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MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

POLICY BRIEF

UAE National Red List of Reef- Building Corals

2021

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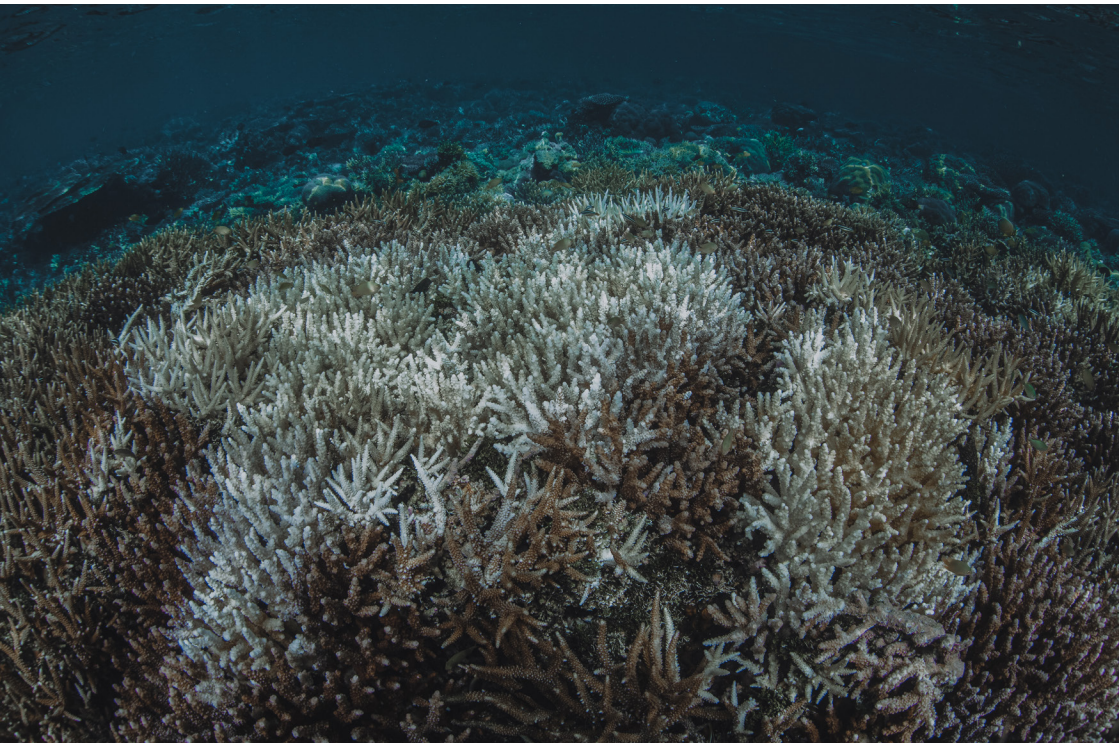
UAE National Red List of Reef-Building Corals

2021

The UAE National Red List of Reef-Building Corals, prepared for the UAE Ministry of Climate Change and Environment (MOCCA), provides the most up-to-date information on the conservation status and distribution of reef-building corals in the country. It serves as the ultimate information resource for policy-making and priority-setting with the aim of refining and expanding the network of protected areas, protecting marine habitats, and meeting the UAE's commitments to international environmental agreements.

Key Messages

- **Nearly half (42%)** of the 66 species of reef-building corals in UAE territorial waters with sufficient data are **threatened** (assessed as Critically Endangered, Endangered, or Vulnerable) **with regional extinction**.
- **The percentage of threatened species would rise to 95% if all Data Deficient species were found to be threatened**, highlighting the urgent need for additional surveys focused on distribution and population trends of reef-building corals in the UAE.
- **Corals in the genus *Acropora* are among the most impacted species** – these ecosystem engineers have undergone dramatic population declines, resulting in a loss of valuable ecosystem services for the UAE.
- The 2019 Red List Index Score for reef-building corals is 0.54.



Overview

There is an urgent need to understand the status of biodiversity in the UAE to inform national conservation policy– and decision–making. Biodiversity data assist with national–level reporting for regional and multilateral environmental agreements (MEAs).

The UAE National Red List of Reef–Building Corals seeks to leverage the combined knowledge of local and international experts to assess the risk of extinction of reef–building corals in the country, and to produce a baseline to understand the long–term trends in extinction risk (the Red List Index datapoint for reef–building corals) that occur within the exclusive economic zone (EEZ) of the UAE.

To support the UAE National Red List Project, the IUCN (International Union for Conservation of Nature) compiled the available data on each species of reef–building corals recorded in the territorial marine waters of the UAE.



Background

Sixty-six species of reef-building corals have been recorded in UAE territorial waters to date. Reef-building corals offer many benefits, such as wave reduction and shoreline protection, providing habitat for marine life, and supporting commercial and subsistence fisheries, and form an important component of the rich natural heritage of the UAE. However, marine habitats, especially coastal areas, are being impacted by a range of threats, especially climate change, pollution, and urban, industrial, and tourism development.

The UAE has an extensive network of marine protected areas; however, the distribution of most reef-building corals is poorly understood, particularly in waters > 10 m. As a result, it is unclear whether the network is providing sufficient protection for reef-building corals of highest conservation concern.

Information on the status and distribution of reef-building corals in the UAE can be used for:

- **Improving** their representation within protected area networks through the expansion of existing protected areas and the designation of new ones.
- **Guiding** the management of existing protected areas for reef-building corals.
- **Providing a foundation** for scientific research, including the design of surveys and monitoring programmes.
- **Informing** environmental impact assessments.
- **Supporting** environmental education, awareness, and citizen science initiatives and programmes.
- **Reporting** on the UAE's progress towards achieving national and international biodiversity targets.

Methodology

IUCN compiled the list of species for inclusion in the UAE National Red List and produced draft distribution maps for each species using Geographic Information Systems (GIS), as well as data on their population size and trend, habitat and ecology, and the threats to each species. This information underwent initial review by experts in the UAE, followed by the National Red List Assessment Workshop (Dubai, September 2019) that brought together experts from across the UAE to assign each species to one of 11 IUCN Regional Red List Categories (Figs. 1 and 2). In contrast to other marine species groups assessed at the UAE national level (i.e., marine mammals, sea birds, mangroves, and seagrasses), a retrospective assessment for 1996 was not produced because of the absence of data on the historical distribution and status of reef-building corals. Thus, a Red List Index data point for 2019 was produced, not a full index.

Following a further stage of internal review by IUCN and peer review by UAE experts, the assessments and distribution maps were published by MOCCAЕ at www.moccae.gov.ae

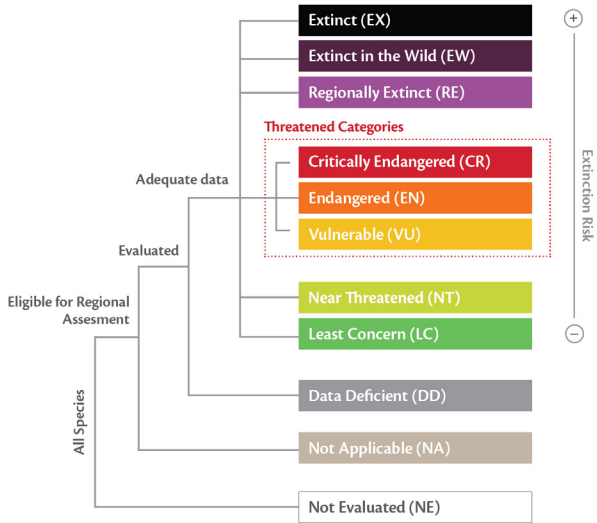


Figure 1: IUCN Red List Categories at the regional scale.

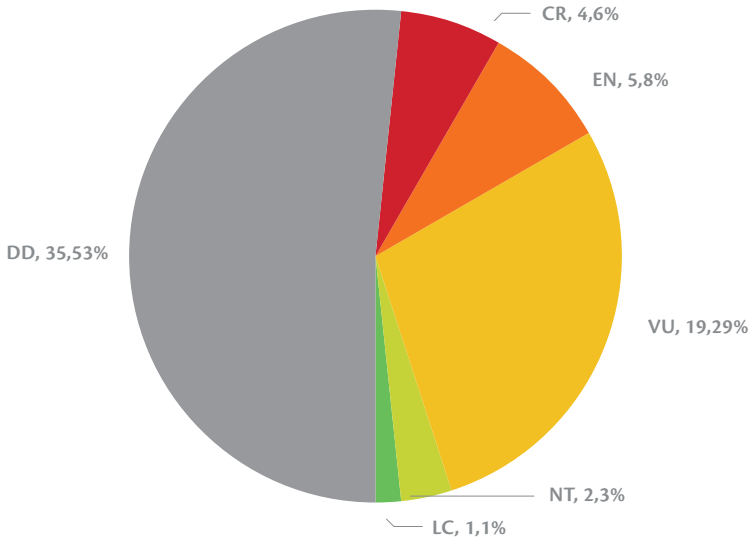


Figure 2. Extinction risk of reef-building corals assessed for the UAE National Red List: number and percentage of species within each IUCN Red List Category.

Outcomes:

Threatened species – priorities for conservation

Sixty-six species of reef-building corals (order Scleractinia) were considered native to the UAE and therefore eligible for national assessment. This represents **the first comprehensive assessment of reef-building corals in the UAE** (Fig. 2).

Nearly half (42%) of all reef-building corals (28 species) for which sufficient data are available are threatened with extinction, and an additional two species were assessed as Near Threatened (NT) – see the full report for more details on this statistic. The proportion of threatened reef-building coral species in UAE waters is higher than the proportion threatened at the global level (Carpenter et al. 2008). Species in the genus *Acropora* are particularly at risk; *Acropora* were historically the dominant reef-building corals in the country but have largely been wiped out from reefs within UAE waters since the 1970s (Grizzle et al. 2016, Burt et al. 2019). All four species with well-documented distributions in the UAE (*Acropora arabensis*, *A. clathrate*, *A. downingi*, *A. pharaonis*) were assessed as Critically Endangered (CR) based on estimated declines of at least 90% over the past three generations. Other reef-building corals, such as those in the families Faviidae and Poritidae, were previously considered more resistant to anthropogenic stressors, but the most recent mass bleaching (2017) caused high mortality even in these stress-tolerant species (Burt et al. 2019).

Species information remains very limited for reef-building corals in the UAE EEZ, with more than half (55%) of the reef-building corals found in UAE waters assessed as **Data Deficient (DD)**, meaning there was insufficient information to apply the IUCN criteria. Given the range of threats observed in UAE marine waters, it is reasonable to expect that many of the DD reef-building coral species are also threatened.

There is therefore an urgent need to continue and expand field research and surveys across all emirates to better understand the taxonomy, distribution, and population trends at the species level. This knowledge will be essential to improve

the efficiency and efficacy of conservation measures needed to ensure the long-term survival of corals in the UAE. Contemporary surveys of coral reefs in waters >10 m deep are not currently available, and such efforts may provide additional information for consideration in regional Red List assessments.

Only one species of reef-building coral (*Turbinaria peltata*) was assessed as Least Concern (LC). This species has demonstrated low susceptibility to bleaching and is found in deeper waters, which likely provides refuge from stressors.

Threats to reef-building corals in the UAE

Major threats to reef-building corals in the UAE include: i) **climate change**–associated temperature extremes; ii) **industrial, residential, and commercial development**, including land reclamation; iii) pollution from domestic and urban wastewater, and industrial and military effluents; iv) localised **fishing and resource harvesting impacts** through destructive fishing practices; v) localised impacts from **recreational activities**; and vi) problematic **diseases**.

Major threats to reef-building corals in UAE waters include increasing and variable temperatures due to climate change that have led to region-wide coral bleaching events, such as those recorded in 1996–1998, 2002, 2010, and 2017. Recent bleaching events observed in Abu Dhabi resulted in the bleaching of nearly 95% of resident corals and 73% coral mortality (Burt et al. 2019). Reef-building corals can also be damaged by extreme weather events that may be intensified by climate change. Local impacts include industrial, residential, and commercial development along the coast and offshore. Large-scale development projects result in corals being physically destroyed or buried by sediment (Burt et al. 2008, 2013; Burt 2014; Burt and Bartholomew 2019). Degradation of water quality caused by land-based sources of pollution has led to localised algae blooms that have negatively impacted coral reefs (Bauman et al. 2010, Foster et al. 2011).

Red List Index (RLI)

The Red List Index (RLI) score for the 2019 assessment of reef-building corals in the UAE is 0.54. A score of 1 indicates that all species are Least Concern, and the lower the value, the faster the set of species is heading toward extinction. This score indicates that at the national level, reef-building corals are more threatened than other marine taxa (e.g., marine reptiles with an RLI of 0.84, marine mammals with an RLI of 0.64, and cartilaginous fishes with an RLI of 0.60). It is clear that these threatened species require accelerated conservation action, as they play a vital role in the health of the UAE's ecosystems. The information compiled in the UAE National Red List of Reef-Building Corals, combined with political will and subsequent action, can help to ensure long-term survival of these species in the UAE.



Management and conservation recommendations

- Develop a nationwide, federal-level coral reef monitoring network (Grizzle et al. 2016).
- Focus future research on determining the distribution of reef-building corals in the UAE, particularly for Data Deficient reef-building corals and those in depths > 10 m (Grizzle et al. 2016).
- Update the UAE National Red List of Reef-Building Corals to reflect upcoming surveys and new information concerning coral distribution and population status.
- Assess the existing network of marine protected areas for coverage/protection of reef-building corals. Expansion of the network should consider the protection of existing reef-building corals (Grizzle et al. 2016).
- Consistently limit and mitigate the impacts of future coastal development and of land- and vessel-based sources of pollution in accordance with the Federal Laws No. (23) and No. (24).
- Consider restoring the ecosystem function for some reef-building corals using evidence-based restoration techniques, including rehabilitation of coral reef habitats in support of fisheries management goals.
- Continue investment in reef-building coral education and awareness initiatives across the UAE to build future capacities.
- Maintain trade controls on all stony corals (order Scleractinia), including all assessed reef-building corals in the UAE, which are currently listed in CITES Appendix II, in order to avoid utilisation incompatible with their survival.
- Use the UAE National Red List of Reef-Building Corals to inform continued interpretation of the Federal Law No. (11), as it relates to Appendix II-listed corals.
- In addition to addressing localised threats in the UAE, concerted movement towards achieving climate neutrality by leaders in government, business, and civil society may benefit biodiversity and conservation initiatives.

Policy and reporting recommendations

The UAE National Red List of Reef-Building Corals and accompanying distribution maps can and should be used to:

- **Set biodiversity targets and enhance national reporting** for the UAE's commitments to MEAs, including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD), and the UN Sustainable Development Goals (SDGs), including:
 - CBD Aichi Biodiversity Targets 5, 6, 10, 12, 14, 17, 12, 19
 - SDG Targets 14.1, 14.2, 14.5, 15.1, 15.5
- **Inform national legislation and priority-setting, including:**
 - Reporting on relevant targets of the National Biodiversity Strategy and Action Plan (2014–2021).
 - Compiling national lists of species of conservation concern.
 - Assessing the attainment of Action 2: Rehabilitation of Fisheries Habitats goals outlined in The UAE National Framework Statement for Sustainable Fisheries (2019–2030).
 - Developing plans, strategies, and policies by the Environment Agency – Abu Dhabi, MOCCA, and competent authorities and stakeholders.
- **Inform the private sector** through mechanisms such as the International Finance Corporation's Performance Standards and Environmental Safeguards. Civil society can play a key role in research, monitoring, conservation planning and action, and education and outreach.

The continued integration and coordination of environmental policy in the UAE across emirates and across sectors, including extractive industries, urban planning, energy, and agriculture, will unify regulatory objectives and ensure the consistency of financial initiatives.

Opportunities for capacity building

Training in the application of biodiversity data sets to species- and site-based management and enforcement activities is available through the IUCN Conservation Planning Specialist Group, the IUCN Species Monitoring Specialist Group, and the IUCN World Commission on Protected Areas / Species Survival Commission Joint Task Force on Biodiversity and Protected Areas.



References

- Bauman, A.G., Burt, J.A., Feary, D.A., Marquis, E. and Usseglio, P. 2010. Tropical harmful algal blooms: An emerging threat to coral reef communities? *Marine Pollution Bulletin* 60: 2117–2122.
- Burt, J.A. 2014. The environmental costs of coastal urbanization in the Arabian Gulf. *City* 18(6): 760–770.
- Burt, J.A., Al-Khalifa, K., Khalaf, E., AlShuwaikh, B. and Abdulwahab, A. 2013. The continuing decline of coral reefs in Bahrain. *Marine Pollution Bulletin* 72: 357–363.
- Burt, J.A., Paparella, F., Al-Mansoori, N., Al-Mansoori, A. and Al-Jailani, H. 2019. Causes and consequences of the 2017 coral bleaching event in the southern Persian/Arabian Gulf. *Coral Reefs* 38: 567–589.
- Carpenter, K.E., Abrar, M., Aeby, G., Aronson, R.B., Banks, S., Bruckner, A., Chiriboga, A., Cortes, J., Delbeek, J.C., DeVaniter, L., Edgar, G.J., Edwards, A.J., Fenner, D., Guzman, H.M., Hoeksema, B.W., Hodgson, G., Johan, O., Licuanan, W.Y., Livingstone, S.R., Lovell, E.R., Moore, J.A., Obura, D.A., Ochavillo, D., Polidoro, B.A., Precht, W.F., Quibilan, M.C., Reboton, C., Richards, Z.T., Rogers, A.D., Sanciangco, J., Sheppard, A., Sheppard, C., Smith, J., Stuart, S., Turak, E., Veron, J.E.N., Wallace, C., Weil, E. and Wood, E. 2008. One-third of reef-building corals face elevated extinction risk from climate change and local impacts. *Science* 321(5888): 560–563.
- Foster, K.A., Foster, G., Tourenq, C. and Shuriqui, M.K. 2011. Shifts in coral community structures following cyclone and red tide disturbances within the Gulf of Oman (United Arab Emirates). *Marine Biology* 158: 955–968.
- Grizzle, R.E., Ward, K.M., AlShihi, R.M.S. and Burt, J.A. 2016. Current status of coral reefs in the United Arab Emirates: distribution, extent, and community structure with implications for management. *Marine Pollution Bulletin* 105: 515–523.

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Read the full report

Ralph et al. (2021) UAE National Red List of Marine Species
(<https://www.moccae.gov.ae/en/home.aspx>)

Visit the UAE National Red List portal
(<https://gis.moccae.gov.ae/>)

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