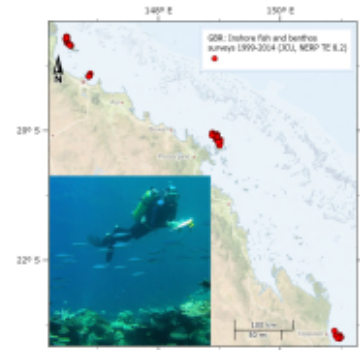


Benthic cover and fish density on fringing reefs of inshore island groups of the GBR, 1999 – 2014 (NERP 8.2, JCU)



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[Visualization service URL \(WMS\) \(\)](#) |

Title	Benthic cover and fish density on fringing reefs of inshore island groups of the GBR, 1999 – 2014 (NERP 8.2, JCU)
Date	2014-11-22
Date type	Publication
Abstract	<p>This dataset consists of site and zone means of the percent cover of major benthic categories and the density of fish functional groups on fringing coral reefs of the Keppel, Whitsunday and Palm Island groups, as a result of monitoring surveys carried out between 1999 and 2014.</p> <p>This data extract summarises the results of a long-term monitoring project that assesses the effects of no-take marine reserve zoning in the Great Barrier Reef Marine Park.</p> <p>Spatial zoning for multiple-use is the cornerstone of management for the Great Barrier Reef Marine Park (GBRMP). Multiple-use zoning was first implemented widely in the GBRMP in the late 1980's and this original zoning plan was in place until 2004, when the marine park was completely rezoned under the Representative Areas Program (RAP). The overall proportion of the marine park area assigned into NTRs was increased from around 5% (~ 25% of the coral reefs) to 33.4%. The need to objectively assess the ecological consequences of zoning management has attracted an increasing amount of research effort in recent years. Critical knowledge gaps still remain however, and research is required to determine how and to what extent NTR networks may help to protect biodiversity, sustain stocks of fished species and increase ecosystem resilience.</p> <p>This project was established in 1999 and expanded in 2004, with the primary objective of providing a robust assessment of the ecological effects of multiple-use zoning on inshore coral reefs of the GBRMP. The project uses underwater visual census (UVC) to provide a spatially and temporally replicated assessment of fish and benthic communities and will include concurrent surveys of coral health within no-take (Green) and fished (Blue) zones on high-use inshore reefs. It is one of the few long-term monitoring projects specifically assessing the effects of zoning management within the GBRMP and the only one with a solid baseline data set that was established prior to the implementation of the 2004 zoning management plan.</p> <p>Methods:</p> <p>Underwater visual census (UVC) was used to survey reef fish and benthic communities on fringing coral reefs of the Palm, Magnetic, Whitsunday and Keppel Island groups. Within each island group, sites are evenly distributed between zones that have remained open to fishing (General Use and Conservation Park zones), NTRs that were closed to fishing in 1987, and NTRs that were established in 2004 (Marine National Park zones).</p> <p>Within each site UVC surveys were conducted using 5 replicate transects (50m x 6m, 300m² survey area). Transects were deployed on the reef slope between approximately 4 and 12</p>

metres depth. Using SCUBA, two observers recorded approximately 190 species of fish from 15 Families (Acanthuridae, Balistidae, Chaetodontidae, Haemulidae, Labridae, Lethrinidae, Lutjanidae, Mullidae, Nemipteridae, Pomacanthidae, Pomacentridae, Scaridae, Serranidae, Siganiidae and Zanclidae). A third diver (observer 3) swam directly behind observers one and two, deploying the transect tapes. This UVC technique reduces diver avoidance or attraction behaviour of the surveyed fish species. To increase accuracy of the fish counts, the species list was divided between the two fish observers. Observer one surveyed the fish families Haemulidae, Lethrinidae, Lutjanidae, Mullidae, Nemipteridae, Serranidae and the larger species of Labridae targeted by fishers. Observer two surveyed the families Acanthuridae, Balistidae, Chaetodontidae, Pomacanthidae, Pomacentridae, Scaridae, Siganiidae, Zanclidae and small 'non-targeted' species of Labridae. Pomacentrids and small labrids were recorded by observer two during return transect swims within a 2m band (1m either side of the tape, 100m² survey area).

Broad-scale structural complexity of the reef habitat was estimated by observer one using a simple method that applied a rank (1-5) to both the angle of the reef slope and the rugosity for each ten-metre section of each transect. Observer three utilised a line intercept survey method to record a benthic point sample every metre along each transect tape (50 samples per transect). Benthos sampled in the benthic survey was live and dead hard coral within morphological categories (branching, plate, solitary, tabular, massive, foliose, encrusting) live soft coral, sponges, clams (*Tridacna* spp.), other invertebrates (such as ascidians and anemones), macro-algae, coral reef pavement, rock, rubble and sand.

Limitations:

Not all island groups could be surveyed in each year, usually due to funding limitations and unpredictable weather events.

Format:

The data are contained within two worksheets of an Excel file (215 kB). All benthic data is in % cover, and fish data are in density (individuals per 1000 m²). The first worksheet shows the data averaged for each site, and the second worksheet has average values for each zone (Fished, NTR 1987 and NTR 2004).

Data Dictionary:

Names in rounded brackets () are the matching names in the shapefile. This was done to meet the 10 character limitation of this format.

- SE - Standard Error
- mean - Mean over the transects at a site.
- Total Fish Densit_mean (TFishDenMn)
- Total Fish Densit_SE (TFishDenSE)
- Fish Species richness_mean (FishRichMn)
- Fish Species richness_SE (FishRichSE)
- Fishery Target Spp_mean (FishTargMn) - Pooled group of fish species designated as 'Primary target' in the species list file.
- Fishery Target Spp_SE (FishTargSE)
- Grazers_mean (GrazersMn) - Pooled group of fish species listed as 'grazers' in the species list
- Grazers_SE (GrazersSE)
- Corallivores_mean (CorallivMn)
- Corallivores_SE (CorallivSE)
- Planktivores_mean (PlanktivMn)
- Planktivores_SE (PlanktivSE)
- Territorial Pomacentrids_mean (TerrPomaMn)
- Territorial Pomacentrids_SE (TerrPomaSE)
- Plectropomus spp_mean (PlectSppMn)
- Plectropomus spp_SE (PlectSppSE)
- SCI_mean - Structural complexity Index.. An index (1-25) calculated by multiplying our visual estimates of reef slope angle (1-5) by reef slope rugosity (Complexity 1-5). These values are estimated for each 10m section of each 50m transect. 5 transects per site = 25 SCI estimates per site. The e-atlas data we have provided is site means... i.e.. the mean of those 25 values.
- LCC - Live coral cover (percent cover), live hard and soft coral pooled.
- LHC - Live hard coral cover (%), live hard coral only.

- MAC - Macro Algae Cover % (fleshy algae only, does not include turf algae)
- Fish Line_SUM - is the pooled number of lines recorded on the 5 transects surveyed at each site. = total number of lines/1500m².
- Line Accumulation Rate - number of lines accumulated per month.

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Character set	UTF8
Hierarchy level	Dataset

OnLine resource

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Protocol	OGC:WMS-1.1.1-http-get-map

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Topic category	Biota

Keyword

Keyword	marine
Type	Theme

Extent

Description	Palm Island Group
Description	Whitsundays
Description	Keppel Islands
Description	Magnetic Island

File identifier	18916872-b710-41b8-becd-0fda1611f413
Metadata language	eng
Character set	UTF8

Metadata author

Individual name	eAtlas Data Manager
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Date stamp	2015-07-01T16:34:48