



Short communication:

Greater crested tern *Thalasseus bergii* population on the South Coast of Getem, Jember, Indonesia

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ABSTRACT

Greater crested tern (*Thalasseus bergii*) is a common resident seabirds in Indonesia. Habitat beach and rest on the shore with other groups of terns. This study aimed to determine the population of Greater crested tern on the southern coast of Getem Jember. Determination of observation points using a purposive sampling method. Data collection uses the encounter rates method. Bird watching in the morning from 06.00-08.00 and afternoon from 15.30-17.30. Recording data on species, number of birds, and other supporting data. Identify using relevant bird feathers. Analysis of bird species' density index data. Using monocular binoculars, camera, and global positioning system support tools. The survey of four sites revealed 413 individuals of great-crested tern. Analysis of individual density at the mouth of the river 60 individuals/Ha. It was concluded that the River mouth is the most excellent location for greater crested tern *Thalasseus bergii*.

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Introduction

Greater crested tern (*Thalasseus bergii*) is a common resident seabird in Indonesia (Mac Kinnon *et al.*, 2010; Taufiqurrahman *et al.*, 2022), this bird is commonly living in groups. Coastal habitat and often observed resting on the shores of other marine groups (Kasambe, 2012), foraging three kilometers from colonies such as shallow seas, estuaries, lagoons, and high seas with small groups (McLeay *et al.*, 2010). In addition, this bird eats fish, squid, crabs, and insects (Gaglio *et al.*, 2015; Gaglio *et al.*, 2018). The behavior of looking for prey by flying low and then grabbing game or swooping down.

According to the International Union for Conservation of Nature (IUCN), it has the conservation status of Least Concern. Based on Indonesia Government Regulation No: 7 of 1999,

Indonesian Law No: 5/1990, and Regulation of the Minister of Environment and Forestry 106 of 2018, species should be on the protected list. So that recommendations are needed regarding population data so that it can be a concern for the list of protected species.

The south coast of Getem is a preferred habitat for greater crested terns. The coast has many fishing activities, boat learning, and tourism activities. This condition is feared to interfere with the preferences of the greater crested terns at that location. The existence of this research is to look at population numbers, preferences, and environmental impacts that threaten the greater crested tern population. Therefore, it is necessary to observe the bird population on the south coast of Getem, Jember, Indonesia.

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According to Robson (2014), the population of Chinese crested tern *Sterna bergii* in eastern Indonesia has an estimated population of no more than 50 birds and a critically endangered status. Another study, according to Tirtaningtyas and Jordan (2017), recorded survey data for 2011–2014 to measure the presence of seabirds in the area and identified 18 species of seabirds, 13 of which were new records for Jakarta Bay. In addition, a study by Jordan et al. (2020) was identified a non-breeding Aleutian Tern *Onychoprion aleuticus* species in Indonesia. Iqbal et al. (2020) summarize all reports of Caspian tern *Hydroprogne caspia* recorded in Indonesia, with a particular focus on Sumatra (1983–2019). There are 29 records, which together show that the Caspian tern was a regular visitor to Indonesia. In another study by Iqbal et al. (2021), sea terns prey on the great blue-spotted mudskipper (*Boleophthalmus pectinirostris*) spent over 20 minutes fed on the fish.

Based on observations, the southern coast of Getem is a stopover location for this bird species. Population studies of the Great Crested Livestock on

the South Coast of Getem, Jember, have previously not provided data. Therefore, the objective of the present study was to determine the population of greater crested tern on the southern coast of Getem Jember, Indonesia. This data is crucial to monitor populations, preserve birds and ecosystems.

Materials and Methods

Sample collection

Preliminary survey in the first week of January 2020. The site geographically located in -8.379S and 113.406E (Figure 1). Quantitative description research method by calculating the bird population at each point. Observe birds on beaches, river estuaries, ponds, and mangroves. Determination of observation points using a purposive sampling method. The data collection method uses the encounter rates method. Bird watching in the morning from 06.00–08.00 and in evening from 15.30–17.30. Data recording includes species and several bird—identification using the book by Mac Kinnon et al. (2010) and Taufiqurrahman et al. (2022).

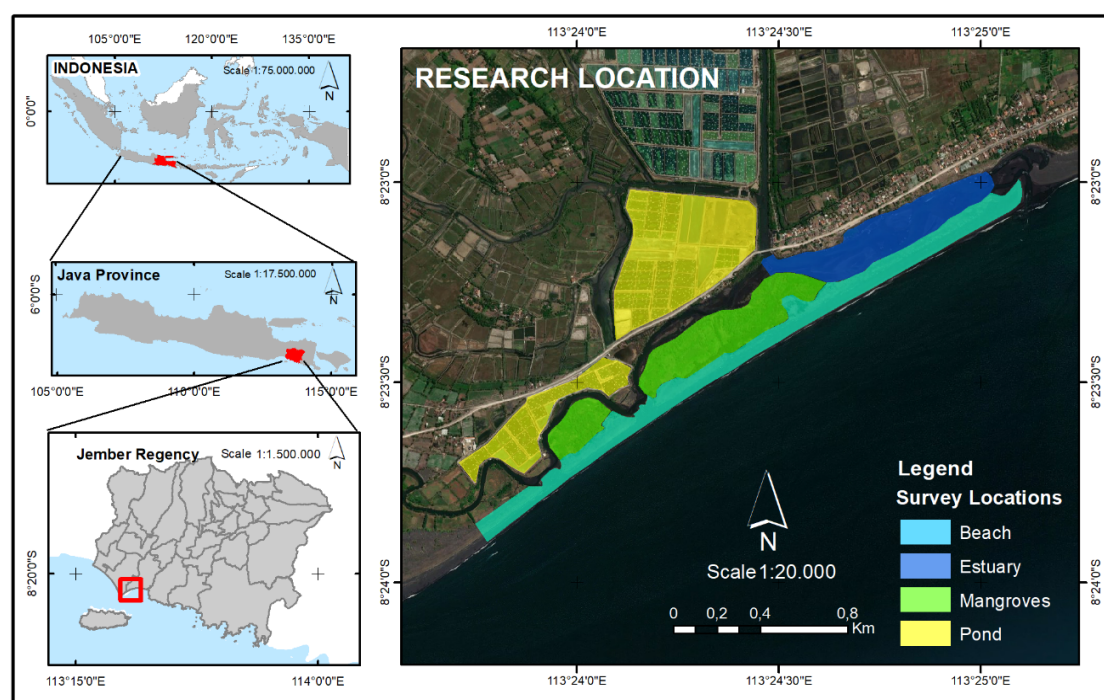


Figure 1. Bird Survey Locations on the South Coast of Getem, Jember (Source: Google Earth)

Data analysis

The density index of individual bird species uses the formula (Alikodra, 1990) as follow:

$$D = \frac{\sum Ni}{A}$$

Where, D = Density of individuals (Individuals/Ha), Ni = number of individuals in

each sampling location (Individuals), A = area of sampling locations (Ha).

Results

There are four survey sites on the southern coast of Getem, Jember. Population data of the Greater crested tern (*Thalasseus bergii*) (Table 1). Bird density data at four locations (Diagram 1). There is a total of 413 Greater crested tern on the south

coast of Getem, Jember, consisting of four survey sites. The survey location for the Estuary of the river contained 240 individuals. The beach has 173 individuals. There are no ponds and mangroves.

The percentage of individuals of the *Thalassens* toothy species shows the river's estuary with a rate of 58%, the beach at 42%, and ponds

and mangroves at 0 (Figure 2). The river mouth location shows the highest percentage, and the second highest is the coast. At the location of the river, the mouth is the prevention of *Thalassens* teeth. In line with Mulyana (2021) that *Thalassens* teeth are the highest number found in rivers and estuaries.

Table 1. The results of the *Thalassens* survey at four locations

No	Location	Amount	Density Analysis Results (individual/Ha)
1	Estuary	240	60
2	Beach	173	43.25
3	Pond	0	0
4	Mangroves	0	0

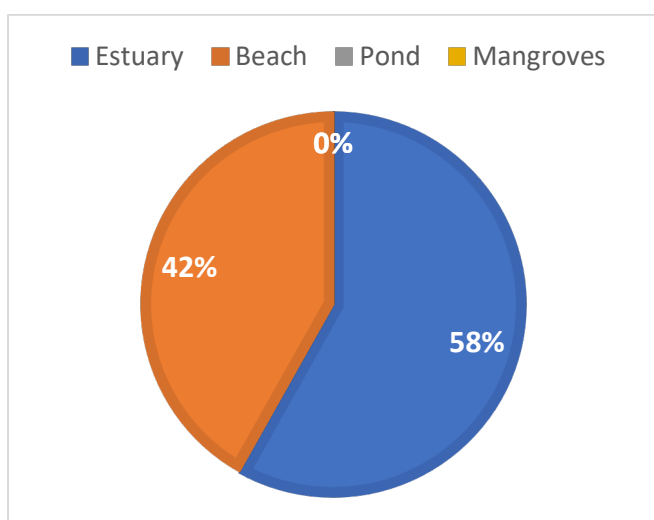


Figure 2. The density of toothed *Thalassens bergii* at the four survey sites (Source: Research)

Discussion

There are four survey sites on the southern coast of Getem, Jember. Population data of the greater crested tern (*Thalassens bergii*). The river mouth is the most greater crested tern among the four survey locations. Based on the characteristics of the river estuary on the Getem Coast, it was an ideal place for Greater crested tern to find food. A river estuary is a meeting place for river flows, and seawater has the potential for the presence of aquatic and foraging animals (Ardli and Wolff, 2009). Several studies also state that abundant feed is the main attraction of a species to be present and exploit it to find food (Hassan-Aboushiba et al., 2011; Quiroga et al., 2013). According to Munandar and Eurika's (2016) research, several types of fish in the Bedadung Jember River, such as *Hypostomus plecostomus*, *Oreochromis niloticus*, *Rasbora argyroteenia*, *Puntius brammoides*, and *Carassius auratus*. Meanwhile, the location has yet to be found in ponds and mangroves. Mangroves are one of the ecosystems that provide

shelter and foraging for several species of birds (Abdullah et al., 2016), but unfortunately the mangrove habitats are under pressure from land use (Cita and Budiman, 2019). Residents have widely used the existence of the Getem mangrove, especially to look for fish, gastropods, and bivalves, so the mangrove location is disturbed by human presence (Pratidina, 2016; Siwi et al., 2017; Susanti et al., 2021; Setiawan et al., 2021). This causes the mangrove location to be less of a favorite area for Greater crested tern prevention. A pond site is an active place for shrimp farming. The location already has officers' guards and a supervision system, so birds are reluctant to occupy the area.

Analysis of individual density at the river's estuary at 60 individuals/ha and the coast at 43.25 individuals/Ha. Based on the analysis, most individuals were found at the mouth of the river. Crested terns at the mouth of the river were found in groups and gathered on the west and east sides of the estuary. Crested terns are found when looking for food and also resting. The survey results show that crested terns with birds of the genus *Tringa*, *Calidris*, *Numenius*, and other terms are usually active foraging around the estuary. In addition to the estuary, Dara-sea crested also forages on the coast. Individuals found on the beach are located far from tourist activities visited by tourists.

The percentage of individuals of the *Thalassens* toothy species shows the river's estuary with a rate of 58%, the beach at 42%, and ponds and mangroves at 0 (Figure 2). The river mouth location shows the highest percentage, and the second highest is the coast. At the location of the river, the mouth is the prevention of *Thalassens* teeth. In line with Mulyana (2021) that *Thalassens* teeth are the highest found in rivers and estuaries.

The estuary is the water entry from the river that leads to the sea. Tides are a factor in estuary conditions. The condition of the estuary affects each niche and the high and low biodiversity. River estuaries form estuary waters as habitats for breeding. It serves as a habitat for breeding, foraging, and resting for aquatic animals. River estuaries form sediment from material deposition (Tumurang et al., 2015). Sedimentation affects the presence of estuary Makrozoobenthos (Pamuji et al., 2015). The abundance of estuary phytoplankton affects the brightness of the waters resulting in high suspended matter (Abidah, 2010). In addition, high fertility water quality affects the presence of fish in the estuary (Sugarti et al., 2016). Fluctuating salinity conditions cause fish species to be less diverse, and salinity conditions positively correlate with the distribution and density of fish biomass (Rais et al., 2017). Despite having limited fish biodiversity, unlike rivers and seas, estuaries can support food reserves in food web systems in ecosystems. The high number of fish is directly proportional to the presence of birds (Mardiastuti and Kusri, 2000).

Conclusions

There are 413 Greater crested terns (*Thalassens bergii*) on the south coast of Getem, Jember. Analysis of individual density at the mouth of the river 60 individuals/Ha. The River mouth is the most excellent location. Ponds and mangroves are locations of low presence.

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