7. Summary

In recent years, swimming programs with dolphins and in particular dolphin-assisted therapy programs have become very popular. In spite of this popularity, there is a lack of scientific study and publication concerning the behavior of dolphins in these swimming programs. This thesis attempts to give some shape to this topic. Here is a brief description of the direction of the research:

In order to provide the study with a groundwork with which to interpret dolphin behavior the first focus was on dolphin ultrasound. In particular, ultrasound characteristics and possible modes of functioning were analysed. Based on publications in medicine concerning the safe use of ultrasound and the calculation of possible dolphin ultrasound emission, it is predictable, that under certain conditions – sufficient intensity, repeated application over several days or weeks and a certain exposure time during each session – ultrasound emitted by dolphins can have an effect on biological tissue, especially on swimmers' tissue. This prediction was used to interpret the observed contacts between dolphins and human swimmers. Furthermore, a method was developed and a device was built to ascertain the directional reference of the individual animal sound emissions.

Data recording of dolphin behaviors took place 1998 at "Dolphins Plus", Florida/USA, (five dolphins, 83 sessions) and 2002 at the "Dolphin Reef", Eilat/Israel, (13 dolphins, 37 sessions). Analyses were concentrated exclusively on data of unstructured swimming programs, where dolphins could interact spontaneously with the swimmers with no control from the trainers.

Detailed observations of contacts and distance behaviors between dolphins and different groups of swimmers (adults, children and disabled children) at "Dolphins Plus" showed that only one of the five dolphins had a clear preference towards disabled children. Through my calculated predictions, I could conclude that the observed close contacts between dolphins and disabled children and the resulting maximal possible duration of ultrasound application did not constitute sufficient evidence to expect an ultrasound effect on biological tissue.

In addition to the analysis of dolphin preferences to particular groups of humans at the "Dolphins Plus", the spatial distribution of dolphins and humans was examined. It became apparent, that close spatial distances between the dolphins and

humans involved in the swimming programs were more rare than expected for a random distribution of dolphins. In addition, some other significant dolphin behaviours appeared modified, whereby especially their speed of movement, frequency of breathing and depth of diving showed values that were greater than during times without swimming programs. When adult humans were present such effects were more prominent than under a presence of disabled children. These findings have been interpreted as indications for a 'subject-related' avoidance behaviour of dolphins at the "Dolphins Plus" towards human swimmers.

The findings at “Dolphins Plus” were compared with the behavior of dolphins at “Dolphin Reef”. It was shown that the dolphins were very attracted to the human swimmers there. Both facilities were fenced enclosures with ocean water but their sizes differ and dolphins were treated differently. Therefore, I have discussed how the different living conditions may be responsible for the differences in dolphin behavior.