

## **FINAL REPORT**

### **Evaluation of Vegetation Expansion as Potential Threat for Spotted Greenshank and other Migratory Shorebird at Pantai Cemara, Jambi**

#### **Background**

Spotted Greenshank (*Tringa guttifer*) is an endangered species, confined to the East Asian–Australasian Flyway (Bamford et al. 2008, BirdLife International 2001, 2012). The global population of this species is estimated at 500–1,000, with an estimated 100 in Malaysia, 100–200 in Thailand, 100 in Myanmar, plus unknown but low numbers in India, Bangladesh, and Sumatra (Wetlands International 2006).

Mostly Spotted Greenshanks have been recorded in very small numbers throughout, for example, it was rediscovered after a gap of almost 129 years. The total count recorded by the Asian Waterbird Census (AWC) in 2006 for Myanmar was 28 birds with 14 being the largest number at a single locality (Naing 2007). In Sumatra Spotted Greenshank was found at Tanjung Rejo village (3°44'N, 98°46'E), Percut Sei Tuan Subdistrict, and Pantai Labu Subdistrict (Abdillah and Iqbal, 2012).

As one of the rarest and most threatened shorebirds, research and conservation activities for Spotted Greenshank are very important, especially in their non-breeding habitat. Based on BirdLife International (2016), one of the key threats for Spotted Greenshank is the development of coastal wetlands throughout Asia, which means that one of the key threats of this species is its passage and/or non-breeding habitat change. Besides the development and reclamation, the decreasing population of shorebirds species is also affected by the vegetation expansion (invasive species), such as grass *Spartina* (Q. Bai in litt. 2016). Most shorebirds species need an open wetland as the feeding ground to get better access to their prey, therefore the massive growth of vegetation could be disturbing and affected the presence of shorebirds in the habitat.

Pantai Cemara, Jambi is one of the most important sites for Spotted Greenshank in Indonesia. In 2019 recorded 28 individuals of Spotted Greenshank used this site as a non-breeding ground, and in 2020 the number of Spotted Greenshank is declining to 21 individuals. There

are also records of other endangered migratory shorebirds at Pantai Cemara: Far Eastern Curlew and Great Knot.

Based on the shorebirds monitoring result at Pantai Cemara in November 2020, we recorded the expansion of vegetation at Pantai Cemara and a drastic drop of migratory shorebirds at Pantai Cemara Jambi. The maximum count of migratory shorebirds using Pantai Cemara as its non-breeding site in 2019 is 17,032 individuals, and in 2020 are dropped to 2,817 individuals (unpublished data of Spotted Greenshank survey at Pantai Cemara, 2019 - 2020). Despite this rapid decline of migratory shorebirds species at Pantai Cemara Jambi, the number of endangered species, such as Spotted Greenshank is still stable. Nevertheless, this result shows the urgent need for continuous research and conservation activities to manage Pantai Cemara as the non-breeding habitat of migratory shorebirds, especially Spotted Greenshank.

#### **Objectives:**

1. Determine if the expansion of vegetation at Pantai Cemara Jambi can be a serious threat for migratory shorebirds, especially Spotted Greenshank
2. Determine the possible cause of the expansion of vegetation at Pantai Cemara Jambi
3. Identify the shorebirds species and shorebirds abundance at Pantai Cemara Jambi, and how the expansion of the vegetation affect the shorebirds presence and distribution
4. Determine the management plan (involving the local authority and local shorebird team) to control the vegetation expansion and manage the habitat.

#### **Project Plan, Timeline, and Method**

Team Leader : <b>Cipto Dwi Handono</b>	Methods :
Team Member :	- Determine the observation point
- Ahmad Zulfikar Abdullah	- Identify the vegetation species
- Iwan Febrianto,	

<ul style="list-style-type: none"> <li>- Ragil S. Rihadini,</li> <li>- Teguh S. ( BKSDA / Conservation and Natural Resources Agency Jambi )</li> <li>- Herman (Local shorebird team)</li> <li>- Joni (Local shorebird team)</li> <li>- Wahidin (Local shorebird team)</li> <li>- Arif (Local Shorebird Team)</li> </ul>	<ul style="list-style-type: none"> <li>- Doing the assessment around the site and interviewing local people to identify and determine the possible cause of this vegetation expansion</li> <li>- Identify the effect of this vegetation expansion to migratory shorebirds especially Spotted Greenshank at Pantai Cemara by doing the survey of migratory shorebirds</li> </ul>
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June 2021	Take care of administrative Permit
5 November 2021	Travel from Surabaya to Jambi
6 November 2021	Having discussion with local people
7 -10 November 2021	Field Survey and Habitat Assessment
11 November 2021	Going to Tanjung Jabung Timur Region
12 November 2021	Having discussion with the representative of local government (the Government of Tanjung Jabung Timur) and local government agencies (BKSDA Jambi Province)
15 November 2021	Presenting the Survey Result to BKSDA (Conservation and Natural Resources Agency) Jambi

## Result and Discussion

We did the monitoring for migratory shorebirds and habitat survey for four days, from November 7th, until November 10th, 2021. The result of the migratory shorebird survey during this activity is present in table 02.

**Table 02.** Monitoring Result of Migratory Shorebird at Pantai Cemara, Jambi from November 7<sup>th</sup> to 10<sup>th</sup>, 2021

NO	Spesies	English Name	Local Name	Day 1	Day 2	Day 3	Day 4
1	<i>Egretta eulopotes</i>	Chinese Egret	Kuntul Cina	0	1	0	1
2	<i>Charadrius dealbatus</i>	White-Faced Plover	White-Faced Plover	2	1	0	0
3	<i>Charadrius leschenaultii</i>	Greater Sandplover	Cerek Pasir Besar	0	5	0	48
4	<i>Pluvialis squatarola</i>	Grey Plover	Cerek Besar	19	20	0	0
5	<i>Charadrius mongolus</i>	Lesser Sandplover	Cerek Pasir Mongolia	933	1820	1276	2342
7	<i>Charadrius alexandrinus</i>	Kentish Plover	Cerek Tilil	0	2	0	0
9	<i>Charadrius javanicus</i>	Javan Plover	Cerek Jawa	0	1	0	1
10	<i>Hydropogone caspia</i>	Caspian Tern	Dara Laut Caspia	0	6	13	0
11	<i>Sterna hirundo</i>	Common Tern	Dara Laut Biasa	0	18	0	0
13	<i>Thalasseus bergii</i>	Greater Crested Tern	Dara Laut Jambul	0	90	110	0
14	<i>Stenula albifrons</i>	Little Tern	Dara Laut Kecil	234	234	0	0
15	<i>Calidris tenuirostris</i>	Great Knot	Kedidi Besar	0	0	9	176
16	<i>Numenius madagascariensis</i>	Far Eastern Curlew	Gajahan Timur	18	29	71	35

17	<i>Tringa guttifer</i>	Spotted Greenshank	Trinil Nordmann	0	0	0	5
18	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Trinil Rawa	0	0	0	27
19	<i>Xenus cinereus</i>	Terek Sandpiper	Trinil Bedaran	68	43	23	10
20	<i>Tringa totanus</i>	Common Redshank, Redshank	Trinil Kaki Merah	0	0	66	0
21	<i>Numenius phaeopus</i>	Whimbrel	Gajahan Penggala	14	57	13	0
22	<i>Actitis hypoleucos</i>	Common Sandpiper	Trinil Pantai	0	0	0	1
24	<i>Tringa nebularia</i>	Common Greenshank	Trinil Kaki Hijau	0	14	0	0
25	<i>Calidris alba</i>	Sanderling	Kedidi Putih	1	0	0	1
26	<i>Limnodromus semipalmatus</i>	Asian Dowitcher	Trinil Lumpur Asia	0	0	0	15
27	<i>Limosa limosa</i>	Black-tailed Godwit	Biru Laut Ekor Hitam	60	75	0	135
28	<i>Limosa lapponica</i>	Bar-tailed Godwit	Biru Laut Ekor Blorok	344	434	258	351
29	<i>Calidris canutus</i>	Red Knot	Kedidi Merah	152	0	58	83
30	<i>Numenius arquata</i>	Eurasian Curlew	Gajahan Besar	66	142	128	193
31	<i>Calidris ruficollis</i>	Red Necked Stint	Kedidi Leher Merah	0	0	2	3
32	<i>Calidris ferruginea</i>	Curlew Sandpiper	Kedidi Gol-Gol	0	0	0	18
33	<i>Glareola maldivarum</i>	Oriental Pratincole	Terik Asia	0	0	1	0
34	<i>Sterna bengalensis</i>	Lesser Crested Tern	Dara Laut Benggala	0	24	0	0
35	<i>Calidris falcinellus</i>	Broad-billed Sandpiper	Kedidi Paruh Lebar	0	2	0	0
				1911	3018	2028	3445

During the monitoring activity, we recorded 35 species of waterbirds on Pantai Cemara, Jambi with two new species recorded: Lesser Crested Tern and Broad-billed Sandpiper. The total maximum count of waterbirds individual recorded is 3.445 birds. If we compare this result with last year's result (see table 03 & chart on fig 01), the maximum count of bird individuals and total species recorded in 2021 are more than 2020, even still less than the result recorded in 2019.

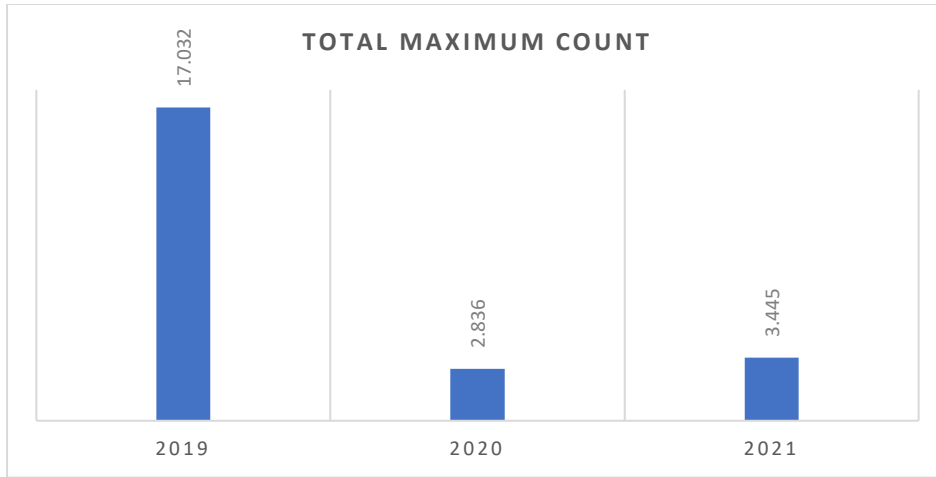


**Fig 01.** Migratory waterbirds at Pantai Cemara Jambi during this research (photo by. Cipto, 2021)

**Table 03.** Total Maximum Count of Bird Recorded at Pantai Cemara, Jambi from 2019 to 2021

Year	Total Maximum Count
2019	17.032
2020	2.836
2021	3.445

**Fig 02.** Chart of Total Maximum Count of Bird Recorded at Pantai Cemara, Jambi from 2019 to 2021



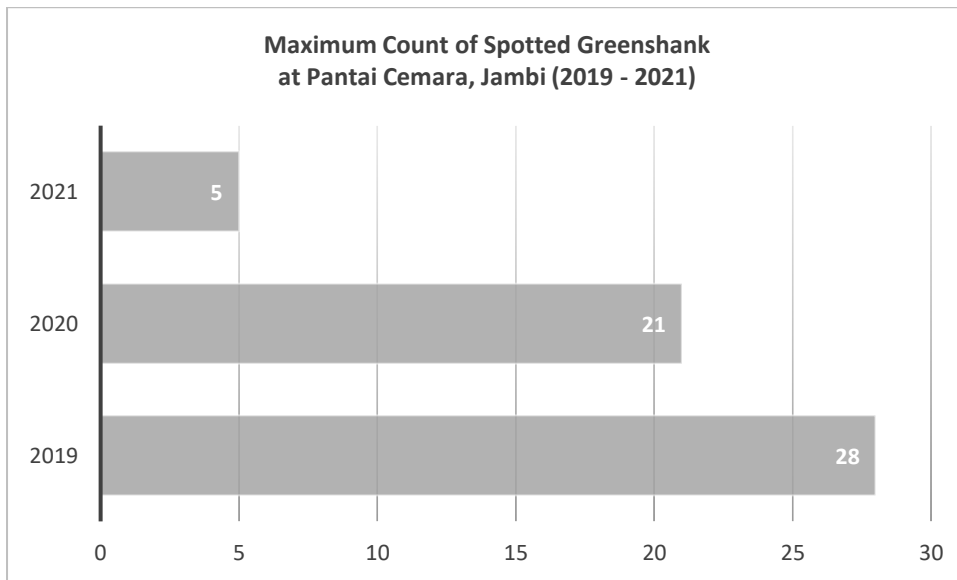
The maximum count of our focus species, Spotted Greenshank (*Tringa guttifer*), recorded during this monitoring were five individuals. This number is far if we compare it with the monitoring result from 2019 and 2020 (fig 03).

**Table 04.** Total maximum count of Spotted Greenshank recorded at Pantai Cemara, Jambi from 2019 to 2021.

Year	Maximum Count of Spotted Greenshank Recorded
2019	28
2020	21
2021	5



**Fig 03.** Chart of Total Maximum Count of Spotted Greenshank at Pantai Cemara, Jambi (2019-2021)



When we did monitoring with local people in 2020, we noticed the shifting of observation point (fig 04) because of the vegetation growth followed by migratory waterbirds decreasing number. The shifting distance of observation point 2019 to observation point 2020 is 198 meters, and from observation point 2020 to observation point 2021 are 110 meters. Based on the condition in 2020, we were wondering if this vegetation (which is dominated by *Ipomoea sp.*, affects the migratory waterbirds flocks or not. During the observation in 2020, we recorded the shifting of migratory waterbird flocks in general, especially medium to large waterbirds such as Godwit, Curlew, and Dowitcher.



**Fig 04.** The change of observation point on 2019 – 2021 because of vegetation growth (the observation points are also the edge / end line of vegetation on that year)

In fig 05, we can see the flocks of migratory waterbirds shifting following the vegetation growth. The vegetation consistently grew to the south, and the migratory bird's flocks were shifted following the vegetation growth. In 2020, we can see in fig 05 (2), the vegetation growing to the south side, and the migratory birds' flock are shifting to the south side too. Small birds such as plover are foraging and resting in the bushes among *Ipomoea* vegetation, while larger birds like Godwit, Curlew, and Dowitcher use the open mudflat without any vegetation. In 2021, from fig 05 (3) we can see that the vegetation is growing much larger, yet the total maximum count of migratory waterbirds at Pantai Cemara are stable and tend to rise. We recorded the mudflat area is increasing to the southeast.



(1)



(2)



(3)

**Fig 05.** (1) Vegetation and migratory waterbird in 2019, (2) Vegetation and migratory waterbird in 2020, (3) Vegetation and migratory waterbird in 2021

We also did a vegetation analysis by making 100 meters transect line, with 10 points between the observation point in 2020 to the observation point in 2021, with 10 meters distance per point. The vegetation analysis result is shown in fig 05 and table 05.



(1)



(2)



(3)



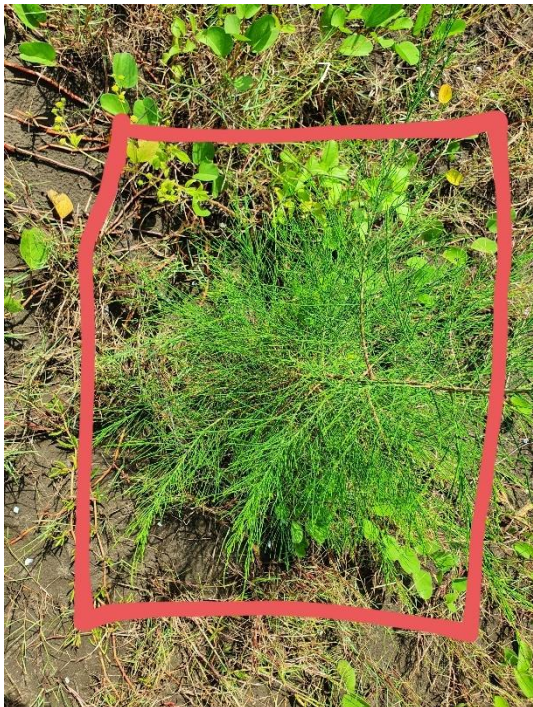
(4)



(5)



(6)



(7)



(8)



(9)



(10)

**Fig 06.** Analysis vegetation result per point (1) photo result of 1<sup>st</sup> point; (2) photo result of 2<sup>nd</sup> point; (3) photo result of 3<sup>rd</sup> point; (4) photo result of 4<sup>th</sup> point; (5) photo result of 5<sup>th</sup> point; (6) photo result of 6<sup>th</sup> point; (7) photo result of 7<sup>th</sup> point; (8) photo result of 8<sup>th</sup> point; (9) photo result of 9<sup>th</sup> point; photo result of 10<sup>th</sup> point.

**Table 05.** Analysis vegetation result

Point	Identified Vegetation
Point 1	<i>Ipomoea pes-caprae</i>
Point 2	<i>Ipomoea pes-caprae</i>
Point 3	grass 1, <i>Ipomoea pes-caprae</i>
Point 4	<i>Ipomoea pes-caprae</i> , grass 2
Point 5	<i>Avicennia sp.</i>
Point 6	grass 2
Point 7	Sea-pine, <i>Ipomoea pes-caprae</i>
Point 8	<i>Ipomoea pes-caprae</i> , grass 2
Point 9	<i>Ipomoea pes-caprae</i> , grass 1

Based on the analysis vegetation result, the most dominant vegetation is *Ipomoea pes-caprae* or Beach Morning Glory. This species was recorded as invasive in three countries: Spain, Anguilla, and South Africa (Dana, *et al.*, 2020; Connor *et al.*, 2021; and Foxcroft *et al.*, 2020). *Ipomoea pes-caprae* is a native species in Indonesia: Kalimantan, Sulawesi, Lesser Sunda Is., Jawa, Maluku, and Sumatra (IUCN RedList of Threatened Species, 2020).

All vegetation species identified during this research are native species, no alien species were detected. Besides the massive growth recorded (we can see the growth rate by comparing the data on fig 05 (1), (2), and (3)), we also record the increase of mudflat on the southeast side of Pantai Cemara, this new-form mudflat were used by migratory waterbirds flocks in 2021 (fig 05 (3)).

The vegetation growth consistently increased from 2019 to 2021 (fig 05), besides, after the decrease of migratory waterbirds number in 2020 (from 2019), the migratory waterbirds number at Pantai Cemara in 2021 are stable and tend to increase. If we see table 03, the maximum count of migratory waterbirds recorded in 2020 is 2.836 individuals, and in 2021 are 3.445 individuals. So, we can not say that the vegetation growth cause migratory waterbirds decrease at Pantai Cemara, but still if we see the pattern of vegetation growth and migratory waterbirds flock each year in fig 05, and if we compare fig 5(1), (2), and (3), we can sure that vegetation growth at Pantai Cemara affecting the location and habitat that used by migratory waterbirds flocks. This information is valuable for the migratory waterbirds habitat management plan at Pantai Cemara, Jambi. During the monitoring, almost all of the migratory waterbirds used the remaining open mudflats, just a small group of small birds (usually plover and small sandpipers) recorded foraging and roosting on the mudflat covered with vegetation.

The data analysis of vegetation growth effect to Spotted Greenshank species at Pantai Cemara, Jambi, shows a similar result. In 2019, the maximum count of Spotted Greenshank recorded at Pantai Cemara, Jambi is 28 individuals and 21 individuals in 2020 (table 04). During this research, we record only 5 individuals of Spotted Greenshank at Pantai Cemara,

Jambi. Our survey at North Sumatra in early December 2021 recorded only 5 Spotted Greenshank, whereas in 2020 recorded 51 individuals of Spotted Greenshank on this site. Hence, we assume this decrease does not cause by vegetation growth. Our local team recorded an increase in the Spotted Greenshank population in Pantai Cemara this January (2022). They recorded 15 individuals of Spotted Greenshank mixed with hundreds of Asian Dowitcher roosting and foraging at Pantai Cemara, Jambi. This result indicates that the decrease of Spotted Greenshank numbers in November 2021 might be caused by the shifting of Spotted Greenshank migration peak in this season.



**Fig 06.** Spotted Greenshank (*Tringa guttifer*) recorded at Pantai Cemara, Jambi during this research (November 2021) (photo by. Cipto, 2021)

Besides doing a monitoring and vegetation analysis we also did a discussion with local people and local government for the conservation plan of Pantai Cemara as one of the migratory waterbirds' important sites in Indonesia.





(1)



(2)

**Fig 07.** (1) Discussion with local people about the condition at Pantai Cemara and potencies that can maximized for migratory waterbirds' conservation; (2) Discussion with the representative of Tanjung Jabung Province Government about the initiative to proposing Pantai Cemara as a new Flyway Network Site in Indonesia in 2022.

In our discussion with local people of Pantai Cemara, Jambi we also investigate the possibility of change around the migratory waterbirds site that might cause the sudden vegetation massive growth since 2019; from our discussion we've got information that since 2017 lands around Desa Cemara are continuously developed to be a Palm Oil Plantation, and in 2019 – 2021 there was a large land clearing for palm oil plantation for a big company. This might lead to an increase in organic waste in the river and estuary. From our meeting with a local government representative, we've got an agreement to propose Pantai Cemara as a new Flyway Network Site and will complete the SIS in 2022, together with all of the relevant government agencies.

As we proposed, we also hand a set of a spotting scope for local people, so they will be able to do a routine migratory waterbirds monitoring (Fig 08).



**Fig 08.** The spotting scope-set handover process from the representative of EKSAI Foundation to local people of Pantai Cemara, Jambi (photo by. EKSAI, 2021).

## Conclusion

1. The expansion of vegetation especially *Ipomoea pes-caprae* growth at Pantai Cemara Jambi does not identify as a threat for migratory waterbirds, yet still affects the area used by migratory waterbirds flocks at Pantai Cemara, Jambi.
2. Based on the interview with local people, a large land clearing near Desa Cemara might cause the increase of organic waste in the river and estuary that possible be a cause of the increase of vegetation growth at Pantai Cemara, Jambi.
3. During this research, we identify 35 species of migratory waterbirds with a maximum count of total migratory waterbirds is 3.445. This result shows that the migratory waterbirds number from 2020 to 2021 is stable and tends to increase through the vegetation is still growing intensively. The result from this research does not show that the vegetation growth threatened the migratory waterbirds community, but still affects the area used by migratory waterbirds due to the mudflats covered by *Ipomoea pes-caprae* and other vegetation at Pantai Cemara.
4. The local government and local agencies responsible for the management of Pantai Cemara are committed to proposing this area to be a new Flyway Network Site in Indonesia in 2022, our team will help and follow up this commitment and help to compile the SIS together with all the responsible authorities.

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