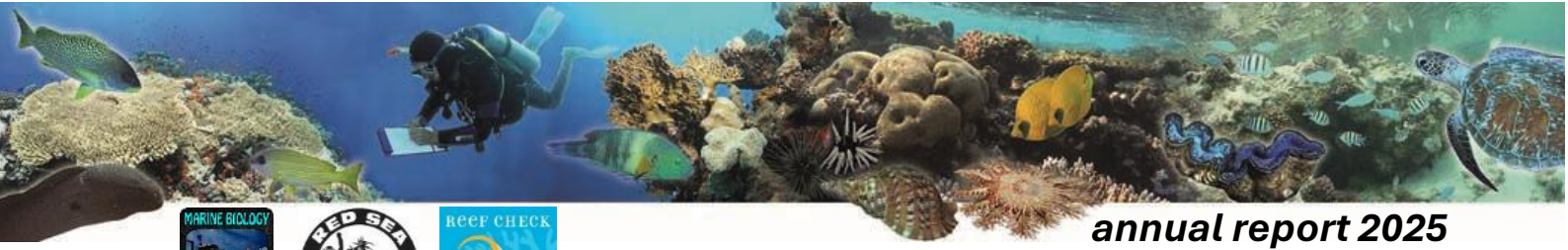

RC Eco Diver Course & Surveys at Red Sea Diving Safari in July 2025

Stephan Moldzio, Marine biologist and Reef Check Course Director
Text & photos: Stephan Moldzio

From July 17–20, 2025, the **Reef Check EcoDiver course** and subsequent surveys (reef assessments) took place once again in its now 17th year at **Red Sea Diving Safari**, this time in **Marsa Shagra**.

Reef Check stands for:

- **Citizen Science – participation in reef surveys**
- **Collecting scientific data**
- **Raising awareness of human impacts**
- **Protecting coral reefs**

Reef Check EcoDiver Course

The course was fully booked — **14 participants from five countries: Germany, Poland, Czechia, England, and Egypt**. The course language was English. To facilitate understanding of the key content, the Reef Check indicator organisms were translated into the respective languages. The program included **four presentations on the Reef Check method** and the three different surveys:

Figure 1: Reef Check Survey

- **Fish**
- **Substrate**
- **Invertebrates and human impacts**

Every day, two training dives took place to practice identifying the Reef Check indicator organisms and to learn the **UW hand signals**.
During the "**Beach Exercise**," we practiced the Reef Check method and the exact survey procedure. Afterwards, we conducted a **test survey** in the reef along a transect of only 20 meters. Finally, identification **tests of the indicator organisms** were also on the schedule.

All participants successfully completed the training dives and tests and are now **certified Reef Check EcoDivers**. They can now help collect scientific data on the basic health of coral reefs.

Figure 2: Theory and practical exercises on the reef check method. Reef Check EcoDiver class 2025

International Reef Check Team

Our **international Reef Check survey team** consisted of a total of 18 people this year. In addition to the course participants, there were also four other divers on-site who had already completed the course in previous years. They wanted to participate in the surveys again and help collect data. Therefore, we had to rotate a bit so that everyone could take part in several surveys. The atmosphere was fantastic — especially because we had such a mixed and international team!

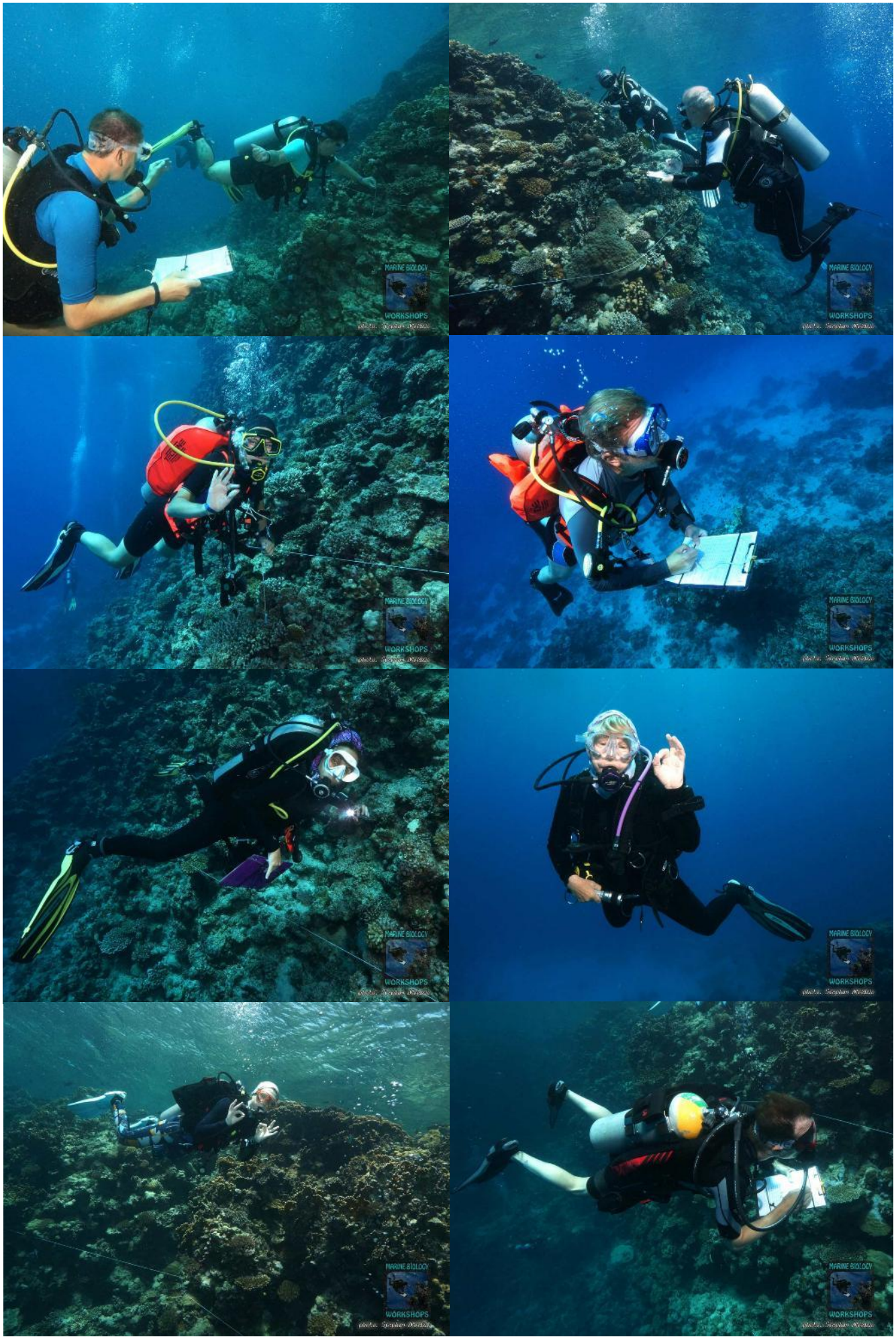

Figure 3: International Reef Check Team

Reef Check Surveys on a total of six reefs

Following the course, we conducted **six complete surveys along two depth contours** at the following reefs:

- **Marsa Shagra North & South**
- **Abu Nawas Garden**
- **Sharm Abu Dabab**
- **Marsa Nakari North & South**

We reached the survey sites by Zodiac. First, a buddy team laid out the **transect lines at both depth contours, at 3.5 m and 8.5 m**. Then the three teams began their surveys!

Everything ran smoothly — first the fish team, then the substrate team, and finally the invertebrate team. After completing the survey, a buddy team retrieved the lines and we returned. In the evening, we entered the **data from the underwater slates** into the **Reef Check Excel sheets**.

On one evening, Stephan also gave a **public presentation** for all guests about **Reef Check and our [reef monitoring program with Red Sea Diving Safari]**.

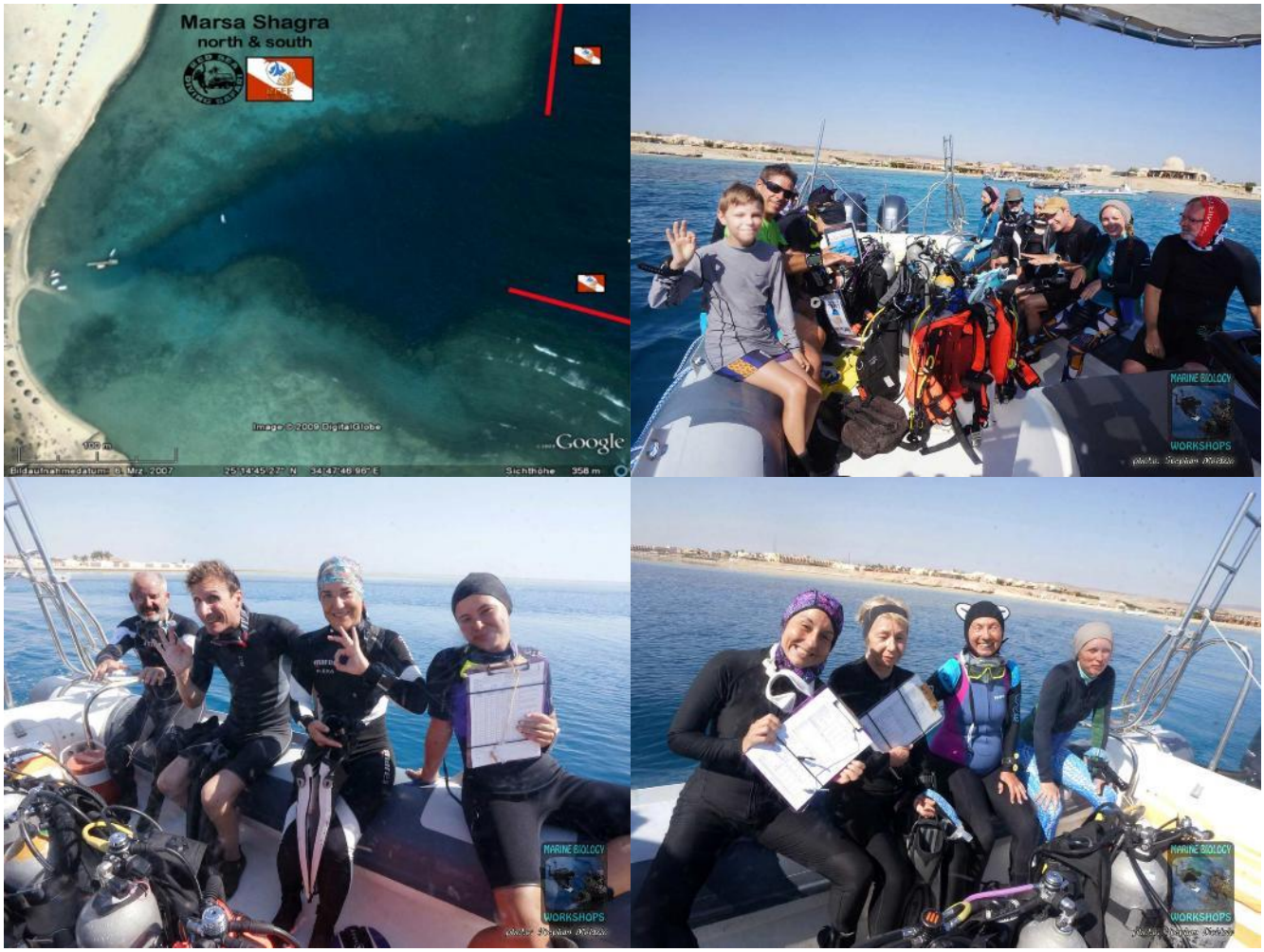

Figure 4: Reef Check surveys on six reefs at and around Marsa Shagra and Marsa Nakari

Results of our Reef Check Surveys

Our collected data were sent to the **Reef Check HQ**, reviewed once more, and have now been entered into the **international Reef Check database**:

https://www.reefcheck.org/global-reef-tracker/

A first look at our data confirmed what our shared impression had already been:
The **4th Global Coral Bleaching Event 2023–2024** had also taken its toll on our survey sites.
Later, the data was compared with those of previous years, e.g. 2021 or 2023, which supported this impression.

Example Marsa Shagra North Reef and South Reef:

Since the **start of our reef monitoring program with Red Sea Diving Safari in 2009**, we have conducted surveys every two years at the two reefs of Marsa Shagra. This year was the 9th time.
To illustrate the **impact of the coral bleaching events of 2023 and 2024 on the house reef of Marsa Shagra**, we were able to compare our 2025 data with those from July 2023:

The **average live coral cover (hard and soft corals)** along our two **transects at 3.5 m and 8.5 m depth** at **Marsa Shagra North Reef** decreased from an absolute 63.1% in July 2023 to now 37.5% in July 2025. This corresponds to an absolute decline of 25.6% and a relative decline of 40.6%.

At **Marsa Shagra South Reef**, the average coral cover (hard and soft corals) decreased from an absolute 56.6% in July 2023 to 42.5% in July 2025. Here, the relative decline was only 25%.
Of course, methodological errors must also be considered.
Although the decline appears drastic, it is still within the mid-range when compared with other places worldwide, or even within the Red Sea.

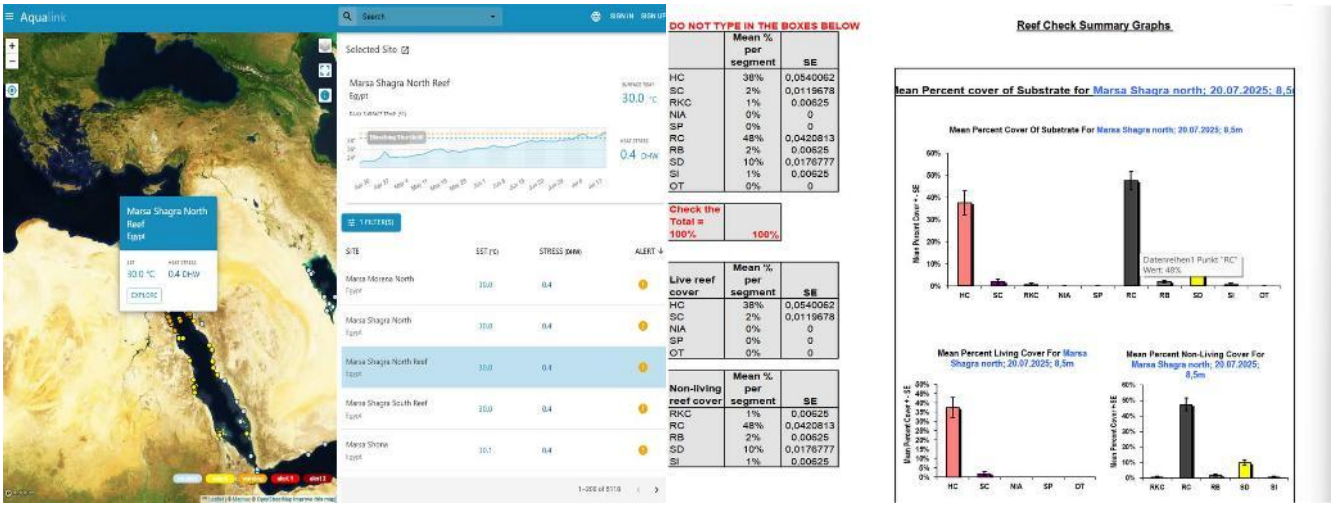

Figure 5: Reef Check database and Survey results

The Global Bleaching Event 2023 and 2024

Global warming and the resulting **warming of the oceans** pose an **existential threat to coral reefs**. The year **2024 was the warmest year since climate records began**, surpassing the previous record set in 2023.

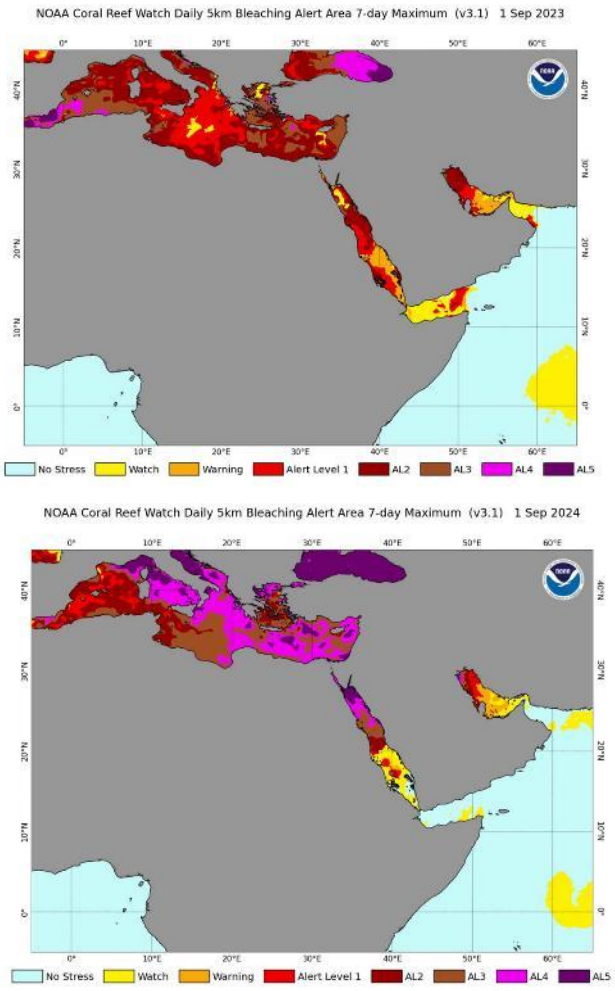

Figure 6: NOAA Coral Reef Watch – Bleaching Alert 1st september 2023 / 2024

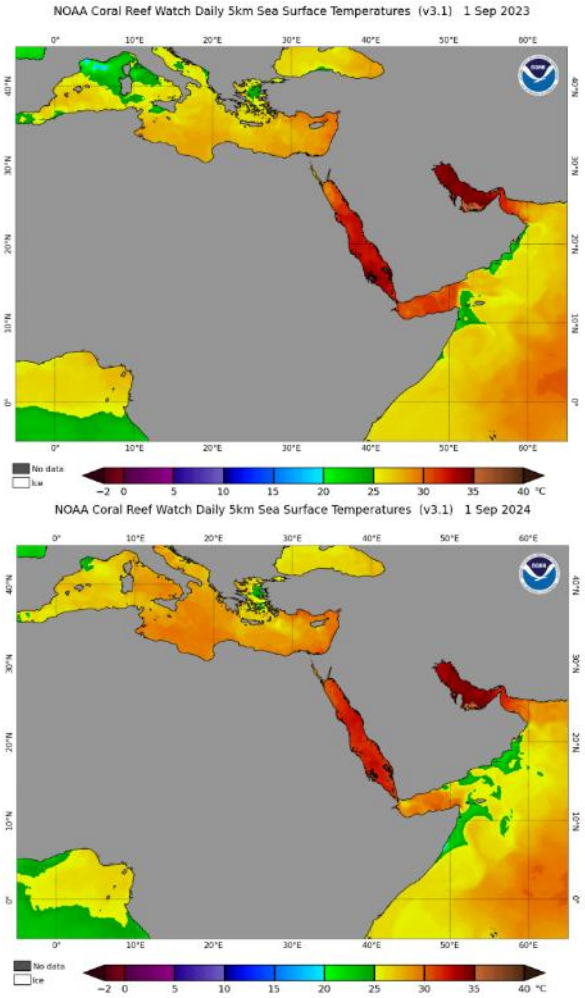

Figure 7: NOAA Coral Reef Watch – Sea Surface Anomalies 1st september 2023 / 2024

To date, there have been four global coral bleaching events.

The first two global bleaching events occurred in 1998 and 2010.
The third, longest, and most extensive **Global Coral Bleaching Event (GCBE3)** took place from 2014 to 2017: around two-thirds of the world's reef areas experienced heat stress that led to coral bleaching and coral mortality. Now, during the **4th Global Coral Bleaching Event (GCBE4),** from January 2023 to September 2025, 84.4% of the world's coral reef regions were affected by heat stress that caused coral bleaching.
Severe bleaching was documented in at least, 83 countries and territories.
The global impacts varied by region — some were hit particularly hard, while others were less affected. In the summer of 2024, the Red Sea also experienced the most severe coral bleaching event on record.

Damaged Corals

Many corals are damaged or have died, especially in sheltered areas and in shallow water or on the reef flat. But **many corals survived**:

- Many coral colonies have fully recovered from the bleaching and have now shown strong growth since their recovery beginning in autumn of last year.
- Many coral colonies have only partially died on the light-exposed parts of the upper surface. The surviving part in the shaded areas is growing back.
- Even in coral colonies that almost completely died, a small part often survives and grows back.

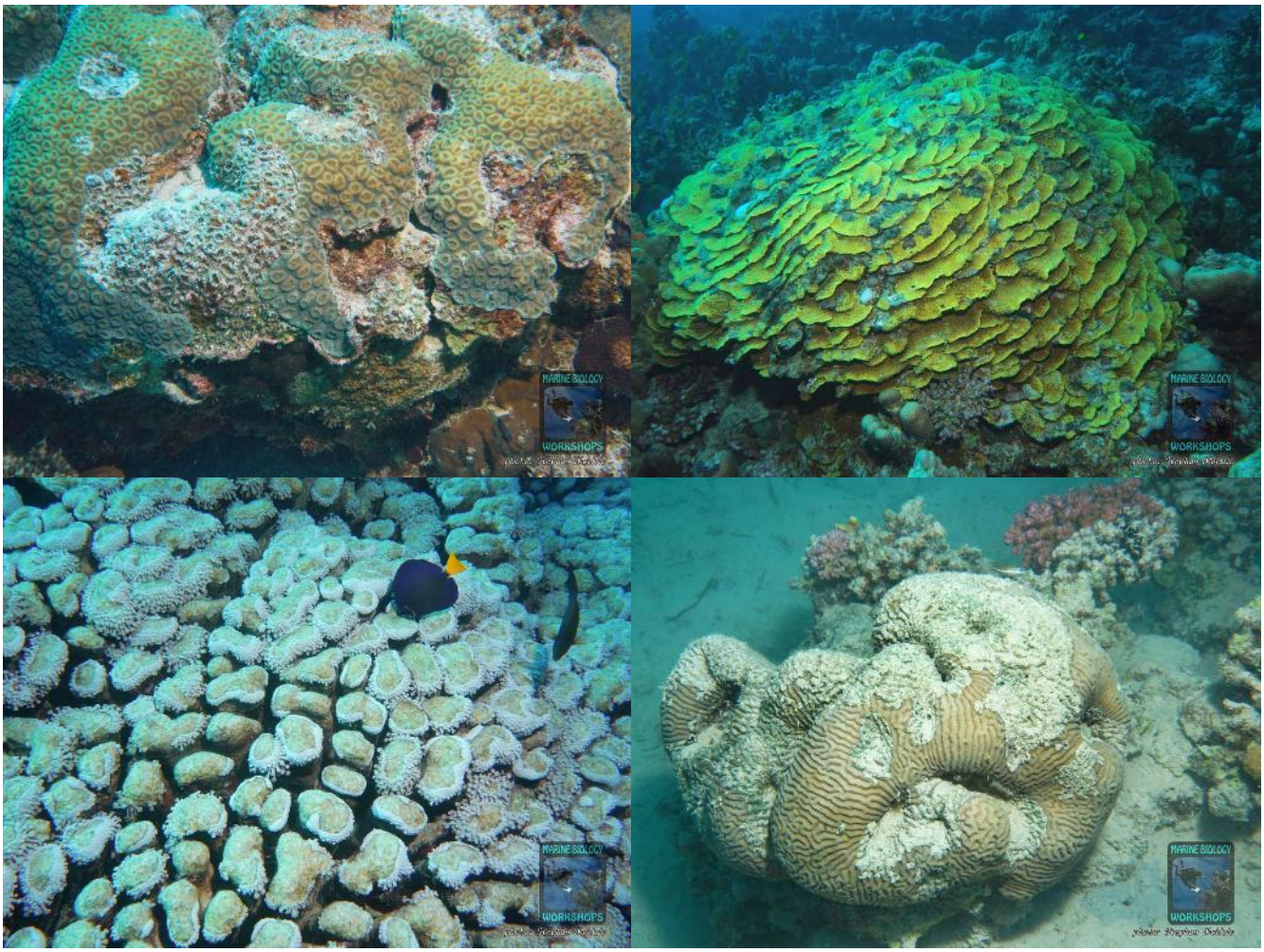

Figure 8: Damaged coral at Marsa Shagra housereef due to the severe coral bleaching in 2024.

Healthy Corals and Strong Growth

In July 2025, during our Reef Check course and the subsequent surveys, we observed on the one hand the **damage caused by the coral bleaching of the previous two years**, but on the other hand also the **recovery of the corals** since then.
First, it should be noted that we observed practically no coral bleaching in July 2026.
According to **NOAA Coral Reef Watch** data, almost no heat stress was present at that time; it only began to build gradually over the course of August.
Most **corals from various genera appeared healthy**, were relatively dark in color, and the bright edges or tips indicated active growth.
All genera and species that can normally be found in Marsa Shagra were also present. However, some genera appeared to have suffered more from the previous coral bleaching, including the fire corals *Millepora* and the small-polyp stony corals *Acropora*, *Seriatopora*, *Stylophora*, and also *Porites*, which obtain most of their nutritional needs through their symbiotic zooxanthellae.

The **various soft corals**, e.g. *Xenia* spp., *Anthelia* spp., *Sarcophyton* spp., were also noticeably reduced in abundance. But since they do not form calcareous skeletons, they disappear without a trace after dying. The small-polyp stony coral *Pocillopora*, as well as most large-polyp stony corals — which obtain a larger share of their nutritional needs by capturing plankton — were obviously more resilient.

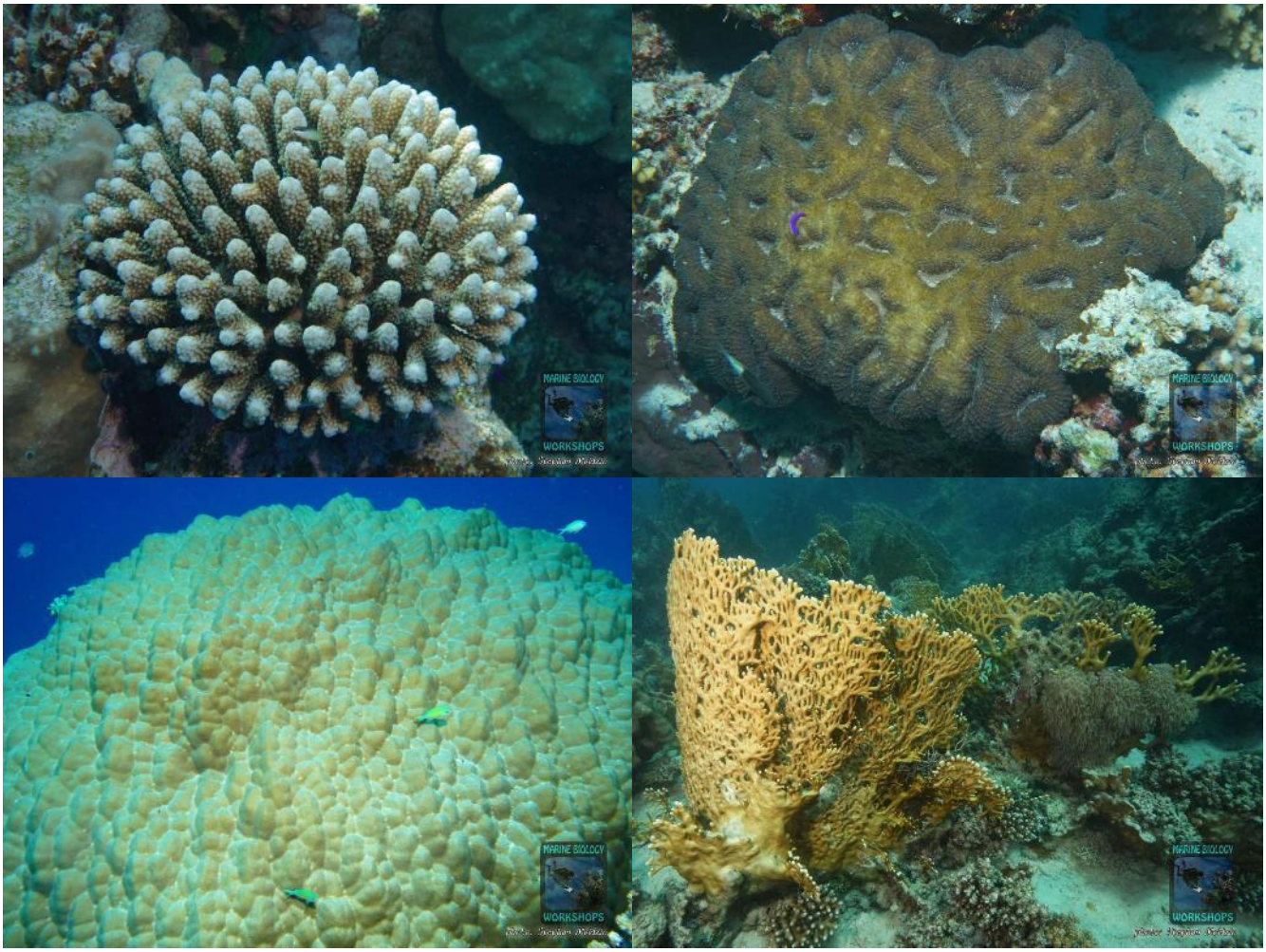

Figure 9: Healthy coral at Marsa Shagra housereef show good recovery and growth.

A new Generation of young coral recruits

Also encouraging are the **many young coral recruits**, which presumably originated from the last coral spawning in April/May of last year: The´re now about one year old. Here, the next generation of corals is growing, which has already survived 2024, the year with the highest heat stress recorded so far.
This also demonstrates that **sexual propagation is still going strong** in the area.

Although **sea surface temperatures in 2025** were also significantly warmer compared to the long-term average, the heat stress was much lower than in **2024**. This gives the corals a "breathing space" for further recovery until at least summer 2026, and it is to be hoped that the coming year will also be somewhat cooler. By the time we conduct our next Reef Check surveys in summer 2026, the corals will have grown and the reef will have continued to recover.

The big question for the future is **whether and how corals, and which species, can adapt to long-term rising temperatures**. A selection process is certainly occurring in this respect. Some species or genotypes will be unable to cope with higher temperatures and will disappear, while others will continue to withstand them.

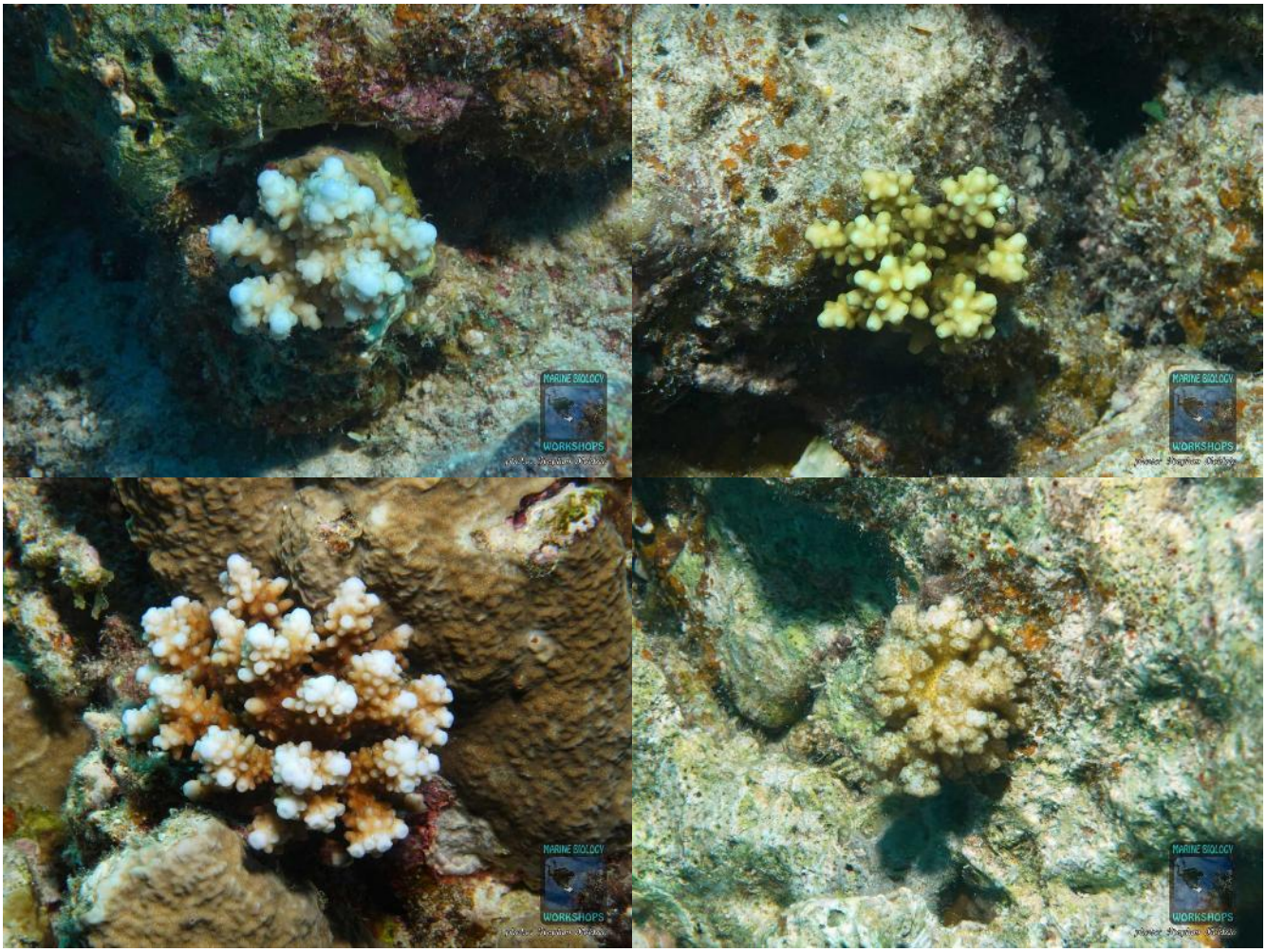

Figure 10: Young coral recruits, which are around one year old

Stony corals

The **stony corals (*Scleractinia*)** have six-fold symmetry in terms of the number of tentacles and septa (*septae and costae*). For genus- and species-level identification, the delicate skeleton, the structure of the coral cups (corallites), and the development of the corallite walls, septa, and other skeletal elements are important. Here are some close-up photos of various stony corals.

Figure 11: Makro Photos of some stony corals: Acropora gemmifera ; Porites rus ; Montipora stilosa ; Gardineroseris planulata ; Pachyseris speciosa ; Galaxea fascicularis (from top left to bottom right)

Soft Corals – The Eight-Tentacled Anthozoans

Leather coral, soft coral, and gorgonians, as well as sea pens (*Pennatulacea*) and the blue coral (*Heliopora coerulea*), belong to the **eight-tentacled anthozoans (*Octocorallia*)**.
They always have eight, mostly feathery tentacles and, with a few exceptions (e.g., organ pipe coral *Tubipora*, blue coral *Heliopora*), do not form a calcareous skeleton, but only various skeletal elements, such as calcareous spicules.
Some groups possess symbiotic zooxanthellae, which are usually pastel beige-brown in color and found in shallower waters. The soft coral and gorgonians shown here all contain zooxanthellae and belong to the genera *Sclerophytum, Litophython, Anthelia* and *Xenia*.
Some groups do not possess zooxanthellae and are often very colorful. Because azooxanthellate soft and gorgonians rely solely on capturing phyto- or small zooplankton, they require a continuous current and dominate in deeper waters.

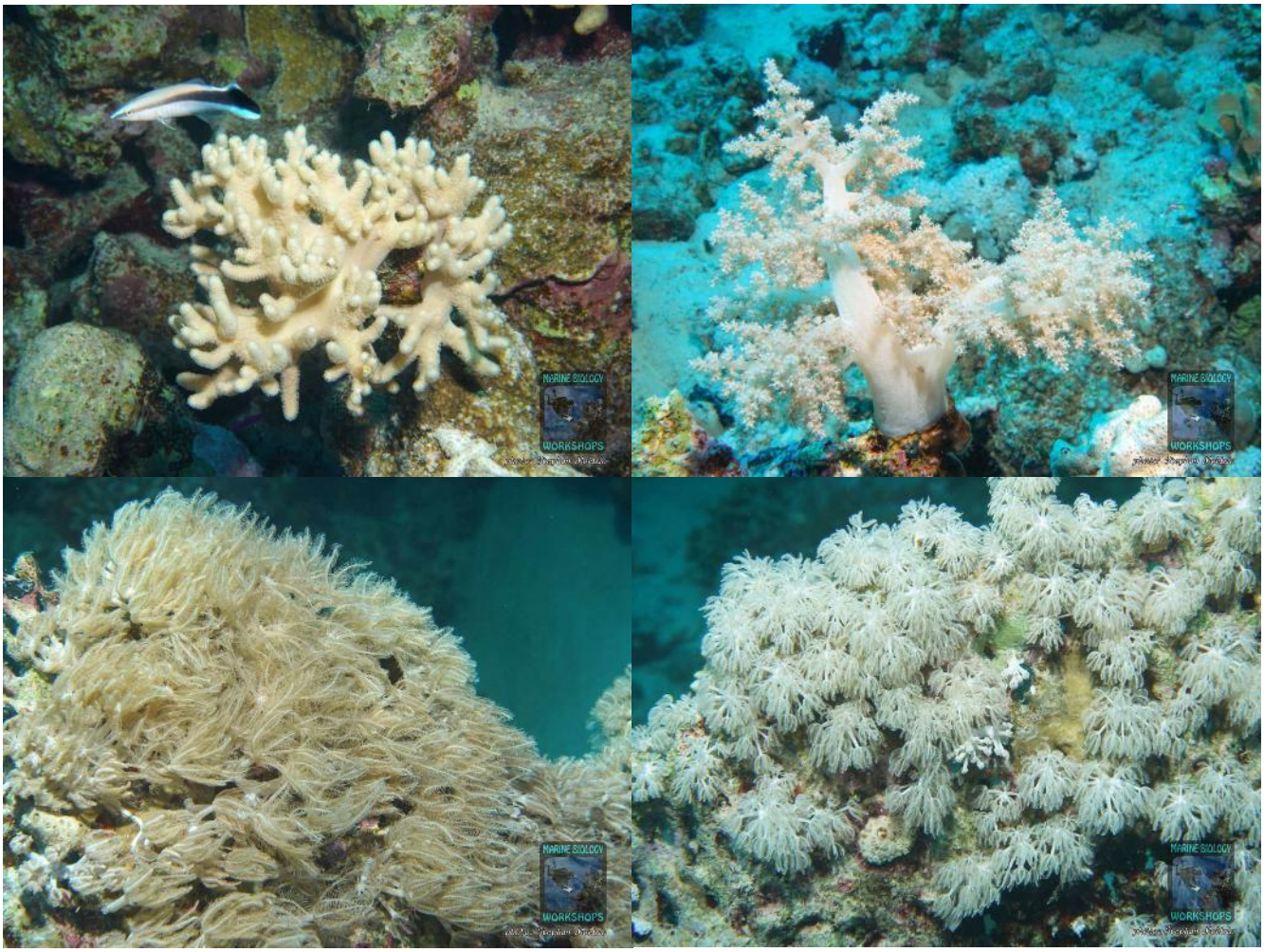

Figure 12: Some zooxanthellate soft corals: Sclerophytum sp., Litophython sp., Anthelia sp. and Xenia sp. (from top left to bottom right)

Algae – the winners of the climate crisis

The **“winners” of coral bleaching are various algae** that occupy much of the freed-up substrate, including the dead coral skeletons. Filamentous coralline algae (*Amphiroa spp*.) have experienced a real boost, having previously been rather rare or hidden. Various brown algae species, such as *Turbinaria* and *Padina*, appear to have increased notably, particularly on the reef crest. Similarly, gelatinous cyanobacteria, which have hardly any predators, have increased noticeably.

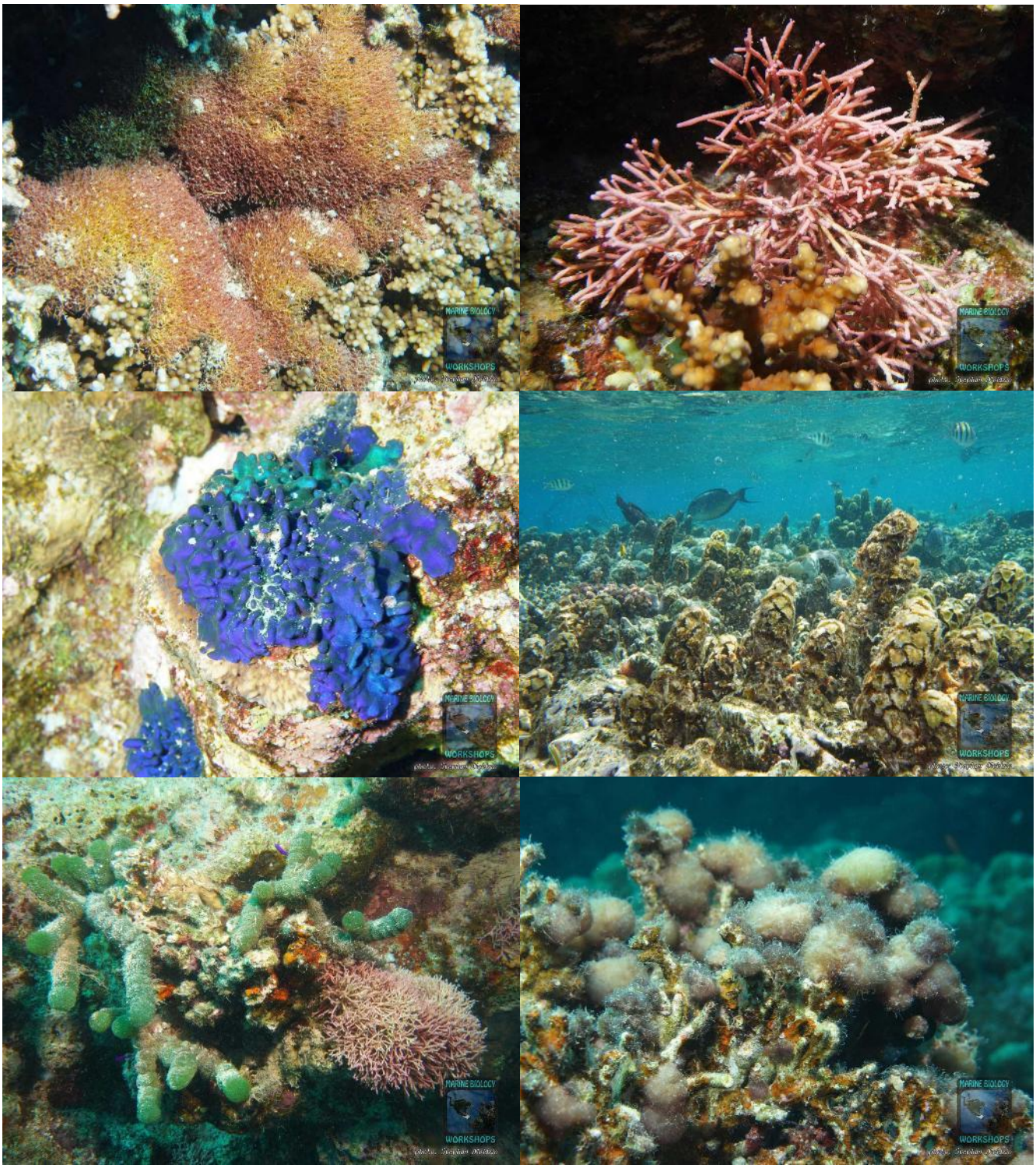

Figure 13: Various red algae (Amphiroa spp.), brown algae (Turbinaria sp.), green algae (Tydemania sp.) and cyanobacteria

Abundance of fish in Marsa Shagra

The **house reef of Marsa Shagra has been effectively protected for over 35 years**; no fishing takes place here. As a result, many large fish are regularly encountered: schools of snappers, and large groupers, which have already become rare elsewhere due to overfishing. A variety of herbivorous fish, particularly parrotfish, surgeonfish and rabbitfish, graze continuously on filamentous and green algae, including many juvenile individuals. The many different species of butterflyfish also indicate a healthy coral reef. Many of them are food specialists.
All fish shown here are also **indicator organisms for the Reef Check method**.

Figure 14: Reef fish indicators of the Reef Check method: Butterflyfish (Chaetodontidae) ; Parrotfish (Scaridae) ; Broomtail wrasse (Cheilinus lunulatus) ; Snapper (Lutjanidae) ; Groupers (Epinephelidae) ; Moray Eels (Muraenidae) (from top left to bottom right)

Reef Check Surveys at Marsa Nakari

On the penultimate day, we also made a trip to Marsa Nakari to conduct the two planned **Reef Check surveys at the house reef**. We left Marsa Shagra in the morning, conducted the survey at **Marsa Nakari north** before noon, and at the **south reef** in the afternoon.

In July 2024, Stephan carried out **detailed monitoring at Marsa Nakari**, in addition to Reef Check surveys. A **flood in December 2023** had damaged parts of the reef, particularly the area close to the bay's shoreline. This monitoring aimed to **investigate the impact of the flood and the 2023 coral bleaching event on the reef's condition and the corals**.
This year, Stephan conducted several **photo documentation dive**s on the north and south reefs of Marsa Nakari.
Another extensive monitoring series is planned for July 2026, 2.5 years after the flood.
The objective of this study is to assess the **impact of the flood and the 2023/24 coral bleaching event on the house reef within Marsa Nakari**, as well as on the **development and regeneration that has occurred between July 2024 and July 2026**.

A brief explanation: these **periodic flood events**, which have occurred for thousands of years, are the reason for the numerous **natural bays ('Marsa')** along the Egyptian coast. The sudden influx of large quantities of fresh water and sediments causes corals to die, especially within the bay. This prevents the bay from gradually 'growing up' and filling in. Otherwise, there would only be a continuous fringing reef along the coast.

Figure 15: Survey Sites Marsa Nakari

Figure 16: Reef flat Marsa Nakari

A **big thank you to Red Sea Diving Safari** and the entire team. They have provided long-standing support and excellent cooperation.
Thanks also to the Reef Check team and all the reef checkers who helped collect valuable data on the state of the coral reefs this year.
We look forward to seeing you again at the next surveys!

Literature and further information:

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