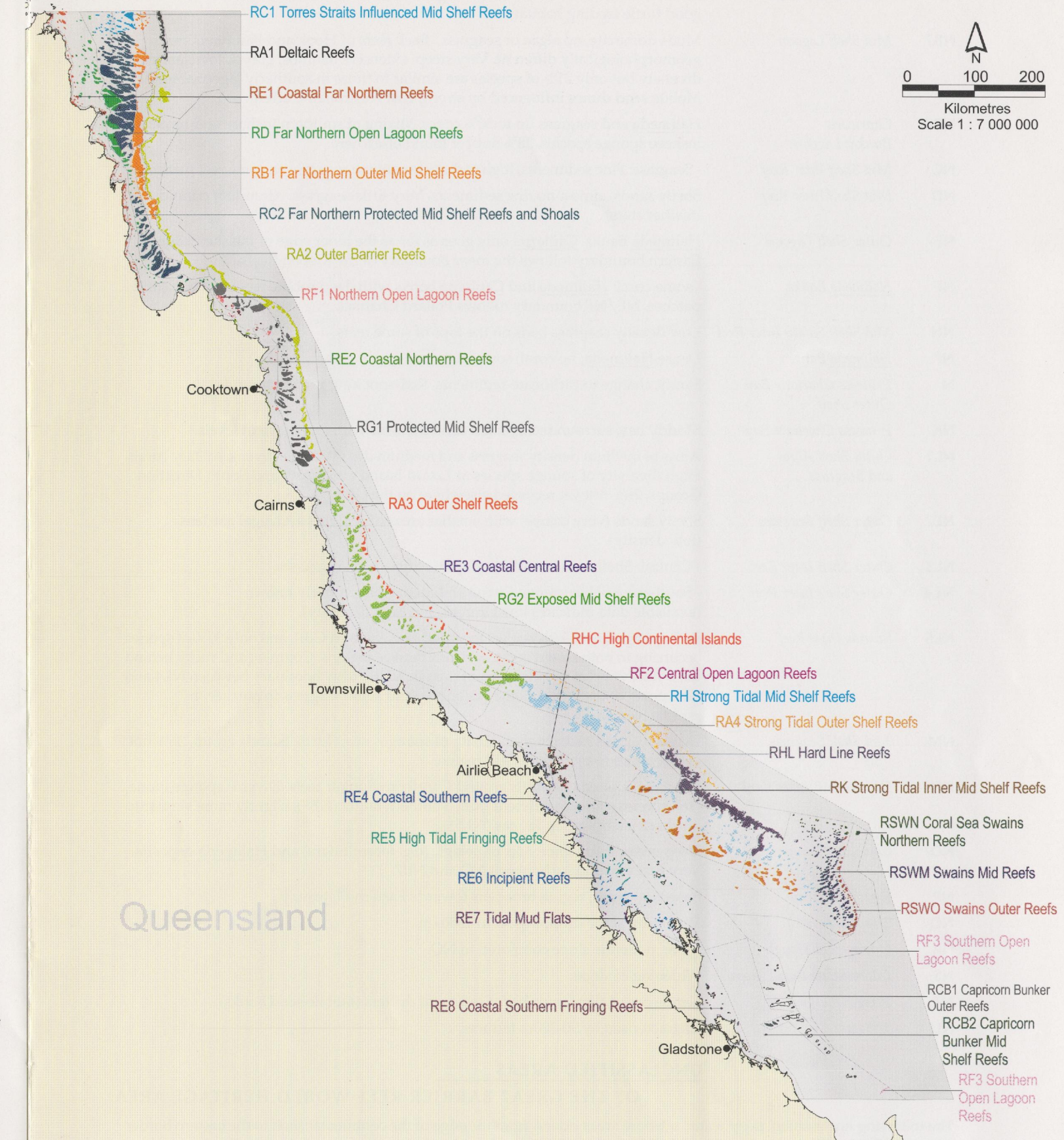
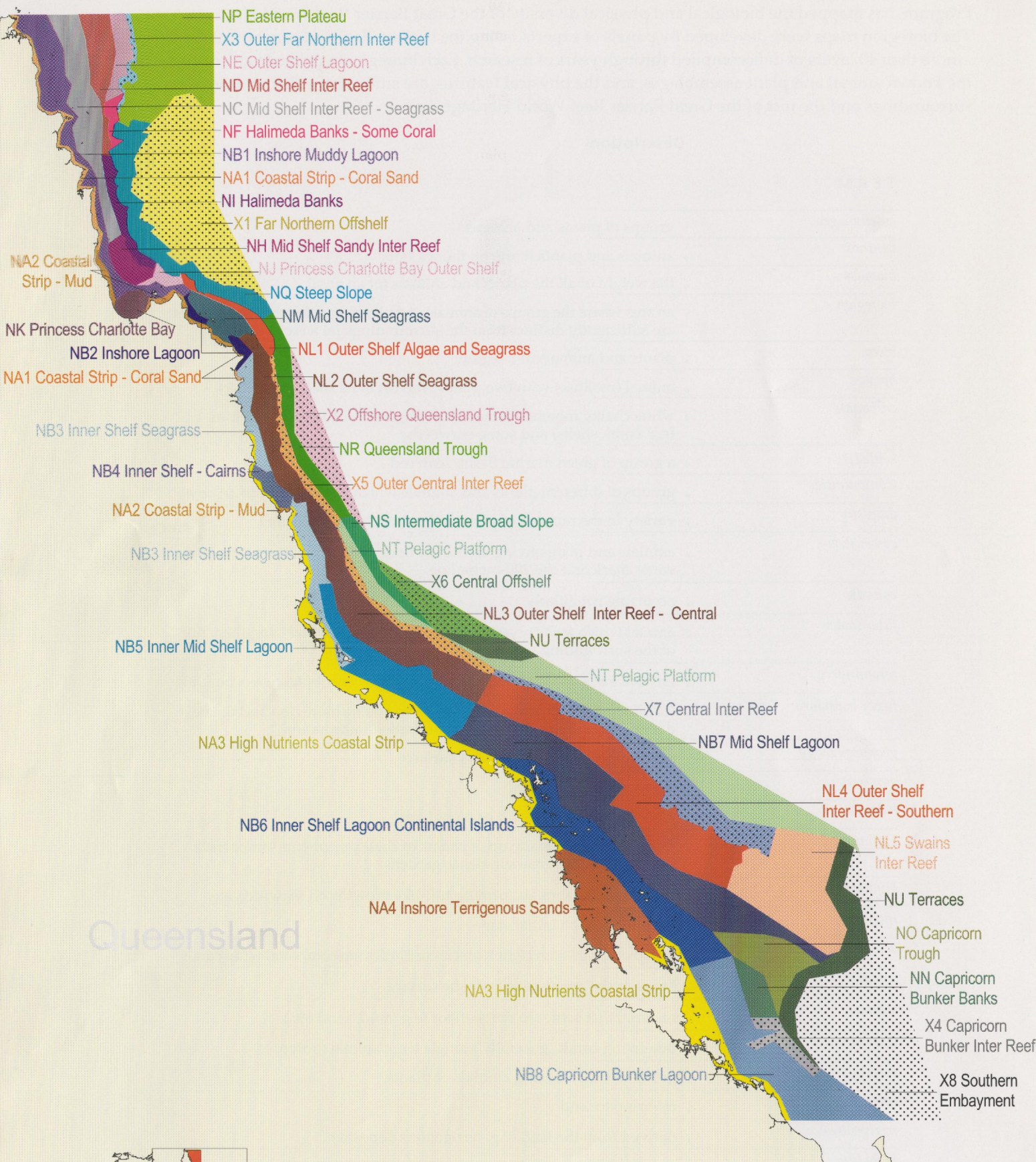


Bioregions of the Great Barrier Reef World Heritage Area

Non-Reef Bioregions

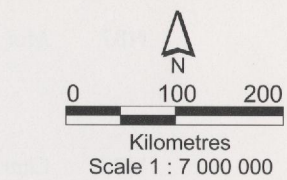
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Reef Bioregions



REPRESENTATIVE AREAS PROGRAM

REEF BIOREGIONS OF THE GREAT BARRIER REEF WORLD HERITAGE AREA



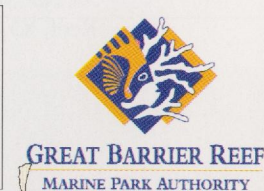
REEFS	Description
RA1	Deltaic. Distinct geomorphology, coral and fish. Torres Strait influences (strong currents).
RA2	Outer Barrier. Distinct geomorphology, coral and fish. Coral Sea influence. Steep, exposed high-energy fronts. Back reefs with mix of clear-water and coastal benthos.
RA3	Outer Shelf. Distinct geomorphology, with more submerged reefs than elsewhere. Transition zone. Open matrix of reefs allows greater Coral Sea influence, little coastal influence.
RA4	Strong Tidal Outer Shelf. Continental shelf protrudes widely but slopes gently. Small outer reefs set back from the edge. Strong tidal movement, high-energy area, biologically distinct.
RB1	Far Northern Outer Mid Shelf. Distinct biologically from true outer-shelf or mid-shelf reefs. Species-rich benthos. Mostly smaller reefs, dominated by shoals.
RC1	Torres Strait influenced Mid Shelf. Reefs small, and have Torres Strait influence. Biologically distinct from RC2.
RC2	Far Northern Protected Mid Shelf. Larger shoals and reefs than RC1. RC2 & RD have highest species diversity of octocorals so far recorded on the GBR.
RD	Far Northern Open Lagoon. Distinct coral communities. Less fish diversity than RC2. RC2 & RD have highest species diversity of octocorals so far recorded on the GBR.
RE1	Coastal Far Northern. Relatively rich in both hard and soft coral species. Sediment resuspension during south-east trade winds. Biologically distinct patches.
RE2	Coastal Northern. Low soft coral cover. Higher species richness, and more Sargassum than in RE3. Silty in protected areas. Sediment resuspension during south-east trade winds. Biologically distinct patches.
RE3	Coastal Central. (Yule/Daintree to Cape Cleveland) Biologically distinct, patchy reefs; more exposed than RE2. Very low soft coral diversity and cover. Influenced by episodic Burdekin River plumes and other annual river plumes. Very muddy in protected areas and on deeper slopes. Sediment resuspension during south-east trade winds.
RE4	Coastal Southern. Moderate tidal ranges, moderate to high turbidity. Broad Sound mouth and Proserpine River influence on water quality. Varying exposure levels within the region, fairly high habitat diversity. Biologically distinct.
RE5	High Tidal Fringing Southern. Very high turbidity. Strong coastal influence and unusually strong currents for inshore area, strong tidal movements and high tidal range. Well-developed fringing reefs, with poor hard and soft coral communities, but rich algal communities.
RE6	Incipient. Area has lots of algae and only incipient reefs. Very high turbidity and tidal movements. Strong southern influences on coral and algal species.
RE7	Tidal Mud Flats. Greatest tidal range and tidal movements on the GBR. Higher turbidity than RE5 and RE6. No reefs or corals, but distinct algal communities.
RE8	Coastal Southern Fringing Reefs. Dominated by episodic Fitzroy River flood plumes. Southern influence in algal species. Fringing reefs around high continental islands with high cover of hard and soft coral and algae, but low coral diversity.
RF1	Northern Open Lagoon. Small islands and low vegetated isles with fringing reefs. Muddy influence from Wet Tropics rivers. Distinct in terms of reef size and assemblages (soft coral, fish and algae).
RF2	Central Open Lagoon. Region dominated by episodic Burdekin flood plumes. Sea floor deeper and lagoon significantly wider, with more tidal movement than RF1. Few reefs and islands.
RF3	Southern Open Lagoon. Deeper sea floor than RF2. Water quality influenced by tidal movement in Broad Sound and by episodic Fitzroy River flood plumes in south. Even more tidally influenced than RF2. No small island fringing reefs.
RG1	Protected Mid Shelf. Protected by outer barrier reefs. Distinct hard and soft corals, fish and algae. Soft coral assemblages diverse, mostly clear water species and some coastal species.

Biologically distinct refers to differences in absolute or relative abundance of seagrasses, &/or sponges &/or general epibenthos &/of pelagic fish.

Point of Clarification
The bioregions shown on this map were defined by a panel of experts in the GBR Region, using the best data and regional analysis available to GBRMPA in 1999.
The map represents a consensus amongst the experts on a delineation of 'bioregions' within the GBRWHA. The experts considered that areas within each bioregion should be protected in a comprehensive, adequate and representative manner to minimally represent the WHA's biological diversity. In some cases the boundaries of the bioregions are not precise, due to the lack of information or the overlap between communities.

The attributes for each bioregion were distinguished by the experts, based on direct observations of locations within bioregions and extrapolation from understanding of how habitats relate to location and the environment.
This was supplemented by analytical methods (spatial cluster analysis), using appropriate available data. The bioregions will need to be revised as new data and information become available.
Updated: 18 August 2000

WARNING: This map is a DRAFT for discussion purposes and comment only, and may change over time. Persons who use this map or the information it contains as the basis for investment or other actions or decisions, do so at their own risk. This map is indicative only and does not purport to alter existing rights or interests.



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REPRESENTATIVE AREAS PROGRAM

		Description
REEFS		... continued
RG2	<i>Exposed Mid Shelf</i>	Fairly exposed to Coral Sea, with clear water and strong wave action on outer area. Episodic Burdekin flood plumes may reach inner reefs adjacent to RF2, resulting in greater cross-shelf variation than in many other bioregions.
RH	<i>Strong Tidal Mid Shelf</i>	High energy/high tidal movement. Turbid water. High water column productivity. Biologically distinct (fish). Dominated by filter-feeders. Fuzzy boundary with RSWM.
RHC	<i>High Continental Islands</i>	Palm Islands: Geomorphologically unique, with high diversity (habitat and benthos) due to exposure to clear water by the Palm Passage on the eastern sides, very sheltered and muddy coastal habitats on the protected sides, and current-swept channels between the islands. Whitsunday Islands: Geomorphologically unique. Both cross-shelf and north/south gradient in benthic communities. Poor muddy reefs close to the Proserpine River. Unique and very fragile hard and soft coral communities in the inlets.
RHL	<i>Hard Line</i>	Geomorphologically distinct. Extensive outer barrier, set well back from edge of continental slope. Fish communities less diverse, but similar to Swain Reefs and Whitsundays. Strong influence from Broad Sound, high tidal energy. Current-swept channels with steep walls, protected back reef communities with low diversity but high abundances of selected species.
RK	<i>Strong Tidal Inner Mid Shelf</i>	High turbidity and very high water column productivity. Distinct from RH. Rich bivalve, sponge and ascidian (sea squirt) dominated communities on back reef slopes. Distinct fish communities (including baitfish) with lower diversity. Strongly influenced by Broad Sound tidal node.
RCB1	<i>Capricorn Bunker Outer</i>	RCB1 & RCB2 oceanographically isolated, may be biologically distinct from the rest of GBR. Distinct differences in coral trout populations compared with the Swain Reefs and elsewhere on the GBR. Set back from edge of shelf but very exposed due to local currents.
RCB2	<i>Capricorn Bunker Mid Shelf</i>	RCB1 & RCB2 oceanographically isolated, may be biologically distinct from rest of GBR. More protected and more algae than RCB1, characteristic of mid-shelf area.
RSWM	<i>Swains Mid</i>	Very sheltered. Biologically distinct communities from Swains Outer Reefs (RSWO). Many cays. Fuzzy boundary with RH.
RSWN	<i>Coral Sea Swains-Northern</i>	Near edge of continental slope. Northerly aspect. Biologically distinct with strong influence of Coral Sea fauna and some similarities to northern outer-shelf reefs, but lower diversity of hard and soft coral species.
RSWO	<i>Swains Outer</i>	Set back from shelf edge. Easterly aspect. Lower influence of Coral Sea fauna than RSWN. Biologically distinct from Mid Swains (RSWM), more similar to Capricorn Bunker Outer Reefs (RCB1).

NON-REEF BIOREGIONS OF THE GREAT BARRIER REEF WORLD HERITAGE AREA

		Description
NON-REEF		
NA1	<i>Coastal Strip - Coral Sand</i>	Sand rather than mud, low carbonate and low nutrient. Isolated seagrasses.
NA2	<i>Coastal Strip - Mud</i>	Muddy sands. Very dense seagrass - important for dugong and turtle feeding.
NA3	<i>High Nutrients Coastal Strip</i>	Terrigenous mud and high levels of nutrients from the adjoining land. Seagrass in sheltered sites only.
NA4	<i>Inshore Terrigenous Sands</i>	Strong Broad Sound tidal influence. Very mobile sands, no algae or seagrass.
NB1	<i>Inshore Muddy Lagoon</i>	High carbonate mud, prawn habitat. Very little seagrass in Princess Charlotte Bay. Rich soft-sediment sponge fauna, 24% not yet recorded elsewhere.
NB2	<i>Inshore Lagoon</i>	Sandy mud. 'Tumble-weed' sponges living in inter-reef sediment depressions.
NB3	<i>Inner Shelf Seagrass</i>	Seasonal seagrass in patches. Distinct gorgonian fauna, associated with low wooded islands. Boundary for sponges and gorgonians extends south to Cape Grafton only.
NB4	<i>Inner Shelf - Cairns</i>	Less of the seasonal seagrasses than NB3. Continuation of distinct sponge and gorgonian fauna, associated with low wooded islands. Many soft sediment sponges recorded from Low Isles unique to this area.
NB5	<i>Inner Mid Shelf Lagoon</i>	Coarse sediment from terrestrial influences (medium-high terrigenous input). Sparse seagrass.

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REPRESENTATIVE AREAS PROGRAM

NB6	<i>Inner Shelf Lagoon Continental Islands</i>	NON-REEF BIOREGIONS <i>continued</i> ... High currents, gravel and hydroids around Pine Peak Island. Some gorgonians and low reef sites, water very turbid. Seagrass meadows in some bays; good turtle feeding habitats.
NB7	<i>Mid Shelf Lagoon</i>	Muds dominate, no algae or seagrass. Back reefs of Hook and Bait Reefs are geomorphologically different. Very steep, extensive benthos, gravel, low sponge diversity but only 21% of species are similar to those in southerly lagoonal reefs. Mobile sand dunes influenced by strong East Australian Current.
NB8	<i>Capricorn Bunker Lagoon</i>	<u>Halimeda</u> and seagrass up to 50% cover. Mixing of southern inshore and tropical inshore sponge species, 28% not yet found elsewhere.
NC	<i>Mid Shelf Inter Reef</i>	- Seagrass: Fine sediments, high carbonate content; seagrass on some reef platforms.
ND	<i>Mid Shelf Inter Reef</i>	Shelly sands, almost no fine sediments. Very little seagrass. Abundant crinoids (feather stars).
NE	<i>Outer Shelf Lagoon</i>	<u>Halimeda</u> Banks. <u>Caulerpa</u> only goes as far as the inner edge of the shelf edge. Eastern boundary follows the inner boundary of the Ribbon Reefs.
NF	<i>Halimeda Banks</i>	- some coral: <u>Halimeda</u> and <u>Caulerpa</u> banks with deep rubble reef or sparse coral patches. NE/NF boundary follows Pollard Channel.
NH	<i>Mid Shelf Sandy Inter Reef</i>	Low density seagrass beds on the tops of some reefs.
NI	<i>Halimeda Banks</i>	Dense <u>Halimeda</u> , no coral; some seagrass.
N	<i>Princess Charlotte Bay Outer Shelf</i>	Sandy, change to carbonate sediments. Red-spot king prawn grounds.
NK	<i>Princess Charlotte Bay</i>	Muddy bay, surrounded by silica sand deposits with low nutrient levels.
NL1	<i>Outer Shelf Algae and Seagrass</i>	Areas of medium density seagrass and medium density algae, diverse solitary corals. High diversity of sponge species at Lizard Island and North and South Direction Groups, 28% not yet recorded elsewhere on the GBR.
NL2	<i>Outer Shelf Seagrass</i>	Shelly sands (very coarse) with smaller areas of seagrass and algal gardens (low density).
NL3	<i>Outer Shelf Inter Reef</i>	- Central: Shelly sands with very sparse algae and seagrasses.
NL4	<i>Outer Shelf Inter Reef</i>	- Southern: High currents. Coarse sediments. Biota poorly known (available data indicates low biomass and high diversity).
NL5	<i>Swains Inter Reef</i>	Rich sponge fauna, 26% not yet recorded elsewhere on GBR, and only 31% of species occurring in both Swain and Capricorn Bunker regions. Complex and rocky behind the T-line, with lower tidal current than in NL4. Fuzzy boundary between NL4 and NL5 north of the T-line. Some <u>Halimeda</u> , and some seagrass in patches in middle Swains.
NM	<i>Mid Shelf Seagrass</i>	Dense seagrass beds; high diversity of sponges near Turtle Islands group, 36% not yet recorded elsewhere in GBR region.
NN	<i>Capricorn Bunker Banks</i>	Pre-reef <u>Halimeda</u> deposits around Capricorn Bunker reefs. Diverse sponge fauna (187 species), mostly different from southern fauna (NB8), slightly more similar to northern island-group faunas (NL5).
NO	<i>Capricorn Trough</i>	Deep oceanic influence. Mix of pelagic (e.g. foraminifera) and <u>Halimeda</u> deposits. Very fuzzy boundary between NO and NB7.
NP	<i>Eastern Plateau</i>	Based on depth, region broadens towards Eastern Plateau.
NQ	<i>Steep Slope</i>	Very steep slope dropping off to 2500+m.
NR	<i>Queensland Trough</i>	More moderate slope compared to NQ.
NS	<i>Intermediate Broad Slope</i>	Widening of slope.
NT	<i>Pelagic Platform</i>	Gentle broad slope, number of sediment drifters (mobile sand banks).
NU	<i>Terraces</i>	Characterised by 90-300m terraces.

UNCLASSIFIED AREAS

OF THE GREAT BARRIER REEF WORLD HERITAGE AREA

The following unclassified, deep water, offshore areas extend from the edge of the continental shelf to the eastern border of the GBRWHA. They remain unclassified due to insufficient information, but for the purposes of the Representative Areas Program, and until further information is gained, they are treated as separate bioregions.

X1 Far Northern Offshelf, X2 Offshelf Queensland Trough, X3 Outer Far Northern Inter Reef, X4 Capricorn Bunker Inter Reef, X5 Outer Central Inter Reef, X6 Central Offshelf, X7 Central Inter Reef, and X8 Southern Embayment.

REPRESENTATIVE AREAS PROGRAM

BIOREGIONS OF THE GREAT BARRIER REEF WORLD HERITAGE AREA

The Great Barrier Reef Marine Park Authority, through the classification phase of the Representative Areas Program, has mapped the biological and physical diversity of the Great Barrier Reef World Heritage Area. The bioregion maps were developed by panels of experts, using the best available information at the time - more than 40 layers of data compiled through years of research. Each bioregion represents an area where the known animal and plant assemblages, and the physical features, are sufficiently distinct from the surroundings and the rest of the Great Barrier Reef World Heritage Area.

TERM	Description
<i>assemblages</i>	• groups of plants and animals
<i>benthos</i>	• animals and plants living on the sea floor
<i>biomass</i>	• the weight of all the plants and animals (of an area)
<i>bioregion</i>	• an area where the groups of animals and plants, and the physical features are sufficiently distinct from the surroundings (at a reef-wide scale)
<i>biota</i>	• plants and animals of a region
<i>bivalve</i>	• animal (mollusc) with two plates (valves) to its shell (eg. oyster)
<i>carbonate</i>	• white chalky mineral formed from fragments of animal skeletons (e.g. coral, shells) and some seaweeds
<i>Caulerpa</i>	• a group of green marine fleshy seaweed
<i>Communities</i>	• groups of different plants and animals which live together in an area
<i>diversity</i>	• variety in the number of plant and animal types in an area
<i>epibenthos</i>	• animals and plants living on the sea floor at depths between the low water mark and the 200-metre line
<i>episodic</i>	• occurring irregularly
<i>filter feeder</i>	• animal which feeds on small animals or plants, by straining them out of the surrounding water
<i>foraminifera</i>	• tiny oceanic animal with a chalky shell which contributes to reef building
<i>fuzzy boundary</i>	• (of bioregion) - unclear boundary between one bioregion and the next, due to gradual change in nature or limited information
<i>geomorphology</i>	• physical features of the earth's surface
<i>gorgonian</i>	• horny coral or fan coral
<i>habitat</i>	• place in which an animal or plant lives
<i>Halimeda</i>	• tropical seaweed made up of chains of chalky segments - important reef builder that grows in dense gardens
<i>Hydroids</i>	• small colonial animals forming tuft-like growths on seaweeds etc.
<i>incipient</i>	• beginning, in an initial stage
<i>octocorals</i>	• group of corals with eight tentacles (includes fan corals and whip corals)
<i>pelagic</i>	• living in the open sea or near the surface
<i>sediment</i>	• material that settles to the seafloor (e.g. mud, sand etc.)
<i>solitary corals</i>	• free-living corals, generally a single large animal (polyp)
<i>species</i>	• group of interbreeding animals or plants
<i>terrestrial</i>	• referring to land
<i>terrigenous</i>	• derived from the land (e.g. terrigenous deposits)
<i>turbidity</i>	• cloudy, muddy water
<i>water column productivity</i>	• amount of microscopic plants and animals in the water at a particular location