## GBRMPA links to Marine Science and Aquatics Syllabus

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| CH | Reef Outlook Report 2014 | Focus Question | Key Concepts | Aquatic Practices  Key concepts | Marine Science  Key concepts | Resources |
| 1 | **Health and status of the Great Barrier Reef Marine Park; its biodiversity; ecosystem and heritage values** | Great Barrier Reef’s health, pressures (threats) and likely future;  trends for a variety of assessment criteria; examining reef health;  management effectiveness | **Overview** of Reef health, threats, future trends, management strategies. | **Environmental** — conditions, ecosystems, conservation and sustainability. | |  | | --- | | **CS3:** Gathering and interpreting scientific information is necessary to make informed decisions on sustainability.  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **OC3:** The world’s oceans and global  climate are inextricably linked. | | **Great Barrier Reef Outlook Report 2014**  <http://www.gbrmpa.gov.au/managing-the-reef/great-barrier-reef-outlook-report>  **2014 GBRMPA Outlook in Brief Strategic-Assessment**  <http://www.gbrmpa.gov.au/managing-the-reef/strategic-assessment>  **GBRMPA 2050 Long term Plan**  <http://www.environment.gov.au/marine/gbr/long-term-sustainability-plan>  **Managing the Great Barrier Reef** – Video [https://www.youtube.com/watch?v=PZlTQFWLdBoandfeature=youtube](https://www.youtube.com/watch?v=PZlTQFWLdBo&feature=youtube)  **Eye on the Reef program** monitoring program that collects valuable information about reef health, marine animals and incidents. <http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef> |
| 2 | **Assessment of Biodiversity** | What are the current state and trends? | **Considers conditions and trends of habitats to support species:**  Islands; Mainland Beaches, Coastlines; Mangrove forests; Sea Grass meadows; Coral reefs; Lagoon floor; Shoals; Halimeda banks; Continental slope; Open waters.  **Considers trends of populations of species and groups of species:** Mangroves; Seagrasses; Macro Algae; Benthic micro algae; Corals; Other Invertebrates; Plankton and microbes; Bony Fish; Sharks and Rays; Sea snakes; Marine turtles; Estuarine crocodiles; Seabirds; Shore Birds; Whales; Dolphins; Dugongs. | **Environmental** — conditions, ecosystems | **MB1:** Marine environments support an abundance of diverse life, which is classified according to a range of characteristics.  **MB2:** Marine organisms are shaped by their environments and interactions.  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments.  **MB3:** The marine environment consists of dynamic and complex relationships between organisms and ecosystems.  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments. | Maps showing the extent to which each of the 30 Reef Bioregions and 40 non Reef Bioregions are protected by Zoning.  **Reef Bioregions** <http://www.gbrmpa.gov.au/__data/assets/pdf_file/0012/17301/reef-bioregions-in-the-gbrmp-and-gbrwh.pdf>  **Non Reef Bioregions** <http://www.gbrmpa.gov.au/__data/assets/pdf_file/0011/17300/nonreef-bioregions-in-the-gbrmp-and-gbrwh.pdf>  **Accessing Data/ Data for comparative studies**  **Eye on the Reef program**: <http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef>  **Rapid Monitoring Survey** <http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef/the-rapid-monitoring-survey>  **Eye on the Reef program**: <http://www.gbrmpa.gov.au/eye-on-the-reef/f?p=150:LOGIN:1050721817325101>  **Eye on the Reef Sightings**  <http://www.gbrmpa.gov.au/visit-the-reef/eye-on-the-reef/report-sightings>  **Eye on the Reef training videos:** <https://www.youtube.com/playlist?list=PL4C509E34B477916E>  **Australian Institute of Marine Science “Long Term Monitoring Program”** <http://www.aims.gov.au/docs/research/monitoring/reef/reef-monitoring.html> |
| 3 | **Assessment of Ecosystem Health** | What are the current state and trends? | **Considers conditions and trends of:**  physical processes; chemical processes; ecological processes; terrestrial habitats that support the Great Barrier Reef;  **Considers conditions and trends of:**  outbreaks of disease, introduced species and pest species. | **Environmental** — conditions, ecosystems, conservation and sustainability.  **Commercial** —employment opportunities: shipping, transport, fishing, ecotourism, aquaculture, aquariums, boat building and marine engineering. | |  | | --- | | **OC1:** The world’s oceans and coastlines have many unique geological features.  **OC2:** The world’s oceans are involved in the dispersal and cycling of all matter.  **OC3:** The world’s oceans and global climate are inextricably linked  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments. | | **Australian Institute of Marine Science:** Reef Monitoring survey reports since 1993, data summaries for each specific reef <http://www.aims.gov.au/docs/research/monitoring/reef/latest-surveys.html>  **Crown of Thorns Starfish** [http://data.aims.gov.au/reefpage2/rpdetail.jsp?fullReefID=16049SandsampleType=MANTA](http://data.aims.gov.au/reefpage2/rpdetail.jsp?fullReefID=16049S&sampleType=MANTA)  **GBRMPA Strategic-Assessment 2014**  <http://www.gbrmpa.gov.au/managing-the-reef/strategic-assessment>  **Images / footage of the carbon cycle**  <https://www.youtube.com/watch?v=U3SZKJVKRxQ>  www.youtube.com/watch?v=HrIr3xDhQ0Eandfeature=related  www.youtube.com/watch?v=c40jebr9jbgand |
| 4 | **Heritage Values** | Protecting the Reef’s heritage will help ensure it can be enjoyed by future generations | The heritage of the Great Barrier Reef including its places, values and experiences shapes and drives what this precious ecosystem is like now and how it is managed. | **Commercial** —employment opportunities: shipping, transport, fishing, ecotourism, aquaculture, aquariums, boat building and marine engineering.  **Cultural —**cultural significance of the aquatic environment and of maritime activity in Queensland and Australia. Attitudes to marine industries and activities exploring the aquatic culture and practices of Aboriginal, Torres Strait Islander, Asian, South Sea Islander and European communities. | **OC1:** The world’s oceans and  coastlines have many unique geological features.  **OC3:** The world’s oceans and global climate are inextricably linked. | **Overview of GBRMP Heritage**  <http://www.gbrmpa.gov.au/about-the-reef/heritage>  **Dent Island lighthouse - Whitsundays** <http://www.gbrmpa.gov.au/about-the-reef/heritage/dent-island-lightstation-heritage-management-plan>  **World Heritage / Marine Park**  <http://www.gbrmpa.gov.au/about-the-reef/heritage/great-barrier-reef-world-heritage-area/differences-between-the-marine-park-and-the-world-heritage-area2>  **Lady Elliot Island Lighthouse**  <http://www.gbrmpa.gov.au/about-the-reef/heritage/lady-elliot-island-heritage-values>.  **Reef Beat 2010 Sea Country Connections**  <http://www.gbrmpa.gov.au/resources-and-publications/student-and-teacher-resources/reef-beat-series> |
| 5 | **Assessment of commercial and non-commercial use** | What are the current state and trends? | **Considers:** Commercial Marine Tourism; Defence activities; Fishing; Ports; Recreation (not including fishing).  **Considers:** Research and educational activities; shipping; traditional use of marine resources. | **Recreational** — ways people engage with the aquatic environment for enjoyment.  **Commercial** —employment opportunities; shipping, transport; fishing; ecotourism; aquaculture; aquariums; boat building and marine engineering. | **CS3:** Gathering and interpreting  scientific information is necessary to make informed decisions on sustainability.  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments.  **OC3:** The world’s oceans and global climate are inextricably linked. | **User groups of the Marine Park**.  [http://www.gbrmpa.gov.au/zoning-permits-and plans/rap](http://www.gbrmpa.gov.au/zoning-permits-and%20plans/rap)  Specific issues that have the potential to impact the Great Barrier Reef Marine Park.  <http://www.gbrmpa.gov.au/zoning-permits-and-plans/legislation-regulations-and-policies/policies-and-position-statements>  **Policy on Structures** e.g Tourism Pontoons <http://www.gbrmpa.gov.au/__data/assets/pdf_file/0003/16968/Structures-Policy-reviewed-2010.pdf>  **Policy on Managing Tourism Permissions** <http://www.gbrmpa.gov.au/__data/assets/pdf_file/0020/3845/gbrmpa_ManagingTourismPermissionsPolicy_2003.pdf>  **On-Board Tourism Operators Handbook** is a Guide for tourism operation in the Great Barrier Reef Marine Park. <http://onboard.gbrmpa.gov.au/>  **Dredging**  <http://www.gbrmpa.gov.au/managing-the-reef/how-the-reefs-managed/dredging-and-dredge-material-disposal> |
| 6 | **Factors influencing the reefs economic, social, environmental values** | What external factors influence reef health? | **Current state and trends of:**  Climate change  Direct use  Coastal development  Catchment runoff  **Vulnerability of the ecosystem and its implications** | **Environmental** — conditions, ecosystems, conservation and sustainability.  **Recreational** — ways people engage with the aquatic environment for enjoyment | **OC2:** The world’s oceans are involved in the dispersal and cycling of all matter.  **OC3:** The world’s oceans and global climate are inextricably linked  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments. | **Issues** that have the potential to impact the Great Barrier Reef Marine Park.  <http://www.gbrmpa.gov.au/zoning-permits-and-plans/legislation-regulations-and-policies/policies-and-position-statements>  **Carbon Cycle and Global Warming**  <https://www.youtube.com/watch?v=1o4ODWMZq5U>  **Reef Beat Climate Change**  Climate Change Impacts  on the Great Barrier Reef / Climate Change Animations  [www.gbrmpa.gov.au](http://www.gbrmpa.gov.au) |
| 7 | **Assessment of existing protection and management approaches.** | How have management activities made a difference? | **Managing direct use**: Commercial Marine Tourism; Defence Activities; Fishing; Ports; Recreation (not including fishing); research activities; Shipping; traditional use of marine resources.  **Managing External factors**: Climate Change; Coastal development; Land Based Runoff | **Environmental** — conditions, ecosystems, conservation and sustainability.  **Recreational** — ways people engage with the aquatic environment for enjoyment.  **Commercial** —employment opportunities: shipping, transport, fishing, ecotourism, aquaculture, aquariums, boat building and marine engineering.  **Cultural —**cultural significance of the aquatic environment and of maritime activity in Queensland and Australia. Attitudes to marine industries and activities, exploring the aquatic culture and practices of Aboriginal, Torres Strait Islander, Asian, South Sea Islander and European communities | **CS2:** Sustainable management practices are essential for the protection of marine resources.  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments. | **Overview of management priorities and management tools** <http://www.gbrmpa.gov.au/managing-the-reef/how-the-reefs-managed>  The principle tool for **managing multiple uses** and protecting biodiversity within the Great Barrier Reef Marine Park.  <http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning>  **About** **Zoning** <http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning/about-zoning>  **Zoning** **Maps** <http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning/zoning-maps>  **Interpreting zoning** (what activities can be undertaken in each zone) <http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning/zoning-guide-to-using-the-marine-park/interpreting-zones>  **Management of risks to reef**  <http://www.environment.gov.au/system/files/resources/d98b3e53-146b-4b9c-a84a-2a22454b9a83/files/reef-2050-long-term-sustainability-plan.pdf>  **Managing-the-reef/threats to the reef**  <http://www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef>  [**Reef Beat 2011**](http://hdl.handle.net/11017/2778) **— working together today for a healthier Reef tomorrow** <http://www.gbrmpa.gov.au/resources-and-publications/student-and-teacher-resources/reef-beat-series> |
| 8 | **Assessment of ecosystem and heritage resilience** | How well can the Great Barrier Reef resist and recover from disturbance? | **Case Studies of recovery in the ecosystem**: Coral reef habitats; lagoon floor habitats; Black teat fish; Coral trout; Loggerhead turtles.  **Case Studies of recovery in the ecosystem**:  Urban Coast Dugongs; Humpback whales | **Environmental** — conditions, ecosystems, conservation and sustainability. | **MB1:** Marine environments support an abundance of diverse life, which is classified according to a range of characteristics.  **MB2:** Marine organisms are shaped by their environments and interactions.  **MB3:** The marine environment consists of dynamic and complex relationships between organisms and ecosystems.  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments. | **Australian Institute of Marine Science:** **Reef Monitoring** survey reports since 1993, data summaries for each specific reef e.g. Green Island <http://data.aims.gov.au/reefpage2/reefpage.jsp?fullReefID=16049S>  **Trends in cover of benthic organisms** including corals and algae [http://data.aims.gov.au/reefpage2/rpdetail.jsp?fullReefID=16049SandsampleType=VPOINT](http://data.aims.gov.au/reefpage2/rpdetail.jsp?fullReefID=16049S&sampleType=VPOINT)  **Trends in Fish abundances** [http://data.aims.gov.au/reefpage2/rpdetail.jsp?fullReefID=16049SandsampleType=FISH](http://data.aims.gov.au/reefpage2/rpdetail.jsp?fullReefID=16049S&sampleType=FISH)  **Reef Beat 2012 Education Series the inshore Great Barrier Reef, bursting with biodiversity** <http://www.gbrmpa.gov.au/resources-and-publications/student-and-teacher-resources/reef-beat-series> |
| 9 | **Assessment of risks to Region’s values** | What are the remaining risks to the Great Barrier Reef? | **Identifying and assessing** the threats.  **Identifying and assessing** the risks. | **Environmental** — conditions, ecosystems, conservation and sustainability.  **Recreational** — ways people engage with the aquatic environment for enjoyment. | **OC2:** The world’s oceans are involved in the dispersal and cycling of all matter.  **OC3:** The world’s oceans and global climate are inextricably linked  **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments. | **Impacts of fishing**  <http://www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef/remaining-impacts-from-fishing>  **Reef Beat 2007 Sustainability**  <http://www.gbrmpa.gov.au/resources-and-publications/student-and-teacher-resources/reef-beat-series> |
| 10 | **Assessment of the long-term outlook for the Region’s values** | What does this mean for the Great Barrier Reef’s future? | **Knowledge for management** (information needs)  **Likely future trends**  **Current and future initiatives** (management and protection)  **Ecosystem Health**  **Biodiversity**  **Heritage**  **Water Quality**  **Community Benefits**  **Economic Benefits** | **Environmental** — conditions, ecosystems, conservation and sustainability.  **Recreational** — ways people engage with the aquatic environment for enjoyment.  **Commercial** —employment opportunities: shipping, transport, fishing, ecotourism, aquaculture, aquariums, boat building and marine engineering.  **Cultural —**cultural significance of the aquatic environment and of maritime activity in Queensland and Australia. Attitudes to marine industries and activities, exploring the aquatic culture and practices of Aboriginal, Torres Strait Islander, Asian, South Sea Islander and European communities. | **MS1:** Safety is a primary concern in marine research skills.  **MS2:** Boating, snorkelling and field techniques enable engagement with marine environments.  **MS3:** Navigation and communication are essential tools for investigating marine environments.  **OC2:** The world’s oceans are  involved in the dispersal and  cycling of all matter.  **CS2:** Sustainable management practices are essential for the protection of marine resources. | **Aquaculture in the Marine Park** <http://www.gbrmpa.gov.au/__data/assets/pdf_file/0020/3890/gbrmpa_AquaculturePositionStatement_2002.pdf>  **Artificial reefs** <http://www.gbrmpa.gov.au/zoning-permits-and-plans/legislation-regulations-and-policies/policies-and-position-statements>  [**Reef 2050 Long-Term Sustainability Plan**](http://www.environment.gov.au/reef-2050-long-term-sustainability-plan) ***and*** [***strategic environmental assessment***](http://www.gbrmpa.gov.au/managing-the-reef/strategic-assessment)  <http://www.environment.gov.au/system/files/resources/d98b3e53-146b-4b9c-a84a-2a22454b9a83/files/reef-2050-long-term-sustainability-plan.pdf>  **GBRMPA Strategic-Assessment 2014**  <http://www.gbrmpa.gov.au/managing-the-reef/strategic-assessment>  **Actions for the future**  <http://www.environment.gov.au/system/files/resources/d98b3e53-146b-4b9c-a84a-2a22454b9a83/files/reef-2050-long-term-sustainability-plan.pdf>  **Australian Institute of Marine Science “Long Term Monitoring Program** represents the longest continuous record of change in reef communities over such a large geographic area. <http://www.aims.gov.au/docs/research/monitoring/reef/reef-monitoring.html>  **Water quality**  <http://www.gbrmpa.gov.au/managing-the-reef/threats-to-the-reef/declining-water-quality>  **Reef Beat 2013 Education Series “The amazing GBR Let’s keep it great”**  <http://www.gbrmpa.gov.au/resources-and-publications/student-and-teacher-resources/reef-beat-series/reef-beat-2013> |