Citizen science to monitor the diversity and distribution of cetaceans in Vietnam

Programme: BIFA
Project ID: BIFA5_027
Project lead organization: Center for Biodiversity Conservation and Endangered Species
Project implementation period: 13/7/2020 - 31/12/2022
Report approved: 1/6/2022

Narrative Midterm report

Executive Summary

Our project is filling the gaps of information on cetacean inhabiting Vietnam. It has built the first database of cetacean occurrences along the Vietnamese coast from whale temples and stranding data. During the early phase of the Project, 154 whale temples have been located. 21 whale temples were visited. With the permission of people who in charge of these temples, 165 skulls of cetacean (and dugongs) were documented, digitized, and await to be mobilized. In parallel to whale temple visiting, the project was able to consolidate cetaceans stranding data from Viet Nam social media. So far 189 stranding cases have been documented along the Vietnamese coast. Combining data from whale temple records and strandings has resulted in one peer-reviewed paper. The citizen science mobile app, which will be a modified version of iNaturalist, is being developed to connect the scattered information on human-cetacean interaction in Viet Nam with the CBES and GBIF database. During the project implementation, the team has established collaborating network between the Center for Biodiversity Conservation and Endangered Species (CBES), Smithsonian Institution, San Francisco State University fishery departments of 10 provinces, staff of 02 marine protected area and 15 enthusiasts in Viet Nam. Due to the COVID-19 situation, international travelling between the US and Viet Nam was severely restricted, which impacted the collaboration between team members. Multiple workshops planned in this project were postponed due to the social distancing policies of Viet Nam. Those activities would be resumed in summer 2021 when the COVID-19 was completely controlled in Viet Nam.

Progress against milestones

Has your project published at least one dataset through GBIF.org?: Yes

Dataset published:

Dataset	DOI
Cetacean occurrence from data mining (cbes_stranding	https://doi.org/10.15468/47bckh
Whale temple database (cbes_whaletemples_specimens_ver1)	https://doi.org/10.15468/hfzknx

Has at least one member of your project team received certification following the BIFA capacity enhancement workshop?: Yes

Name of the workshop participant: Vu Long

Certification obtained: Basic Badge

Report on Activities

Activity progress summary

IT expense: we have acquired a workstation-grade computer to use for data storage. It was used mainly to store photographs of cetacean skulls taken from whale temples. Recently, the team had access to a 3D scanner to scan whale and dolphin skull in the field. Since then, the workstation has also been used for 3D modelling.

Travel to mobilizing data: 21 whales temples (in Da Nang city, Quang Nam, Quang Ngai, Thua Thien-Hue, Binh Dinh, Khanh Hoa, Binh Thuan, Ben Tre and Soc Trang provinces) were visited. The team was approved by the local community and stakeholder to document the skeletal materials inside those temples.

The COVID-19 has delayed this project activity significantly. First of all, Smithsonian Institution and San Francisco State University project collaborators could not come to Viet Nam due to the quarantine policies. While the local team can conduct works just fine in most cases, some special specimen (e.g. damaged specimens, rare species) still required international expertise to properly documented. As a result, the documenting process took more time. For the local team, travel to different provinces were also challenging. Travel took more time in late 2020 when airports in Viet Nam was temporarily closed. Besides, whale-temple keepers, who were mostly elder, also avoid meeting with the team because of the concerns of COVID-19. In these cases, the team have to wait for 01 or 02 extra days for the local medical checks. Recently, the COVID-19 has been well controlled in Viet Nam. These project activities have already been resumed. The team should reach the proposed 100 whale temple by November 2021.

Develop citizen-science app: the team have already contacted the iNaturalist development team for support. The source code of iNaturalist was also be acquired and ready for the development of a sister app or a modified app that tailored this project's need. However, the development was slow as iNaturalist was developed on Ruby programming language, which is unknown by the team. We are working closely with an IT company in Vietnam and the iNaturalist team. The alpha version of the app on the Android platform should be ready in July 2021.

Outreach: due to COVID-19, all outreach activities so far have been made online. A series of 25 Facebook posts, 02 website posts and multiple social-media engagements had been done to attract public interest on cetacean diversity in Viet Nam and set up for the coming of the mobile app that based on iNaturalist.

Data communication: due to COVID-19, only 03 online workshops on documenting cetacean occurrences have been conducted between the team and: (1) University of Science, Ho Chi Minh City, (2) Management broad of Nui Chua, Con Dao and Cu Lao Cham marine protected areas and (3) Da Nang University for Education. A workshop for policy-makers (the Vietnamese Directorate of Fishery) is planned for August 2021.

Publication: 02 papers have been published from the data acquired by this project (DOI: 10.26107/RBZ-2021-0066 and DOI:10.1578/AM.46.4.2020.395). More papers and research paper using data mobilized by this project will be available in 2022.

Completed activities

Report on Deliverables

Deliverables progress summary

The whale temple database was delayed due to the travel limitation and the difficulties in setting up meetings with people who in charge of those temples. So far, we have located 154 whale temples along the Vietnamese coast. 21 of those were visited. 165 marine mammal skulls were documented, which accounted for 16.5% of the 1000 records that we expected from this project. With COVID-19 is under control, we will resume documenting data in the unvisited temples in Q2 of 2021. By July 2021, we expected to have more than 600 records. The dataset should be refined and published in GBIF by August 2021.

Cetacean occurrence dataset from citizen science app: the development of the mobile app, the tool to document this dataset, was delayed due to technical difficulties. The app is based on iNaturalist, which is a globally succeeded app. However, its interfaces were unsuited for the Vietnamese fishermen, who will contribute most data on cetacean encounters. Simplifying the app interfaces and adding features (e.g. offline records) took a longer time than we expected. Also, the components of the iNaturalist that were programming on Ruby language is challenging for the team to work with. The team has resorted

to an IT company to develop a prototype app, which will be tested in July 2021. We hope to achieve 1000 cetacean occurrence records by the end of 2021.

Cetacean occurrence from data mining: we have mined 189 cases of cetacean strandings from social media and local news. This was 94% of our proposed 200 records. With this speed, we should be able to publish the cetacean stranding dataset in May 2021.

Progress towards deliverables

Title: Whale temple database

Type: Dataset
Status update: Located 154 whale temples along the Vietnamese coast (54 more than 100 temples expected in the proposal) 21 (13%) temples those were visited
Dataset scope: The accumulated skeletal materials over time in whale temples contain a wealth of information regarding the occurrence of marine mammals in Vietnam
Expected number of records: 240
Data holder: CBES
Data host institution: CBES
Sampling method: Sampling methodology can be varied depending on the agreement with the temples' owners. Including: specimen examination, measurements, photographs
% complete: 20
DOI: https://doi.org/10.15468/hfzknx
Expected date of publication: 2022-08-31

Title: Cetacean occurrence from citizen science app

Type: Dataset
Status update: the app is still in development
Dataset scope: To channel the information of human-cetacean interaction in Vietnam to the occurrence database
Expected number of records: 1
Data holder: CBES
Data host institution: CBES
Sampling method: Citizen science mobile app
% complete: 1
DOI:
Expected date of publication: 2022-08-31

Title: Cetacean occurrence from data-mining

Type: Dataset
Status update: Cetacean occurrence from data mining: we have mined 187 cases of cetacean strandings from social media and local news. This was 93.5% of our proposed 200 records. With this speed, we should be able to publish the cetacean stranding dataset in May 2021.
Dataset scope: Utilizing already-existed data on cetacean stranding along Vietnamese coast
Expected number of records: 189
Data holder: CBES
Data host institution: CBES
Sampling method: Data mining, web crawling and social listening
% complete: 93
DOI: https://doi.org/10.15468/47bckh
Expected date of publication: 2022-05-31

Communications and visibility

The stranding database is being shared with the Vietnamese Directorate of Fishery and 03 marine protected areas in Vietnam. We are expanding the networks to involve NGOs and more marine protected areas.

The whale temple and citizen science dataset will also be shared with the Vietnamese Directorate of Fishery to informed their planning. The whale temple dataset will also be shared with the Da Nang University of Education to promote the historical and culture values of whale temples.

Monitoring and evaluation

Monitoring and evaluation findings

The project was able to set up 02 over 03 of its proposed datasets. Although the datasets were not ready to be published on GBIF or as a data paper, records from this project have been published in the peer-reviewed journal (05 records of Fraser's dolphins Lagenodelphis hosei in Vietnamese water). Overall, the project was delayed by the COVID-19. Domestic and international travel restrictions had pushed the project schedule far into 2021. But in this current stage, the project team has gain momentum and experience to implementing the project. The team gratefully acknowledge the flexibility of GBIF Secretariat in project time line and schedule.

Impact of COVID-19 pandemic on project implementation

The COVID-19 pandemic affects the whole world. Our project suffers from multiple delays due to travel restrictions and social distancing. The fact that experts from Smithsonian Institution could not travel to the whale temples in Viet Nam to help with the species identification was a significant set back. The local team still significantly improve their experiences and knowledge on handling and examining cetacean skull. The working process, however, would still be slower than having a 15-year experienced marine mammal curator from Smithsonian on site. As international travelling is still highly uncertain, the project local team will continue to improve and seeking advice from the project collaborators to carry on the project.