

## **Research Paper Links with Dataset Availability and Simple Summaries**

1. Enhancing the heat tolerance of reef-building corals to future warming

[Source: Science Advances](#)

Dataset Availability: Yes - BioProject PRJNA681420

Simple Summary: They bred corals from hot places with others, and their babies survived heat better. They found DNA patterns connected to heat survival.

2. Multilocus Adaptation Associated with Heat Resistance in Reef-Building Corals

[Source: Current Biology](#)

Dataset Availability: Unclear

Simple Summary: They found specific coral genes that help them survive hot water in the Persian Gulf.

3. Genomic determinants of coral heat tolerance across latitudes

[Source: Science](#)

Dataset Availability: Yes (genomic sequencing data)

Simple Summary: They looked at coral genes and temperature, finding that warm-water corals have different DNA than others.

4. Genetic markers for antioxidant capacity in a reef-building coral

[Source: Science Advances](#)

Dataset Availability: Yes

Simple Summary: Found DNA markers that help coral cells fight heat-related damage.

5. Integrative omics framework for coral reef ecosystems (Tara Pacific)

[Source: MDPI](#)

Dataset Availability: Yes - Tara Pacific dataset

Simple Summary: They combined DNA and protein data to better understand how corals survive heat stress.

6. Trade-offs in a reef-building coral after six years of thermal acclimation

[Source: ScienceDirect](#)

Dataset Availability: Not clear

Simple Summary: Corals grew faster in warm water but got weaker when stressed again later.

7. Coral Reefs and Climate Change

[Source: ScienceDirect \(Book Chapter\)](#)

Dataset Availability: No

Simple Summary: This paper talks about how climate change hurts corals and what can be done.

## 8. Coral bleaching independent of photosynthetic activity

[Source: Nature](#)

Dataset Availability: No

Simple Summary: Coral bleaching can happen even if their photosynthesis isn't affected - heat is the main issue.

## 9. Adaptive significance of color polymorphism in corals

[Source: Royal Society](#)

Dataset Availability: No

Simple Summary: Some coral colors help them live better in different conditions.

## 10. Review of genomics in coral adaptation

[Source: Nature Reviews Genetics](#)

Dataset Availability: Review article - no dataset

Simple Summary: Summarizes how genetics help corals adapt to warming oceans.

## 11. Thermal adaptation in corals: A genetic perspective

[Source: Royal Society](#)

Dataset Availability: No

Simple Summary: Explains how coral genes may allow them to live in hot environments.

## 12. Marine Genomics: Coral Thermal Response

[Source: MDPI - JMSE](#)

Dataset Availability: Likely

Simple Summary: Reviews marine genetic studies, showing which genes react to heat.

## 13. AI-based genomic analysis of coral reef organisms

[Source: PNAS](#)

Dataset Availability: Yes

Simple Summary: They used AI to look at coral genes and classify species quickly.

## 14. Rapid thermal adaptation in reef-building corals

[Source: Nature Communications](#)

Dataset Availability: Yes

Simple Summary: They tested how fast coral genes change to help them survive higher temperatures.

## 15. Genomic insights into coral resilience

[Source: Annual Review of Marine Science](#)

Dataset Availability: Review article

Simple Summary: Found strong genes in some coral groups that make them better at surviving bleaching.

#### 16. AI-Based Prediction of Coral Bleaching Using Satellite and Ocean Data

[Source: Preprints.org](#)

Dataset Availability: Yes

Simple Summary: AI looks at satellite images to predict where corals will bleach from heat.

#### 17. Corals in a warming world: predicting climate stress impact

[Source: Global Change Biology](#)

Dataset Availability: Yes

Simple Summary: A model that predicts coral survival by using temperature and genetic data.

#### 18. Toward sustainable coral reef monitoring with AI

[Source: MDPI Sustainability](#)

Dataset Availability: Yes

Simple Summary: Describes how AI and sensors can help monitor coral health.

#### 19. Automated classification of coral reef structure using deep learning

[Source: PeerJ](#)

Dataset Availability: Yes

Simple Summary: Used machine learning to group coral shapes and detect reef changes.

#### 20. Transcriptomic response of corals to heat stress

[Source: MDPI - JMSE](#)

Dataset Availability: Yes

Simple Summary: Looked at coral genes under heat stress to see which ones turn on or off.

#### 21. A hybrid AI model for coral species classification

[Source: ScienceDirect - Ecological Informatics](#)

Dataset Availability: Yes

Simple Summary: Combined two AI systems to identify coral species more accurately.

#### 22. Application of AI in predicting coral bleaching in Sri Lanka

[Source: IOP Conf. Series: Earth and Environmental Science](#)

Dataset Availability: Yes

Simple Summary: Used computer models to predict how corals will bleach based on the weather and their location.

## 23. Advancing coral adaptation research: challenges and future directions

[Source: Trends in Genetics](#)

Dataset Availability: Review article - no dataset

Simple Summary: This research looks at all the methods scientists use to find heat-adaptive coral genes, and points out what scientists still don't know.

## 24. Nano-enabled strategies to protect coral reefs

[Source: ScienceDirect](#)

Dataset Availability: No

Simple Summary: They propose using microscopic technology tools to help track reef health or even repair reef structures itself.

## 25. Heat tolerance inheritance through adult coral breeding

[Source: Nature Communications](#)

Dataset Availability: Yes

Simple Summary: They bred corals with high heat tolerance, and their children were also more heat-resistant. The change was real but small, so more work is needed.

## 23. Advancing coral adaptation research: challenges and future directions

[Source: Trends in Genetics](#)

Dataset Availability: Review article - no dataset

Simple Summary: This research looks at all the methods scientists use to find heat-adaptive coral genes, and points out what scientists still don't know.

## 24. Nano-enabled strategies to protect coral reefs

[Source: ScienceDirect](#)

Dataset Availability: No

Simple Summary: They propose using microscopic technology tools to help track reef health or even repair reef structures itself.

## 25. Heat tolerance inheritance through adult coral breeding

[Source: Nature Communications](#)

Dataset Availability: Yes

Simple Summary: They bred corals with high heat tolerance, and their children were also more heat-resistant. The change was real but small, so more work is needed.

## 26. Recent trends in coral reef research: a marine genomics perspective

[Source: ScienceDirect - Marine Genomics](#)

Dataset Availability: Yes

Simple Summary: This paper shows how coral DNA is used to study reef health, especially under stress like warming or pollution.

27. Predictive ecological modeling in marine ecosystems

[Source: ScienceDirect](#)

Dataset Availability: No

Simple Summary: An early study that used math models to predict changes in marine life systems.

28. AI-based assessment of marine pollution impact on coral reefs

[Source: ScienceDirect - Environmental Research](#)

Dataset Availability: Yes

Simple Summary: They used AI to understand how pollution affects coral bleaching and survival.

29. Deep learning for coral reef health classification using image data

[Source: ScienceDirect](#)

Dataset Availability: Yes

Simple Summary: They taught an AI to look at coral photos and decide if the reef is healthy or not.

30. Effects of warming on coral microbial symbionts

[Source: Limnology and Oceanography](#)

Dataset Availability: Yes

Simple Summary: They studied how coral microbes change when temperatures rise.

31. Thermal tolerance variation in coral species across the Red Sea

[Source: Frontiers in Marine Science](#)

Dataset Availability: Yes

Simple Summary: They found that corals in hotter parts of the Red Sea survive better in high temperatures.

32. Environmental genomics approach to coral species monitoring

[Source: MDPI - Marine Biology](#)

Dataset Availability: Yes

Simple Summary: They used eDNA to detect which coral species are living in different reefs.

33. Emerging chemical threats to coral ecosystems

[Source: ACS Environmental Science & Technology](#)

Dataset Availability: No

Simple Summary: The study lists harmful chemicals that may damage coral reefs and are often overlooked.

### 34. Effects of ocean warming on coral reef biodiversity

[Source: Springer](#)

Dataset Availability: Yes

Simple Summary: They found that warm water kills off some corals but others can survive better.

### 35. Coral reef data standards for monitoring ecosystems

[Source: Springer](#)

Dataset Availability: Yes

Simple Summary: They made rules for how to collect coral data in a way that AI can use it easily.

### 36. Global coral reef environmental DNA dataset

[Source: Springer Nature Scientific Data](#)

Dataset Availability: Yes - dataset paper

Simple Summary: This paper gives DNA data collected from oceans around the world where coral reefs live.