
6.1 Human intrusions & disturbance: Recreational activities				
6.2 Human intrusions & disturbance: War, civil unrest & military exercises			X Diego Garcia houses a US Naval Support Facility which could constitute a military target in case of war	
6.3 Human intrusions & disturbance: Work & other activities			X Facilities required to support human populations would require jetties and pilings, buildings and roads, waste and fuel storage areas, waste treatment facilities, some form of agriculture involving introduced plant species. Possibly of air landing strip though this is	

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
			really unlikely given size of islands.	
7.1.1 Natural system modifications: Fire & fire suppression: Increase in fire frequency/intensity				
7.1.2 Natural system modifications: Fire & fire suppression: Suppression in fire frequency/intensity				
7.1.3 Natural system modifications: Fire & fire suppression: Trend Unknown/Unrecorded				
7.2.1 Natural system modifications: Dams & water management/use: Abstraction of surface water (domestic use)				
7.2.2 Natural system modifications: Dams & water management/use: Abstraction of surface water (commercial use)				
7.2.3 Natural system modifications: Dams & water management/use: Abstraction of surface water (agricultural use)				
7.2.4 Natural system modifications: Dams & water management/use: Abstraction of surface water (unknown use)				
7.2.5 Natural system modifications: Dams & water management/use: Abstraction of ground water (domestic use)				
7.2.6 Natural system modifications: Dams & water management/use: Abstraction of ground water (commercial use)				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
7.2.7 Natural system modifications: Dams & water management/use: Abstraction of ground water (agricultural use)				
7.2.8 Natural system modifications: Dams & water management/use: Abstraction of ground water (unknown use)				
7.2.9 Natural system modifications: Dams & water management/use: Small dams				
7.2.10 Natural system modifications: Dams & water management/use: Large dams				
7.2.11 Natural system modifications: Dams & water management/use: Dams (size unknown)				
7.3 Natural system modifications: Other ecosystem modifications			X Removal of tree cover from islands for development could lead to increased run off of what soil there is	
8.1.1 Invasive & other problematic species, genes & diseases: Invasive non-native/alien species/diseases: Unspecified species				
8.1.2 Invasive & other problematic species, genes & diseases: Invasive non-native/alien species/diseases: Named species			X Disease may become an issue in the future if there is increased tourism and development in the archipelago that results in eutrophication from improperly treated waste	
8.2.1 Invasive & other problematic species, genes & diseases: Problematic native species/diseases: Unspecified species				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
8.2.2 Invasive & other problematic species, genes & diseases: Problematic native species/diseases: Named species				
8.3 Invasive & other problematic species, genes & diseases: Introduced genetic material				
8.4.1 Invasive & other problematic species, genes & diseases: Problematic species/diseases of unknown origin: Unspecified species				
8.4.2 Invasive & other problematic species, genes & diseases: Problematic species/diseases of unknown origin: Named species			X	
8.5.1 Invasive & other problematic species, genes & diseases: Viral/prion-induced diseases: Unspecified "species" (disease)				
8.5.2 Invasive & other problematic species, genes & diseases: Viral/prion-induced diseases: Named "species" (disease)				
8.6 Invasive & other problematic species, genes & diseases: Diseases of unknown cause				
9.1.1 Pollution: Domestic & urban waste water: Sewage				
9.1.2 Pollution: Domestic & urban waste water: Run-off				
9.1.3 Pollution: Domestic & urban waste water: Type Unknown/Unrecorded				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
9.2.1 Pollution: Industrial & military effluents: Oil spills				
9.2.2 Pollution: Industrial & military effluents: Seepage from mining				
9.2.3 Pollution: Industrial & military effluents: Type Unknown/Unrecorded				
9.3.1 Pollution: Agricultural & forestry effluents: Nutrient loads				
9.3.2 Pollution: Agricultural & forestry effluents: Soil erosion, sedimentation				
9.3.3 Pollution: Agricultural & forestry effluents: Herbicides & pesticides				
9.3.4 Pollution: Agricultural & forestry effluents: Type Unknown/Unrecorded				
9.4 Pollution: Garbage & solid waste			X Resident human population will create waste which increases the risk from pollution by sewage, effluent from cleaning products, desalination equipment, fuel etc	
9.5.1 Pollution: Air-borne pollutants: Acid rain				
9.5.2 Pollution: Air-borne pollutants: Smog				
9.5.3 Pollution: Air-borne pollutants: Ozone				
9.5.4 Pollution: Air-borne pollutants: Type Unknown/Unrecorded				
9.6.1 Pollution: Excess energy: Light pollution				

Full Description	Past threats (no longer occurring)	Current threats	Threats expected to emerge or continue over next 10 years	Threats that would be relevant in the long-term aspiration scenario
9.6.2 Pollution: Excess energy: Thermal pollution				
9.6.3 Pollution: Excess energy: Noise pollution				
9.6.4 Pollution: Excess energy: Type Unknown/Unrecorded				
10.1 Geological events: Volcanoes				
10.2 Geological events: Earthquakes/tsunamis				
10.3 Geological events: Avalanches/landslides				
11.1 Climate change & severe weather: Habitat shifting & alteration				
11.2 Climate change & severe weather: Droughts				
11.3 Climate change & severe weather: Temperature extremes		X Primary impact is ongoing effects of global climate change with predicted annual bleaching events likely to take place by 2030.		
11.4 Climate change & severe weather: Storms & flooding				
11.5 Climate change & severe weather: Other impacts		X Ocean acidification is likely to play some contributing role in the degradation of the reef, although impacts are likely currently being masked by thermal stresses		
12.1 Other threat				

