



Department für Geo- und Umweltwissenschaften
Paläontologie & Geobiologie



REPORT TO THE EGYPTIAN ENVIRONMENTAL AFFAIRS AGENCY (NATURE CONSERVATION SECTOR) FOR UNDERTAKING A STUDENT COURSE IN EGYPT (SINAI PENINSULA).

**Geobiology and Biodiversity of Recent and Fossil Coral Reefs in the Gulf of Aqaba (Red Sea, Egypt) and Geology of the Sinai. (Dahab, South Sinai, Egypt)
24.09.-08.10.2010**

Organized by:

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Rationale:

Coral reefs belong to the habitats on earth most rich in species but they are under severe threat. The emphasis of this study course is on learning about the geobiology and biodiversity of recent and fossil coral reefs, which are directly and easily accessible along the coastline of the Sinai Peninsula. The reefs in the Red Sea belong to the healthiest reefs world-wide (acc. to Reef Check results). The spectacular recent coral reefs occur in the Gulf of Aqaba mainly as narrow fringing reefs, which make them directly accessible. Outcrops of the similarly spectacular fossil (Pleistocene) reefs are also easily accessible along large parts of the Sinai coast, often only a few meters apart from their recent counterparts, permitting an unprecedented direct comparison of recent and fossil reef-fauna. The scientific programme of this course involves intensive familiarization with the marine flora and fauna of the recent reefs and a comparison with the fossil reefs. Students will also learn about marine conservation issues and local marine conservation efforts and strategies. Also local geological and socio-cultural aspects are on the program, like a visit to Mount Sinai and St. Catherine's Monastery in the South Sinai mountain massif and information about local environmental protection efforts.

The study course was carried out in close co-operation and with support from the Dahab Marine Research Center (DMRC) in Dahab, with permission from the Nature Conservation Sector of the Egyptian Environmental Affairs Agency. The program of the student course followed the same scheme as previous courses to the region.

Program:

In Munich, students prepared presentations about specific topics about the biology, ecology and conservation of coral reefs, and the geology of the Sinai and the Red Sea. Each student worked out a topic and prepared a handout. The handouts were compiled into the field guide for the excursion and used as supporting media for student's presentations on the spot of interest.

During the first days of the study course an overview about the settings around Dahab was given. In the following days, students were introduced to the ecosystem of the fringing reefs. Supported by their own presentations the students learned to recognise the zonation of the reef and to identify and quantify key species of fishes and invertebrates. In the first three days students compared communities and structure of the reef at different localities at the dive sites 'Islands', 'Southern Oasis', 'Blue Hole' and 'Canyon'. At the latter, the fossil reef outcrop was presented and students were able to compare the Pleistocene fossil reef assemblage with recent reef communities. After this thorough introduction, the students had to come forward with small scientific projects to work on for five days. The students suggested five projects, and developed a study design. During the projects the students learned to focus on a special subject in the complex ecosystem, to plan their experiments, to collect data and to interpret and present their results. The topics of the projects and a short summary of the results are given in the following:

1. *Comparison of the feeding behaviour of two parrot fish species*

Activity and feeding behaviour in terms of bite rates of two species (*Scarus niger* and *Scarus sordidus*) differed. The results are in congruence with published studies from the Red Sea and Australia.

2. *Do cleaner wrasses show an individual host preference?*

No clear preference of host choice was observed.

3. *Orientation of Tridacna shells in the reef in relation to light exposition*

Certain orientations were observed more frequently. However, the reason for the preference (reef structure, current etc.) remains uncertain.

4. *What triggers the activity of intertidal invertebrate fauna?*

In experiments where tides were simulated in aquaria, it seems that activity was mainly caused by water level changes, but not by light.

5. *Effect of salinity plant inlet on the reef flat on invertebrate and algae communities*

The invertebrate community changed in direct vicinity to the salinity plant outlet- here, only fewer gastropod and echinoderm species were present. Similar, algae growth was reduced. However, in approx. 300 m distance from the inlet (downstream in direction of current during the project), the communities were again very similar to unaffected reef flats.

In the last third of the course, we went to Ras Mohamed National Park in southern Sinai. Many unique habitats and geological sites are present in the national park. We examined recent and pleistocene coral reefs, a small mangrove patch, expanded lagoons, traces of tectonic activity, and the hyper-saline lake with its special microbial mats. We stayed two days at Marsa Bareika, where it was also possible to study the local fossil reefs.

Instead of returning straight to Dahab, a detour was made to Nabq National Park. After an introduction to the setting in the visitors centre, it was possible to inspect a larger mangrove ecosystem. On the way to and from the mangroves we inspected the special vegetation.

Back in Dahab, we went to Wadi Qnai and introduced the students to the Geology of the Hinterland, i.e. the Precambrian basement rocks.

Timetable:

Thu.	24.09.	travel to Dahab, set-up at DMRC
Fri.	25.09.	local snorkeling (Lagoon, Islands)
Sat.	26.09.	snorkeling Southern Oasis
Sun.	27.09.	am: snorkeling Blue Hole, pm: fossil reefs Canyon
Mon.	28.09.	small group projects
Tue.	29.09.	small group projects
Wed.	30.09.	small group projects
Thu.	01.10.	small group projects
Fri.	02.10.	free day (St. Catherine Monastery)
Sat.	03.10.	small group project, reports
Sun.	04.10.	day trip Ras Mohammed, stay o/n at Marsa Bareika
Mon.	05.10.	day trip Ras Mohammed, stay o/n at Marsa Bareika
Tue.	06.10.	day trip Ras Mo and Mangroves
Wed.	07.10.	day trip Wadi Qnai, Southern
Thu.	08.10.	pack and depart

Participant list:

1. Prof. Dr. Gert Wörheide (group leader)
2. Catherine Vogler (tutor)
3. Dr. Oliver Voigt (tutor)
4. Mrs. Sarah Adolf
5. Mrs. Sabine Beierl
6. Mr. Vincent Eichmann
7. Mr. Kristian Karl
8. Mr. Jan König
9. Mrs. Melanie Kühn
10. Mrs. Miriam Küstner
11. Mr. Sebastian Lenz
12. Mr. Florian Mayer
13. Mrs. Franziska Schmid
14. Mrs. Marlies Schnell
15. Mrs. Astrid Schuster
16. Mr. Fabian Serr
17. Mr. Nico Trebbin
18. Mrs. Caroline von Lavergne-Peguihen
19. Mr. Daniel Waibel
20. Mrs. Magdalena Wilde
21. Mr. Rainer Wunderlich
22. Prof. Dr. Gerhard Haszprunar

Munich, 18.02.2010



Prof. Dr. Gert Woerheide