Conservation Actions of Cetaceans in the Georgian Territorial Waters

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Project Partners & Collaborators

1) Co-Funder of the project Rufford Foundation
2) Ilia State University – provide boat and other resources for conducting the research.
3) Prof.NatiaKopaliani: Head of program for the Ecology and Conservation of Large Mammals in Ecology Institute, at Ilia State University. E-mail: - natia_kopaliani@iliauni.edu.ge.
4) Dr. Arda M. Tonay: Assistant professor in Marin biology department of faculty Fisheries at Istanbul University. E-mail: - atonay@istanbul.edu.tr. Implement of Pingers. So he will help us by this way.

Section 1:

Summary
In reference to the conservation of Dolphins in Georgia this project was a pioneer seeking to reduce cetacean's mortality inside fishing nets. The by-catch is the major threat for cetaceans and Georgia is not an exception. In search of different methods, acoustic warning systems (pinger) has been chosen for slow down accidentally tangling of dolphins in the gill-nets. In order to implement pinger device we reached an agreement to local fisherman. Unluckily, they cancelled a deal prior to the field work and asked for the compensation in return of collaboration. So, we had to overcome this situation, in the middle of the project, and changed the objective. We decided to survey pinger effectiveness without nets. According to our survey, we assume that this type of pinger doesn't have any impact on Common dolphins and Bottlenose dolphins. But we are concerned about survey validation due to short period had left for research. Apart from by-catch, we have been collected the tissues from carcases for further analysis on expected viruses or other diseases. But it is still in process. National Environmental Agency developed 24/7 hotline (153) for stranding monitoring reports. The government have interest risen in dolphin conservation and they got involved in this project in hope that they will do direct activities for the good of endangered cetacean species.

Introduction
Our team has been monitoring stranding and abundance of dolphins in the Georgian territorial waters since 2010. Under this project, we monitored stranding by monthly and collected proficient data for further analyses. Georgian Black Sea coast has to be wintering ground for black sea anchovy fish that led Cetaceans migration towards our coastline. Thus, our team identified core areas for cetacean's feeding and reproduction grounds. The major threat to cetaceans is by-catch inside fishing nets during the year with the exception of period from May to June. Our team reported individual that had fish net traces on the body (image 8). Tail cut carcases were found during the stranding monitoring as well. Also we tested for the first time influence of the pinger device on dolphins to reduce by-catch rate. After this project the report from people about stranding events has been increased 1.5 times compare to 2016. Those outcomes are really important and valuable for future direct conservation actions for dolphins in Georgia.

Project members
1. Davit Dekanoidze – Expert in Cetacean ecology and monitoring. Field researcher and Public awareness coordinator, Age: 29
2. Levan Ninua – Expert in Cetacean Ecology and autopsy. Age 31

3. Nana Devidze – Cetacean stomach analysis expert, Age: 30

Section 2:

Aim and objectives

The aim includes the following objectives:
Objective 1: Assessment and mitigation of bycatch
Objective 2: Assessment of spatial and temporal distribution of cetaceans – identification of core areas
Objective 3: Establishment of stranding network
Objective 4: Raise public awareness and capacity building

Changes to original project plan
There were unexpected important changes in implementation of Pingers inside the fishing nets. We faced unforeseen difficulties dealing with fisherman. They had an agreement with us and were really welcomed to our project. But they cancelled it. We assumed that the reason was the fear of the penalties and they don't trust us. So we found a local person who has trust with them. But we lost a lot of time in searching with him. So we changed the plan and tested only pinger influence on dolphins without net. We put a pinger in the water and recorded dolphin activities during the day using hydrophone.

Methodology

Objective 1.
a) We conducted a threat analysis to justify adequately other conservation problems existence apart from by-catch. We interviewed 12 fishermen about by-catch evidences, on how frequently they had such cases. Our team member attended the fishing process with fisheries and collect the data of the bycatch rate individuals per kilometres. There were two variables – presence and absence of cetaceans in the net. None of them has been detected during the project.
b) - Implement acoustic warning system on the fishing nets such as "Pingers". Our team will choose fishing gear and with agreement of fisheries and Pingers will be attached inside net - this is one appropriate method to reduce bycatch (Gonener and Bilgin, 2009). Also our project will monitor the pingers effectiveness, due to it might have a bad influence on cetaceans. Based on the recent surveys, there are some core areas where the dolphins are stranded. We hypothesized that dolphins are entangled mostly in gillnets during fishery season. In addition, Yelkouan Shearwaters are listed as VU in IUCN. They are quite prone to die in fishing nets, but this kind of mortality has never been reported in Georgian waters. Hence, we will also monitor the Yelkouan Shearwater mortality in fishing nets under this project.

Objective 2.
Field survey, which includes photo identification and following cetacean species groups by Motorboat will give us information where they frequently feeding and socialized. Based on this data we identified cetacean core areas by project experts and advisors.

Objective 3.

a) We monitored stranded dolphin once per month during the project. We examined 11 dolphins and all of them were stranded from January to June. Our team trained kolkheti national park rangers in stranding monitoring.
b) Project experts organized workshop for rangers and trained them in collection and examining stranded data and encouraged the local organizations to share the information of stranded evidences urgently via online database, to rapidly respond the reported stranding.

Objective 4. Project team organized a workshop with local authorities, Kolkheti protected areas and environmental agencies. We discussed and give future recommendations to reduce bycatch by banned gillnets and implement Pingers inside fishing nets and creation a good warning systems for sharing information (24h Hotline).

Outputs and Results

All the figures can be found in appendices:
1. Figure 1 – Stranding data in Georgia
2. Figure 2 – 4 – Stranding counts along the Georgian coast
3. Figure 5 – Core areas of Cetaceans for feeding and reproduction in the Georgian territorial waters
4. Figure 6 – Data from hotline database about stranding reported evidences.
5. Figure 7 – 8 – Cetaceans whistle recorded via hydrophone.

Objective 1: The presentation held in the environmental agency conference room, where we introduced our project to stakeholders. They were motivated to begin a conservation of dolphins and promised to help us during this project. The major threat for dolphins in Georgia is Overfishing and bycatch. First leads to food depletion and second gives us high mortality of the dolphin population especially Harbour porpoise. We interviewed 12 fisherman during the project. Best of their knowledge they didn't have bycatch evidence since 2017. Three of them told us that they have at least 2 bycatch evidence in their nets per year. And all of the tangled species were Harbour porpoise. They say that other two species are too big (likely cmmon dolphin and bottlenose dolphin) and they only damage nets. Unfortunately no any fisherman collaborated to implement the Pinger inside their nets. They welcomed our project but always cancelled the scheduled activity. Due to that reason we only test pinger influence on dolphin groups. We recorded dolphin activities using hydrophone in two steps. First with pingers and second without pingers in the same area at the same time. The results shows that Common dolphin and bottlenose dolphin took an interest with pingers but they don't scare of it. Also there was no any bell-effect. We can't say definitely that pinger doesn't work under a year project and it needs more time. Especially we need to test it for Harbour porpoises.

Objective 2: On every season we followed the groups and we are detect them on the same areas. There are several territories along the coast where they are feeding. Compering recent data we identified important areas for dolphin feeding.

Objective 3:
Beached dolphins had their carcases collected by our team examining a common methods for autopsy (length, weight, the size of blubber). Eleven Dolphins in total. From which harbour porpoise was 2 (male and female) and 9 common dolphins (2 female, 3 male and 4 unknown)

(Figure 1 & Figure 9). Also we took notes of scars, net marks and injuries on the body considering sufficient evidence of cetacean's mortality. The bones (particularly Pelvic Bones) were collected for further analysis of sex and age that is useful technique in determining the population dynamics. On the basis of stomach content analysis we estimated different prey items for dolphins with the exception of bottlenose dolphin. The survey showed that harbour porpoise diet depend on the black sea anchovy and common dolphin diet - horse mackerel and anchovy as well. Both of the fish species has commercially important status in Georgia.

Objective 4: Only 12 young people signed into our volunteering group. From the start they were really motivated but after the project they stopped because we can't afford them enough. Our volunteers and team members had educational talks into two schools in Black Sea region in Poti and produced t-shirts and booklets about the dolphin conservation. Thankfully school children are much more motivated and interested in conservation.

Communication & Application of Results

The outcomes of the project directly addressing the conservation problem of cetaceans. There is urgent need to mitigate bycatch inside fishing nets and the fact is obvious but nobody wants to collaborate with us without any interest (i.e money). Unfortunately our team cannot pay any honorary to fisherman under this project. Also we are working on the different approach like buy some fishing nets for the fisherman and get them involve a responsibility to help us conducting major conservation activities.

Monitoring and Evaluation

We measured the resources and identified that one year and amount of money is not enough in conservation. For instance to use fisherman for Pinger testing need some money due to fisherman asked honorary for the contribution of the project. The timeline of the project is enough for our main objective of the project. The entire fishery season is enough to get representative data on Pingers. Our team tried to meet project activities to the ethical issues as well.

Achievements and Impacts

1) Stranding monitoring

We created the stranding monitoring network according to the ACCOBAMS guidelines. During the project field work we made monthly expeditions on the Georgian coast to find stranded carcasses. We examined 11 carcasses during the project. From those 2 of them was Harbour porpoise and 9 of them was Common dolphin. For the tables and graphs please see appendices.

2) Assessment of Pinger influence

This was the first attempt of direct conservation ever in Georgia for dolphins. We recorded dolphin species activities when the pinger was active and non-active. The measuring results were that Common dolphin and bottlenose dolphin took an interest with pingers which was expressed in their activity near the pinger. But after that they don't have any fear of the pinger clicks. We found no any differences and changes in dolphin behaviour during the pinger and non-pinger days. Of course, this is the short time research and we can't definitely say that pinger doesn't work properly. It needs more than one year study. Besides we need to find how different pinger devices has effect on Harbour porpoises. We can't test that because porpoises

are in winter season in high abundance in the Georgian territorial waters. Due to our fisherman difficulties we missed the winter season.

3) We also monitored the mortality of Yelkouan shearwater during the migration period in winter. We counted more than 4000 individuals in Anaklia. During the spring period we found 3 dead individuals of shearwaters (see images in appendicies). Our team member made an autopsy and they had water in their lungs which means the evidence of bycatch inside the fishing nets. We are going to monitor them permanently.

Capacity Development and Leadership capabilities

Our team is qualified in conducting various research about Cetaceans. During the project we faced many challenges. However we were not ready enough to communicate with local fisherman and stakeholders that appeared to be more difficult. Our team gained a lot experience from this issues and we are ready now to implement new approaches to overcome those challenges. This project and leadership training gain me a good experience. At this point I am able to create logical framework prior to submission that's help my project considering into account different challenges that might be occur during the survey. As you identified external factors that have influence on your tasks you can handle them easy. At least you have already worked on backup plan for difficulties. Despite of being displeased with fisherman circumstances, I am content with this project and my team. I am always proud of being a CLP alumni and it would be a great honour if I have myself selected for follow-up award. In consideration with previous experience I am able to plan my project with an eye to making a contribution of endangered species of dolphins in Georgia.

Section 3:

Conclusion

During this project, our team identified feeding and reproduction core areas for cetaceans in the Georgian territorial waters. These areas covers marine protected areas where the fishing is prohibited. Despite the legislation poaching and legal fishing still occurring. Our team reported ourselves five evidence of by-catch. The implementation of acoustic warning systems (pingers) inside the fishing net is the only theoretical approach to mitigate by-catch rate apart from legislation. But collaboration with local fisherman is unachievable. In the event of we give them motivation they will collaborate. We don't want to push them by the word of law and make them pay penalties due to fishing is the only income for their families in the region. Our team evaluated the situation and working on the different solutions. One is to provide new fishing nets for fisherman if they contribute the project. In addition to bycatch is major threat for Yelkouan Shearwater as well. We reported 3 individuals as result of bycatch.

Problems encountered and lessons learnt

- Identification of core areas, stranding monitoring and raising public awareness went well. Because we had recent data for dolphin populations and observations and it was easy to identify important feeding areas. We found new territories and we covered all the coast for stranding monitoring and that was also first year ever our team monitored the whole coast per month. Our team members worked really well in public talks and produce materials including training rangers and other stakeholders in the term of dolphin conservation.

- The most problematic activity was implementation of pinger inside the fishing nets. Due to the fisherman didn't come on agreement and they cancelled all of the activity. They didn't trust us and were hiding from us. So, it took half time of our project to dealing with them. We found a person from locals and after that we had an agreement from three fisherman but they promised us to implement pingers in September after the project. Now we are trying to find extra finances and continue this activity until we won't have a result.
- My team and I learnt that we need to assess the fisherman and other local people behaviour well. We should expected that they might cancel our agreement. So, now we know how to talk with them. They need some contribution from us like to buy a new net for them or other stuff.

In the future

Further contribution to the conservation of cetaceans in the Georgian territorial waters will be more intense public awareness. We need more resources to make big interest in locals and sea tourists. This will also encourage fisherman to contribute work as the society is willingly to contribute. Deployment of Pinegrs inside fishing nets still is the major activities in terms of direct conservation and mitigation of bycatch. We plan to buy gill-nets and test different acoustic warning systems effectiveness on endangered dolphin species.

Financial Report

Itemized expenses	Total CLP Requested (USD) *	Total CLP Spent (USD)	% Difference	
PHASE I - PROJECT PREPARATION				
Communications (telephone/internet/ postage)	400.00	400.00	0%	
Field guide books, maps, journal articles and other printed materials				
Insurance	100.00	100.00	0%	
Visas and permits				
Team training				
Reconnaissance				
Other (Phase 1)				
EQUIPMENT				
Scientific/field equipment and supplies	1,000.00	1153.99	15%	
Photographic	500.00	520.83	4%	

equipment				
Camping equipment				
Boat/engine/truck (including car hire)	1,100.00	1300.00	18%	Beside car rent we needed extra charges for car repai
Other (Equipment)	2,700.00	1481.61	-45%	we got sale on Pingers and Hydrophone because of th
PHASE II - IMPLEMENTATION				
Accommodation for team members and local guides	2,200.00	2700.00	23%	
Food for team members and local guides	1,200.00	914.00	-24%	
Travel and local transportation (including fuel)	1,500.00	1800.00	20%	Due to stranding monitoring, we found new areas and section.
Customs and/or port duties				
Workshops	800	1000.00	25%	
Outreach/Education activities and materials (brochures, posters, video, t-shirts, etc.)	400.00	400.00	0%	
Other (Phase 2)				
PHASE III - POST-PROJECT EXPENSES				
Administration	450.00	550.00	22%	
Report production and results dissemination				
Other (Phase 3)				
Total	**12,350.00**	**12,320.43**		

Section 4:

Appendices

Output	Number	Additional Information
Number of CLP Partner Staff involved in mentoring the Project		
Number of species assessments contributed to (E.g. IUCN assessments)		
Number of site assessments contributed to (E.g. IBA assessments)		

Number of NGOs established		
Amount of extra funding leveraged ($)		
Number of species discovered/rediscovered		
Number of sites designated as important for biodiversity (e.g. IBA/Ramsar designation)		
Number of species/sites legally protected for biodiversity		
Number of stakeholders actively engaged in species/site conservation management		
Number of species/site management plans/strategies developed		
Number of stakeholders reached		
Examples of stakeholder behaviour change brought about by the project.		
Examples of policy change brought about by the project		
Number of jobs created		
Number of academic papers published		
Number of conferences where project results have been presented		

Appendix 4.1 CLP M&E measures

Bibliography

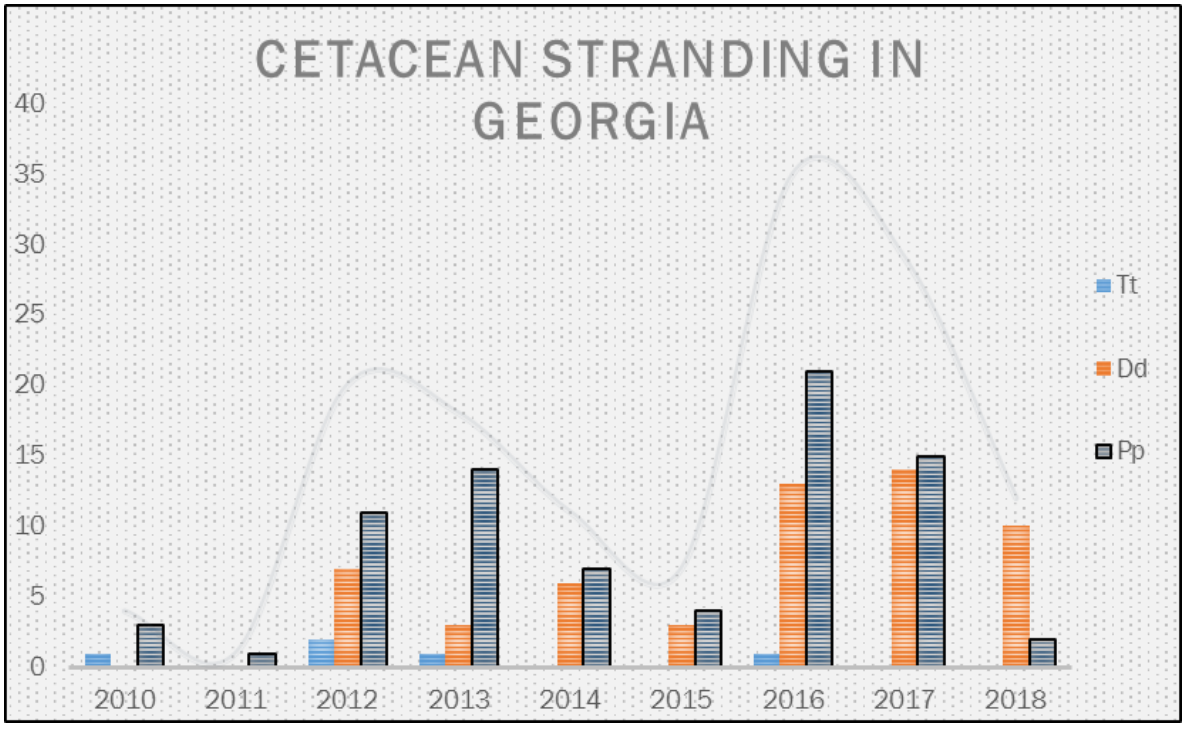

Figure 1. Stranding in Georgia from 2010 – 2018. Blue – Tursiops truncates, Orange – Delphinus delphis, Black – Phocoena phocoena

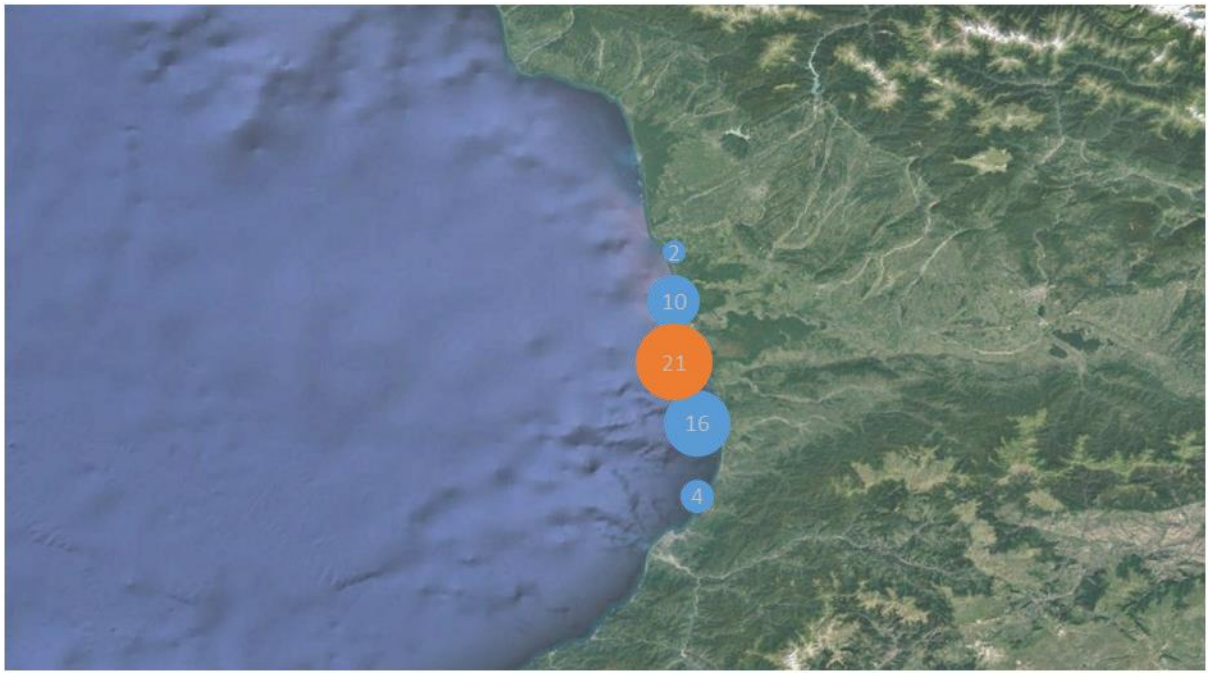

Figure 2. Stranding of Common Dolphin on the coast during 2010-2018. The numbers inside the circle indicates stranded carcases counts.

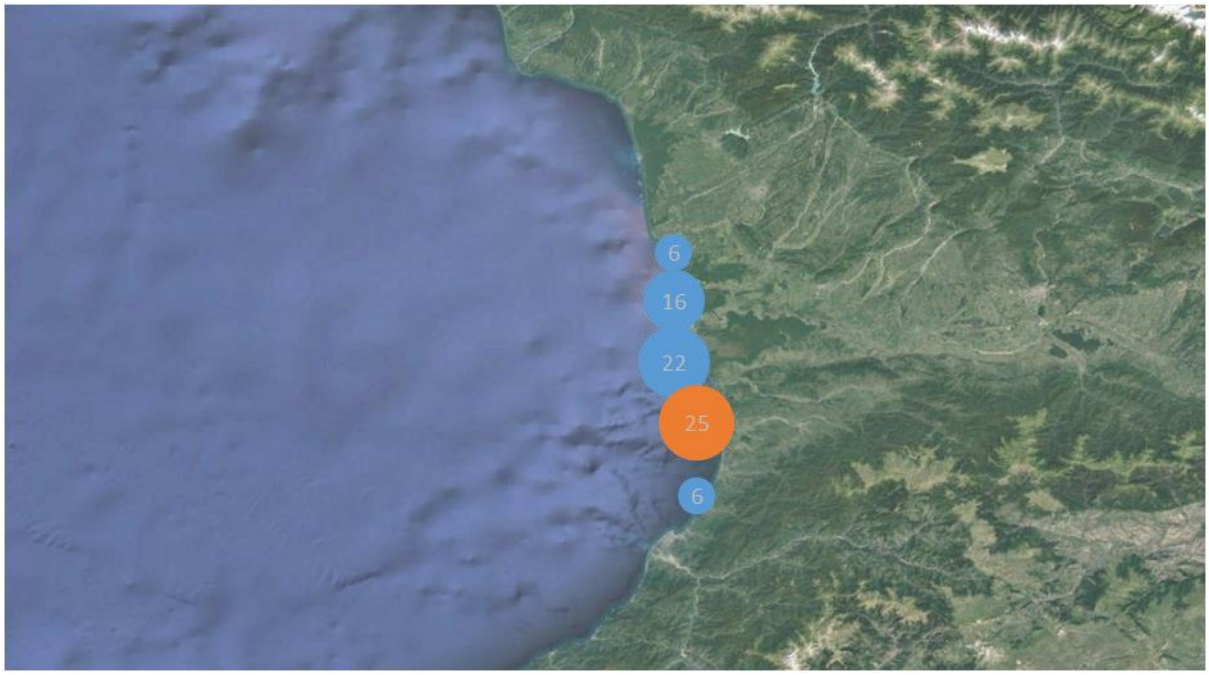

Figure 3. Stranding of Harbour porpoise on the coast during 2010-2018

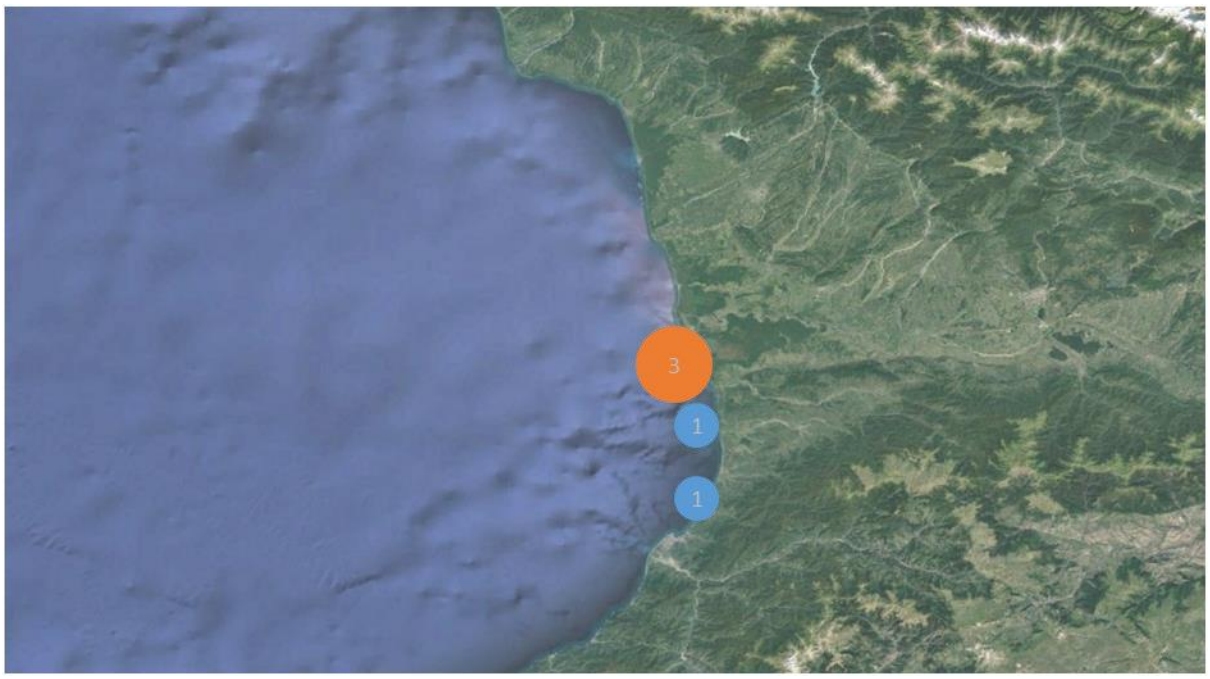

Figure 4. Stranding of Bottlenose dolphin on the coast during 2010-2018

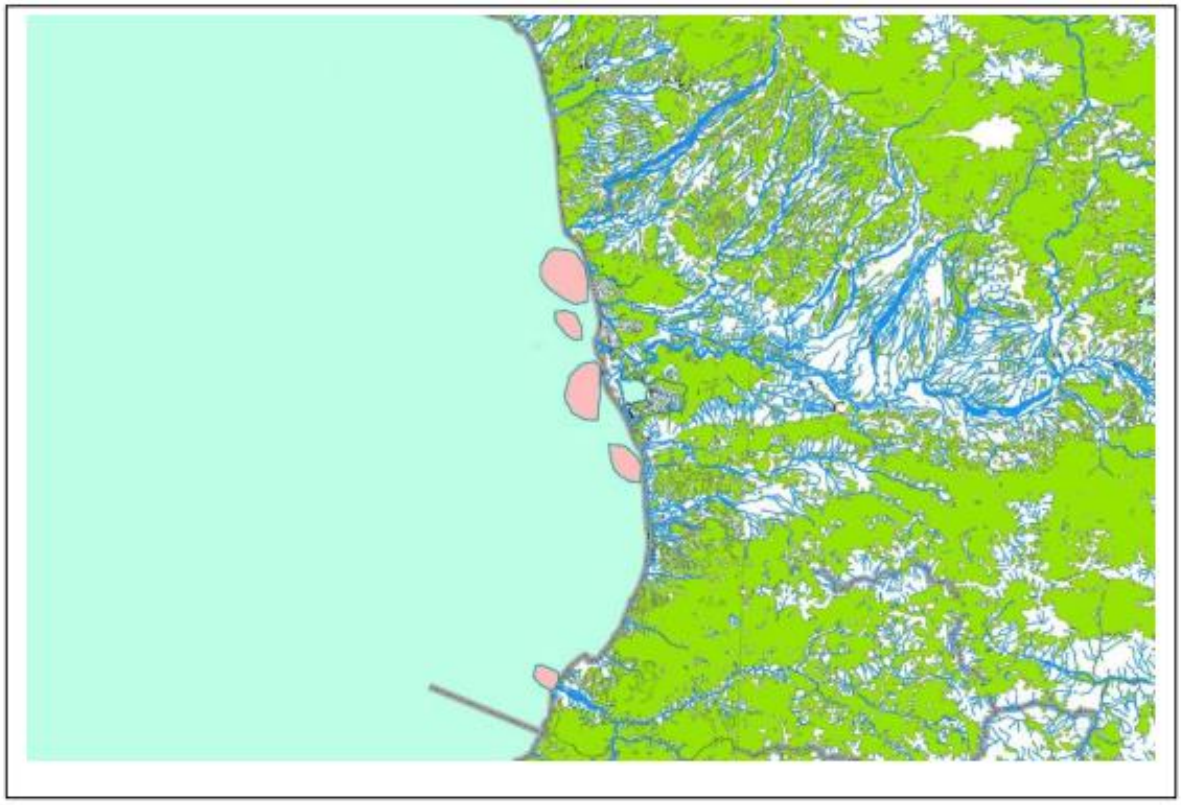

Figure 5. Core areas of dolphins in the Georgian territorial waters. Pink polygons are represented the areas that are important for dolphin feeding and reproduction.

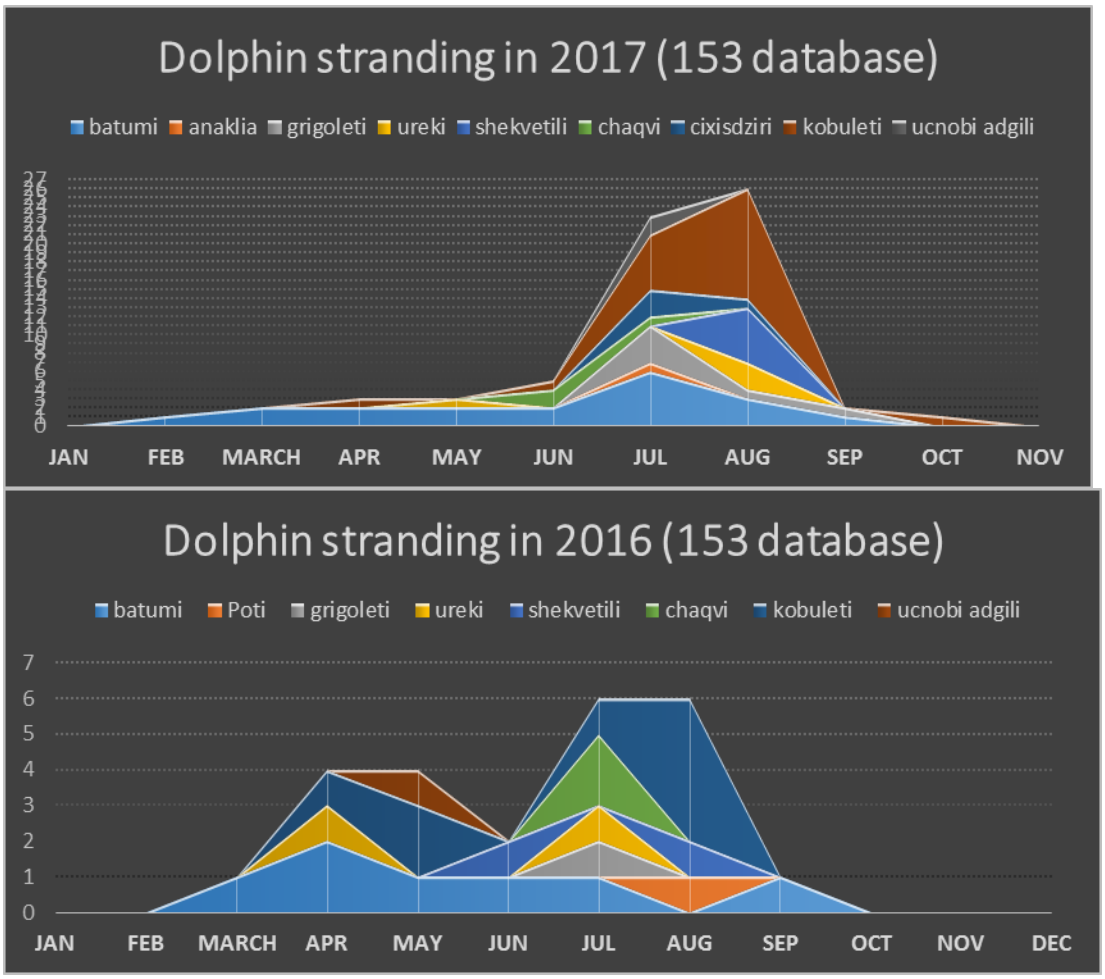

Figure 6. Environmental agency hotline stranding dolphin database statistic in 2016-2017

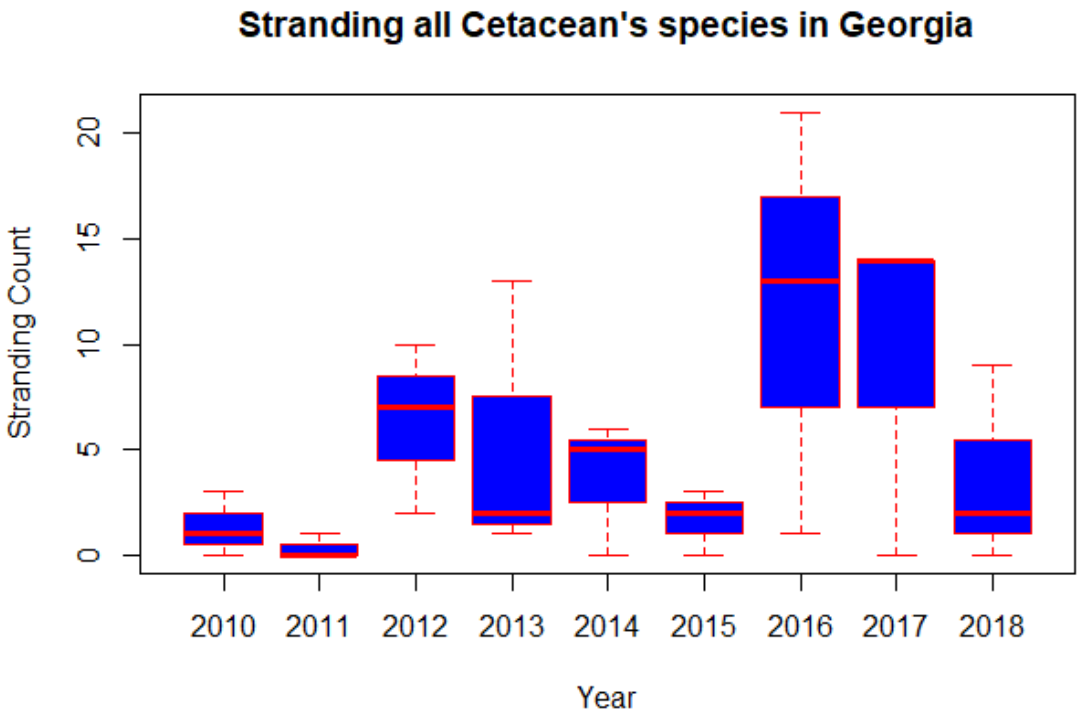

Figure 9. Stranding data of all cetacean species in Georgia since 2010

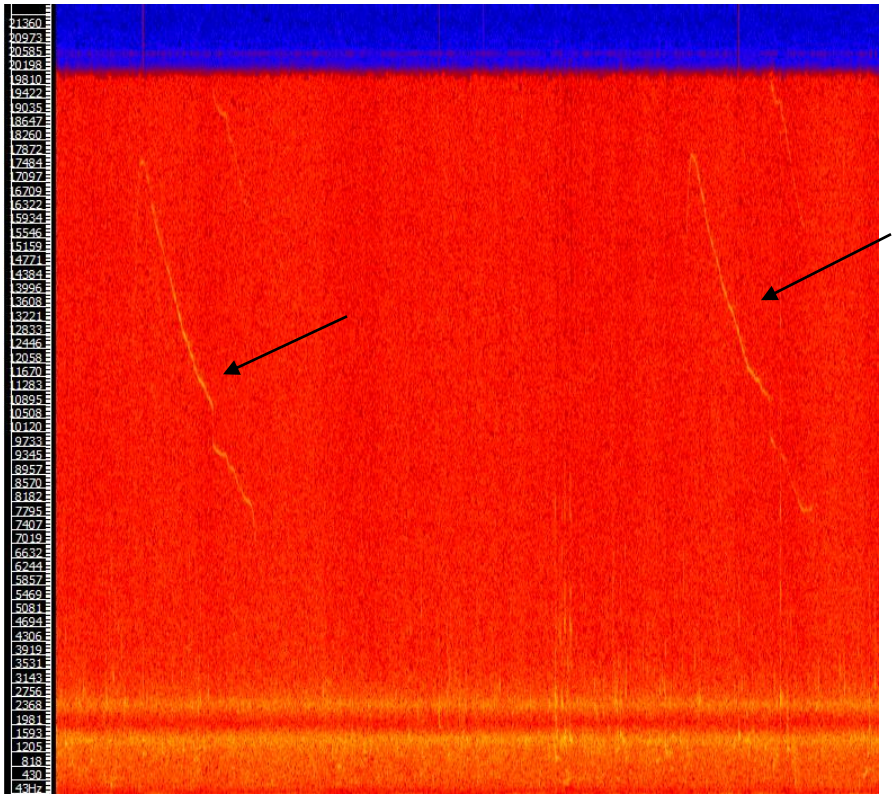

Figure 7. Common dolphin whistle spectrogram recorded via hydrophone during the pinger monitoring

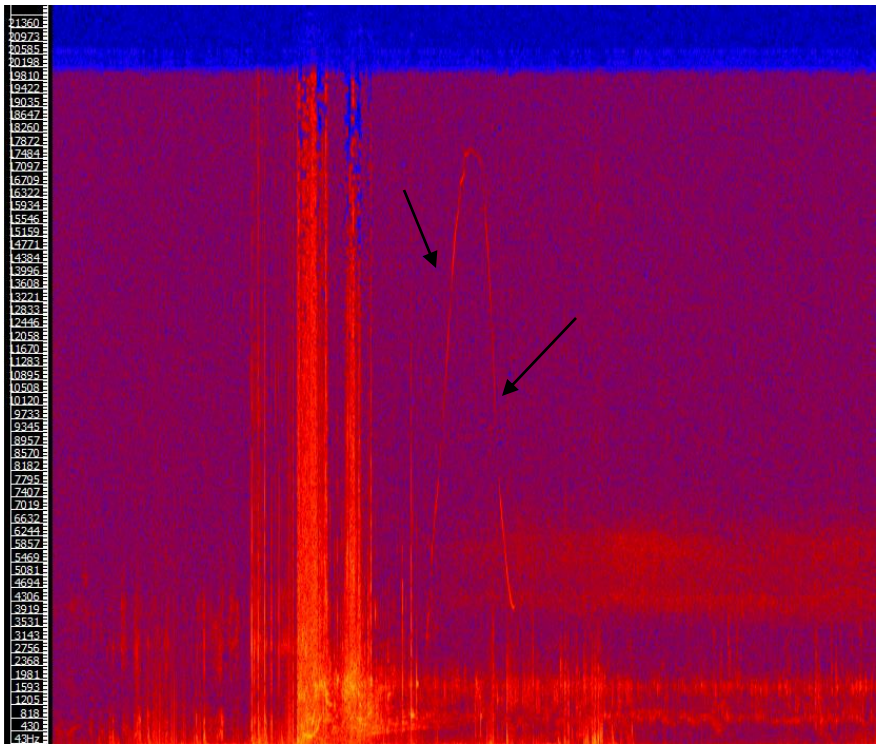

Figure 8. Bottlenose dolphin whistle spectrogram recorded via hydrophone during the pinger monitoring

Photos of the Field work

Image 1. Stranded Harbour porpoise

Image 2. The stomach of the Harbour porpoise

Image 3. Autopsy in the field

Image 4. Take tissue samples for Genetic studies

Image 5. Common dolphin during the motorboat observation

Image 6. Common dolphin during the motorboat observation

Image 7. Fresh stranded Harbour porpoise

Image 8. Gill net stripes on the body of Harbour porpoise by-catch evidence

Image 9. Autopsy

Image 10. Levan Ninua doing autopsy

Image 11. Nana Devidze and Temur shvelidze are trying to drag dead dolphin on the coast.

Image 12. Stranded Harbour porpoise that had many damages on the skin because of Pox virus

Yelkouan shearwater

Autopsy of shearwater