

WILD BIRDS TRADED IN THE CENTRAL COASTAL PROVINCES, VIETNAM

Ho Thang¹, Le Nguyen Thoi Trung²*, Le Manh Hung³, Nguyen Ngoc Hoa², Nguyen Dang Thach², Ho Thi Cam Giang²

¹Department of Science and Technology of Thua Thien Hue province, Vo Nguyen Giap St., Hue, Vietnam ²Central Coast Nature Museum, 7 Vy Da St., Hue, Vietnam

³Institute of Ecology and Biological Resources, Hoang Quoc Viet St, Cau Giay, HaNoi, Vietnam

* Correspondence to Le Nguyen Thoi Trung <lnttrung.skhcn@thuathienhue.gov.vn> (Received: December 4, 2024; Accepted: December 30, 2024)

Abstract. The wild bird trade in Vietnam has been widespread. From July 2023 to April 2024, a total of 35 bird shops and markets were surveyed in five Central Coast provinces, including Thua Thien Hue, Da Nang, Quang Nam, Binh Dinh and Khanh Hoa. A total of 1,601 individuals belonging to 9 orders, 20 families and 53 species were recorded. Among the recorded species, 12 species are listed in the IUCN Red List (2024) and in Decree No. 84/2021/ND-CP of the Government of Viet Nam. The results showed that the bird trading in the Central Coast provinces includes 3 different types: fixed pet bird shops (25 shops, accounting for 71.42%), street vendors (08 locations, accounting for 22.86%) and locations selling birds for release (2 location, accounting for 5.72%). The prices varied significantly across species groups.Birds for release had the lowest price range, from 7,000 to 15,000 VND per individuals. Songbirds had the highest price fluctuation, ranging from 50,000 to 2,500,000 VND, and the group for food (mainly migratory waterfowls) ranges from 30,000 – 300,000 VND. It is necessary to propose and implement solutions to limit and end the wild bird trades in the region as well as in Vietnam.

Keywords: Wild bird trade, vendor, pet, waterfouls, migratory, song birds

1 Introduction

Vietnam's avifauna is recognized as one of the most diverse countries in Southeast Asia. Vietnam falls within a globally important hotspot for biodiversity, Indo-Burma, and hosts a large number of rare and endemic species. To date, a total of 63 Important Bird Areas (IBAs), 102 Key Biodiversity Areas (KBAs) and 918 bird species have been recorded in Vietnam [1, 2]. However, rapid development in recent years has posed significant threats to the natural resources and bird populations, including habitat loss due tologging and agricultural expansion, as well as hunting and consumption [1, 3, 4].

Mainly in Asia, overexploitation of birds is widespread. Eight out of ten countries have the highest number of threatened bird species at risk from exploitation. Vietnam is ranked tenth [5]. A main threat of Southeast Asia's bird declines and extinctions in the last two decades is trapping

wildlife for cage bird trade and is part of the Asian songbird crisis [6, 7]. Birds are traded because of their plumage or song, since singing contests are getting more established. The mostly illegal and unregulated trade takes place at markets, but also online [8]. The current rampant wildlife trade in Vietnam poses serious problems, with many kinds of wild animals and bird species being sold openly in markets, including rare and threatened species. Many local people prefer to keep wild birds in cages and many young people still shoot birds for fun and for food [9].

To date, several studies have been published on the status of bird trade in Vietnam. However, most of these publications only focus on the current status of bird trade in some major cities in the North (Hanoi city), South (Ho Chi Minh city) and Central Highlands (Lam Dong and Dac Lac provinces [9–13].

This is the first comprehensive study on the current status of birds traded in the central coastal provinces of Vietnam. The results will provide important information for future management and conservation of wild birds in Vietnam.

2 Methods

Bird trading activities were surveyed in five coastal provinces of Central Vietnam (Thua Thien Hue, Da Nang, Quang Nam, Binh Dinh and Khanh Hoa) (Figure. 1). Five cycles of market surveys were conducted from July 2023 to April 2024, over the months of July, October, December 2023 and February, April 2024. A total of 35 days were spent during the surveys. The survey routine consisted of observations from 8h00 to 11h00 in the morning and from 14h30 to 17h00 in the afternoon. In each survey, the number of individuals and the values of each bird species found in each shop and market were counted and recorded using the data collection forms. The prices of each recorded bird were followed by the traders. For species identification, the Robson [14], Craik et al. [15], and Le et al. [2] were used. Taxonomy and nomenclature in this study follow Le et al. [2]. The threatened status and protected category of the recorded species follows IUCN Red List (2024) and Degree No.84/2021/ND-CP; 64/2019/NC-CP of the Government of Viet Nam [16, 17]. Photos of rare and threatened species were obtained by the Nikon D5 camera with lens 200 mm to 500 mm. Recorders were used in some of the shops and markets in sensitive cases.

Species richness of birds found in the local markets was also generated as a sample-based rarefaction curve using EstimateS [18]. The value was converted from Vietnam Dong to US Dollar, considering US\$1 = 25.000 Dong on 17 July 2024.



Figure 1. Locate of the surveyed provinces (A1 = Thua Thien Hue; A2 = Da Nang; A3 = Quang Nam; A4 = Binh Dinh; A5 = Khanh Hoa)

3 Results

A total of 1,601 individuals belonging to 9 orders, 20 families and 53 species were recorded during the surveys (Table 1). Most of the species found were classified as Least Concern in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species [19].

Order	Family	No. of species	Percentage of total species found (%)	No. of individuals	Percentage of total individuals (%)
APODIFORMES		01	1.88	157	9.80
	Apodidae	01	1.88	157	9.80
CUCULIFORMES		01	1.88	18	1.12
	Cuculidae	01	1.88	18	1.12
COLUMBIFORMES		03	5.66	187	11.68
	Columbidae	03	5.66	187	11.68
GRUIFORMES		07	13.20	63	3.93
	Rallidae	07	13.20	63	3.93
CHARADRIIFORMES		03	5.66	27	1.68
	Scolopacidae	03	5.66	27	1.68
PELECANIFORMES		04	7.54	33	2.06
	Ardeidae	04	7.54	33	2.06
BUCEROTIFORMES		01	1.88	02	0.12
	Upupidae	01	1.88	02	0.12
PSITTACIFORMES		02	3.77	67	4.18
	Psittacidae	02	3.77	67	4.18
PASSERIFORMES		31	58.49	1.047	65.39
	Muscicapidae	02	3.77	76	4.74
	Corvidae	02	3.77	05	0.31
	Pycnonotidae	01	1.88	88	5.49
	Hirundinidae	02	3.77	270	16.86
	Leiothrichidae	08	15.09	102	6.37
	Zosteropidae	01	1.88	132	8.24

Table 1. Number of species a	nd individuals in each	bird order and family
------------------------------	------------------------	-----------------------

Order	Family	No. of species	Percentage of total species found (%)	No. of individuals	Percentage of total individuals (%)
	Sturnidae	08	15.09	159	9.93
	Chloropseidae	01	1.88	11	0.68
	Passeridae	02	3.77	66	4.12
	Ploceidae	01	1.88	07	0.65
	Estrildidae	02	3.77	125	7.80
	Emberizidae	01	1.88	06	0.37

Among 53 recorded species, 2 species are listed in the IUCN Red List (2024) including Yellow-breasted Bunting *Emberiza aureola* (Critical Endanger), Red-breasted Parakeet *Psittacula alexandri* (Near-threatened) and 10 species are included in appendix IIB of Decree No. 84/2021/ND-CP of the Government of Viet Nam - list of rare and threatened species (Table 2). Among 53 recorded species, 41 species are resident (about 1.244 individuals) and 12 species are migratory (about 357 individuals). The rarefaction curve showed that the number of bird species and individuals recorded continued to increase with additional surveys (Figure 2), with an average number of 45 birds seen for sale each surveyed day. The bird trading in the Central Coast provinces includes 3 different types: fixed pet bird shops (25 shops, accounting for 71.42%), vendors (08 areas accounting for 22.86%) and two areas selling birds for freed (5.72%) (Appendix 2, Figure. 4).

The highest number of birds were recorded for sale is from HU6 market in Hue city with the total of 188 individuals on 25 July 2023 (mainly Barn Swallow *Hirundo rustica* and Redrumped Swallow *Cecropis daurica*). Those species were trapped and sale for freed in front of Thien Mu pagoda. The highest abundances recorded of songbird were Swinhoe's White-eye *Zosterops simplex* (132 individulas), next are Red-whiskered Bulbul *Pycnonotus jocosus* (88 individuals) and Oriental Magpie Robin *Copsychus saularis* (48 individuals). For the freed group, the highest number is Germain's Swiftlet *Aerodramus germani* (157 individuals), next are *Barn Swallow* (148 individuals) and Red-rumped Swallow (122 individuals). The highest number of the species selling for food are Red-collared Dove *Streptopelia tranquebarica* (121 individuals), Common Snipe

No	English name	Scientific name	Status	Numbers recorded	Notes
1	Red-breasted Parakeet	Psittacula alexandri	Re	64	NT, IIB, CII
2	Vernal Hanging Parrot	Loriculus vernalis	Re	03	IIB
3	White-rumped Shama	Copsychus malabaricus	Re	28	IIB, CII
4	Red-billed Leiothrix	Leiothrix lutea	Re	08	IIB, CII
5	Silver-eared Mesia	Leiothrix argentauris	Re	17	IIB, CII
6	Lesser Necklaced Laughingthrush	Garrulax monileger	Re	09	IIB
7	White-crested Laughingthrush	Garrulax leucolophus	Re	22	IIB
8	Orange-breasted Laughingthrush	Garrulax annamensis	Re	02	E, IIB
9	Black-throated Laughingthrush	Pterorhinus chinensis	Re	37	IIB
10	White-cheeked Laughingthrush	Pterorhinus vassali	Re	05	IIB
11	Common Hill Myna	Gracula religiosa	Re	12	IIB
12	Yellow-breasted Bunting	Emberiza aureola	М	06	CR, IIB

Table 2. List of protected bird species recorded in bird shops and markets in five coastal provinces of
Central Vietnam

Notes: Re = resident; M = migratory; CR = Critical Endanger; NT = Near-threatened as per IUCN 2024. E = Endemic, IIB = Listed in appendix IIB of Degree No. 84/2021/ND-CP on the list of endangered, precious and rare species prioritized protection of Vietnam. CII = listed in Appendix II of Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Gallinago gallinago (19 individuals) and Greater Coucal *Centropus sinensis* (18 individuals) (Appendix.1).

Order Passeriformes was the richest in bird species and individuals recorded, with 31 species found during the surveys, which represented (58.49%) and 1.047 individuals representing 65.39 % of the total individuals recorded (Table.1). Order Gruiformes was the second group with seven species (13.20%), followed by Pelecaniformes with four species (7.54%) and Columbiformes, Charadriiformes, each with three species (5.66%). Among passerines, Leiothrichidae and Sturnidae were the richest in species with eight species found, which represented (15.09%) of total species detected (Table.1). Families Muscicapidae, Corvidae, Hirundinidae, Passeridae and Estrildidae were the second richest with two species found (3.77%).

The highest levels of species richness and abundance of bird trading were found at Da Nang province (40 species, 453 individuals), next are Quang Nam (38 species, 349 individuals)

and Thua Thien Hue province (34 species, 334 individuals). Lower numbers of individual birds and species were found in Khanh Hoa province (17 species, 261 individuals) and Binh Dinh (14 species, 177 individuals) (Figures. 3).

The prices are variable for each different species group: the released bird group had the lowest fluctuation ranging from 7,000 to 15,000 VND (US\$0.25 - US\$0.60), the songbirds had the largest fluctuation from 50,000 to 2,500,000 VND (US\$ 2.0 - US\$100), and the group for food (mainly migratory waterfowls) ranges from 30,000 – 300,000 VND (US\$1.20 - US\$12.0) (appendix 1).

The price of the birds traded appeared to be based on the size (for food group), perceived beauty and quality of song (for songbirds). The most expensive species was the Common Hill Myna *Gracula religiosa* at US\$ 60 (n=12 individuals) per individual, and the species with the lowest value was Germain's Swiftlet, House Sparrow *Passer domesticus*, Eurasian Tree Sparrow *Passer montanus*, White-rumped Munia *Lonchura striata* and Scaly-breasted Munia *Lonchura punctulata* with an average price of US\$0.35 (appendix 1).



Figure 2. Species rarefaction curve of birds in local shops and markets at five Central Coastal provinces, Vietnam



Figure 3. Number of species and individuals of birds traded in each province



Figure 4. One of the vendor bird shop recorded in Le Duan St., Hue city

4 Discussion

The investigation results show an alarming situation of bird trade in Central Vietnam. Among the recorded species, 12 species are listed in the list of priority and protected bird species in Vietnam. Particularly, Yellow-breasted Bunting (*E. aureola*) is listed as Critically Endangered in the IUCN Red List 2024 or as Orange-breasted Laughingthrush (*G. annamensis*) is an endemic species in Vietnam. However, during the surveys, there was no record of any inspection or supervision from the local authorities, whether the owners of bird shops or vendors were blatantly selling birds along the roads or in big streets in the city. Most of the shop owners who sell ornamental birds and vendors are unaware of the Government's relevant Decrees and Directives. This shows that law enforcement forces are still limited, and regulations of the Government are still be laxed. The Government Decrees have not been fully propagated and implemented in the region. It can be seen that the group of wild bird species trapped and traded as for freed accounts for the largest number of individuals and was recorded mainly in the survey in July, the peak month for freed of species. Frequently recorded areas are spiritual areas, in front of the gates of large pagodas (Thien Mu Pagoda, Hue city, Thac Ba Pagoda, Nha Trang City). Therefore, propaganda to pagodas and temples about releasing wild species is extremely necessary and urgent and needs to be deployed right in these areas.

The majority of waterfowl species are recorded trading during the fall (October) and spring (April) migration seasons. At this time, migratory waterbirds were sold openly on some markets or streets (Appendix. 2). Studies have shown that many migratory wild birds have the ability to carry and spread infectious diseases [12, 13], therefore, trading these species poses a high risk of disease spread and requires immediate prevention. The recording of six individuals globally threatened Yellow-breasted Bunting and two Orange-breasted Laughingthrush shows that bird traders are unaware of the current status of endangered species, leading to the situation of trapping and selling all species they can, this is truly an alarming situation in the conservation of wild birds in Vietnam.

The surveys were conducted in a relatively short period of time and did not cover all bird trading markets in the area (especially the vendor where birds are sold during the migration season). It is necessary to continue investigating and monitoring the surveyed areas and shops as well as new areas in order to provide full information of the current trade situation to relevant authorities such as forest rangers and environmental policies. These authorities need to intervene as soon as possible to control and prevent this situation. Curently, the Vietnamese Government is in the process of negotiating and preparing documents to register to join the International Convention for the Protection of Migratory Species (CMS). If the situation of hunting and trading of migratory bird species continues, it will greatly affect the reputation and image of the country.

5 Conclusion

The research results have partly assessed the current status of wild bird trade, especially migratory and resident songbird species in the five large coastal provinces of Central Vietnam. However, the results also show an alarming situation in the trade of wild birds in the area. A total of 1,601 individuals of 53 bird species were recorded. This recorded number is large in a relatively short survey period. It is necessary to conduct further surveys and monitor in the future and carry out propaganda measures to minimize and prevent this situation.

Acknowledgements

We express our gratitude to Cai Quoc Hung and Le Van Bao for providing valuable information. We also thank Tran Thanh Tung for providing the map and Nguyen Kim Oanh, La Nhat Tan, Vu Thi Minh Phuong, Le Duc Hien for their assistance in the field. This research was funded by the National Independent Project of the Ministry of Science and Technology of Vietnam under grant No. ĐTĐLCN.71/22.

References

- Tordoff, A.W., Baltzer M.C., Fellowes J.R., Pilgrim J.D., Langhammer P.F.J.J.o.T.T. (2012), Key biodiversity areas in the Indo-Burma Hotspot: Process, progress and future directions, *Journal* of *Threatened Taxa*, 4, pp. 2779-2787.
- 2. Le, M.H., Bui D.T., Nguyen M.H., Tang A.P., Nguyen A.T. (2021), *Birds of Vietnam*, The Gioi Publishing House.
- 3. Sterling, E., Hurley M., Le M. (2006), *Vietnam: A Natural History*, Yale University Press, New Haven, Connecticut.
- Eaton, J., Nguyen M., Willemsen M., Lee J., Chng S. (2017), *Caged in the city: An inventory of birds for sale in Ha Noi and Ho Chi Minh City, Viet Nam*, TRAFFIC, Southeast Asia Regional Office, Petaling Jaya, Selangor, Malaysia.
- BirdLife International (2012), Unsustainable exploitation of birds is most prevalent in Asia. (22.07.2024 http://datazone.birdlife.org/sowb/casestudy/unsustainable-exploitation-of-birdsis-most-prevalent-in-asia).
- 6. Sykes, B.R. (2017), The elephant in the room: addressing the Asian songbird crisis, *BirdingASIA*, 27, 35–41.
- 7. Leupen, B., Gomez L., Nguyen M., Shepherd L., Shepherd C. (2022), A Brief overview of the online bird trade in Vietnam, *Asian Journal of Conservation Biology*, 11(2), 176–188.
- Lees, A.C., Yuda P. (2022), The Asian songbird crisis, *Current Biology*, 32(20), R1063-R1064. 10.1016/j.cub.2022.08.066.
- 9. Le, M.H., Craik, R. (2016), Notes on the trading of some threatened and endemic species from Vietnam, *BirdingASIA*, 26, 17–21.
- 10. Craik, R. (1998), Bird trade in Vietnam, OBC Bulletin, 28, 22–23.
- 11. Morris, S. (2001), Bird trade in Hanoi, Bulletin of the Oriental Bird Club, 33, 34–35.

- 12. Brooks-Moizer, F., Roberton, S.I., Edmunds, K., Bell, D. (2009), Avian Influenza H5N1 and the wild bird trade in Hanoi, Vietnam, *Ecology and Society*, 14(1), 28.
- Edmunds, K., Roberton, S.I., Few, R., Mahood, S., Bui, P.L., Hunter, P.R., Bell, D.J. (2011), Investigating Vietnam's ornamental bird trade: Implications for transmission of Zoonoses, *EcoHealth*, 8(1), 63–75. 10.1007/s10393-011-0691-0.
- 14. Robson, C.R. (2008), New Holland field guide to the birds of South-East Asia. Bangkok, New Holland Publishers, UK.
- 15. Craik, R., Le Q.M. (2018), Birds of Vietnam, Lynx Edicions, Barcelona.
- 16. The Government of Viet Nam (2019), Degree No.64/2019/ND-CP on endangered, precious and rare species prioritized protection of Vietnam. (15.07.2024 http://www.haiquanbinhduong.gov.vn/en/vanban/ND64/2019.doc).
- 17. The Government of Viet Nam (2021), Degree No.84/2021/ND-CP on the list of endangered, precious and rare species prioritized protection of Vietnam. (15.07.2024 https://vanban.chinhphu.vn/default.aspx?pageid=27160&docid=204157).
- 18. Colwell, R. K. (2013), Estimates: statistical estimation of species richness and shared species from samples, Version 9.1.0. (12.07.2024 http://viceroy.eeb.uconn.edu/estimates/).
- 19. IUCN (2024), The 2024 IUCN Red List of Threatened Species. (21.07.2024 http://www.redlist.org).

	Provinces (codes)				Total	Prices	Notes	
Species	Thua Thien Hue	Da Nang	Quang Nam	Binh Dinh	Khanh Hoa	individuals recorded	Min - Max	
Germain's Swiftlet	HU5				KH8	157	0.30 - 0.40	Re
Aerodramus germani ¹ Greater Coucal Centropus sinensis ²	HU6	DN9	QN2			18	2.50 - 4.00	Re
Red-collared Dove Streptopelia tranquebarica ²	HU6	DN10, 11, 12	QN1, QN2			121	1.25 – 1.66	Re
Spotted Dove Spilopelia chinensis ³	HU2,3,6	DN4,7,8	QN3	BD3	KH4, 6	59	2.50 - 42.5	Re
Thick-billed Green Pigeon Treron curvirostra ^{2, 4}			QN2			07	3.00 - 6.00	Re
Slaty-legged Crake <i>Rallina</i> eurizonoides ²			QN2			03	2.00 - 3.00	М
Slaty-breasted Rail Gallirallus striatus ²	HU6	DN11	QN1			08	1.5 – 2.5	М
White-breasted WaterHen Amaurornis phoenicurus ²	HU6	DN10	QN3			12	1.5 – 2.5	Re
Ruddy-breasted Crake Porzana fusca ²		DN9	QN3			04	0.8 – 1.20	М
Watercock Gallicrex cinerea ²	HU6		QN3			16	2.00 - 3.00	Re
Black-backed Swamphen Porphyrio indicus²		DN11	QN1			06	2.00 - 3.00	М
Common Moorhen Gallinula chloropus ²	HU6	DN10				14	0.83 - 1.25	М
Eurasian Woodcock <i>Scolopax</i> <i>rusticola</i> ²		DN11				02	2.00 - 3.00	М
Common Snipe Gallinago gallinago ²	HU6	DN12	QN2			19	0.62 – 1.20	М
Common Greenshank Tringa nebularia ²			QN3			06	0.62 – 1.20	М
Yellow Bittern Ixobrychus sinensis ²		DN09				04	0.42 – 0.83	Re
Cinnamon Bittern <i>Ixobrychus</i> cinnamomeus ²		DN09				05	0.62 – 1.20	Re
Chinese Pond Heron Ardeola bacchus ²	HU6	DN12	QN1			22	0.62 - 1.25	Re
Grey Heron Ardea cinerea ²			QN3			02	6.25 – 10.4	М

Appendix 1. Bird species traded in local markets (vendor) and pet shops in five central coastal provinces of Vietnam

Ho Thang et al.

		Provi	nces (cod	es)		Total	Prices	Notes
Species	Thua Thien Hue	Da Nang	Quang Nam	Binh Dinh	Khanh Hoa	individuals recorded	Min - Max	
Eurasian Hoopoe <i>Upupa</i> epops ⁴		DN9				02	1.25 - 3.00	Re
Red-breasted Parakeet Psittacula alexandri****4	HU6	DN9, 10, 12	QN1,2,3			64	2.08 - 4.16	Re
Vernal Hanging Parrot Loriculus vernalis****4			QN2			03	3.00 - 4.00	Re
Oriental Magpie Robin Copsychus saularis ³	HU1, 3,4	DN2,4,5		BD, 2,4,5,6	KH3,6,7	48	4.16 - 20.8	Re
White-rumped Shama Copsychus malabaricus ³	HU2	DN1, 6,7,8		BD1,3,5,6	KH4	28	6.25 - 104	Re
Indochinese Green Magpie <i>Cissa hypoleuca</i> ⁴		DN10	QN3			03	3.33 - 8.34	Re
Common Green Magpie <i>Cissa chinensis</i> ⁴		DN12	QN1			02	3.33 - 8.34	Re
Red-whiskered Bulbul Pycnonotus jocosus ³	HU1,2,3,4	DN1-8		BD3-6	KH1-6	88	4.16 - 62.5	Re
Barn Swallow Hirundo rustica ¹	HU5		QN1		KH8	148	0.30 - 0.40	М
Red-rumped Swallow Cecropis daurica ¹	HU5	DN12	QN3		KH8	122	0.30 - 0.40	М
Spot-necked Babbler Stachyris striolata ³	HU6					02	4.00 - 6.00	Re
Red-billed Leiothrix Leiothrix lutea*3	HU6	DN10				08	3.33 - 8.34	Re
Silver-eared Mesia <i>Leiothrix</i> argentauris*3	HU6	DN11, 12	QN2			17	2.04 - 12.5	Re
Lesser Necklaced Laughingthrush Garrulax monileger*4	HU6	DN9	QN3			09	4.20 - 8.35	Re
White-crested Laughingthrush <i>Garrulax</i> <i>leucolophus</i> *4	HU6	DN10	QN1,2	BD2		22	4.20 - 12.5	Re
Orange-breasted Laughingthrush <i>Garrulax</i> annamensis*** ³	HU6					02	16.66	Re
Black-throated Laughingthrush Pterorhinus chinensis ^{**3}	HU2,3,6	DN4,5,9,10,11	QN1,3	BD3,4	KH2,4	37	6.25 - 83.4	Re
White-cheeked Laughingthrush Pterorhinus vassali*4			QN2			05	4.20 - 8.34	Re

62

Jos.hueuni.edu.vn

		Prov	inces (cod	es)		Prices N Total		
Species	Thua Thien Hue	Da Nang	Quang Nam	Binh Dinh	Khanh Hoa	individuals recorded	Min - Max	
Swinhoe's White-eye Zosterops simplex ³	HU1,3,4	DN1,3,5,6,7		BD3,5,6	KH1,4,6,7	132	0.84 - 62.5	Re
Common Hill Myna <i>Gracula</i> religiosa*3	HU3,6	DN2,6		BD2,3,4	KH2,4,6	12	6.25 – 100	Re
Great Myna Acridotheres grandis ⁴	HU2,6	DN11	QN3	BD1	KH4	19	2.00 - 4.00	Re
Crested Myna Acridotheres cristatellus ⁴	HU6	DN9	QN3			13	2.00 - 4.00	Re
Common Myna Acridotheres tristis ⁴	HU6	DN10,12	QN1,2,3			32	2.00 - 4.00	Re
Red-billed Starling Spodiopsar sericeus ⁴	HU6		QN1			17	2.00 - 3.00	М
Vinous-breasted Starling Acridotheres leucocephalus ⁴			QN2	BD3		04	1.25 - 4.00	Re
Black-collared Starling Gracupica nigricollis ⁴		DN3, 11,12	QN2	BD6	KH2,5	16	4.20 - 10.4	Re
White-shouldered Starling Sturnia sinensis ⁴	HU6	DN10	QN3			46	1.25 - 6.25	Re
Blue-winged Leafbird Chloropsis moluccensis ⁴	HU2,6	DN2,4,5		BD4	KH2	11	2.04 - 6.25	Re
Eurasian Tree Sparrow Passer montanus ¹	HU5	DN12	QN2		KH8	52	0.30 - 0.40	Re
House Sparrow Passer domesticus ¹		DN10	QN2,3		KH8	14	0.30 - 0.40	Re
Baya Weaver Ploceus philippinus¹		DN11	QN1			07	0.30 – 0.60	Re
White-rumped Munia Lonchura striata1	HU5	DN10	QN2,3	BD3	KH8	49	0.40 - 0.60	Re
Scaly-breasted Munia Lonchura punctulata ¹	HU5	DN11	QN1	BD2	KH8	76	0.30 - 0.40	Re
Yellow-breasted Bunting Emberiza aureola****1		DN12				06	0.30 - 0.40	М
Total: 53 species						1.601		

Remarks: Re = Resident; M = Migratory

* Category II in the CITES checklist and Vietnam Degree No.84/2021 ND-CP on the list of rare and threatened species.

** Category II in the Vietnam Degree No.84/2021 ND-CP on the list of rare and threatened species.

*** Category II in the Vietnam Degree No.84/2021 ND-CP on the list of rare and threatened species and endemic species.

**** Category II in the Vietnam Degree No.84/2021 ND-CP on the list of rare and threatened species and IUCN Red List species 2024.

¹ For freed and food, ² for food only ³ for pet as songbird, ⁴ for pets.

Appendix 2. List of bird shops and markets in five central coastal provinces, Vietnam

No	Province	City	Address	Types	Code
1	Thua Thien Hue	Hue	71 An Duong Vuong st, An Dong Ward	Pet	HU1
2	Thua Thien Hue	Hue	139 Phan Boi Chau st, Truong An Ward	Pet	HU2
3	Thua Thien Hue	Hue	86 A Ngu Binh st, An Cuu Ward	Pet	HU3
4	Thua Thien Hue	Hue	340 Phan Chu Trinh, An Cuu Ward	Pet	HU4
5	Thua Thien Hue	Hue	Thien Mu pagoda	Vendor	HU5
6	Thua Thien Hue	Hue	Le Duan st, Phu Thuan Ward	Vendor	HU6
7	Da Nang	Da Nang	53 Nguyen Huu Tho st, Hai Chau district	Pet	DN1
8	Da Nang	Da Nang	156 Hoang Dieu, Hai Chau district	Pet	DN2
9	Da Nang	Da Nang	600 Ong Ich Khiem, Hai Chau district	Pet	DN3
10	Da Nang	Da Nang	235 Trung Nu Vuong, Hai Chau district	Pet	DN4
11	Da Nang	Da Nang	44 Tieu La, Hai Chau district	Pet	DN5
12	Da Nang	Da Nang	194 Thai Thi Boi, Thanh Khe district	Pet	DN6
13	Da Nang	Da Nang	632 Dien Bien Phu, Thanh Khe district	Pet	DN7
14	Da Nang	Da Nang	442 Thang Long st, Cam Le district	Pet	DN8
15	Da Nang	Da Nang	Trieu Nu Vuong st, Hai Chau district	Vendor	DN9
16	Da Nang	Da Nang	Ton Duc Thang st, Lien Chieu district	Vendor	DN10
17	Da Nang	Da Nang	Truong Chinh st, Thanh Khe district	Vendor	DN11
18	Da Nang	Da Nang	Nguyen Huu Tho st, Hai Chau district	Vendor	DN12
19	Quang Nam	Hoi An	Hung Vuong st	Vendor	QN1
20	Quang Nam	Hoi An	Phan Chau Trinh & Phan Boi Chau st	Vendor	QN2
21	Quang Nam	Tam Ky	Hung Vuong st	Vendor	QN3
22	Binh Dinh	An Nhon	32 Quang Trung st	Pet	BD1
23	Binh Dinh	Quy Nhon	1608 Hung Vuong st	Pet	BD2
24	Binh Dinh	Quy Nhon	368 Tay Son st	Pet	BD3

No	Province	City	Address	Types	Code
25	Binh Dinh	Quy Nhon	60 Thanh Thai st	Pet	BD4
26	Binh Dinh	Quy Nhon	01 Ton Duc Thang st	Pet	BD5
27	Binh Dinh	Quy Nhon	487 Nguyen Thai Hoc st	Pet	BD6
28	Khanh Hoa	Nha Trang	193 Tran Nguyen Han st	Pet	KH1
29	Khanh Hoa	Nha Trang	227 Hai Thang Tu st	Pet	KH2
30	Khanh Hoa	Nha Trang	475 Le Hong Phong st	Pet	KH3
31	Khanh Hoa	Nha Trang	93 Tran Quy Cap st	Pet	KH4
32	Khanh Hoa	Nha Trang	145 Tran Quy Cap st	Pet	KH5
33	Khanh Hoa	Nha Trang	174 Ngo Gia Tu st	Pet	KH6
34	Khanh Hoa	Nha Trang	28 Tran Nhat Duat st	Pet	KH7
35	Khanh Hoa	Nha Trang	Thap Ba Ponaga pogoda	Vendor	KH8