

## ASSESSMENT OF THE DIVERSITY OF BIRD SPECIES IN CAT BA NATIONAL PARK, HAI PHONG CITY

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### SUMMARY

Cat Ba National Park (NP) is considered as a potential area in terms of biodiversity conservation due to its diversified species and habitat. However, little information on the diversity of fauna in the park is available for conservation and management. The aim of this study is to investigate the species composition of bird, their distribution as well as threats to the species and its habitat. Line transect and mist net were used to collect data in the field. The results of the study reveal that there are 209 bird species belonging to 51 families, 17 orders in the park. The observed species distributed mostly in natural forests, followed by artificial forests and mixed of natural and artificial forests; in the shrub and grassland was the habitat with least species observed compared to the 3 mentioned habitats. We also identified 17 bird species as a high value for conservation. Hunting, trapping, wood and Non-timber forest product (NTFPs) exploiting, forestfire, grazing cattle, tourism are the main threats to the bird species and their habitats.

**Keywords:** Bird species composition, Cat Ba National Park, conservation values, threat.

### I. INTRODUCTION

The avifauna of Vietnam is diverse and abundant with 887 species belonging to 88 families and 20 orders (Nguyen Lan Hung Son and Nguyen Thanh Van, 2011). The number of known bird species in Vietnam makes up over 9% of the total known birds on Earth with 9800 species (James F. Clements, 2007). There are 13 endemic species, 40 rare birds are threatened on the global scale and 75 species are suffering the risk of extinction at the national level.

Bird is the most diverse vertebrate animal group in Vietnam. Because of its importance and high values, bird has been serious threatened in recent decades. The population of birds has decreased significantly.

Cat Ba National Park is a national park in Northern Vietnam, situated on Cat Ba Island, Ha Long Bay and is administered by Cat Hai District, Hai Phong City. It was established on 31 March 1986 includes marine ecosystems, terrestrial forest ecosystem, mangrove ecosystem. The park is located approximately 55 kilometers East of Haiphong, covering a

total natural area of 16,196.8 ha, in which 10,931.7 ha is forest and mountain and 5,265.1 ha is the sea, covering most of Cat Ba Island.

An evaluation of fauna at Cat Ba NP (Do Tuoc, 2013) was conducted and it gives the information of bird species which its total number of species has reached 205. This is the most complete and recent study of birds in the study site. Data available on bird species composition, distribution and threats to the species and their habitat has been little. Therefore, the aims of this study are to reveal the diversity of the species composition, distribution of bird between habitats, and threats to the species. The information gathered will be a scientific base for proposing appropriate recommendations for conservation and management of avifauna in the Park.

### II. METHODOLOGY

This research was conducted from 01/07/2016 to 25/09/2016 and the field investigation was from 08/08/2016 to 25/08/2016.

**1) Interviewing:** This method was used to collect the information about species

composition, status, distribution and the bird exploitation status in the study site.

Furthermore, interviewing contributes to collect the information about birds or specimens from birds which were being kept in some local families. Those are the evidences to determine the species composition in the study site. The total 50 interviewees from national park officials and local people were interviewed. In which, for the officials, I interviewed 5 rangers and 5 officials of Cat Ba NP. For the local people, 40 people who were interviewed are tourists, hunters, people living around the buffer zone usually go into the forest to collect, exploit wood, firewood, non-timber forest products, graze cattle.

**2) Line transect survey:** Transect survey was conducted in order to identify the species composition, main habitats and threats to birds in the study site.

5 line transects were established based on forest status, topographic maps and also the information which was preliminary interviewed about bird distribution. The transects were across some types of habitat, each transect length, depending on terrain, was from 2-5km. The survey time was in the early morning (after finishing setting up mist nets)

and late afternoon (before setting up mist nets).

**3) Mist net:** Bird trapping by mist net was conducted in order to identify the species composition and study the biological, ecological characteristics of the birds which find food or shirk under the forest canopy.

7 mist nets were set in the early morning (5a.m) or late afternoon (6p.m) which is 2 periods when birds are most active.

**4) Threat assessment to birds and their habitats:** This method is to find out the impacts of local community to birds and their habitats in order to propose the solutions for conservation and management. In this study we used method of Margoluis and Salafsky (2001). Impacts of human on the avifauna and their habitats such as: logging, trapping, cattle grazing sites were recorded during the line transect surveys. In addition, we also noted in the data sheet the affected area, intensity and endangered level to birds and their habitats for each threat.

### III. RESULTS

#### 3.1. Bird species composition

A total of 209 bird species belonging to 51 families and 17 orders were recorded in Cat Ba NP. The number of species belonging to families and orders is presented in table 1.

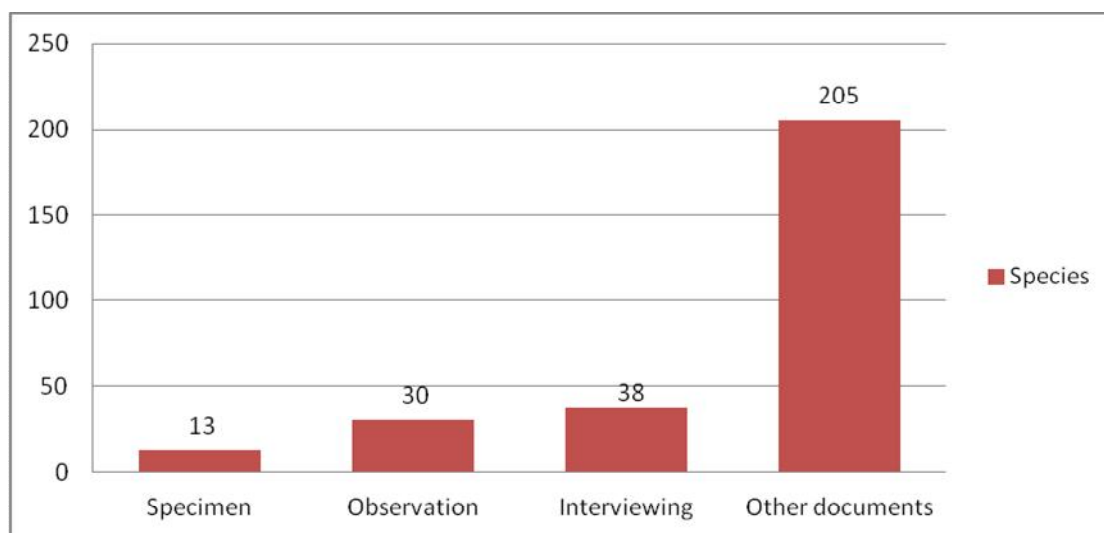
**Table 1. Bird species composition in Cat Ba National Park**

No	Order		Family	Species
	Local name	Scientific name	No.	No.
1	Bộ chim lặn	Podicipediformes	1	1
2	Bộ Hải âu	Procellariiformes	1	1
3	Bộ bồ nông	Pelecaniformes	1	2
4	Bộ Cò	Ciconiiformes	1	15
5	Bộ ngỗng vịt	Anseriformes	1	2
6	Bộ Cắt	Falconiformes	3	11
7	Bộ Gà	Galliformes	1	1
8	Bộ Sếu	Gruiformes	2	8
9	Bộ Rẽ	Charadriiformes	4	16

No	Order		Family	Species
	Local name	Scientific name	No.	No.
10	Bộ Bồ câu	Columbiformes	1	5
11	Bộ Cu cu	Cuculiformes	1	8
12	Bộ Cú	Strigiformes	2	5
13	Bộ Cú muỗi	Caprimulgiformes	1	1
14	Bộ Yến	Apodiformes	1	3
15	Bộ Sả	Coraciiformes	4	9
16	Bộ Gõ kiến	Piciformes	1	2
17	Bộ Sẻ	Passeriformes	25	119
<b>Total</b>		<b>17</b>	<b>51</b>	<b>209</b>

In the total recorded 209 bird species, there are 30 species that have been observed in the field, 13 specimens of species were caught and kept in some families through the interviewing and mist nets. Moreover, by interviewing hunters and officials, 38 species were recorded, 4 bird species Common hill myna (*Gracula religiosa*), Black-collared starling

(*Gracupica nigricollis*), Black-throated laughingthrush (*Garrulax chinensis*), White-crested laughingthrush (*Garrulax leucolophus*) were found in the investigation and added to the list of bird species of Cat Ba NP. The comparison of bird species recorded from different sources of information is shown in figure 1.



**Figure 1. Bird species recorded from sources of information in Cat Ba NP**

As can be seen from the chart, the information on species composition in the NP is mainly from the previous studies (205 species were mentioned in the study of Do Tuoc, 2013).

**3.2. Diversity of taxon**

Birds in Cat Ba NP are very diverse with the number of species, families and orders. The diversity of bird species and families within orders in the Cat Ba NP is shown in figures 2 and 3.

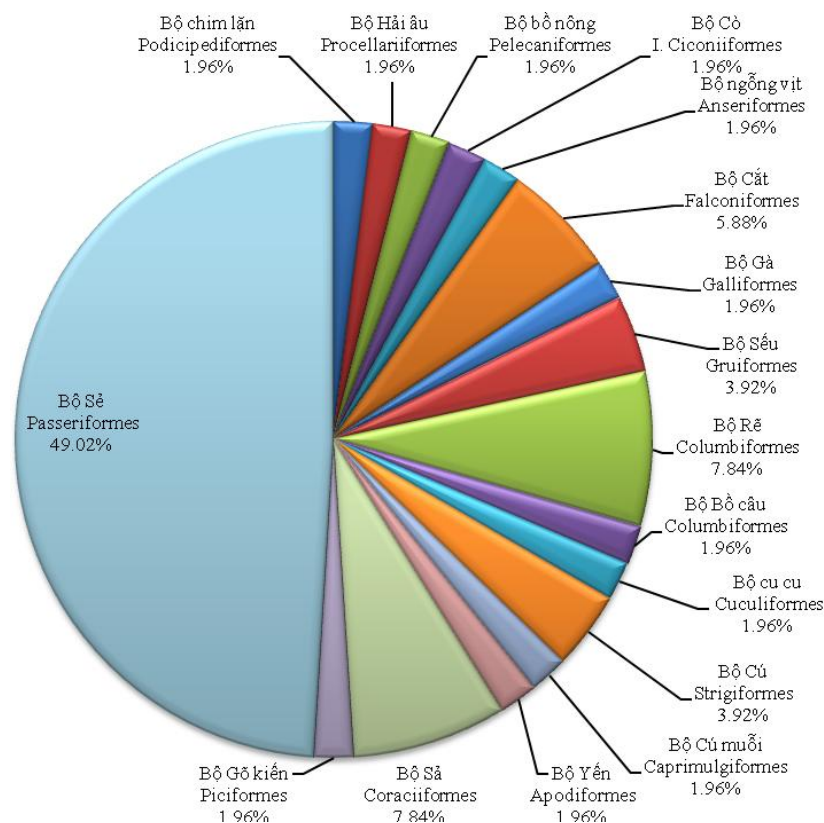


Figure 2. The diversity of Bird families in the park

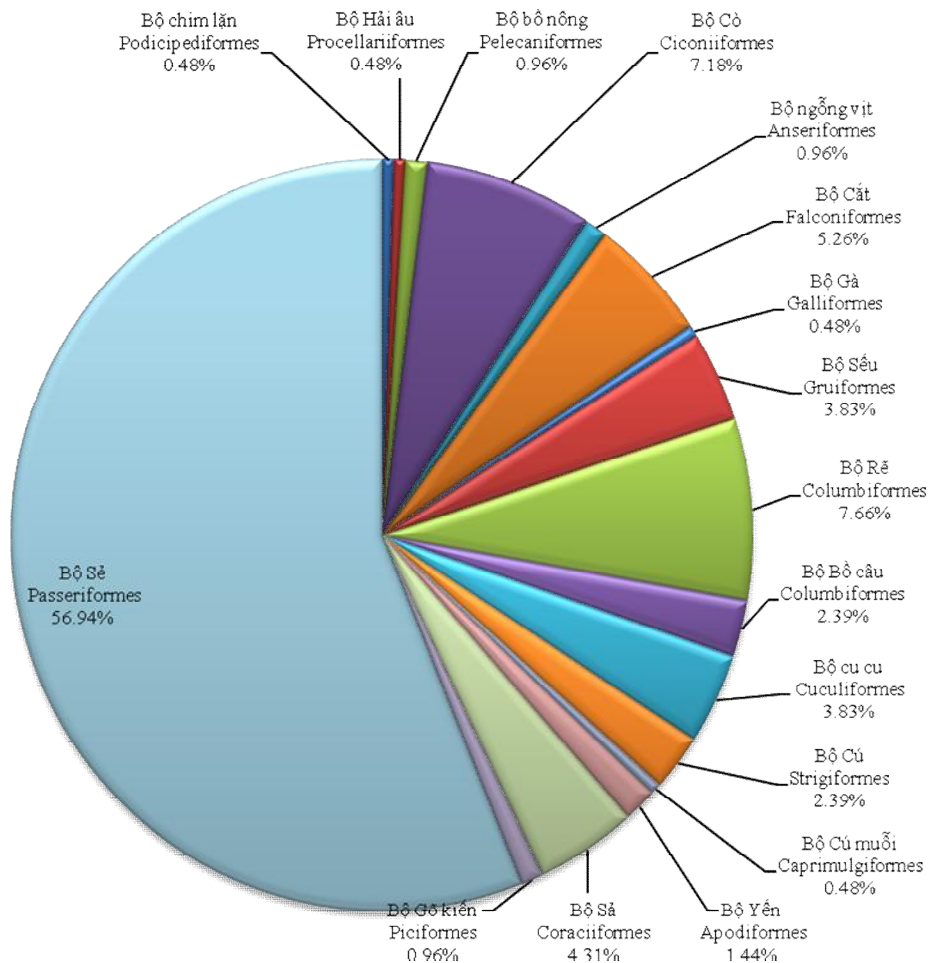


Figure 3. The diversity of bird species in the park

Among 17 orders were recorded in Cat Ba NP, *Passeriformes* is the most diverse order in the number of family and species with 25 families and 105 species. It is followed by *Charadriiformes*, *Coraciiformes*, *Falconiformes*. *Podicipediformes*, *Procellariiformes*, *Galliformes*, *Caprimulgiformes* are the least diverse orders with only 1 family and 1 species for each.

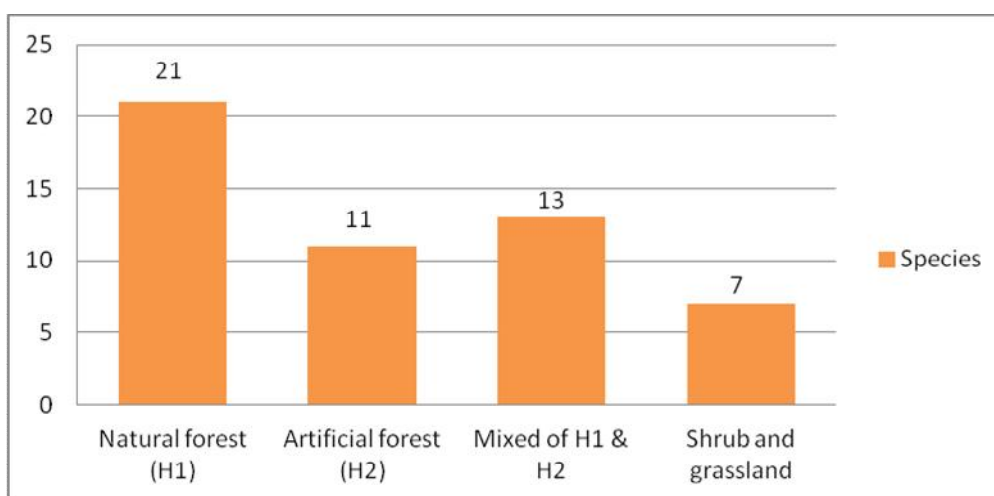
**3.3. Distribution of birds observed**

We identified 4 main habitats including natural forest, artificial forest, mixed of natural and artificial forests, shrub and grassland in the

study area

Among 30 species observed in the study site, the number of bird species in natural forest is highest with 21 species observed. In contrast, this figure for shrub and grassland is lowest with 7 species detected. The figures of bird species observed in artificial forest and mixed of natural and artificial forests are not significantly different with 11 and 13 species respectively.

The comparison of bird species detected according to 4 main habitats is shown in figure 4.

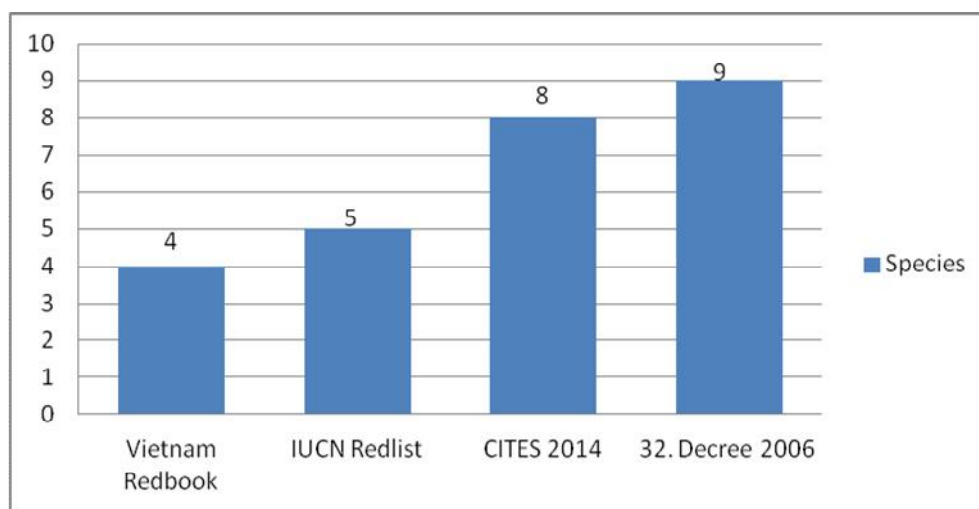


**Figure 4. Bird species distribution according to habitats**

**3.4. Bird conservation value**

Among 209 bird species recorded in Cat Ba NP, there are 17 species (accounting for 8.13%

total species) being on the lists of endangered species of Vietnam and international organizations.



**Figure 5. Endangered bird species in Cat Ba National Park**

There were 17 endangered bird species recorded in Cat Ba NP in which 5 species were recorded by field observation - White-rumped shama (*Copsychus malabaricus*), Yellow-breasted bunting (*Embriza aureola*), Chinese hwamei (*Garrulax canorus*), Barn-owl (*Tyto alba*), Black kite (*Mivus migrans*), 14 rare birds were recorded through the interviews including the specimens of 3 species - Chinese hwamei (*Garrulax canorus*), Common hill myna (*Gracula religiosa*) and White-rumped shama (*Copsychus malabarius*) found in local families. 16/17 species were mentioned in other documents (except for Common hill myna - *Gracula religiosa*).

Among 17 rare species, there are 4 species listed on Red Data Book (2007) including: Great cormorant (*Phalacrocorax carbo*) is in EN level, Great hornbill (*Buceros bicornis*) and Chinese egret (*Egretta eulophotes*) are VU, White-rumped falcon (*Polihierax insignis*) is in LR level; 5 threatened with extinction species globally (IUCN) including: Great cormorant (*Phalacrocorax carbo*) and Yellow-breasted bunting (*Embriza aureola*) are in EN level, Chinese egret (*Egretta*) is VU and Great hornbill (*Buceros bicornis*), White-rumped falcon (*Polihierax insignis*) are NT. Additionally, there are 8 species listed on

CITES and 9 species are protected nationally on 32 Dec.2006/ND-CP (shown in figure 5).

### 3.5. Threats and ranking

**Threats:** Birds, other species have strong relationship with habitat and environment. The abundance, diversity, stability of bird resource rely on the diversity, stability and ability of food, shelter providing of the environment where birds live. The more influences the environment suffers, the lower the stability of habitat is, the weak in food, shelter providing ability is. Those things lead to the less diverse, abundant in the number of birds and species composition. Human affecting the habitat, environment means a indirect effect that bird resource has to suffer. But the human activities and its level of influence have still kept on rising. That causes the bird resource is at the risk of being threatened.

In the investigation period, 5 threats to fauna resource in general and to birds in particular were recorded in the study site. They are: hunting, wood&NTFP exploitation, forest fire, grazing cattle and other activities.

**Threats ranking:**The result of the assessment of threats to Birds in Cat Ba NP was ranked according to Threat Reduction Assessment (TRA) (Richard Margoluis and Nick Salafsky, 2001) shown in table 2.

**Table 2. Ranking of threats to Bird resource in Cat Ba NP**

	Threats	Criteria rankings			Total	Ranking
		Area	Intensity	Urgency		
A	Hunting, trapping	4	5	5	14	1
B	Wood and NTFP exploitation	5	4	3	12	2
C	Forest fire	3	1	4	8	3
D	Grazing cattle	2	3	1	6	4
E	Tourism	1	2	2	5	5
<b>Total</b>		<b>15</b>	<b>15</b>	<b>15</b>	<b>45</b>	

The result showed that: hunting and trapping is the biggest threat and directly impacts to Bird species. It is followed by the threats to birds' habitat: wood and NTFP exploitation; forest fire; grazing cattle and the threat has the least influence to Birds is tourism. Therefore, in order to make the management of birds conservation sustainable, restricting hunting, trapping, exploiting wood and NTFP should be prioritized.

This research result would be the basis to propose the solutions to manage, conserve effectively not only bird resource but other sectors in Cat Ba NP.

### **3.5. Discussion**

The results in bird species composition indicate that avifauna in Cat Ba national park is relatively diverse.

Compared to Bird resource of Vietnam which has 887 species, 88 families, 20 orders, this figure for Cat Ba NP has 209 species, 51 families, 17 orders make up 23.5%, 57.9% and 85% respectively.

The distribution of bird found in the study area is uneven. The reason for that could be:

- + Natural forest is a habitat with less influences of human, enough elements for lives of birds such as foods, place to making bird net, hiding...

- + Artificial forest is a habitat is significant affected by human (hunting, trapping, wood and NTFP exploitation)

- + Mixed of natural and artificial forests is a habitat with less impacts by human than artificial forest but the food and places to live are less abundant than natural forest.

- + Shrub and grassland is a habitat with remarkable influences from human (grazing cattle, cropping). The foods and place to live are not enough for birds.

Due to the limitations of time and ability, the density of birds has not been mentioned

due to the large study area and the limitations of time and ability.

- The results of this research about endangered bird species contribute to identify the species that need to be prioritized for protection, raise the awareness of officials, rangers and people about the importance of species protected by our State and also the World. Thence, the conservation and development of these species should be invested.

The data collected from field observation is not big because the population of rare birds is small and distributed mostly in tough, rugged terrain areas so it is difficult to record.

Cat Ba NP is the habitat of numerous species with high conservation value. Cat Ba NP has great importance in the conservation of endangered bird species at national and international level.

### **IV. CONCLUSIONS**

A total of 209 species belonging to 17 orders and 51 families were recorded in the study area.

There are 17 species made up 8.3% total number of bird species in the NP were listed in IUCN, CITES, Red Data Book, Decree no. 32/2006.

The distribution of birds is mainly in natural forest (21 species), followed by mixed of natural and artificial forests, artificial forest and shrub, grassland habitats (with 13, 11 and 7 species respectively).

There are 5 main threats to birds in Cat Ba NP including hunting, wood, non timber forest products exploitation, forest fire, tourism and grazing cattle freely. Hunting is greatest threat to the bird species.

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## **ĐÁNH GIÁ SỰ ĐA DẠNG CỦA CÁC LOÀI CHIM TẠI VƯỜN QUỐC GIA CÁT BÀ, THÀNH PHỐ HẢI PHÒNG**

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### **TÓM TẮT**

Vườn quốc gia Cát Bà được coi là một khu vực tiềm năng về bảo tồn đa dạng sinh học do các loài và môi trường sống đa dạng. Tuy nhiên, có rất ít thông tin về sự đa dạng của hệ động vật để hỗ trợ công tác bảo tồn và quản lý. Mục đích của nghiên cứu này là để điều tra thành phần loài chim, sự phân bố cũng như các mối đe dọa đến loài chim và môi trường sống của chúng. Điều tra theo tuyến và lưới mờ đã được sử dụng để thu thập số liệu trên thực địa. Kết quả của nghiên cứu cho thấy rằng có 209 loài chim thuộc 51 họ, 17 bộ. Các loài quan sát phân bố chủ yếu ở khu rừng tự nhiên, tiếp theo là khu rừng nhân tạo và hỗn hợp của rừng tự nhiên và nhân tạo; Trảng cỏ, cây bụi là môi trường sống với các loài ít nhất quan sát được so với 3 môi trường sống nói trên. Chúng tôi cũng xác định được 17 loài chim với giá trị bảo tồn cao. Săn bắn, khai thác gỗ và lâm sản ngoài gỗ, cháy rừng, chăn thả gia súc và du lịch là những mối đe dọa chủ yếu đến chim mà môi trường sống của chúng.

**Từ khoá:** Cát Bà, loài chim, loài quý hiếm, mối đe dọa, Vườn quốc gia.

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