KELP FOREST
FOUNDATION

2023
ANNUAL REPORT

CONTENTS

MESSAGE FROM THE BOARD

Dear Supporters and Stakeholders,

It is our privilege to take a moment to reflect on the incredible 2023 we had. One of our founding principles is that of ACTION. We've stayed true to this and embedded it even more deeply in our ways of working. We're sure you agree this is reflected in the significant advancements we've made in our mission to harness the potential of seaweed ecosystems for environmental, biodiversity, and community benefits. Here are our highlights of the year:

Research:

- 2023 saw the publication of the first-ever ocean Carbon Dioxide Removal (CDR) model by the University of Cambridge, funded by the Moore Foundation. This model is a critical step towards understanding and quantifying the potential of kelp cultivation as a carbon sink.
- Our collaborative work with Wageningen University on biostimulants, as we secured funding for ongoing research projects focused on the impact of cultivated seaweed on existing ecosystems.
- We strengthened our team by welcoming new scientific advisors, including Dr. Ian Hendy and Finn Ross.

Capacity Building:

- Our Blue House Fellowship Programme saw our MSc scholars making substantial progress in their research, and our first MSc student successfully defending his thesis.
- We also selected a new cohort of MSc students for 2024, who will focus on ocean acidification, spawning processes, and sessile marine species.

Ocean Education:

We engaged with the community by supporting various after-school activities at the Lüderitz Blue School, including the Ocean Days and the garden club, which saw its first crop harvest (with seaweed biostimulant as a nutrient) and a kelp soap-making workshop. These initiatives aimed to inspire the younger generation and promote ocean literacy.

Public Awareness:

- Our efforts to raise awareness about the importance and potential of seaweed were highlighted by the session we organised at Monaco Ocean Week titled "Seaweed: Reality vs. Hype"
- Our presentation at the MIT Solve conference in Boston brought global attention to our project, "Regenerating Soil with Cultivated Kelp," which was recognized as a winner together with Kelp Blue and ReNature.
- Our participation in numerous conferences and summits, including the International Seaweed Symposium in Tasmania and UN COP28 in Dubai, further elevated our profile.

In other news, we successfully established new partnerships and received several grants.

- Notably, De Beers supported a female MSc scholar,
- Wilde Ganzen Foundation funded extra-curricular activities at the Lüderitz Blue School, and
- The Blue Marine Foundation supported water sample analysis for our carbon research project.
- We also joined the 1% for the Planet initiative, emphasising our commitment to environmental stewardship.

While the above are some of our positive achievements, this year has not been without its challenges. Our sediment collection expedition, while ultimately not successful, reminded us that the weather and the power of our oceans as forces to be reckoned with, and that while we might have a meticulously planned research agenda, nothing could overcome the adverse conditions this expedition faced. We will try again - it's all about the action.

We are excited about the future as we commence a new cohort of MSc students, continue our efforts to secure funding for further scientific research, organise a second sediment collection expedition, and foster new collaborations.

For now, we extend our heartfelt gratitude to our dedicated team, donors partners, and supporters. Together we are truly making significant strides in our mission to create a sustainable future where humanity and nature harmoniously coexist.

Warm regards,

Caroline Slootweg
Board Chair

Samantha Deane
Outgoing Managing Director

ABOUT THE KELP FOREST FOUNDATION

We are a Netherlands-based nonprofit with a mission to unlock kelp as a nature-based solution to restore the health of the planet. We advance kelp science, bridging knowledge gaps by working together with research institutions, coastal communities and industry. Next to our research, we aim to inspire and support the next generation of ocean stewards through education and training.

Why kelp?

Kelp forests are among the most diverse and ecosystems in the world. Covering approximately 30% of the world's coastlines, their estimated value is up to $500 billion a year, primarily driven by the value of three ecosystem services they provide: fisheries production, nutrient cycling, and carbon removal. Kelp forests act as key marine habitats, where over 1800 species can find food and shelter. Kelp acts as an ecosystem engineer, creating a supportive habitat for marine life to thrive in.

Kelp can be processed into many high-value compounds, such as agricultural products, foods, cosmetics, nutraceutricals, packaging, and more. Despite their value, these magical underwater forests have gone largely understudied. At Kelp Forest Foundation, we research their potential in product development as well as their potential to sequester carbon, enhance biodiversity and water quality. By researching the value of these ecosystem services, we unlock kelp as a nature-based solution in our fight against climate change and the challenges we face as a result of human activity and pollution.

WHO WE ARE

TEAM

Lieschen Smith
Managing Director
(as of 01 Feb 2024)

Xu Ben Zhang
Research Program Lead

BOARD OF DIRECTORS

Caroline Slootweg
Board Chair

Prof. Tim Flannery
Chief Scientist

Daniel Hooft

Dr. Kat Bruce

Sarah Mathies

SCIENTIFIC ADVISORS

Finn Ross

Prof. Dorte Krause-Jensen

Dr. Ian Hendy

Prof. Carlos M. Duarte

OUR STRATEGY: FOCUS AREAS

RESEARCH

We are dedicated to driving the science on the ecosystem services of cultivated and wild kelp and the various benefits of kelp products. Through collaborations with renowned universities and research institutions, we address key research questions within this field. We provide funding opportunities for Postdoc, PhD, and MSc students, and actively promote awareness and facilitate knowledge sharing by making our research and results accessible to the public. The research program is focused on four key areas that represent the ecosystem services of kelp:

- **Carbon Sequestration**
  How much and at what rate is kelp carbon sequestered in the deep ocean?
- **Biodiversity**
  What is the impact of kelp forests on fauna, algae, zoo- and phytoplankton?
  How is the food web structured in a kelp forests?
- **Water quality**
  How does kelp affect surrounding waters?
- **Kelp products**
  How much do kelp-based products avoid/reduce emissions?

CAPACITY BUILDING

We support young talent with scholarships and programmes designed to build the necessary capacities and skills to conserve the health of our oceans and ecosystems. Our students are co-supervised by international experts in their field to facilitate knowledge exchange.

- **Scholarships**
  We award scholarships to Namibian MSc students interested in studying kelp ecology and marine science, with a preference for women
- **Capacity & Skills building**
  Our scholars receive a broad training, preparing them for work in the marine field, including swimming, diving, lab trainings, data management, etc.

OCEAN EDUCATION

We fund educational initiatives for younger learners (<18 years), aimed at building the passion and interest in the marine realm. Our goal is to foster the next generation of ocean custodians, and connect the youth with the ocean and kelp by providing swimming lessons, ocean-focused extracurricular activities, STEM-clubs and robotics workshops.

- **Extra-curricular activities focused on oceans**
  After school programmes with a specific focus on ocean education and taking care of the local environment
- **STEM and robotics**
  Teaching important skills for working in the marine sector, already at a young age

OUR IMPACT TO DATE

ACADEMIC RESEARCH

1 1st ever ocean CDR model published

21 Research projects

23 Research partners worldwide

WE FUNDED

9 Master's students

2 PhD students

5 Postdoc researchers

AWARDS

uplink
The open innovation platform of the World Economic Forum
Top Innovator

2022 MIT SOLVE Solver

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

OA ALLIANCE
INTERNATIONAL ALLIANCE TO COMBAT OCEAN ACIDIFICATION

FUNDS RAISED

2,5+

Million EUR

KNOWLEDGE SHARING

31 Interviews, conferences, webinars and podcasts

7 Mentions/quotes in published reports/articles

OCEAN EDUCATION

With our funding, the Luderitz Blue School organised:

62 Ocean's Day as part of afterschool activities

46 Robotics Clubs

ACHIEVEMENTS

RESEARCH

CARBON SEQUESTRATION

Kelp forests are considered a potentially important natural sink for carbon, and their contribution to climate change mitigation is yet to be fully understood. As kelp forests grow on rocky bed substrates, there is little to no local burial of carbon. However, there is evidence that some of the kelp biomass is transported to deeper seafloor locations where it is sequestered in sediments. This involves complex dynamics that are difficult to measure with traditional tools and methods. At the Kelp Forest Foundation, we drive the science on these measurement methods to close the existing knowledge gaps, with the ultimate aim to develop carbon credit methodologies that can be applied within the industry and by kelp restoration initiatives.

Kelp carbon sequestration - how does it work?

Through photosynthesis, kelp absorbs carbon from its surrounding waters and stores it in its biomass. This kelp biomass will naturally break off over time, due to old age, storms, and propellor cuts. Some of this kelp biomass, containing carbon, will end up in deeper layers of the oceans, where they can be stored for extended periods of time, therefore 'locking away' the carbon and preventing it from returning to the atmosphere.

Our research programme aims to understand exactly how much, where, and for how long, kelp carbon gets sequestered, to understand their impact on climate change. Over the past years, we have initiated research projects that reveal a piece of the puzzle, by answering the following questions:

- How much carbon is temporally stored in kelp biomass?
- How much carbon is naturally exuded or lost by the kelp, and how much of it gets stored in deeper ocean sediments or waters?
- When analysing sediment samples, can kelp carbon be recognised and quantified? Do we know something about the age (and thus permanence of kelp carbon?)

Understanding kelp's carbon sequestration potential is important for nature and society. Once well understood, it can be an important, nature-based tool against climate change, and provide additional understanding of the importance of these marine ecosystems.

Accomplishments in 2023

Finding all the answers on carbon sequestration is a challenging endeavour. In 2023, we have started new collaborations, supported the development of the groundwork needed for quantifying carbon, built a strong monitoring set up for Kelp Blue's farm in Namibia, and attempted to collect deep ocean sediments ourselves. Looking ahead, the continued integration of these studies will enhance our ability to leverage kelp forests as a natural solution for carbon management and climate resilience.

MICHAEL MATEUS MEASURING BEACH CAST KELP

CARBON SEQUESTRATION
2023 HIGHLIGHTS

Kelp Sequestration Pathway Model by Cambridge University

Led by Prof. John Taylor at Cambridge University and funded by the Gordon and Betty Moore Foundation, this study aims to track the movement of kelp detritus after it leaves the ecosystem, quantifying the amount of kelp biomass that reaches deeper ocean layers. In 2023, the team developed a high-resolution model, *OceanBioME,* to predict kelp detritus trajectories. This model incorporates real-time oceanographic data and weather conditions, creating a community-standard tool for tracking ocean carbon sequestration. The release of OceanBioME marks a major milestone: the first model designed to study oceanic carbon dioxide removal, with open-access availability to foster applications in the field.

Sediment Coring Expedition

A key step in assessing the carbon sequestration potential of kelp lies in understanding where kelp-derived particles can sink and accumulate on the deeper ocean floor. Along Namibia's coast, we identified natural accumulation zones of carbon, where sediment cores (tubes driven into the seafloor to extract layered samples), can help measure the amount and age of accumulated carbon in these sediments.

In collaboration with the King Abdullah University of Science and Technology (KAUST), University of Namibia, and the International Atomic Energy Agency, we organised a sediment collection expedition along Namibia's coast. The aim is to establish a baseline measurement of organic carbon in the Namibian shelf sediments, serving as a reference to evaluate additional organic carbon contributions from the farmed kelp ecosystem over time. For this expedition, we chartered the MV Good Wind, a South African vessel, to conduct sediment sampling along the coast. However, adverse weather conditions prevented the expedition from proceeding as planned. Projects like these illustrate the challenges of field research and the importance of adaptability and persistence in advancing our understanding of kelp carbon sequestration.

Geochemistry at the Namibian giant kelp farm

Protasius Mutjida, among the first MSc scholars supported by the Kelp Forest Foundation, successfully defended his thesis in November 2023. His research established essential baseline data on the biogeochemical conditions of the Kelp Blue giant kelp farm. Protasius monitored key water quality indicators - including nutrient levels, pH, and carbon carbon concentrations - in and around the kelp cultivation site, providing valuable insights into the the carbon sequestration potential of cultivated kelp. Upon graduation, Protasius joined Kelp Blue as a Senior Chemist, where he will continue his focus on marine monitoring.

Macroalgal Biomarker Study

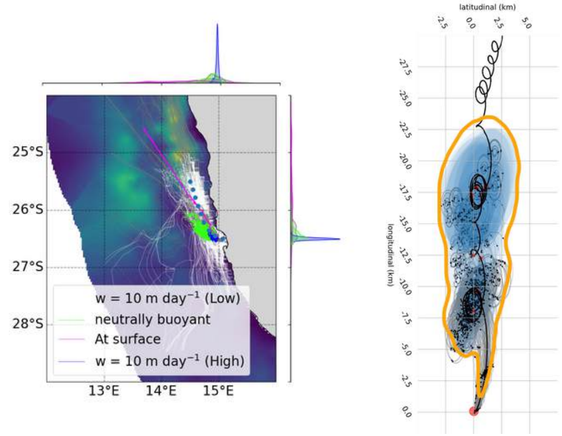
MSc. Emilia Heiskanen (Utrecht University) studied the unique biomarkers for tracing kelp-derived carbon in ocean sediments. She analysed the isotopes and other compounds that could form the unique 'fingerprint' of giant kelp, to use for identification in future sediment sampling. Emilia identified Fucosterol - a type of lipid - as a potential biomarker for brown seaweeds. Isotopes were found to be unsuitable for kelp species due to their commonality across species.

Net Primary Production (NPP) Study

KFF Scholar Michael Mateus, is focusing his master studies on improving measurement techniques for quantifying kelp biomass and carbon capture in cultivated kelp farms in Namibia. Michael applied a combination of satellite imagery, drone images, and manual measurements, to estimate the quantity of biomass that was available in the cultivated kelp farm in Namibia.

The team boarding the South African vessel MV Good Wind (left) chartered by KFF and equipped with a multi-corer (above), able to dig into the seafloor and extract sediment, keeping layers intact.

Net Primary Production (NPP) study led by KFF MSc. Scholar Michael Mateus.



Cambridge University Carbon Pathway Model

BIODIVERSITY

One of the key aims of our research programme is to better understand how kelp, wild or cultivated, impacts biodiversity. We drive research into the ecosystem services kelp offers to both resident and visiting species. An excellent case study to study kelp's interaction with the local environment is Kelp Blue's giant kelp farm in Luderitz, Namibia, where our scholars examine how offshore kelp farms can boost marine biodiversity and support ecosystem restoration. The research spans multiple studies that assess various aspects of biodiversity and marine life using innovative techniques like environmental DNA (eDNA), combined with traditional observation methods such as spotting and plankton tows.

By leveraging these advanced techniques, we gain insights into species diversity and ecosystem health within and around kelp farms. These findings are not only important for developing sustainable kelp farming practices and marine conservation, but also to help promote kelp forests and kelp farms as nature-based solutions against biodiversity loss.

In 2023, our biodiversity research offered significant insights into the ecological impact of cultivated kelp forests. Using innovative techniques like eDNA analysis alongside field studies, KFF has established a robust foundation for ongoing and future research.

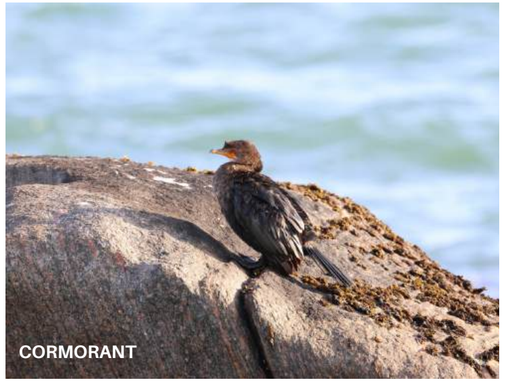
The accompanying images showcase the diverse species recorded in 2023, reflecting the breadth of life supported within these kelp ecosystems. Looking ahead, continued research and collaboration will be key to leveraging the full ecological benefits of kelp forests and ensuring their role in supporting healthy and diverse marine ecosystems.


AFRICAN OYSTERCATCHER (*Haematopus Moquini*)

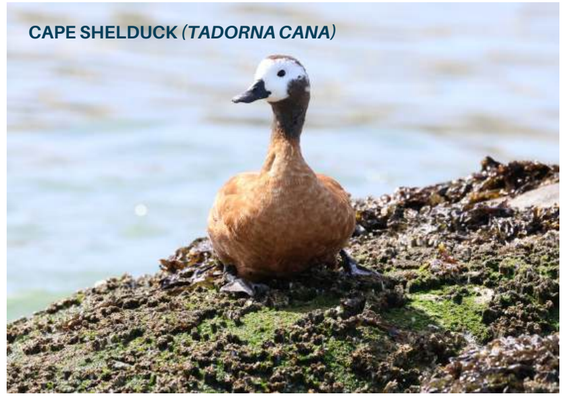

SILVERTIP NUDIBRANCH


DARK SHYSHARK


BLACK MUSSEL


CORMORANT


CAPEMANTIS SHRIMP (*PTERYGOSQUILLA CAPENSIS*)


CAPE SHELDUCK (*TADORNA CANA*)


JELLYFISH


HEAVISIDE'S DOLPHIN

BIODIVERSITY
2023 HIGHLIGHTS

Falklands eDNA Study
A milestone was reached with the first eDNA study performed on the pristine kelp forests that surround the Falkland Islands. Led by Dr. Narissa Bax, the study aims to create an in-depth snapshot of marine biodiversity within one of the most unique and undisturbed kelp ecosystems in the world. Known for their dense kelp forests and high species diversity, the Falkland Islands serve as a sanctuary for many marine species, including endemic and migratory species that rely on these habitats for food, shelter, and breeding grounds. The water samples collected are under analysis, with the potential for discovering previously unrecorded species in these remote habitats. Understanding the biodiversity in this unique habitat is essential not only for its conservation but also for global marine research, as understanding the biodiversity in these healthy, pristine kelp forests, will provide an indication of what 'good' looks for these types of ecosystems.

eDNA Study at giant kelp farm
In 2023, we completed a baseline eDNA (environmental DNA) study to assess biodiversity in and around Kelp Blue's cultivated giant kelp farms in Namibia. Sampling across eight locations revealed a high diversity of species, with fish as the most prevalent group, followed by birds and marine mammals. The study also identified seasonal variations in species diversity, noting the presence of endangered species and near-threatened dolphin species.

Algal Biodiversity Study
One of our first MSc scholars, Angelique Dodds, completed her research on the diversity, biomass, and distribution of algae in and around Lüderitz (close to the giant kelp farms of Kelp Blue). Her study established a baseline for local algal ecosystems, detailing the role of farmed kelp in sustaining biodiversity and its interactions with native kelp species, such as *Ecklonia maxima* and *Laminaria pallida.* Angelique's thesis presents valuable insights into kelp bed ecology.

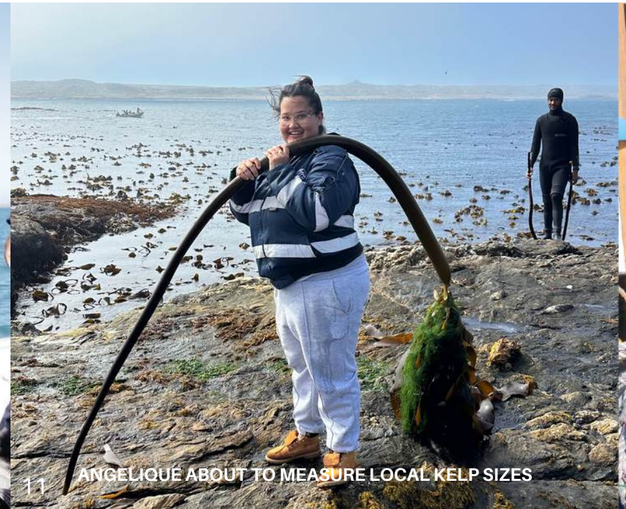
The Jellyfish Project
In February 2023, we initiated a project at the cultivated kelp farms in Namibia to study the impact of artificial materials used within farming structures on the recruitment of jellyfish species in the water. We observed an initial increase in jellyfish numbers when farming operations started, sparking the need to better understand farming structures affect the ecosystem. Jellyfish, despite their incredible beauty, when abundant, are known to be indicators of an imbalanced ecosystem. For example, it could indicate a decline in predator species, an increase in water temperature, or an increase of nutrients from pollutant sources. The project aims to understand how our artificial materials contribute towards jellyfish recruitment, provide baseline data for mitigation and monitoring measures.

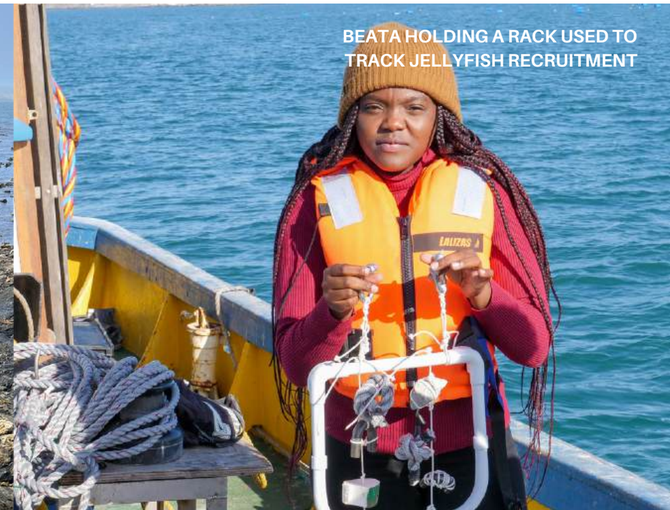
Benthic Impact Study
MSc Scholar Beata Tooleni, who started early 2023, focused her studies on benthic (seafloor) biodiversity underneath the farm in Namibia. Studying the benthic biodiversity allows for close monitoring of changes in the ecosystem, as seafloor species are often unable to move very far, and will directly be affected by their surroundings. Beata's study involved collecting sediment samples to identify species and analyse grain composition. Notable discoveries included Pterygosquilla capensis (Cape Mantis Shrimp) in the samples.

Fauna Impact Study
Part of the MSc cohort that started in 2023 is Arisha September. Arisha focuses on the fauna species that live inside, or visit the giant kelp farms in Namibia. Not only does she analyse the eDNA samples that are taken in this area, she also goes out to sea weekly to spot birds and bigger animals such as seal and dolphins. Seabirds and other fauna are important ecosystem indicators in the cultivated kelp of Namibia.


ARISHA PACKING AN EDNA SAMPLE


BEATA HOLDING A SEDIMENT SAMPLE


ANGELIQUE ABOUT TO MEASURE LOCAL KELP SIZES


BEATA HOLDING A RACK USED TO TRACK JELLYFISH RECRUITMENT

KELP PRODUCTS
2023 HIGHLIGHTS

Kelp Products
By harvesting and processing kelp, a vast array of sustainable products can be created, replacing those that are traditionally fossil-fuel based. By investigating kelp's role in reducing greenhouse gas emissions and enhancing sustainable agricultural practices, we aim to develop the research behind innovative solutions for climate change mitigation. These studies highlight the potential of kelp to play a crucial role in global efforts to mitigate climate change.

- Biostimulant research: This study has the potential to revolutionise sustainable agriculture by reducing the need for synthetic fertilisers, which are a major source of nitrous oxide, a potent greenhouse gas. The enhancement of the soil microbiome also supports carbon sequestration in soils.
- Methane reduction in cattle: Livestock methane emissions represent a substantial portion of global greenhouse gas emissions. While the reduction observed with *Macrocystis pyrifera* (giant kelp) was minimal compared to other seaweeds like red algae, this research was an important contribution to understand kelp's role in sustainable livestock management.

Our research in 2023 has provided promising insights into the potential of kelp to contribute to emissions reduction and climate change mitigation. Continued research and collaboration will be essential in unlocking the full potential of kelp to support global emission reduction goals and enhance environmental resilience.

Biostimulant Research at Wageningen University
This 3-year postdoctoral research project launched in February 2023 at Wageningen University's Laboratory of Plant Physiology, to investigate the potential of kelp biostimulants to improve crop resilience against abiotic stress, enhance soil microbiome health, and reduce reliance on synthetic fertilizers. The study focuses on understanding how kelp biostimulants affect plant performance, root system architecture, and soil microbiome.

Cattle Methane Reduction Study at Queen's University Belfast
This study explored the potential of giant kelp (Macrocystis pyrifera) to reduce methane emissions from cattle digestion. Led by Dr. Sharon Huws, this study tested the effects of adding giant kelp to cattle diets in lab-controlled experiments. Methane emissions from cattle are a significant source of greenhouse gases due to their multi-stomach digestive system. While previous studies have shown that red seaweed can reduce methane emissions by up to 90%, this study aimed to assess whether Macrocystis pyrifera could achieve similar results. The study compared methane production from cattle fed a control diet (100% grass silage) with those fed a diet including 8% Macrocystis (on a dry matter basis). After 24 hours of incubation with rumen fluid, methane production was reduced by an average of 15.97%, though this difference was not statistically significant.

ACHIEVEMENTS

CAPACITY BUILDING

THE BLUE HOUSE FELLOWSHIP

CAPACITY BUILDING

The Blue House Programme is a scholarship initiative, funding Namibian students, especially women, in their MSc studies and supporting their development in natural ecosystem sciences. As we shift towards a regenerative economy, where nature and oceans play a central role, it's crucial to support communities with the tools and expertise to build stronger blue economies.

The program aims to foster climate and social impact, enriching the talent pool in Namibia and Southern Africa with skills for a sustainable future. This initiative is important as it equips graduates for careers in government, business, entrepreneurship, and academia, contributing to societal and environmental well-being. The programme provides rolling scholarships to MSc students from Namibian universities, supplemented with marine skills training including swimming, scuba diving, lab skills, data analysis, and more. MSc students in the programme are co-supervised by international experts in their field, fostering global knowledge exchange in a niche topic.

2023 Cohort

In February 2023, the 2023 cohort of MSc students kicked off. The Namibian students arrived to Luderitz and started their diverse set of research projects, all focusing on the ecological benefits of cultivated kelp. Our list of students within this cohort includes:

- Beata Tooleni, focusing on the benthic (seafloor) biodiversity underneath the cultivated kelp farm
- Arisha September, focusing her work on the fauna biodiversity in- and around the kelp farm
- Michael Mateus, studying the Net Primary Production (the biomass growth and size) of the cultivated kelp farm

2023 Cohort

The first cohort of students within this programme, who started their MSc in 2022, have concluded their Master's thesis in 2023. Angelique Dodds, studying the algal biodiversity in and around the farm, and Protasius Mutjida, looking at the biogeochemistry of the water, have successfully concluded their programme, and have moved on to work in the marine monitoring team of Kelp Blue Namibia.

So far, we've funded:

9 Master's students

2 PhD students

5 Postdoc researchers

SAKARIAS MEASURING WATER QUALITY

THE BLUE HOUSE PROGRAMME

SELECTED 2024 MSC COHORT

As part of the Blue House Fellowship Programme, we have selected a cohort of three new MSc students to start their Master's degree in aquaculture marine science in January 2024. Their two-year MSc projects will bring valuable knowledge and broaden our understanding of the ecosystem services of cultivated giant kelp, using Kelp Blue's farm as a case study for monitoring and measurements.

DORTEA HAMUKOTO

Dortea will study the sessile species that are attracted to the kelp farm structure and kelp itself. Sessile species are species that are generally attached to a substrate and do not move around - for example barnacles, mussels, bryozoans. This will support our understanding of the cultivated kelp forest ecosystem on local species.

SAKARIAS MALYENGE

Sakarias, also known as Sacky, will study the fish spawning and nursery processes in the cultivated giant kelp, with a focus on commercial species. This will help us understand whether the kelp is supporting the nursing and spawning activities of fish, and thus whether the cultivated kelp helps increase local fish stocks.

PAULA SACHEUS

Paula will start her MSc studying the interactions between kelp and the carbon and pH levels of its surrounding waters. Ocean acidification is a problem caused by excess levels of carbon in the ocean. As kelp grows and stores carbon in its tissue, it could help reduce this effect.

ACHIEVEMENTS

OCEAN EDUCATION

OCEAN EDUCATION

EXTRA-CURRICULAR OCEAN-RELATED ACTIVITIES

As part of our Ocean Literacy and Skills Development program, we collaborate with The Luderitz Blue School to run extra-curricular activities, open to all children in Lüderitz, Namibia, with a special focus on ocean education and robotics every Friday afternoon.

The programme focuses on children aged 8-13 with the goal of fostering ocean stewardship. This programme immerses them in ocean wonders and science, promoting ocean literacy and an early awareness of climate change and human impact on marine ecosystems. We sponsor many activities: surfing lessons, beach clean-ups, raft building, species counting, ocean artwork, and many more.

Our goal is to have afternoons filled with learning, inspiration, and appreciation for our world's marine ecosystems and animals. Our hope is that, through fun and education, the next generation of ocean stewards will lead our communities with passion and grit to preserve and safeguard our planet.

Here are a few of the many activities students participated in this year:

- Painting an ocean-themed mural at the tennis court, with over 40 people in attendance; a real team effort!
- Soap-making workshop using kelp
- Surfing lessons
- A visit from European Space Agency satellite expert Anna Burzykowska, where the students learned about space and the stars
- Making artwork using beach cast, collected at the local beach in Lüderitz
- Learning about diving hand signals - a workshop held by the marine divers from the Kelp Forest Foundation and Kelp Blue
- Mobile planetarium visit - A project from the Netherlands, where the children can dive into a dome to learn about the universe
- Robotics lessons at the Robotics Lab, where we helped students make a machine with sensors to tell us when plants need watering
- ..and many more!

2023 IN REVIEW

PUBLIC AWARENESS

ADRIEN VINCENT, PHILIPPE POTIN AND SAMANTHA DEANE DURING A PANEL SESSION AT THE MONACO OCEAN WEEK

PUBLIC AWARENESS

PRESENTING KELP AT A GLOBAL STAGE

Public awareness of kelp's potential is crucial for supporting industry growth and realising kelp as a nature-based solution to combat climate change, biodiversity loss, and pollution. The Kelp Forest Foundation is dedicated to driving open-access research and spreading knowledge through various platforms, including conferences and media. In 2023, the KFF team participated in conferences across the world to share their research with industry peers, academics, and the public:

Monaco Ocean Week

Together with the Institut Océanographique Prince Albert I of Monaco Foundation, we hosted “Seaweed: Reality vs. Hype” at the Monaco Ocean Week. During the sessions, speakers shared the realities and experiences of their seaweed-related businesses and research. After opening the session with Robert Calcagno, CEO of Institut Océanographique and renowned Australian scientist Professor Tim Flannery, we had several speakers across businesses: Ocean Rainforest (Olavur Gregersen), Brian Tsuyoshi Takeda (Urchinomics), Notpla (Rodrigo García González), Kelp Blue (Daniel Hooft) and Nestlé Purina PetCare Europe (Kerstin Schmeiduch).

These speakers represented private companies accelerating the development of the algae market by using kelp in their products and supply chains to replace more harmful equivalents, like plastics and synthetic fertilisers respectively - supporting the transition to a more sustainable economy. Next, Vincent Doumeizel, senior advisor of the United Nations Global Compact, presented the re-branded "Global" Seaweed Coalition and its three 2023 action pillars Funding, Advocacy and Science. The last session was dedicated to science. Philippe Potin (Station Biologique de Roscoff) and Samantha presented findings on the impact of kelp on biodiversity for their respective projects, which are showing positive results. Samantha presented our exciting project in some of the most pristine kelp forests in the world: eDNA study Falklands.

TED Countdown Summit

Samantha and Xu attended the TED Countdown Summit, an invite-only climate conference organised by TED Conferences in Detroit during July 2023. The event focused on the role of business in accelerating climate solutions and transforming the global economy.

United Nations COP28 Dubai

The KFF team visited the 28th United Nations Conference of the Parties in Dubai, UAE. The conference centred around the first Global Stocktake - the first assessment of where the world stands eight years after the Paris Agreement, and how countries plan to fix their shortcomings - as well as the negotiations for phasing out fossil fuels. The conference provided many opportunities to connect with organisations and individuals focusing on climate change and ocean/nature-related solutions.

Double Nature Summit - Presenting at Oceans Day

In May, The Climate Cleanup hosted a 4-day summit aimed at showcasing and accelerating nature-based solutions to fight climate change. The second day of the Double Nature summit focused on ocean-related solutions, hosted at the Royal Netherlands Institute for Sea Research (NIOZ) in Texel, The Netherlands. The KFF team presented the potential of cultivated giant kelp to sequester carbon and boost biodiversity. The presentations and workshops on this Oceans-themed day were focused on the challenge of 'doubling nature' and applying regenerative practices to re-store carbon dioxide in the land and oceans.

MIT Solve

The KFF team attended the MIT Solve, a marketplace for social impact and social entrepreneurship. It is an initiative by Massachusetts Institute of Technology, aimed at bringing together startups, funders and resources to solve global challenges. Samantha attended the conference representing our project in collaboration with Kelp Blue and reNature, "Regenerating Soil with Cultivated Kelp". This project aims to set up a model cotton farm using only regenerative agriculture practices. Kelp biostimulant, produced by Kelp Blue, can be an important ingredient in the success of this farm, as biostimulant has several benefits: it improves the plant's resilience to abiotic stress such as drought and heat, it can increase nutrient use efficiency, and support plant growth and health. Here, Samantha connected with fellow Solvers and built stronger connections with startups and innovators all focused on climate action

2023 IN REVIEW

FINANCIALS

FINANCIAL STATEMENT

BALANCE SHEET

(after allocation balance of income and expenses)

ASSETS

Cash at bank	€	206.446
Current assets	€	15.772
Total assets	**€**	**222.218**

LIABILITIES

Current liabilities	€	11.061
Other reserves	€	211.157
Total liabilities	**€**	**222.218**

PROFIT AND LOSS STATEMENT

INCOME

Income from companies	€	48.488
Income from non-profits	€	102.720
Total income	**€**	151.208
Income minus expenses	**€**	**-182.278**

EXPENSES

Spend on objectives	€	321.022
Cost of management/admin	€	9.808
Financial expenses	€	2.656
Total expenses	**€**	**334.741**

NEW FUNDING PARTNERS

oceankind

Amount
NZD 622.275
Project
Metabarcoding of giant kelp (Macrocystis pyrifera)

Oceankind's mission is to improve the health of global ocean ecosystems while supporting the livelihoods of people who rely on them.

This grant supports a research project by Cawthron Institute, Sequench and NatureMetrics to measure the eDNA 'fingerprint' of giant kelp found in sediment samples. qPCR and ddPCR will be adapted to giant kelp-specific organic compounds to help us determine if organic carbon in samples indeed come from kelp, supporting our understanding of kelp carbon sequestration.

DE BEERS GROUP

Amount
USD 40.000
Project
Blue House Fellowship Programme

De Beers Group is a South African-British corporation that specialises in diamond mining, retail, trading and industrial diamond manufacturing sectors.

This grant will go to support the Blue House Fellowship Programme, and more specifically to cover a Namibian female graduate student to undertake a two-year MSc degree at a Namibian university with Kelp Forest Foundation.

BLUE MARINE FOUNDATION

Amount:
GBP 10.000
Project:
Kelp Isotopic DOC analysis

Blue Marine Foundation is a charity dedicated to restoring the ocean to health by addressing overfishing, one of the world's biggest environmental problems.

This grant supports the sampling and analysis of dissolved organic carbon (DOC) exuded by the giant kelp forests. This analysis is an important step towards quantifying the carbon sequestration potential of cultivated giant kelp forests as the kelp DOC is the largest portion of the sequestered carbon by kelp.

WILDE GANZEN FOUNDATION

Amount
EUR 15.000
Project
Extra-curricular activities for the Luderitz community

The Wilde Ganzen Foundation is a Dutch NGO with a mission to reduce poverty and inequality through community-led activities.

This grant is dedicated to the extra-curricular activities organised by the Luderitz Blue School, offering an after-school programme with a focus on ocean education and robotics. These programmes are open to all children in the Luderitz community.

COLLECTING SEDIMENT SAMPLES FOR EDNA ANALYSIS

FUNDING SUPPORT

THANK YOU TO OUR SUPPORTERS

The Kelp Forest Foundation is incredibly grateful to the following foundations and institutions for their funding support:

CO2MON FOUNDATION

GORDON AND BETTY MOORE FOUNDATION

global seaweed coalition

J, C & R KREDIET CHARITABLE FOUNDATION

kelp blue

BLUE MARINE FOUNDATION

CLIMATE REPAIR
UNIVERSITY OF CAMBRIDGE

Great Island Foundation

Ocean Born

DE BEERS GROUP

SOA
SUSTAINABLE OCEAN ALLIANCE

PRINCE ALBERT II OF MONACO FOUNDATION

WANT TO SUPPORT US? GET IN TOUCH

Contact us at info@kelpforestfoundation.org

KELP FOREST FOUNDATION

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