Earthwatch 2017 Annual Field Report

TRACKING DOLPHINS IN THE ADRIATIC SEA

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Report completed by: Ana Hace
Period Covered by this report: June -September, 2017
Dear Volunteers,

Thank you for participating in the expedition Tracking Dolphins in the Adriatic Sea and contributing to our research on local bottlenose dolphin population. Without you, the research season would not be that successful.

Together we have collected a very big and important amount of data. In 70 days we did over 170 hours of land surveys from Piran bell tower, we surveyed over 2,950 km of the sea in the Gulf of Trieste with our research boat and registered 76 sightings! From the first until the last day of expeditions you have been really helpful and fun. With the help you provided, whether it was an extra pair of eyes on the survey boat, helping with the equipment, recording dolphin dive profiles or helping with data entry, we were able to get high-quality data. This will contribute to the improved conservation of dolphins, their habitat and other species living in the northern Adriatic Sea.

We appreciate your high motivation. Neither rain nor heat suppressed your enthusiasm for fieldwork and data processing. You proved to be excellent dolphin spotters, recorded a great number of dolphin dives and entered a lot of data. We are also very grateful for sharing your experiences from different projects you have attended before joining us and for boosting the team spirit with your positive energy.

We hope that by taking part in this expedition, you have gained new knowledge and experiences that you can cherish and share with your family and friends.

Thank you for all your help and all the best in your future challenges.

Ana Hace

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SUMMARY

One of the most studied cetacean species is bottlenose dolphin, yet there are still some populations of this species we know very little about. Thanks to a long-term research project in the northern Adriatic Sea, we have learned a lot about the local bottlenose dolphin population. The main research method is photo-identification, which is used worldwide and it gives a lot of information on dolphin ecology.

This year we have published a very interesting and innovative complementary method of identifying individual dolphins by their faces, which was not known previously. This new method is also very applicable to calves, which usually do not carry sufficient dorsal fin markings to be recognizable after they leave their mothers, and can, therefore, help increase cross-generational knowledge. It may be particularly suited to species that do not carry many markings on dorsal fins, or those that lack dorsal fins altogether.

GOALS, OBJECTIVES, AND RESULTS

1) Survey effort and dolphin sightings
We recorded 76 sightings during Earthwatch expeditions between June and September 2017. Locations of sightings, depicting positions of dolphins at the beginning of each sighting, are shown in Figure 1. Dolphins regularly moved between Slovenian, Italian and Croatian waters. In total, we carried out 76 boat surveys and covered 2.955.4 km (Figure 2). We carried out 94 land-based surveys, totaling 172 hours and 53 minutes off land-based effort.
Group sizes of encountered animals ranged from 1 to 55 animals, comprised mostly of both genders. Calves were present in 69.7% of all group encounters. Dolphins have used the research area for variety of activities including socializing, feeding, travelling, diving, resting, breeding and raising of the calves. Behavioural data collected from this season shows that dolphins spent most of their time diving, feeding and travelling.

Altogether in the past three years (2015, 2016 and 2017) we recorded 152 sightings (Figure 3), carried out 328 land surveys, totaling in 483 hours and 37 minutes of effort. 191 boat surveys were conducted and 8,010.94 km surveyed on the sea (Figure 4).


2) Abundance, population dynamics and trends
Monitoring abundance, vital rates and assessing trends is vital in evaluating the status of long-lived top predators. Reliable abundance estimates are critical for conservation. This is the basic mechanism in evaluating whether human activities are having detrimental effects on populations. Annual abundance estimates are highly variable (Genov et al., 2008; Genov, 2011), but have been declining in recent years (Morigenos, unpublished). These data are being used towards a PhD thesis of T. Genov. Preliminary analysis revealed 63 identified individuals; most of the animals encountered were known from before and belonged to the resident animals from our local population.

3) Social and genetic structure
The photo-identification data collected during this season will contribute to a better understanding of the social structure of this local population. Preliminary examination of the social structure of this population, using social network analysis (Wey et al., 2008; Krause et al., 2009), showed that the local dolphin population is structured into distinct social clusters or communities. We encountered the two main social clusters during this research season. As before, there was no mixing between these two clusters.
During expeditions in 2017, we haven’t collected any samples from dead or live animals. Biopsies are performed only in very good weather conditions and at times when we least disturb dolphins (depending on their behaviour). Animals are sampled only once. In this way we increase the chances to get the biopsy sample and ensure we don’t disrupt the animals unnecessarily. During sightings, there were either calves present, dolphins were hard to approach because of certain behaviour patterns (like diving or fast travel), or the weather conditions were not good enough (high waves and wind). However, all the samples from live and dead animals from previous years will be included in future genetic, toxicological and feeding ecology analyses. The interplay between dolphin social structure and kinship among individuals is being investigated as part of a PhD thesis of T. Genov.

4) **Habitat use and critical habitats**
The existing and newly gathered data in 2017 are being used to build habitat preference models, as part of a PhD thesis of T. Genov. Such information is vital for the designation of the Natura 2000 sites of special importance for the bottlenose dolphin. The results of this exercise are not yet available.

5) **Interactions with fisheries and boat traffic**
Fisheries were present in 89% of the sightings, with 32 observations of dolphins actively following trawlers, 3 observations of dolphins around mussel and fish farms, and 7 cases of dolphins observed near trammel nets. Fishery interaction was confirmed in 42 %, mainly involving bottom trawlers. Additional data on dolphin activities in the area around fish farms were collected via passive acoustic monitoring using a C-POD, a static passive acoustic data logger. This, coupled with observations made during surveys provides information on dolphin feeding habits and interactions with the fish farms. By working closely with local fishermen and fish farmers, we hope to obtain further insights into the factors driving dolphin-fishery interactions and how detrimental interactions may potentially be avoided.

In summer months, recreational boat traffic increases significantly along the Slovenian coast. Studies have demonstrated that recreational boating can have strong adverse impacts on dolphins using coastal habitats, affecting their distribution, behaviour and vocalizations, and increasing the risk of collisions. There is some concern that the large number of boats may be displacing dolphins from important habitat (Genov et al., 2008; Morigenos, unpublished). The land team consistently quantified boat numbers during surveys, and monitored potential traffic-induced changes in dolphin behaviour. Up to 160 boats could be recorded in the area at peak times.
Literature cited:


Project Impacts

1. Increasing Scientific Knowledge
   a. Total citizen science research hours: 21 volunteers contributed approximately 1200 hours of support in the field.

   b. Peer-reviewed publications


   c. Non-peer reviewed publications: Technical reports, white papers, articles, sponsored or personal blogs

   d. Non-peer reviewed publications: Books and book chapters

   e. Presentations


Kotnjek P. 2017. Interactions between bottlenose dolphins (Tursiops truncatus) and trawlers in the Gulf of Trieste. 31th Annual conference of European Cetacean Society, 29th April -3rd May 2017, Middlefart, Denmark.


Podlesek P. 2017. Slovenian Dolphin Project. 18th Young and Mediterranean Meetings, 7th November – 9th November 2017, Villefranche sur Mer, France.


f. Other media:
https://www.vecer.com/slovenska-inovacija-delfine-prepoznavajo-po-obraznih-linijah-6339088
http://www.onaplus.si/v-piranu-se-bodo-poklonili-delfinom
http://www.prmorske.si/2017/08/20/dan-delfinov-v-piran-prvabil-mnoge-obiskovalce-f
http://wwwREGIONALObala.si/novica/piranski-raziskovalci-do-pomembnega-odkritja-delfine-lahko-prepoznamo-tako-kot-ljudi-
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http://www.facebook.com/STA_Novice/videos/10154789478442035/
http://otroski.rtvslsio/bansi/avacc/media/40002677/section/bansi-tv
https://casoris.si/delfini-in-njihovi-obrazi/
http://www.accobams.org/news-publications/fins-newsletter/
2. Mentoring

   a. Graduate students


   b. Community outreach

   Provide details on how you have supported the development of environmental leaders in the community in which you work.

<table>
<thead>
<tr>
<th>Name of school, organization, or group</th>
<th>Education level</th>
<th>Participants local or non-local</th>
<th>Details on contributions/activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prince of Wales Tribal Conservation District</td>
<td></td>
<td>Local</td>
<td>Consultation with tribal and local leaders on this research project</td>
</tr>
</tbody>
</table>

   c. Developing Environmental Leaders

   As part of our education program Morigenos researchers carried out over 60 lectures, workshops, nature science days, presentations etc. for various target groups (kindergarten kids, schoolchildren, high school students, college students, general public) from all over Slovenia and abroad.

   In order to present our work and to emphasise the importance of preserving marine biodiversity, we organized various events and campaigns. Through the Adopt a Dolphin program we raise awareness and educate by sharing our knowledge and experience of local dolphin population and draw attention to the importance of marine conservation.

3. Partnerships

   1) AUTHORITIES. Morigenos works closely with governmental representatives (e.g. Ministry of the Environment and Spatial Planning, Institute of the Republic of Slovenia for Nature Conservation, Institute for Waters of the Republic of Slovenia), particularly on the issues of monitoring, implementation of conservation legislation and EU policies, reporting to international conventions and the EU, and identifying appropriate conservation measures.

   2) SCIENTISTS. Morigenos regularly collaborates and coordinates its activities with other scientists within the country (e.g. Bird Life Slovenia, Marine Biology Station of the National Institute of Biology, University of Primorska, University of Ljubljana, etc.), as well as internationally (e.g. Tethys Research Institute, University of Padova, University of Florence, etc.) on the issues of integrating knowledge, capacity building, training, collaborative research projects and identification of threats to marine biodiversity. Project team members are active in international bodies such as the Scientific Committee of ACCOBAMS, the Council of the European Cetacean Society, the Scientific Committee of the International Whaling Commission, the Intergovernmental Oceanographic Commission of UNESCO, etc. In May 2015, Tilen Genov was nominated into a Steering Committee of the Small Cetacean Task Teams, within the Scientific Committee of the International Whaling Commission. In September 2015, Tilen Genov was nominated Vice-Chair of the European Cetacean Society.

   3) FISHERMEN AND LOCALS. Fishermen and local people, although informally, are an important part of the project. Local fishermen and fish farmers regularly report dolphin sightings. Local people help out in local awareness events or provide logistical support in various ways. Morigenos has become a well-respected part of the local community. Morigenos has a mooring place for the project boat, made available by the local port manager. The manager of the Piran church tower has given the team a key for access to the city tower, for the purposes of land-based monitoring.

   4) EDUCATION. Morigenos works very closely with a range of schools, universities and other education institutions. A range of students carry out their student practice or their theses with the project. Education activities such as lectures, seminars, workshops and trips are regularly carried out at schools.
4. Contributions to management plans or policies

**International**

Morigenos produced expert documentation for the implementation of the EU marine strategy framework directive in relation to marine mammals and turtles in 2013 and 2014. Morigenos data has also been used to establish Gulf of Trieste as Important marine mammal area (IMMA) by the IUCN Marine Mammal Protected Areas Task Force ([https://www.marinemammalhabitat.org/](https://www.marinemammalhabitat.org/)).

**Regional**

National action plans for the conservation of dolphins and sea turtles are being drafted.

**Local**

Morigenos is providing input into the process of revisiting the management of Cape Madona Natural Monument (a small marine protected area in Piran).

5. Conserving natural and sociocultural capital

We believe that setting a good example is the best way to contribute to society. Within implementing our project we are putting all our efforts into making our activities environmentally and people friendly.

We establish and maintain good relations with local inhabitants and cooperate with them in any way we can. We regularly attend and/or participate in local events. This year we collaborated in the coast clean up organized during Mediterranean Coast Week. We also organized annual Dolphin Day in Piran, which was visited by local and non-local people to raise awareness about local dolphins, familiarize our work to general public and encourage them to help protect our marine ecosystem. With the local Gymnasium we organized a practicum for students to experience the work in environmental NGO in theory and practice.

We also take care of the environment. Besides keeping our carbon footprint as low as possible, we also always pick up litter from the sea (balloons, Styrofoam, pieces of plastic …).

Also, one of Morigenos members is a local high school teacher. This gives additional recognition of Slovenian Dolphin Project in the local high school and among their student peers.

**Conservation of taxa**

The project does contribute to maintaining (and hopefully enhancing) taxa of conservation significance. Bottlenose dolphins (Tursiops truncatus) as a species are not threatened globally, but they are locally. The Mediterranean population is listed as "Vulnerable" by the International Union for the Conservation of Nature (IUCN). Several local populations are either poorly known or completely unknown. Loggerhead turtles (Caretta caretta) are listed as "Endangered" by the IUCN on a global scale, so their conservation is of paramount importance. The northern Adriatic is known to be one of the most important areas for the growth, development and feeding of juvenile loggerheads, as well as for feeding of adult loggerheads. Both the bottlenose dolphin and the loggerhead turtles are species of European importance, and are listed in the Annexes of the EU Habitats Directive.

In 2016 postage stamps with dolphins were issued in Slovenia as part of Morigenos’ initiative proposed to the Post of Slovenia. With this project, national public awareness increased.

The disappearance of turtles and dolphins from Slovenian waters would mean a tremendous loss of biodiversity for Slovenia. This would mean a significant failure of a country to protect its natural heritage. Furthermore, the loss of this habitat would diminish the quality of the habitat in the north Adriatic as a whole and therefore the deterioration of conservation status for these species.

**Conservation of ecosystems**

*In the past year, has your project helped conserve or restore habitats?*

Not directly through active modification, but definitely indirectly through measures aimed at maintaining a favorable conservation status of these species and their habitat. For example, the designation of Natura 2000 sites (see "Contributions to conventions, agendas ...") directly contributes to maintaining (and restoring, where necessary) of natural habitats, as it facilitates restriction of harmful activities such as construction, trawling or boating in these areas. A more responsible attitude of boat drivers (see "Actions or activities that enhance the local natural environment...") also maintains a safer and better habitat for the species.
Ecosystem services

It is widely known that top marine predators have an important regulatory role in marine ecosystems. As such, they help maintain healthy marine food webs. Humans living along coasts are directly dependent on healthy marine food webs for food. Food that the healthy ecosystems provide is one type of ecosystem services. Further, the existence of charismatic megafauna such as dolphins and turtles makes an area more appealing to tourists and especially eco-tourists, thus bringing revenue. Economic benefits are another type of ecosystem services. Healthy and clean ecosystems, needed for the survival of our target species, also provide aesthetic, spiritual and recreational benefits for humans. Such benefits are yet another type of ecosystem services. Actions aimed towards conserving marine top predators should therefore be seen as enhancing a range of ecosystem services.

Conservation of cultural heritage

Even though we are focusing on nature within our project, culture is just as important. A lot of times they are intertwined, as it is for example the case in Sečovlje Salina Nature Park. As we are hosting volunteers from all over the world, it is always our great honour and pleasure to present to them the Slovenian cultural heritage and the local specifics. The City of Piran is extremely rich with its cultural heritage: the architecture, local way of life, traditions, and old crafts are all connected with nature and the sea.

Impacting Local Livelihoods

Ecosystem services often have direct implications to people's livelihoods on their own. Apart from that, because the project provides employment, it contributes to livelihoods of people directly, through providing job(s). With our project we are following the saying: live locally, think globally. We try to support our local community as much as possible. Mostly, we buy produce from local farmers, fishermen and craftsmen, order services from local business and visit local cultural events.

Local Community Activities

Morigenos has very good relations with local community. Officials and locals know our work and also help out with informing us about dolphins sightings, participating or helping in different activities (clean-ups, workshops, presentations, appearances in their events, etc.). Our activities and events are open to the public; also membership is open to anyone with interest. Local are also invited to follows us and give their feedback on our social media and in person.

See also: Actions or activities that enhance natural and/or social capital

Acknowledgements

Firstly and foremost we are grateful to Earthwatch for supporting the Slovenian Dolphin Project. Special thanks go to the volunteers that joined our project, for all the “driving force” and good will that they brought to the project. Local community that has been very supportive accepted the project and helped us grow. And last but not least thanks to all Morigenos supporters and donators.