# Population size and distributions of Lesser Sand plover Charadrius mongolus in Banyuasin peninsula, South Sumatra, Indonesia

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# POPULATION SIZE AND DISTRIBUTION OF LESSER SAND PLOVER *CHARADRIUS MONGOLUS* IN BANYUASIN PENINSULA, SOUTH SUMATRA, INDONESIA

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Lesser Sand Plover *Charadrius mongolus* is one of the most common small migratory shorebird in Banyuasin Peninsula, South Sumatra Province, Indonesia. There are at least 32 documented observations of significant counts of Lesser Sand Plover in Banyuasin Peninsula between 1984 to 2020. Based on the single largest record of Lesser Sand Plover at a site, the population in Banyuasin Peninsula is estimated at 20000 birds (15% population in EAAF region). We investigated the population trend over time and show that since the 1980s that population size for Lesser Sand Plover across nine monitored sites in Banyuasin Peninsula has more than halved. The estimated population for the region has been less than 4000 individuals since the late 1980s. We recommend continued monitoring of shorebirds at this site and habitat protection for the conservation of this declining species.

## INTRODUCTION

Lesser Sand Plover *Charadrius mongolus* is a small migratory shorebird that breeds discontinuously from Himalayas through Tibet (upto 5500 m) to eastern Asia, and moves to coasts of the southern hemisphere (South Asia, Southeast Asia and Australasia) (Hayman *et al.* 1986, Sonobe & Usui 1993). There are five subspecies of Lesser Sand Plover, including: *Charadrius mongolus pamirensis* (breeds in West Tien Shan, Pamirs, Karakoramto West Kunlun Shan; winters to Africa and India), *C. m. atrifrons* (breeds in Himalaya and South Tibet, winters to India and Sumatra), *C. m. schaeferi* (breeds in East Tibet and Mongolia, winters to Thailand and Greater Sundas), *C. m. mongolus* (breeds in Siberian and Russian Far East; winters to Taiwan to Australasia) and *C. m. stegmanni* (breeds in Kamchatka and Chukotskiy; winters to Ryukyu island and Taiwan to Australasia) (Piersma & Wiersma 1996, del Hoyo & Collar 2004). Two of the four populations in the East Asian-Australasian Flyway (EAAF) (*C. m. mongolus* and *stegmanni*) may qualify for Endangered status at the regional level (criterion A2/3/4 of IUCN), due to substantial documented declines in the flyway, and recognition that further proposed degradation of intertidal staging habitats will perpetuate this decline (Garnett 2011, Conklin *et al.* 2014).

As an extremely large range shorebird species, the global population of Lesser Sand Plover is estimated to be made up of 310,000 to 390,000 individuals (Wetlands International 2006, Birdlife International 2021b). The population in the EAAF is estimated to range between 180,000 to 275,000 individuals, and Indonesia supports the most Lesser Sand Plover in the EAAF during the non-breeding period (Bamford *et al.* 2008, Hansen *et al.* 2016). The global population trend is unknown, but the population is not recognized to be decreasing sufficiently rapidly to approach the thresholds under the population trend criterion (>30% decline over ten years or three generations) (Birdlife International 2021b). In the EAAF, the species is declining (Studds *et al*. 2017) due to habitat loss predominantly in eastern Asia.

Banyuasin Peninsula of South Sumatra province is an important habitat for Lesser Sand Plover in Indonesia during the non-breeding season (Bamford *et al.* 2008). Lesser Sand Plover is one of the nine most common shorebirds in Banyuasin Peninsula, including Black-tailed Godwit *Limosa limosa*, Common Redshank *Tringa totanus*, Bar-tailed Godwit *Limosa lapponica*, Terek Sandpiper *Xenus cinereus*, Eurasian Curlew *Numenius arquata*, Asian Dowitcher *Limnodromus semipalmatus*, Curlew Sandpiper *Calidris ferruginea* and Whimbrel *Numenius phaeopus* (Silvius 1988, Iqbal *et al.* 2020). In this paper, we review the population estimate and distributions of Lesser Sand Plover in Banyuasin Peninsula.

## METHODS

We summarize all records and review Lesser Sand Plover in Banyuasin Peninsula, South Sumatra province, Indonesia. Banyuasin Peninsula is one of important wetlands sites in Indonesia (Wibowo& Suyatno 1997, Wibowo & Suyatno 1998). This area is also a Ramsar site, one of international importance, Important Bird Area (IBA) or Key Biodiversity Area (KBA) and UNESCO world heritage site (Authentic Indonesia 2021, Birdlife International 2021a, EAAFP 2021, RSIS 2021). We mapped the maximum count from our monitoring surveys of Lesser Sand Plover, and estimated the population size of Lesser Sand Plover in Banyuasin Peninsula based on the single highest count recorded from the monitoring sites (Figure 1).

## DISCUSSION

Lesser Sand Plover were recorded from at least eight monitoring sites along the Banyuasin Peninsula. There are at least 32 internationally significant observations of Lesser Sand Plover in Banyuasin Peninsula between 1984 to 2020 (Table 1). Silvius (1988) reported a total of 10,764 Lesser Sand Plovers in Banyuasin Peninsula during October-November 1984. This record is the highest count of Lesser Sand Plover in this area, including in Sumatra and Indonesia (Bamford *et al.* 2008). Based on the single largest record of Lesser Sand Plover in a site, the population in Banyuasin Peninsula is estimated to be made up of at least 20000 birds.

Table 1. Lesser Sand Plover records in Banyuasin Peninsula between 1984 to 2020.

| Date | Sources | Locations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| Oct-Nov 1984 | Silvius 1988 | | | | | | | | | **1076** |
| Jul-Aug 1985 | Silvius 1988 | | | | | | | | | 200 |
| 24-29 March 1986 | Silvius 1987 | **600** | | | | | | | | |
| 23-29 March 1986 | Silvius 1987 | | | | **150** | | | | | |
| Aug 1988 | Verheugt *et al.* 1990 | | | | | | | | | 250 |
| Sep 1988 | Verheugt *et al.* 1990 | | | | | | | | | 1322 |
| Oct 1988 | Verheugt *et al.* 1990 | | | | | | | | | 5565 |
| Nov 1988 | Verheugt *et al.* 1990 | | | | | | | | | 6624 |
| Dec 1988 | Verheugt *et al.* 1990 | | | | | | | | | 1310 |
| Jan 1989 | Verheugt *et al.* 1990 | | | | | | | | | 1675 |
| Feb 1989 | Verheugt *et al.* 1990 | | | | | | | | | 50 |
| Mar 1989 | Verheugt *et al.* 1990 | | | | | | | | | 2000 |
| Apr 1989 | Verheugt *et al.* 1990 | | | | | | | | | 715 |
| May 1989 | Verheugt *et al.* 1990 | | | | | | | | | 35 |
| Jun 1989 | Verheugt *et al.* 1990 | | | | | | | | | 15 |
| Jul 1989 | Verheugt *et al.* 1990 | | | | | | | | | 50 |
| Aug 1989 | Verheugt *et al.* 1990 | | | | | | | | | 200 |
| 31 July 2001 | Gonner & Hasudungan 2001 | | *c.*70 0 | | | | *c.***70 0** | | *c.*700 | |
| Dec 2012 | TNS 2016 | | | | | | | | | 1000 |
| Nov 2014 | TNS 2016 | | | | | | | | | 3200 |
| 1 Nov 2008 | MI *pers.obs* | | | | | | | **3.00 0** | | |
| 14 Dec 2008 | MI *pers.obs* | | | | | | | | **5.000** | |
| Nov 2008 | TNS 2016 | | | | | | | | | 1515 |
| Nov 2009 | TNS 2016 | | | | | | | | | 226 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Nov 2010 | TNS 2016 | | | | | | | | | 1000 |
| Jan 2016 | SNP 2016 | | 56 | | | | | | 50 | |
| Sep 2017 | Iqbal & Martini 2018 | | 10 | | | | | | | |
| Feb 2018 | Iqbal & Martini 2018 | | 298 | | 32 | | | | 100 | |
| Nov 2018 | Iqbal & Martini 2018 | | 352 | | 3 | | | | 28 | |
| Dec 2019 | TNBS 2019 | | 426 | | | **2120** | | | | |
| Oct 2020 | MI & DM | | 150 | **3000** | | 200 | | 50 | 2000 | |
| Nov 2020 | SY *pers.com* | | **3600** | | | | | | | |

Notes:

1. Bungin and Apung River
2. Barong River
3. Dinding River
4. Jentolo River
5. Between Tengkorak and Palu Gedi River
6. Teluk Galas River
7. Kuala Sapi River
8. Nibung River
9. Total count in Banyuasin Peninsula
10. TNS 2016 (Taman Nasional Sembilang 2016)
11. MI & DM Muhammad Iqbal and Deni Mulyana observations)
12. TNBS 2019 (Taman Nasional Berbak Sembilang 2019)
13. SY *pers.com* (Suyoko personal communication to Muhammad Iqbal)

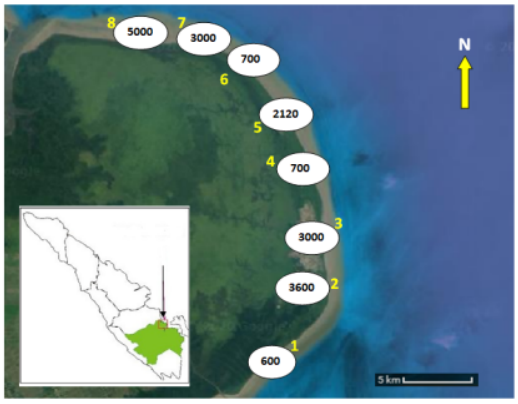


**Figure 1.** Map showing the Banyuasin Peninsula, South Sumatra, Indonesia. Yellow numbers refer to the number of rivers in Table 1. Numbers in white circles refer to the largest number in a single record of each localities.

The coastal zone of Banyuasin Peninsula is at least 50-60 km long stretching from the south (Bungin and Apung River) to the north (Sembilang River) (Silvius 1986). There are small rivers in this area, namely Bungin River, Apung River, Barong River, Dinding River, Jentolo River, Tengkorak River, Palu Gedi River, Teluk Galas River, Kuala Sapi River and Nibung River. Most of the area is mangrove forest, but in the inner part of Barong to Jentolo River, the mangrove forest has been converted to aquaculture ponds of up to 205,750 ha (Iqbal *et al.* 2019). The single largest record of Lesser Sand Plover in a site is 5000 birds in Bungin River, following 3600 birds in Barong River. Except Barong River, where Lesser Sand Plover is found in aquaculture ponds, all records are observed in mudflats along the coastline (Figure 2 and 3). A record of 3600 birds in Barong River suggests aquacultural ponds can be important non-breeding habitat for Lesser Sand Plover. It is presumed concentration of Lesser Sand Plovers in aquaculture ponds is caused by high tides.

Bamford *et al.* (2008) estimate the number of Lesser Sand Plover in Indonesia during the non-breeding period is around 45,000 birds. Conklin *et al.* (2014) only listed Benoa Bay (Bali Province) as important habitat for Lesser Sand Plover in Indonesia, with a number of 4000 birds in 15 January 1996. Other important habitats for Lesser Sand Plover in Indonesia are Cemara beach of Jambi Province *c.* 3481-3924 birds, Wasur National Park of Papua Province birds c. 3130 birds, and in Bagan Percut of North Sumatra Province *c.* 2180-2222 birds (Silvius 1988, Crossland *et al.* 2012, Putra *et al.* 2015, Conklin*etal.* 2016, Febrianto *et al.* 2019). The results from this study show that the population is estimated to be at least 20,000 birds in Banyuasin Peninsula (15% population in EAAF region) indicating that this area is internationally important for Lesser Sand Plover.

The population trend of Lesser Sand Plover in Banyuasin Peninsula has decreased over time. This assumption based on a total number in October-November 1984 is around *c.* 10,000 birds, and compare to a single largest count of c. 4,000 birds in October and November 2020. No indication about threats to Lesser Sand Plover in Banyuasin Peninsula, including from hunting, aquaculture ponds and fisheries activities. However, the data since the 1980s suggest population size for Lesser Sand Plover across nine monitored sites in Banyuasin Peninsula has more than halved. The estimated population for the region has been less than 4000 individuals since the late 1980s (Figure 4). We have no significant indication of threats to Lesser Sand Plover and other shorebirds in Banyuasin Peninsula. The decline of Lesser Sand Plover in this region could be induced by hunting or loss of habitats outside this area. In the EAAF region, hunting of migratory shorebirds has occurred; there are records of hunting from 14 of the 22 countries (63.6%) within the flyway, from the non-breeding grounds through stopping sites, and also in breeding grounds areas (Gallo-Cajiaoetal. 2020).

The Lesser Sand Plover is recently listed as Least Concern, because of its large number and the global population trend is unknown (Birdlife International 2021b). However, there is a potential to upgrade the species to Near Threatened or Vulnerable based on recent information of declines in some areas in East Asia (MacKinnon *et al.* 2012, Conklin *et al.* 2014). Two subspecies (*C. m. mongolus* and *stegmanni*) are listed as Endangered in EAAF region (Conklin *et al.* 2014), and concern on the population future trend should be pointed out. We need to continue monitoring Lesser Sand Plover in Banyuasin Peninsula to study local population trends.

**Figure 2.** Lesser Sand Plovers (with mix Terek Sandpiper and Curlew Sandpiper) on 16 October 2020 in Dinding River, Banyuasin Peninsula, South Sumatra, Indonesia (©Muhammad Iqbal).

**Figure 3.** Group of small shorebirds dominated by Lesser Sand Plovers on 6 December 2020 at an aquaculture pond in Barong River, Banyuasin Peninsula, South Sumatra, Indonesia (©Suyoko).

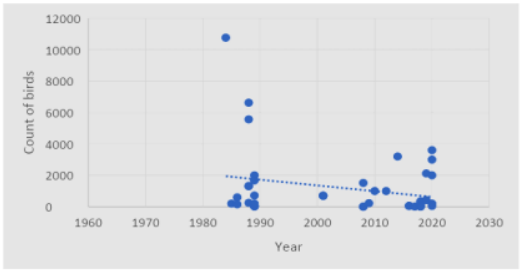


**Figure 4.** The estimated population of Lesser Sand Plovers in the region from the late 1980s to 2020.

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