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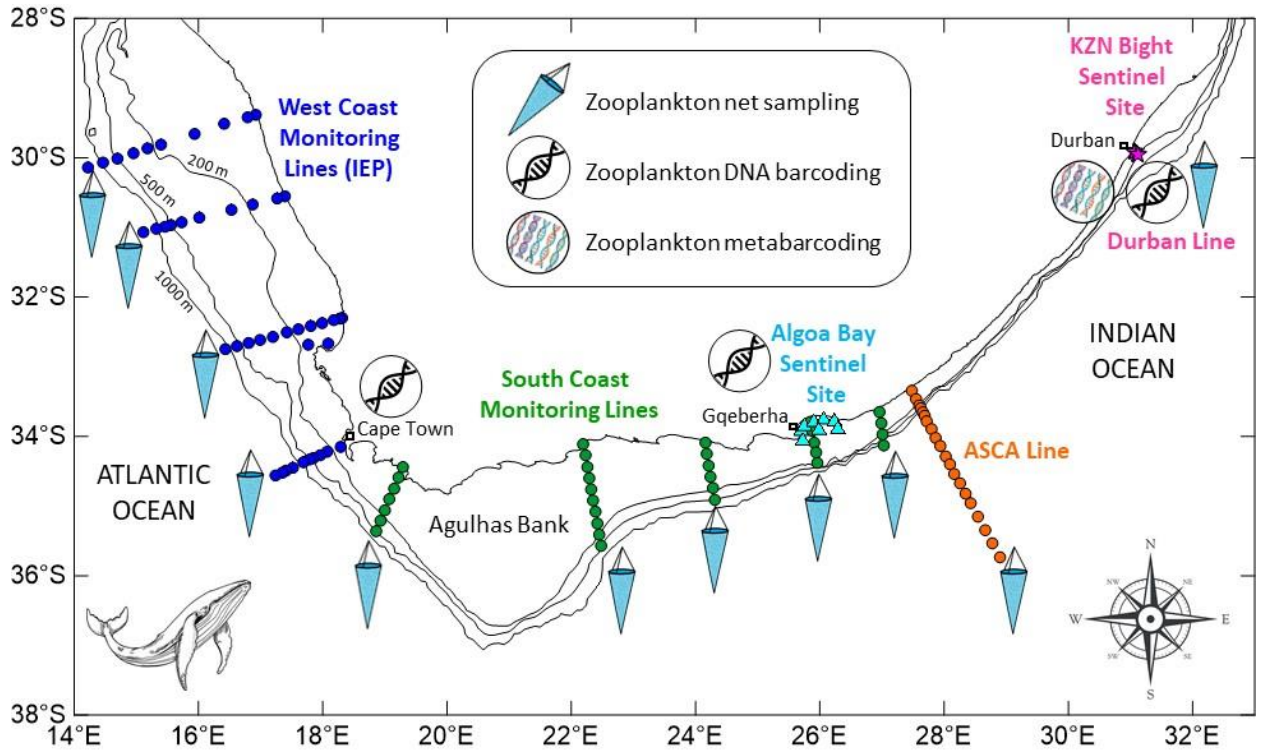

Supplementary figure 1: Map showing locations of zooplankton net sampling, DNA barcoding and metabarcoding initiatives contributing to the national ocean observation system. Circles indicate stations along monitoring lines sampled quarterly for the West Coast Integrated Ecosystem Programme (IEP) and annually on the South Coast (by DFFE), and annually along the Agulhas Current System Array (ASCA) monitoring line (by DFFE, SAEON, University of Cape Town). Triangles indicate locations sampled monthly within the Algoa Bay Sentinel Site Pelagic Ecosystem Long Term Ecological Research Programme (by SAEON and SAIAB), and stars indicate the Durban line stations sampled biannually within the KZN Bight Sentinel Site (by SAIAB and the Oceanographic Research Institute, ORI). Note that sampling frequency for some lines has been interrupted due to COVID-19 related restrictions or vessel non-availability.

Supplementary table 1: Description of observation-related organisations and systems referred to in the text

Project	Description
Global Ocean Observing System (GOOS)	GOOS supports a community of international, regional and national ocean observing programmes, including development and implementation of observing tools and technology, information systems, scientific analysis and forecasts. Essential ocean variables (EOVs) for biology and ecosystems[1] are: • Phytoplankton biomass and diversity • Zooplankton biomass and diversity • Fish abundance and distribution • Marine turtles, birds, mammals abundance and distribution • Hard coral cover and composition • Seagrass cover and composition • Macroalgal canopy cover and composition • Mangrove cover and composition • Microbe biomass and diversity (emerging) • Invertebrate abundance and distribution (emerging) https://www.goosocean.org
Group on Earth Observations Biodiversity Observation Network (GEO BON)	A global biodiversity observation network that contributes to effective management policies for the world's biodiversity and ecosystem services through improved acquisition, coordination and delivery of biodiversity observations Essential biodiversity variables (EBVs)[2,3] are: • Genetic composition • Species populations • Species traits • Community composition • Ecosystem functioning • Ecosystem structure https://geobon.org/ebvs
Barcode of Life Data systems (BOLD)	Online DNA barcode reference database. Allows for searching all 1.3 million public records using multiple search criteria, including geography, taxonomy and depository. www.boldsystems.org
GenBank	Online genetic sequence database with an annotated collection of all publicly available DNA sequences, part of the International Nucleotide Sequence Database Collaboration. www.insdc.org

Project	Description
MetaZooGene	SCOR Working Group 157 entitled 'Toward a new global view of marine zooplankton biodiversity based on DNA metabarcoding and reference DNA sequence databases'. Key deliverables are: • Open-access web portal for DNA barcodes for marine zooplankton – see the MetaZooGene Barcode Atlas & Database (MZGdb)[4] at https://www.st.nmfs.noaa.gov/copepod/collaboration/metazoogene/atlas/index.html; https://metazoogene.org/MZGdb • Optimal DNA barcoding pipeline for marine zooplankton • Best practices for metabarcoding of marine zooplankton biodiversity https://scor-int.org/group/157; https://www.metazoogene.org/
KwaZulu-Natal Bight Sentinel Site (KZNBSS)	Ocean observation site of the Shallow Marine and Coastal Research Infrastructure (SMCRI) programme developed by the Department of Science and Innovation to collect reliable long-term data for research and policymaking. SMCRI builds on a suite of observatories, sentinel sites and research platforms established and maintained by the South African Environmental and Observation Network (SAEON), the South African Institute for Aquatic Biodiversity (SAIAB) and the Department of Forestry, Fisheries and the Environment (DFFE) https://smcri.saeon.ac.za/

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