

A stylized logo featuring a light blue silhouette of a dolphin leaping above a wavy blue line, with a smaller dolphin tail below it.

DOLPHIN WATCH

NATURAL UNDERWATER SCIENCE



Dolphin Watch - Natural Underwater Science

How the project started...

During the last few years, the indo-pacific bottlenose dolphins (*Tursiops aduncus*) around Hurghada have started to gain trust in our team of divers (<http://www.swdf.de/>) and accepted us as part of their group. Together with the wild dolphins we explore the underwater world of the Red Sea and observe them in their natural habitats. This continuous friendship with the wild dolphins started in the fall of 2001 in Shaab Sambuka with one injured indo-pacific bottlenose dolphin called Ferdinand Destiny. He was bitten by a shark on his dorsal fin and on the left side of his body (Fig.1.). He turned to humans for shelter and was extremely gentle. With slow movements he accompanied our team during the dive and stayed close to the boat the whole day. On the next day, we met him on the same reef again and spent the whole day together. In the following weeks, Ferdinand encountered us on different reefs in the area. Whenever we met him, he stayed close to us and followed our boat for a while.



Fig.1. Injured bottle-nose dolphin Ferdinand in Shaab Sambuka on March 2001



Fig.2. Ferdinand in Abu Nugar on February 2010

Dolphins live in a fission-fusion social system which means that members of the same community form frequently changing subgroups. Ferdinand was isolated from his group during the time that he was healing from the shark attack. When his wounds had bettered, Ferdinand once again became integrated in the group and accompanied our team with his group members. Until now we have visited the dolphins as much as possible in their natural habitats around Hurghada and videotaped them underwater in their daily life (Fig.3. and Fig.4.).



Fig.3. Our team and the indo-pacific bottlenose dolphins in Fanus West

“Dolphin Watch” was founded in October 2009 by the biologist Angela Ziltener from the University of Zurich, technical director Michael Stadermann and layout designer Sandra Caramelle. To enhance humans’ awareness of dolphins and the surrounding ecosystem of the Red Sea, a movie from a dolphins’ perspective, in this case Ferdinand, is planned for the next year. With more than 200 hours of film material of dolphins, film producer Michael Stadermann is creating a TV series of Ferdinands’ life and his group members for children.

On http://www.youtube.com/watch?v=zV_AVw0YuwE you can already watch the preview of the film “Ferdinands Welt”.

In cooperation with scientists from different universities, dolphin conservation organizations and supported by HEPCA, “Dolphin Watch” wants to collect more data about:



Fig.4. Michael Stadermann is filming the playful dolphins

- The population size of the indo-pacific bottlenose dolphin and distribution in the area of Hurghada by doing photo identification
- Seasonal residency patterns of dolphins in the Hurghada area (residents and transients)
- Environmental and anthropogenic influence on the behaviour activity of the dolphins
- The dolphins’ critical habitats (e.g. El Fanus, Shaab El Erg) for particular behavioural activity states such as mating, calving, resting and foraging
- Dolphin social behaviour and group structure
- Specialization techniques in different contexts (foraging, social, play)

Photo identification

The research of animal behaviour, ecology and life history of any species is dependent on identifying the individuals within a population. Without distinguishing the animals from each other, nothing can be predicted about their social network and social structure within a group. To monitor the presence of individual dolphins around Hurghada and to track their movements we use dorsal fin photography techniques to identify them by their scars, nicks and notches (Fig.5.).

Dolphin Watch, Natural Underwater Science		Photo ID, Fin types/category		Mai 2010/C. Ackermann
<ol style="list-style-type: none"> 1. Priority: dominant, easily recognisable features 2. Priority: upper dominant nick(s) or over the entire fin 3. Priority: mid dominant nick(s) 4. Priority: lower dominant nick(s) and scars 		Fins can be ordered into more than one category but not more than three		
Bend Fin 1	Missing Top 1	Lead Ding 1	Peduncle Notch 1	
Tip Nick 1	Up 2	Mid 3	Low 4	
Entire 2	Scaring 4	Clean		

Fig.5. This photo ID "Fin type/category" table is developed and applied by the Shark Bay Dolphin Project in Western Australia. To identify an individual dolphin, they use different categories to order the dorsal fins.

Being integrated as divers in the group of dolphins allows us also to take pictures of their whole body. This gives us more relevant information about their physical conditions, reproductive state and their gender. Furthermore, dolphins with a clear dorsal fin can be often recognized by irregularities in the shape of their fluke, their pectoral fins and other distinct characteristic markings on their body. In particular, immatures or calves are sometimes not easily identifiable because they often have very few observable markings. Once a dolphin has been identified, we give it a name and include its picture into the photo

ID catalogue as you can see below. Because the notches or markings in their dorsal and pectoral fins are permanent, we can recognise them as individuals over many years. With the film material of Michael Stadermann we are able to go back to the year 2001. At the moment we have registered 98 indo-pacific bottlenose dolphins around the Hurghada area.

Catalogue of the indo-pacific bottlenose dolphin in Hurghada, Red Sea



**Ferdinand
Destiny**

Sex: Male
Attribute:
Fin: lead ding and up nicks
Special: curved fin
First registration:
Shaab Sambuka, March 2001



Shams

Sex: male
Attribute:
Fin: tip nick, big low nick
Special: wave nick on the right side of the fluke
First registration:
Shaab el Erg, Jan. 2010



Kira

Sex: Female
Attribute:
Fin: Tip nick, mid and low nicks
Special: Nicks on the left pectoral fin and white on the top of it, white mouth; mother of Kiri
First registration:
El Fanus, Dec. 2009



Kiri

Sex: unknown
Attribute:
Fin: Tip nick
Special: big scar on the left side of the body, infant of Kira
First registration:
El Fanus, Dec. 2009



Conservation effort

Over the last twenty years, the tourist industry in Hurghada has enjoyed a booming success. As a consequence of this expansion of human presence in the region, there is a lot more vessel traffic on the sea. Swimming with wild dolphins has become a very popular activity and attraction for tourists in Hurghada. Fanus West (< 20m depth) is a famous dive site to the north of Hurghada and it is well known as an area for swimming with wild dolphins. The reef has two main “ergs” - pinnacles of coral reef that rise up towards the surface of the sea and harbour a stunning diversity of marine life. One of these is in the north and one is in the south and there are several smaller pinnacles off-to the western end. Divers can follow the reef wall and watch out for dolphins as they are frequent visitors in this dive site.

The dolphins enter into the reef during daytime mostly for resting. Often they move between the north and south erg, but sometimes they also enter the lagoon and interact with snorkelers and divers. The presence of divers *per se* does not seem to have a negative impact on the dolphins.

Much more problematic are the tourist boats advertised as dolphin watching/swimming trips as well as the vessels bringing the divers to the spot. The dolphin watching/swimming boats visit the lagoon especially to see the dolphins. When dolphins are present the diving boats drive around for longer than without dolphins. As soon as a group of dolphins is sighted the boats will often approach directly right next to the animals without maintaining any clear distance (Fig.6.a. and 6.b.), drive through the group and even hit the animals! Furthermore, immense numbers of tourists jump from the boats directly into the group of dolphins. Recently it seems that these wild dolphins are even fed to come closer to the boat.



Fig.6.a. The boats approach directly right next to the dolphin group.



Fig.6.b. A crowded zodiac is driving right next to the dolphins in Fanus West.

This physical harassment may be very stressful for the dolphins, but also the noise exposure caused by the boat engines could have a negative influence on the dolphins and their echo location. Multiple tourist boats and zodiacs follow the dolphins for several hours.

The present “dolphin watching and swimming” activity is performed without any respect for the wild living animals and injuries and stress of the bottlenose dolphins is not consciously taken into account. Inattentive boat driving is not only a serious risk for the dolphins but also divers on the dive site are in danger.

Besides these obvious threats, different studies of indo-pacific bottlenose dolphins show that tourist boats can affect the behaviour of marine mammals. A study conducted in Zanzibar, Tanzania, demonstrated that the presence of boats can decrease the dolphins’ resting time and therefore can have negative long-term effects on the dolphins’ energy budget and physiology (Christiansen F. *et al.*, 2010). To minimize actual threat of injuries and stress as well as potential long-term negative effects on the indo-pacific bottlenose dolphins near Hurghada, regulation on dolphin tourism activities is absolutely necessary!

Result and aims

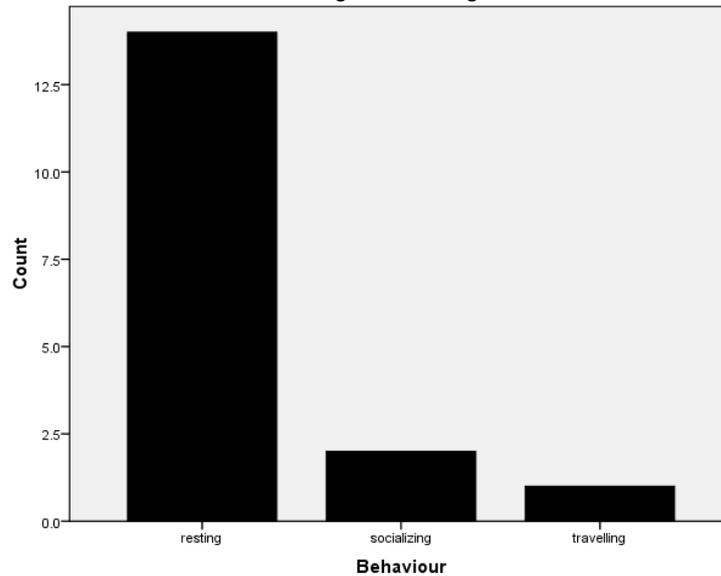
Presently there is no conservative activity concerning the dolphin watch/swimming problematic in the Red Sea near Hurghada. To regulate the present “dolphin watching/swimming” activity near Hurghada and especially Fanus West, “Dolphin Watch” plans to work out the following conservation measures:

1. Collecting scientific data about the importance of Fanus West and other critical habitats for the dolphins as well as data about the dimension of the threat
2. To design an adequate conservation area in Fanus West and other critical areas
3. To prepare basic guidelines for the “dolphin watching/swimming” activity in Hurghada

1. Collecting scientific data

Observations by “Dolphin Watch” from 2004 until now demonstrate that the dolphins in Fanus West stay in this area to rest. Between October 2009 and March 2010 “Dolphin Watch” data proved that dolphins in Fanus show significantly more resting (Fig.7.) than other behaviours such as socializing or travelling ($\chi^2=0.01$). This underlines the importance of the location for the dolphin population and the seriousness of the actual threat by the boat activity.

Fig.7. Dolphins in Fanus West show significantly more resting behaviour than socializing or travelling.



More information can be gained by a further study period carried out by “Dolphin Watch”. This study will include further documentation of the dolphin behaviour in Fanus West as reactions to the tourist boats. Furthermore, “Dolphin Watch” wants to document the activities of the tourist boats to get a more detailed impression of the actual negative activity.

To localize and document other critical habitats and possible future conservation areas, the planned study will also include trips to other dive sites where similar situations are expected (e.g. Shaab El Erg).

For conservation purposes it is important to get information about population size, distribution and density of the indo-pacific bottlenose dolphin in the study location. To pinpoint locations with special importance for the dolphins as resting, calving and feeding places is an important step for the definition of special conservation sites. Furthermore, information about the environment as well as their social structure can give important implication for the design of conservative management plans.

2. Design of conservation area

In the future, Fanus West should be a protected area for the dolphins (Fig.8.) where no boats are allowed to enter. The boats will have to use the already installed anchoring facilities in front of the conservation zone. From there, divers and snorkelers will be permitted to enter the critical area. In addition, boats can drop divers or snorkelers outside of the protected area to drift for example to the Anker position. A second conservation area for

the dolphins should be in Shaab El Erg where often big groups of dolphins rest during the day time.

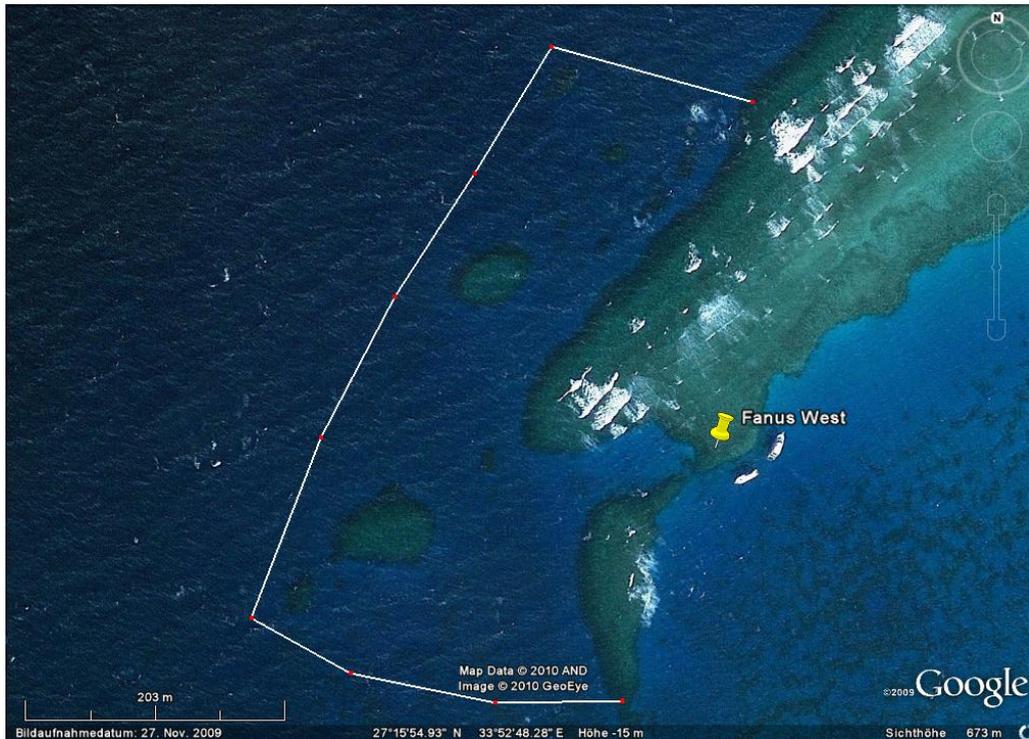


Fig.8. Planned protected zone for the dolphins in Fanus West where boats and zodiacs are not allowed to enter. The white line on the map mark the protected area.

3: Basic guidelines for the “dolphin watching/swimming” activity

The present situation shows that it is absolutely necessary to inform operators, captains and tourists about bottlenose dolphin behaviour, social organization and intelligence. To develop an understanding of the animals and the necessity to treat them with a high level of respect in their natural environment, “Dolphin Watch” and HEPCA have designed guidelines for the “dolphin watch/swimming” activity which you can download on the HEPCA website.

For more information about the “Dolphin Watch – Natural Underwater Science” project please contact Angela Ziltener: a.ziltener@aim.uzh.ch.