In-situ temperature measurements across depths in the Galapagos Islands 2024-2025

Website: https://www.bco-dmo.org/dataset/998307
Data Type: Cruise Results, Other Field Results
Version: 1
Version Date: 2026-05-22

Project
» RAPID: Effects of the 2023-24 El Nino on Fish Disease and Population Dynamics in the Galapagos Islands (RAPID Galapagos Fish Disease)

Contributors	Affiliation	Role
Lamb, Robert	University of Florida (UF)	Principal Investigator
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Abstract
This dataset provides temperatures from the Galapagos Islands along with their respective depths of measurement and locations. These temperatures were taken in-situ by a diver on a Shearwater dive computer. All temperatures were collected between January 2024 and August 2025.

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Coverage

Location: Galapagos Islands
Spatial Extent: **Lat**:-0.5 **Lon**:-90.5
Temporal Extent: 2024-01-22 - 2024-08-07

Methods & Sampling

Temperatures were collected in situ during dives using a Shearwater dive computer. Dives were made from vessels Valeska, Costa and Danubio Azul, under Chief Scientist Robert Lamb (University of Florida), at the Galapagos Islands (0°30′S 90°30′W / 0.500°S 90.500°W) from 0-70 m depth.

Data Processing Description

Data were transferred directly from source device.

BCO-DMO Processing Description

- Imported original file "temps.csv" into the BCO-DMO system.

- Combined Date (%Y-%m-%d) and Time (%H:%M) columns into ISO_DateTime_Local without timezone conversion.
- Combined Date (%Y-%m-%d) and Time (%H:%M) columns into ISO_DateTime_UTC, converting from GMT-6 (Etc/GMT-6) to UTC
- Removed the original, separate Date and Time columns.
- Saved the final file as "998307_v1_galapagos_ocean_temps.csv".

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Related Publications

Lamb, R. W., Pérez-Matus, A., Garmendia, V., Suarez-Moncada, J., Ortega, M. T., Banks, S., Sanchez, N. T., Dubey, A., & Witman, J. D. (2025). Discovery of populations of the critically endangered coral *Rhizopsammia wellingtoni* in the Galápagos mesophotic zone. Conservation Science and Practice, 7(8). Portico. https://doi.org/10.1111/csp2.70103
Results

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Parameters

Parameter	Description	Units
ISO_DateTime_Local	Date and time (GMT-6) of data collection in ISO 8601 format	unitless
ISO_DateTime_UTC	Date and time (UTC) of data collection in ISO 8601 format	unitless
Season	Season of data collection (Cold/warm)	unitless
Site	Site of data collection	unitless
Easting	Easting (longitude)	Meters
Northing	Northing (latitude)	Meters
Transect	Transect number	unitless
Observer	Observer name	unitless
Depth	Depth of temperature	Meters
Temperature	Temperature	degrees Celsius
Depth_strata_i	Depth strata	unitless
Depth_strata_ii	Secondary depth strata	unitless
Bioregion	Region of Galapagos	unitless

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Instruments

Dataset-specific Instrument Name	Shearwater Dive Computer
Generic Instrument Name	Data Logger
Dataset-specific Description	Temperatures were collected in situ during dives using a Shearwater dive computer.
Generic Instrument Description	Electronic devices that record data over time or in relation to location either with a built-in instrument or sensor or via external instruments and sensors.

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Project Information

RAPID: Effects of the 2023-24 El Nino on Fish Disease and Population Dynamics in the Galapagos Islands (RAPID Galapagos Fish Disease)

Coverage: Galápagos Archipelago

NSF Award Abstract:
Disease is a growing threat facing wild animals in a world increasingly dominated by humans. Marine fish diseases are poorly understood but have increased in recent decades in connection with ocean warming. In the Galapagos Islands of Ecuador, extreme warm waters have led to ulcerative skin disease in several different species of fish. An outbreak of this skin disease is underway in association with a strong El Niño event. This project addresses the growing threat of wildlife disease and the current outbreak of skin disease in fish of the Galapagos Islands by determining what proportion of different species are affected and by examining infected fish from the wild. Infected fish are being assessed for microbes that might cause the disease, and ocean temperature are being monitored along with other factors that may foster skin disease. Isolated microbes are being used in lab tests to see if they cause the same disease seen in the field in order to confirm the cause of this ulcerative skin disease.

This project includes training for students in the US and in Ecuador and development of a virtual teaching module for high school students in English and Spanish. The research team is working closely with the Galapagos National Park to address the threat of fish disease and associated population declines caused by the 2023-24 El Niño event, and to help modify fisheries policy to reflect species' vulnerability. Through public symposia and online learning materials, this work serves as a platform for teaching and engaging students of all ages and industry stakeholders on issues of climate change and wildlife disease. The research advances understanding of how and why these ulcerative skin disease outbreaks occur in the Galapagos, which is very important for marine reserve and fisheries management and can have far-reaching impacts for understanding and addressing diseases in wild fish as well as in aquaculture and aquarium industries.

Climate change increases the frequency and severity of marine heatwaves, such as those experienced in the Tropical Eastern Pacific Ocean during extreme El Niño events. An extreme El Niño that began in summer 2023 and has facilitated an outbreak of an ulcerative skin disease in several species of marine fish. This project: 1) establishes the extent of ulcerative skin disease, species affected, demographic, environmental, and ecological correlates, and timing of disease progression relative to the development of the El Niño event; 2) determines the putative pathogen(s) responsible for ulcerative skin disease through histological and genetic analyses, pathogen cultures, and laboratory challenge trials; and 3) examines the effects of the El Niño event on fish populations by building a database of morpho-ecological traits for 165 species of reef fish and using multivariate ordination analysis to test the ability of these traits to predict El Niño-associated declines relative to an 8-year database of fish populations at 16 sites across the archipelago.

The results advance understanding of a widespread emerging fish disease and reef fish populations dynamics in a warming ocean. This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-2348548

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