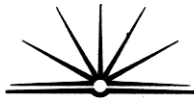


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The biophysical interactions are the basis for the formation of diverse ecosystems such as coral reefs and intertidal wetlands, and their functioning. Ecosystems are self-sustaining, self-regulating communities of living organisms interacting in a physical environment within a definite geographical area (Kaufmann & Franz © 1996). The more organisms and the larger the linkages are of an ecosystem i.e. the interdependence, the ~~more~~ ^{higher} chance the ecosystem has at coping with the natural stresses of the biophysical interactions.

A stress which ecosystems find difficult to regain its dynamic equilibrium which is its normal state is human induced stress which is often constant and is always damaging.

~~An example of the intertidal wetland ecosystem is the Ham Homebush Bay wetlands.~~
An intertidal wetland is an intertidal zone meaning that this transition, between aquatic and terrestrial land is subject to



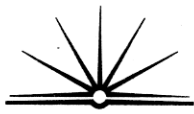
and lie between 35°N and 30°S ,
an inundation of water twice daily. An
example of an interwetland (ITW) ecosystem
is the Homebush Bay Wetlands. A coral reef
is a marine reef formed by calcium carbon-
ate extracted from the sea by living
organisms and lie between 25°N and 25°S .
An example of a coral reef is
the Great Barrier Reef. Both these ecosystems
are diverse because of their specificities,
levels of
vulnerabilities and resilience in relation
to the biophysical environment.

The Great Barrier Reef is located north of
Bundaberg to Cape York in Queensland,
Australia. It stretches 2300km up the east
coast and covers an area of 350000km^2 .
The diverse ecosystem comes mainly from
the 1500 fish species, 4000 coral species, and
400 molluscs that inhabit the Great Barrier
Reef (GBR). The coral system has unique
conditions under which they live: the vital
temperature range is between 23°C and 28°C
(but can fall to low as 18°C in some areas), the



Salinity levels of the water has to be between 24% and 26%, the coral lives in water 50 metres in depth with good access to sunlight and slow tide movements take place. [These unique conditions depend on the atmosphere and rainfall for climate, the biosphere for the natural food chain & web to be undisturbed, the hydrosphere for tide movements and the lithosphere for the amount of run off and erosion which eventually reaches the coral reef.

The coral has a symbiotic relationship with zooxanthellae which use the coral as homes. This symbiotic relationship is crucial to the functioning of the ecosystem. The zooxanthellae ~~get~~ photosynthesis from the sun giving the coral ^{energy} to live and eat. However if ^{because of rain or runoff} salinity levels increase and the zooxanthellae does not photosynthesise due to lack of sunlight ^{the} coral will die and so too will the zooxanthellae. Although the coral has an efficient

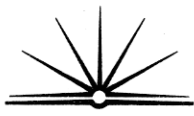


reproduction system natural predators such as Crown of ~~Thorn~~ ^{Thorn} Starfish will increase and the marine food web is disrupted.

The need for slow tidal movement is so that the organism can eat. If the ~~tides~~ ^{tides} move too fast no food is caught and hence organisms will die and once again the food web is disrupted.

Although the GBR is subject to tropical cyclones this is a natural stress which the ecosystems are resilient to but other interactions such as human interaction causes ~~get~~ great danger to the GBR as it is in such close proximity to humans on the coast.

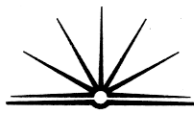
The Intertidal wetlands at Homebush Bay are located in Bicentennial Park, which is approximately 12 kilometres west of Sydney's CBD. The wetlands cover an area of 58 hectares and run on the Parramatta River. This ecosystem unlike the GBR only has one main plant,



that being the mangroves. However wetlands are breeding grounds for fish and nesting areas for birds. ~~As shown~~

As shown clearly in the broadsheet, Source D AR 3593 and AR 3592 wetlands are a transition zone from land to water therefore ITN's are a mix of both.

The atmosphere produces the rain for the ITNs but too much rain increases the salinity levels in the wetlands and causes flooding because of the twice daily ~~the~~ inundations. If the inundations, which occur by hydrological processes of tidal movements, do not occur excess nutrients and toxins are left in the wetlands. This encourages algae bloom to grow, which kills most other organisms in the food chain of the ITN, mainly the mangroves because the pneumatophores can no longer breathe. They do not breathe b/c the dissolved oxygen is taken from the water so as photosynthesis takes place for



only algal bloom ^{when} the nutrient cycling is disrupted stress is put on the ecosystem as a result of the biophysical interactions.

Both intertidal wetlands and coral reefs are unique because of their specific needs and functions. Although both ecosystems have natural stresses because of the biophysical ~~ecos~~ environment and it is because of the biophysical environment the ~~ecosystems~~ ecosystems are so diverse and their functioning different from regular ecosystems.