Lampiran 10

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	Bird Species Biodiversity In Coastal Area Of Panjang Island, Jepara, Central Java		
Penulis Jurnal Ilmiah	Ketua : Sri Utami Anggota : Sutrisno Anggoro, Tri Retnaningsih Soeprobowati		
Identitas Jurnal Ilmiah	a. Nama Jurnal	:	American Scientific Publishers
	b. Nomor ISSN	:	1936-6612
	c. Volume, nomor, bulan, tahun	:	Vol 23, No. 3, Maret 2017
	d. Penerbit	:	American Scientific Publishers
	e. DOI artikel	:	https://doi.org/10.1166/asl.2017.8655
	f. Alamat web	:	http://www.ingentaconnect.com/content/asp/asl/2017/00000023/00000003/art00249
	g. Terindeks : **SCOPUS SJR** 0.13		

Kategori Publikasi Karya Ilmiah (beri ✓ pada kategori yang tepat)

- ☐ *Jurnal* Ilmiah Internasional/ Internasional Bereputasi
- ☐ *Jurnal* Ilmiah Nasional Terakreditasi
- ☐ *Jurnal Ilmiah Nasional/Nasional Terindeks di DOAJ,COPERNICUS*

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Yang Diperoleh
	Internasional ☐	Nasional Terakreditasi ☐	Nasional Tidak Terakreditasi ☐	
a. Kelengkapan unsur isi buku (10%)	3			3,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	9			6,00
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9			7,50
d. Kelengkapan unsur dan kualitas penerbit (30%)	9			8,50
Total = (100%)	**30**			**25,00**
Pengusul YBS = (40%/2)*25,00				**5,00**

Catatan penilaian oleh Reviewer :

1. **Kelengkapan unsur isi:** Sesuai "Guide for Author": Abstract, Introduction, Experimental Details,..... References and Notes
2. **Ruang lingkup & kedalaman:**Sebagai pembimbing-2 Disertasi Doktor Lingkungan, hanya 7th dari 28th rujukannya dilibatkan dalam proses membahas hasil, ruang lingkup sesuai bidang ilmu dan kurang mendalam. Proporsi "Discussion" sangat kecil.
3. **Kecukupan & kemutakhiran:**Dari 28 rujukannya, terdapat: 13bh sudah kadaluwarsa lebih dari 10th terakhir, 5bh berbahasa indonesia dan 6bh berupa buku. Kemutakhiran cukup baik.
4. **Kelengkapan unsur dan kualitas penerbit:**Terindeks di scopus/scimagojr, sebagai A SPECIAL SECTION. **Selected Peer-Reviewed Articles from the International Conference on Information in Business and Technology Management (I2BM'17), Penang, Malaysia, 18–20 April, 2017 .** *Guest Editors: Hamzah Asyrani Sulaiman, Mohd Azlishah Othman, Ahmad Na'im Che Pee@Che Hanapi, . Mohd Fairuz Iskandar Othman, and Yahaya Abd Rahim . Adv.* Sci. Lett. 23(11), 10481–10482 (2017)

Semarang, Desember 2017
Reviewer I

Prof. Dr. Ir. Syaiful Anwar, M.Si
NIP . 196005101990011002

Lampiran 10

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- ☐ *Jurnal Ilmiah Nasional/Nasional Terindeks di DOAJ,COPERNICUS*

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Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Yang Diperoleh
	Internasional ☐	Nasional Terakreditasi ☐	Nasional Tidak Terakreditasi ☐	
a. Kelengkapan unsur isi buku (10%)	4			2
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			8
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			6
d. Kelengkapan unsur dan kualitas penerbit (30%)	12			6
Total = (100%)	**40**			**22**

Catatan penilaian oleh Reviewer :
Kualitas penerbit baik, nilai novelty dan kemutahiran. Yang perlu ditingkatkan kaidah penulisan dimana editor harus urut nomor pembahasan juga harus lebih detail.

Semarang,
Reviewer II

Prof. Dr. Moh. Djaeni, S.T., M.Eng
NIP. 197102071995121001

Lampiran 10

LEMBAR
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Penulis Jurnal Ilmiah	Ketua : Sri Utami Anggota : Sutrisno Anggoro, Tri Retnaningsih Soeprobowati
Identitas Jurnal Ilmiah	a. Nama Jurnal : Advanced Science Letters b. Nomor ISSN : 1936-6612 c. Volume, nomor, bulan, tahun : Vol 23, No. 3, Maret 2017 d. Penerbit : American Scientific Publishers e. DOI artikel : https://doi.org/10.1166/asl.2017.8655 f. Alamat web : http://www.ingentaconnect.com/content/asp/asl/2017/00000023/00000003/art00249 g. Terindeks : **SCOPUS SJR** 0.13

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	Internasional ☐	Nasional Terakreditasi ☐	Nasional Tidak Terakreditasi ☐	
a. Kelengkapan unsur isi buku (10%)	4			0,72
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			2,16
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			2,16
d. Kelengkapan unsur dan kualitas penerbit (30%)	12			2,16
Total = (100%)	40			7.2

Catatan penilaian oleh Reviewer :
Cukup bagus. Informasi lokasi pulau Panjang secara spasial kurang. Kalau diversity disajikan dalam konteks peta akan lebih bagus. Penulis ke 3 dari 3 penulis
Nilai 20% × 90% × 40 = 7,2

Yogyakarta,
Reviewer

Prof. Dr. Sudarmadji, M.Eng.Sc.
NIP . 194812211976031003

MINISTRY OF RESEARCH, TECHNOLOGY AND HIGHER EDUCATION
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SCHOOL OF POSTGRADUATE STUDIES

CERTIFICATE

Number : 969/UN7.P/HK/2016

This is to certify that :

SRI UTAMI

Has participated as

PRESENTER

in the "1st International Conference on Energy, Environment, and Information System (ICENIS) 2016",
School of Postgraduate Studies, Diponegoro University, Semarang Indonesia,
October 11th - 12th, 2016

Dean,

Prof. Dr. Ir. Purwanto, DEA
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Chair of Organizing Committee,

Dr. Suryono, M.Si.
NIP. 197306301998021001

RESEARCH ARTICLE

Advanced Science Letters
Vol. 23, 2498–2500, 2017

Bird Species Biodiversity in Coastal Area of Panjang Island, Jepara, Central Java

Sri Utami[1,3,*], Sutrisno Anggoro[2], and Tri Retnaningsih Soeprobowati[1,3]

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Panjang Island has been officially established as a protection forest area for wildlife habitat, in particular birds. Bird species biodiversity can be used for an indicator for environmental quality in a particular area. This study aimed to find out biodiversity of the bird species and to assess vegetation structure in coastal area of Panjang Island. The location was selected by a purposive sampling method. Data on bird species were collected by a variable circular-plot method. In addition to collect bird species, this study also performed vegetation sampling by a square (plot) method measuring 20×20 m plots for saw timber stage, 5×5 m plots for sapling stage, and 1×1 m plots for seedling stage. The study found 27 bird species from 15 families. Ardeidae became the dominating bird species in Panjang Island. The island had a moderate biodiversity rate of the bird species ranging from 1.15 to 2.20. Furthermore, the study also found 21 vegetation species with biodiversity index rate from 1.92 to 2.22. The dominant vegetation species found were Leucaena glauca and Thespesia pupolnea. The bird species biodiversity in Panjang Island was affected by vegetation structure in the island. The study recommended a protection effort for bird species biodiversity in the coastal area of Panjang Island because all of the species had been considered in Least Concern status by the IUCN Red-List.

Keywords: Ardeidae, Coastal Area Vegetations, Least Concern, Panjang Island.

1. INTRODUCTION

Indonesia is the largest archipelagic country in the world with 17,508 islands where most of them are isles, even islets.[25] These islands have great aquatic and terrestrial natural resources with high biodiversity rate.

Islets, or small islands, have been vulnerable to environmental changes and damages. Therefore, it is important to give a protection in order to improve the quality of and to create sustainable resources of the islands.

Panjang Island is one of islets in Indonesia measuring 19.73 ha. The island is under the administrative area of Jepara Regency, Central Java Province. Its natural resource potentials consist of coastal and protection forest with great biodiversity. The beauty of Panjang Island is marked with white sands and clear sea water. The island has been an attractive spot for tourists. Based on its status as an environmental damage-prone area, Panjang Island has become a priority for the sustainable protection. The island possesses a protection area for the habitat of wild animals, among others avian birds.[27]

There are 8,000–10,200 bird species worldwide. Of these, Indonesia has been contributing as many as 1,500 species. Sumatera Island has become predominantly the habitat for 450 Indonesian birds.[20] Birds as part of ecosystem components that help control bugs population and vegetation growth and distribution.[1]

Birds can be found in any terrestrial part worldwide in varied habitat. They are sensitive to the environmental damage. Accordingly, birds can be used for bio-indicators of the change in environmental quality. Birds are present and inhabit in a particular place by their environmental characteristics.[13] Bird species biodiversity in forest area may reflect a high biodiversity of other living creatures. In other words, they can be an indicator for the quality of the forest.[1] Such explanation applies to the ecosystem function that supports the birds' activities, as well as the protection area, feeding, and growth.[7,26]

Birds have been threatened by illegal hunting, deforestation, and land conversion of the forest. There have been more and more species that are endangered, and even extinct due to such damaging activities.[2] Vegetation biodiversity of a habitat affects biodiversity, abundancy and composition of the bird species. The habitat with more vegetations have been proven to possess a better bird species biodiversity compared to those with less vegetations.[4] Besides, bird species biodiversity is also affected by a vegetation composition.[12] The vegetations supply foods for

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the birds, therefore, food supplies have been significant to the birds' survival.[19]

This study aimed to find out biodiversity of bird species and vegetation structure in the coastal area of Panjang Island, Jepara Regency, Central Java Province. The study had been expected to contribute to the development proram of the bird conservation in Indonesia.

2. EXPERIMENTAL DETAILS

The study was held in Panjang Island, Jepara Regency, Central Java Province, from January 2014 to July 2015. The location was selected by a purposive sampling method. The method determined four locations in the coastal area, i.e., East, South, West and North sides of Panjang Island.

Birds for this study were collected by using a variable circular-plot method where each location was marked with a 500-meter line. Along the marked line the study determined a 100-meter observation range with 50-meter wide on the right and left sides.[2] In order to minimize bias and to obtain the accurate date, times and conditions were selected as such that the observation was able to document the peak activity of the birds in the morning from 07.00 to 09.00 a.m. (GMT +7) in a clear weather.[5] Furthermore, the bird species identification applied direction from MacKinnon's book.[13]

Vegetation samples were obtained with a square method with 20×20 m plots for saw timber stage, 5×5 m plots for sapling stage, and 2×2 m plots for seedling stage.[6] The saw timber stage consisted plants with stake diameter of ≥ 10 centimeters, the sapling stage consists of plants with stake diameter of <10 centimeters and height of ≥ 1.5 meters, and the seedling stage consisted of plants from the sprout phase to those with the height of <1.5 meters.[14, 18]

$$H' = \sum ni/N \log ni/N$$

where, H': Shannon-Wiener's biodiversity index. ni: number individuals by species. N: total number individuals of all species.

The species biodiversity was divided into three categories, as follows:

$H' > 3$ for high species biodiversity.
$1 \leq H' \leq 3$ for moderate species biodiversity.
$H' < 1$ for low species biodiversity.

Variables used for examining the vegetation structure were density, frequency, and domonation. The vegetations obtained were subject to analysis using Important Value Index (IVI),[3] with the following equation:

$$\text{IVI} = \text{Relative Density (RD)} + \text{Relative Domonation (RD)} + \text{Relative Frequency (RF)}$$

3. RESULTS AND DISCUSSION

The coastal area of Panjang Island has become a habitat for many bird species, either those living in aquatic or in terrestrial ecosystems. This study found 27 species with a total of 186 individuals from 15 different families. The most dominating birds documented during the observation were from Ardeidae family (Table I).

Table I. Bird species biodiversity in coastal area of panjang island.

	Family	Species	Local name	East	South	West	North	IUCN
1	Alcedinidae	*Alcedo coerulescens*	*Raja udang biru*	2				LC*
2		*Todirhamphus sanctus*	*Cekakak suci*		3		2	LC*
3	Ardeidae	*Ardea cinerea*	*Cangak abu*		5			LC
4		*Ardea purpurea*	*Cangak merah*		6			LC
5		*Butorides striatus*	*Kokokan laut*		1			LC
6		*Egretta alba*	*Kuntul besar*		3			LC*
7		*Egretta garzetta*	*Kuntul kecil*		10			LC
8	Artamidae	*Artamus leucorynchus*	*Kekep babi*		1			LC
9	Apodidae	*Collocalia linchi*	*Walet linci*	14	7	8	8	LC
10	Columbidae	*Geopelia striata*	*Perkutut Jawa*		2			LC
11		*Streptopelia bitorquata*	*Dederuk Jawa*	5	2	2	5	LC
12		*Streptopelia chinensis*	*Tekukur biasa*					LC
13		*Treron vernans*	*Punai gading*					LC
14	Dicaeidae	*Dicaeum trochileum*	*Cabai Jawa*	1	2			LC
15	Hirundinidae	*Hirundo tahitica*	*Layang-layang batu*	6	4			LC
16	Nectariniidae	*Nectarinia jugularis*	*Burung madu sriganti*	3				LC
17	Picnonotidae	*Pycnonotus aurigaster*	*Cacak kutilang*		1			LC
18		*Pycnonotus goiavier*	*Merbah cerukcuk*	8	6	5	7	LC
19	Ploceidae	*Lonchura leucogastroides*	*Bondol Jawa*		7			LC
20		*Lonchura maja*	*Bondol haji (emprit)*		1			LC
21		*Passer montanus*	*Burunggereja Eurasia*		1			LC
22	Rallidae	*Amaurornis phoenicurus*	*Kareopadi*		6			LC
23	Scolopacidae	*Numenius phaeopus*	*Gajahan penggala**	5				LC*
24		*Tringa hypoleucos*	*Trinil pantai*		3	1		LC*
25	Silviidae	*Orthotomus sutorius*	*Cinenen pisang*		6			LC
26	Sternidae	*Sterna bergii*	*Dara laut jambul**		1			LC*
27	Zosteropidae	*Zosterops palpebrosus*	*Kacamata biasa*		1			LC
	No. of species			**8**	**22**	**4**	**4**	
	No. of individuals			**44**	**79**	**16**	**22**	
	Biodiversity index (H')			**1.86**	**2.20**	**1.15**	**1.29**	

Note: LC*: Least Concern status according to Indonesi.

Adv. Sci. Lett. 23, 2498–2500, 2017

Table II. Vegetation structure in coastal area of panjang island.

Description	East	South	West	North
No. of species	12	10	8	8
No. of individuals	49	67	49	27
H' (biodiversity index)	2.22	2.13	1.99	1.52

The number of the birds found in Panjang Island were less than those found in other islands, such as the National Park of Wakatobi (36 species).[23] Such phenomenon agrees with the theory of bio-geography, in which smaller islands have less bird species than the bigger islands or the islands more adjacent to the terrestrial area.[13]

The most abundant species found in Panjang Island was Collocalia linchi, a bug-eating bird species (Table I). The observation obtained the similar result with that of Seribu Islands, in which of the 46 species found, bug-eating birds dominated the composition.[23] The species ability enabled it to hunt the preys.[16] In addition, Collocalia linchi was benefited from the abundance of the bug supplies through the year, either during rainy or dry seasons. Panjang Island had a very low rainfall rate (<100 mm in six months) so that most of the vegetations died when the dry season came.[27] As the dry season occurred, less vegetations were available to supply the foods to the birds. The abundance of Arthropoda and flowers affected the abundance of the bird species.[17]

The largest number of species and individuals, as well as the biodiversity of the birds were found in the Southern side of the island (Table I). This due to the fact that most vegetations during the observation were also located in this area (Table II). The current results were similar with the other studies,[15,22] that concluded that vegetation abundance as the food suppliers had a significant effect on the bird species biodiversity. In addition, food supply availability in a particular type of habitat was one of leading factors for selecting the most appropriate habitat (the habitat with abundant food supplies).

All bird species found had been inclued into the IUCN Rest List 10, among others were seven birds under the Least Concern category for Indonesia, i.e., Alcedo coerulescens, Todirhamphus sanctus, Egretta alba, Egretta garzetta, Numenius phaeopus, Tringa hypoleucos, and Sterna bergii.[21]

4. CONCLUSION

There were 27 bird species found in the coastal area of Panjang Island with the most dominating family of Ardeidae. *Collocalia linchi* (*wallet linchi*) and *Egretta garzetta* (*kuntul kecil*) were two most detected species in the island with the biodiversity indices ranging from 1.15 to 2.22. All of the species had been included into the Least Concern according to the IUCN Red List, in which seven of them were protected birds under the national regulation of Indonesia. The bird species biodiversity in the coastal area of Panjang Island was affected by the vegetation bidiversity, number of species, and number of individuals.

Acknowledgments: This study is part of the author's dissertation: "The Strategy of Environment Conservation Based Vegetation on Panjang Island, Jepara, Jawa Tengah. The authors were grateful to the Directorate General of Higher Education, the Ministry of Research and Technology and Higher Education of the Republic of Indonesia) for the scholarship assistance during the study at the postgraduate degree, RullyRahadian, M. Hadi, Penny, Imam, Meisya, Nabila, Alam, and Laras.

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Bird Species Biodiversity In Coastal Area Of Panjang Island, Jepara, Central Java

by Sri Utami

Submission date: 03-May-2018 03:01PM (UTC+0700)
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Word count: 2462
Character count: 13077

RESEARCH ARTICLE

Advanced Science Letters
Vol. 23, 2498–2500, 2017

Bird Species Biodiversity in Coastal Area of Panjang Island, Jepara, Central Java

Sri Utami[1,3,*], Sutrisno Anggoro[2], and Tri Retnaningsih Soeprobowati[1,3]

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[3]*Faculty of Sciences and Mathematics, Diponegoro University, Semarang 50275, Indonesia*

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Keywords: Ardeidae, Coastal Area Vegetations, Least Concern, Panjang Island.

1. INTRODUCTION

Indonesia is the largest archipelagic country in the world with 17,508 islands where most of them are isles, even islets.[25] These islands have great aquatic and terrestrial natural resources with high biodiversity rate.

Islets, or small islands, have been vulnerable to environmental changes and damages. Therefore, it is important to give a protection in order to improve the quality of and to create sustainable resources of the islands.

Panjang Island is one of islets in Indonesia measuring 19.73 ha. The island is under the administrative area of Jepara Regency, Central Java Province. Its natural resource potentials consist of coastal and protection forest with great biodiversity. The beauty of Panjang Island is marked with white sands and clear sea water. The island has been an attractive spot for tourists. Based on its status as an environmental damage-prone area, Panjang Island has become a priority for the sustainable protection. The island possesses a protection area for the habitat of wild animals, among others avian birds.[27]

There are 8,000–10,200 bird species worldwide. Of these, Indonesia has been contributing as many as 1,500 species. Sumatera Island has become predominantly the habitat for 450 Indonesian birds.[20] Birds as part of ecosystem components that help control bugs population and vegetation growth and distribution.[1]

Birds can be found in any terrestrial part worldwide in varied habitat. They are sensitive to the environmental damage. Accordingly, birds can be used for bio-indicators of the change in environmental quality. Birds are present and inhabit in a particular place by their environmental characteristics.[13] Bird species biodiversity in forest area may reflect a high biodiversity of other living creatures. In other words, they can be an indicator for the quality of the forest.[1] Such explanation applies to the ecosystem function that supports the birds' activities, as well as the protection area, feeding, and growth.[7,26]

Birds have been threatened by illegal hunting, deforestation, and land conversion of the forest. There have been more and more species that are endangered, and even extinct due to such damaging activities.[2] Vegetation biodiversity of a habitat affects biodiversity, abundancy and composition of the bird species. The habitat with more vegetations have been proven to possess a better bird species biodiversity compared to those with less vegetations.[4] Besides, bird species biodiversity is also affected by a vegetation composition.[12] The vegetations supply foods for

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the birds, therefore, food supplies have been significant to the birds' survival.[19]

This study aimed to find out biodiversity of bird species and vegetation structure in the coastal area of Panjang Island, Jepara Regency, Central Java Province. The study had been expected to contribute to the development proram of the bird conservation in Indonesia.

2. EXPERIMENTAL DETAILS

The study was held in Panjang Island, Jepara Regency, Central Java Province, from January 2014 to July 2015. The location was selected by a purposive sampling method. The method determined four locations in the coastal area, i.e., East, South, West and North sides of Panjang Island.

Birds for this study were collected by using a variable circular-plot method where each location was marked with a 500-meter line. Along the marked line the study determined a 100-meter observation range with 50-meter wide on the right and left sides.[2] In order to minimize bias and to obtain the accurate date, times and conditions were selected as such that the observation was able to document the peak activity of the birds in the morning from 07.00 to 09.00 a.m. (GMT +7) in a clear weather.[5] Furthermore, the bird species identification applied direction from MacKinnon's book.[13]

Vegetation samples were obtained with a square method with 20×20 m plots for saw timber stage, 5×5 m plots for sapling stage, and 2×2 m plots for seedling stage.[6] The saw timber stage consisted plants with stake diameter of $\geq$10 centimeters, the sapling stage consists of plants with stake diameter of $<$10 centimeters and height of $\geq$1.5 meters, and the seedling stage consisted of plants from the sprout phase to those with the height of $<$1.5 meters.[14, 18]

$$H' = \sum ni/N \log ni/N$$

where, H': Shannon-Wiener's biodiversity index. ni: number individuals by species. N: total number individuals of all species.

The species biodiversity was divided into three categories, as follows:

$H' > 3$ for high species biodiversity.

$1 \leq H' \leq 3$ for moderate species biodiversity.

$H' < 1$ for low species biodiversity.

Variables used for examining the vegetation structure were density, frequency, and domonation. The vegetations obtained were subject to analysis using Important Value Index (IVI),[3] with the following equation:

$$\text{IVI} = \text{Relative Density (RD)} + \text{Relative Domonation (RD)} + \text{Relative Frequency (RF)}$$

3. RESULTS AND DISCUSSION

The coastal area of Panjang Island has become a habitat for many bird species, either those living in aquatic or in terrestrial ecosystems. This study found 27 species with a total of 186 individuals from 15 different families. The most dominating birds documented during the observation were from Ardeidae family (Table I).

Table I. Bird species biodiversity in coastal area of panjang island.

	Family	Species	Local name	East	South	West	North	IUCN
1	Alcedinidae	*Alcedo coerulescens*	*Raja udang biru*	2				LC*
2		*Todirhamphus sanctus*	*Cekakak suci*		3		2	LC*
3	Ardeidae	*Ardea cinerea*	*Cangak abu*		5			LC
4		*Ardea purpurea*	*Cangak merah*		6			LC
5		*Butorides striatus*	*Kokokan laut*		1			LC
6		*Egretta alba*	*Kuntul besar*		3			LC*
7		*Egretta garzetta*	*Kuntul kecil*		10			LC
8	Artamidae	*Artamus leucorynchus*	*Kekep babi*		1			LC
9	Apodidae	*Collocalia linchi*	*Walet linci*	14	7	8	8	LC
10	Columbidae	*Geopelia striata*	*Perkutut Jawa*		2			LC
11		*Streptopelia bitorquata*	*Dederuk Jawa*	5	2	2	5	LC
12		*Streptopelia chinensis*	*Tekukur biasa*					LC
13		*Treron vernans*	*Punai gading*					LC
14	Dicaeidae	*Dicaeum trochileum*	*Cabai Jawa*	1	2			LC
15	Hirundinidae	*Hirundo tahitica*	*Layang-layang batu*	6	4			LC
16	Nectariniidae	*Nectarinia jugularis*	*Burung madu sriganti*	3				LC
17	Picnonotidae	*Pycnonotus aurigaster*	*Cacak kutilang*		1			LC
18		*Pycnonotus goiavier*	*Merbah cerukcuk*	8	6	5	7	LC
19	Ploceidae	*Lonchura leucogastroides*	*Bondol Jawa*		7			LC
20		*Lonchura maja*	*Bondol haji (emprit)*		1			LC
21		*Passer montanus*	*Burunggereja Eurasia*		1			LC
22	Rallidae	*Amaurornis phoenicurus*	*Kareopadi*		6			LC
23	Scolopacidae	*Numenius phaeopus*	*Gajahan penggala**	5				LC*
24		*Tringa hypoleucos*	*Trinil pantai*		3	1		LC*
25	Silviidae	*Orthotomus sutorius*	*Cinenen pisang*		6			LC
26	Sternidae	*Sterna bergii*	*Dara laut jambul**		1			LC*
27	Zosteropidae	*Zosterops palpebrosus*	*Kacamata biasa*		1			LC
	No. of species			**8**	**22**	**4**	**4**	
	No. of individuals			**44**	**79**	**16**	**22**	
	Biodiversity index (H')			**1.86**	**2.20**	**1.15**	**1.29**	

Note: LC*: Least Concern status according to Indonesi.

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Table II. Vegetation structure in coastal area of panjang island.

Description	East	South	West	North
No. of species	12	10	8	8
No. of individuals	49	67	49	27
H' (biodiversity index)	2.22	2.13	1.99	1.52

The number of the birds found in Panjang Island were less than those found in other islands, such as the National Park of Wakatobi (36 species).[23] Such phenomenon agrees with the theory of bio-geography, in which smaller islands have less bird species than the bigger islands or the islands more adjacent to the terrestrial area.[13]

The most abundant species found in Panjang Island was Collocalia linchi, a bug-eating bird species (Table I). The observation obtained the similar result with that of Seribu Islands, in which of the 46 species found, bug-eating birds dominated the composition.[23] The species ability enabled it to hunt the preys.[16] In addition, Collocalia linchi was benefited from the abundance of the bug supplies through the year, either during rainy or dry seasons. Panjang Island had a very low rainfall rate (<100 mm in six months) so that most of the vegetations died when the dry season came.[27] As the dry season occurred, less vegetations were available to supply the foods to the birds. The abundance of Arthropoda and flowers affected the abundance of the bird species.[17]

The largest number of species and individuals, as well as the biodiversity of the birds were found in the Southern side of the island (Table I). This due to the fact that most vegetations during the observation were also located in this area (Table II). The current results were similar with the other studies,[15, 22] that concluded that vegetation abundance as the food suppliers had a significant effect on the bird species biodiversity. In addition, food supply availability in a particular type of habitat was one of leading factors for selecting the most appropriate habitat (the habitat with abundant food supplies).

All bird species found had been inclued into the IUCN Rest List 10, among others were seven birds under the Least Concern category for Indonesia, i.e., Alcedo coerulescens, Todirhamphus sanctus, Egretta alba, Egretta garzetta, Numenius phaeopus, Tringa hypoleucos, and Sterna bergii.[21]

4. CONCLUSION

There were 27 bird species found in the coastal area of Panjang Island with the most dominating family of Ardeidae. *Collocalia linchi* (*wallet linchi*) and *Egretta garzetta* (*kuntul kecil*) were two most detected species in the island with the biodiversity indices ranging from 1.15 to 2.22. All of the species had been included into the Least Concern according to the IUCN Red List, in which seven of them were protected birds under the national regulation of Indonesia. The bird species biodiversity in the coastal area of Panjang Island was affected by the vegetation bidiversity, number of species, and number of individuals.

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