

CYCLONE WINIFRED - A WILD LADY'S LIST OF DESTRUCTION

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Cyclone Winifred's path through the Great Barrier Reef, across islands and eventually the coastline, was littered afterwards with examples of her destructive forces. This report is a summary of the damage reported to the Authority that occurred to reefs and marine life in the Great Barrier Reef Marine Park, and to features associated with the Marine Park and its use. It also addresses some management implications of the damage. It makes no attempt to put dollar values on the damage.

Both natural and man-made features suffered damage to varying degrees.

DAMAGE TO NATURAL FEATURES

Reefs in or very close to the direct path of the cyclone suffered severe but apparently localised physical damage to structure, corals, fish and other marine life.

Reef and cay damage

- Damage was largely restricted to the more exposed windward (north-eastern and north-western) areas of the reefs, especially the reef fronts, forereef crests and tops. (Potter, Gilbey and Feather Reefs were seriously effected in this manner).
- The back-reef areas of two of the reefs in or very near the direct path of the cyclone (Potter and Feather) surveyed one week after the cyclone were virtually untouched except for some sand/rubble deposits off the reef edge and occasional broken branching corals (presumably broken through impact by coral debris from the reef front).
- Other reefs in or near the cyclone path to suffer significant physical damage included, Taylor, Farquarson, Eddy, Nathan, Ellison and Beaver Reefs (some of the reefs surveyed since the cyclone). The main damage to these reefs was sediment scouring, overturning of bottom material, overturned plate corals, broken branching corals and disturbance of clams.
- The size of the cay on Taylor Reef was considerably reduced and is now awash at some low tides). There was also a slight reduction in the size of the cay on Beaver Reef.
- The reefs around the Franklin Islands had damage to corals including large plate corals overturned, and broken branching corals.
- Reefs (and cays) some distance away from the cyclone path also suffered some damage, although not nearly as extensive as the reefs in or near Winifred's path. The

north-eastern and northern sides of John Brewer Reef, off Townsville, had a considerable number of large plate corals overturned, and the northern sides of Grub and Bowl Reefs had coral cover damaged in patches. Michaelmas Cay, off Cairns, had some erosion visible on the cay three days after the cyclone, particularly on the south-west tip. Green Island had vegetation damage on the western side and some trees uprooted on the rest of the island.

- Reports from Myrmidon Reef indicated no significant damage had occurred there.

Marine life damage

- It is probable that marine life, such as fish, molluscs, crustacea and others, on reefs directly in the path of the cyclone would have been significantly damaged, but the extent of the damage is hard to determine without detailed studies.

Damage included:

- One week after the cyclone passed, damage to marine life was obvious on Potter, Gilbey and Feather Reefs. On these reefs, large fish were seen with obvious impact damage on their bodies.
- Very few fish were seen on the reef fronts and many of the other marine life species including echinoderms, molluscs, and crustaceans, usually obvious in such areas were notably absent.
- Some clams were observed which had apparently been dead a very short time, as no algae was growing on the insides of the shells.
- Of particular note on the reefs surveyed was the extensive growth of algae on all newly broken coral or substrate surface which had appeared within one week of the cyclone.

DAMAGE TO MAN-MADE FEATURES

Resort and tourist facility damage

- Dunk, Bedarra and Orpheus Islands - some minor building and/or equipment damage. The main damage on Dunk and Bedarra was to the vegetation and aesthetics, with some beach erosion.
- A glass bottomed boat was washed away from Taylor Reef and recovered at John Brewer Reef.

Vessel damage

- The 20 m vessel MV 'Quick Cat' had its front bollards and stanchions ripped off while tied up in Mourilyan Harbour.
- Several trawlers in Mourilyan Harbour were sunk, severely damaged or lost.
- Several vessels anchored off Green Island were damaged.

- Several vessels anchored at Dunk and Bedarra Islands were sunk, damaged or dragged moorings.

Scientific equipment and project damage

- A barge with drilling equipment on loan to James Cook University from BMR for use in crown of thorns studies was washed away from Green Island and recovered several days later at John Brewer Reef.
- JCU lost some satellite receiving equipment off Innisfail.
- The Pacific Clam Trust project off Fitzroy Island lost all its giant clam broodstock and juvenile clams through damage to its floating holding tank barges.
- At the Seafarm clam project at Flying Fish Point, 21 of its 33 giant clam broodstock died due to lowered salinity and high silt content of the only available seawater (due to the heavy rain), and the holding tanks were damaged (16 tanks collapsed and all contents were lost).

Other damage and incidents

- Drums of toxic agricultural chemicals were washed out to sea from near Cardwell.
- A barge from Bougainville Reef in the Coral Sea was separated from its moorings/mothership.
- Heavy siltation of offshore waters for considerable distances off the coast and a great deal of debris from the mainland was observed one week after the cyclone (coastal debris was even found off John Brewer Reef, well south of the cyclone's path).

SOME IMPLICATIONS FOR MANAGEMENT OF THE MARINE PARK

It is very difficult to determine clear cut implications of Winifred's damage but a few possibilities are listed below.

Research and monitoring

- The reef damage will provide an opportunity for day-to-day management staff to monitor the recovery of hard hit reefs. Also, the recovery of those reefs which are popular tourist destinations, Beaver Reef for example, could be compared with recovery rates of little used reefs to see if there are any differences.
- The monitoring of the recovery of damaged reefs could also provide opportunistic data which could be of use in present crown of thorns studies.
- Another research opportunity would be the comparison of reefs which had been hard hit by crown of thorns (COT) before damage by Winifred, with reefs damaged by Winifred without prior COT damage. This may indicate whether or not previous COT attack predisposes a reef to greater susceptibility to cyclone damage.

Tourism

- As no popular tourist cays were significantly damaged, there are no apparent cay management implications, except for the possibility that the damage to Taylor Cay may have had an influence on the decision by Avago Holdings to utilise Beaver Cay for its tourist operations.
- There may be a case for ensuring that tourist facility moorings be of a sufficient standard to withstand cyclonic conditions to prevent facilities breaking away and possibly doing damage to reefs or other facilities. However, as most tourist operators would probably take precautions already to prevent valuable facilities from being damaged, (for example, by taking them to protected anchorages when a cyclone is imminent), this may not be necessary.

Mariculture

- The damage to clam projects is of concern, particularly as a significant number of adult giant clams were killed. However, it is probable that it would not be economically or otherwise feasible to force the operators of clam projects to plan and build their facilities to withstand cyclonic conditions when there is only a small chance of a repeat of the conditions associated with Cyclone Winifred.

INFORMATION SOURCES

- Australian Institute of Marine Science/Great Barrier Reef Marine Park Authority survey of reefs off Innisfail 7-8 February, 1986.
- GBRMPA survey of Taylor, Beaver, Farquarson and Eddy Reefs 25-26 February.
- Queensland National Parks and Wildlife Service - Cairns.
- Coastwatch surveillance reports.
- Seafarm Pty. Ltd. (Richard Braley).
- Personal communications from - Doug Tarca (Reef Link - Townsville), Perry Harvey (Friendship Cruises - Mission Beach), Wayne Williams (Mike Ball Watersports - Townsville), and Bruce Marcum (Pacific Clam Trust - Cairns).
- Personal observations.