OUTLINE OF SCIENTIFIC RESEARCH

THE FACTS OF SCIENCE AND TECHNOLOGY APPLICATIONS INTO THE CONSERVATION OF WILDLIFE

1. Urgency

Lying on the eastern part of the Indochinese peninsula, Vietnam is a strip of land shaped like the letter 'S' and it is known as the ideal land for many animals and ranked 16th among the countries with the highest biodiversity in the world. However, nowadays, Vietnamese wildlife are in an emergency situation due to the increasing threatens toward them. According to the Red List of the International Union for Conservation of Nature, about nearly two decades from 1996 to 2014 the number of endangered species increased between 25 and 188 species. ThienNhien.net made the statistics: "From the beginning of 2018 to May 2019, there were 560 cases of violations of protection and trafficking in wildlife detected and handled. There are 41 criminal cases and 519 administrative sanctions. Ranger confiscated 1464 individuals and about 27 tons of assorted wild animal meat". The main cause is derived from illegal hunting, collection of timber and non-timber products, and agricultural traditional shifting cultivation (1).

In order to support conservation and research institutions in selecting appropriate and effective technologies for different conservation goals, this research is formed. In this research, we answer the following questions:

• What technologies are being applied to wildlife conservation in the world and in Vietnam?
• What are the advantages and disadvantages applicability of current technologies?
• What are the future trends of technology applications for wildlife conservation?

In addition, we recommend different types of technology for wildlife conservation in Vietnam.

2. Target

• Systematizing and aggregating of available technology for wildlife conservation in the world and in Vietnam

• Analyzing their strengths, weaknesses and feasibility when applied in Vietnam.

• Recommend on technology application trends for conservation in Vietnam.

(1) 2014, Viet Nam - Fifth National Report to the United Nations Convention On Biological Diversity

3. Research content

The research was conducted based on 5 main purposes with which the technology will be implemented to deal: (1) research on population and ecology; (2) combating wildlife trade; (3) raising awareness of the community; (4) breeding critically endangered and precious species; (5) citizen science.

4. Research Methodology

Stage 1: Data collection

Step 1: We conduct a preliminary research via the internet to look for technologies that are currently being applied by organizations about wildlife conservation in the world and in Vietnam. This preliminary research aims to aggregate available technologies and detailed information related to each technology such as: The preliminary research collected 70 technologies belonging to 5 groups: 1) tracking devices, 2) telephone applications, 3) analytics, 4) sets of tools, and 5) software. At the same time, information about technology and contacts of organizations are collected to serve for step 3. Preliminary study has gathered information of 70 organizations, which are composed of 20 organizations in Vietnam and 50 international organizations.

Step 2: Setting up three detailed questionnaires to serve step 3.

The first set of questionnaires is a set of interview questions with the technical staffs from the organizations obtained from step 1. The second question is the online questionnaire via Google Form with the audiences of scientists, and conservationists who work for wildlife conservation. The two sets of questions will clarify technologies based on factors: usage purposes, user and species applied, installation and maintenance costs, advantages and disadvantages, preferable scale and landscape applied, future improvements and the method technology works. Questionnaire 3 is an online questionnaire through Google Form with Vietnamese people in general. The main purpose of first and second questionnaires is to survey information on technology and its application for conservation, with the third set of questions, the main aim is to investigate the level of knowledge and the potential to apply technology from other fields into wildlife conservation.

Step 3: Contact, interview and send questionnaire

For organizations in Vietnam, the research team will contact and directly interview technical staff or project staff while we will be conducted to interview via the platform Zoom or Skype for foreign organizations. The second and third questionnaires will be sent email and via social networking Facebook for the targeted audiences. All interviews and surveys are recorded and aggregated into spreadsheets on Google Sheets.

Stage 2: Aggregation of data

All data will be collected:

- List of available technologies for the purposes, advantages and disadvantages of each technology
- The ability of foreign technology application in Vietnam, based on the survey criteria
- The trend of technology for wildlife conservation in the future

5. Timeline

The research will have been conducted from 15/3/2020 to 5/25/2020 in the following timelines:

March 15 - April 20: Collecting information through interviews and surveys

April 20 - April 30: Aggregating and processing information

May 1 - May 10: Writing research results

May 10 - May 25: Completing the research