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Species Checklist and Abundance of Birds in Salt Field Areas and Aquaculture Areas along the Coastal Land, Bang Kaew Sub-district, Muang District, Samut Songkhram Province

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Abstract

The objectives of this research were to study species checklist, abundance, feeding behavior, status of birds and group of migratory birds in the research area. The data were carried out by field survey of species checklist and abundance of birds which foraged in land-use areas namely salt field areas, aquaculture areas, shrimp pond and cockle pond in Bang Kaew Sub-district, Muang District, Samut Songkhram Province from August 2015 - July 2016. The data were analyzed to find out abundance of birds. The results showed that 10 orders, 24 families and 51 bird species were found in salt field areas and aquaculture areas of coastal land. 9 orders, 17 families and 35 bird species were found in salt field. 10 orders, 22 families and 44 bird species were found in shrimp pond. 7 orders, 16 families and 32 bird species were found in cockle pond. According to bird abundance, 6 bird species were in level 5 of bird abundance. It was 11.76% of all bird species. According to feeding behavior, there were 12 insectivorous birds, 20 piscivorous birds, 12 aquatic, benthic invertebrate feeding birds, 4 granivorous birds, 1 frugivorous bird, 1 carnivorous bird, 1 omnivorous bird and 1 predator bird. According to bird seasonal status, there were 24 resident birds, 7 resident and migratory birds and 20 migratory birds. According to migratory bird group, there were 12 shore birds, 4 terrestrial birds and 3 sea birds. According to IUCN threatened Status, Painted Stork, Eastern Black-tailed Godwit, Red-necked Stint and Eurasian Curlew were near-threatened (NT). So the communities should give their hands to conserve salt field areas and aquaculture areas of coastal land and biodiversity continuously, because the birds are indicators of natural balance and plenty of food in local ecosystem.

Keywords: Species checklist of birds, Abundance of birds, Coastal land

1. Introduction

Samut Songkram Province is located at central region of Thailand along the Inner Gulf of Thailand. There are natural areas and land-use areas along the coastal land in Bang Kaew Sub-district, Muang district, Samut Songkhram Province. There are mangrove forest, mudflat, salt field, cockle pond, shrimp pond and planted mangrove forest. Tourists are interested in birding in salt field, cockle pond and shrimp pond in the research area. The salt field, cockle pond and shrimp pond are rich of invertebrates which are foods of both resident and migratory birds in the winter (November - February) and in the summer (March - May). Three areas are near Don Hoi Lod wetland which is the 1099th Ramsar Site. The research areas of Bang Kaew situate near the Inner Gulf of Thailand which is foraging place for many shorebirds and sea birds every year. The shorebirds can be found mostly in the summer (March - May) and in the winter (December - February). The Inner Gulf of Thailand is surrounded by flooding mudflat, seacoast shrimp farms, salt fields, cockle ponds and mangrove forests. Most of migratory birds found in Thailand used East-Asian Australasian Flyway which started from Arctic to Southeast Asia, Australia and New Zealand (Erftemeijer & Jugmongkol, 1999). In Bang Kaew Sub-district, 13 migratory bird species and 20 resident and migratory bird species were found (Meewattana, Chamchoi, & Sooksawang, 2013). In the nature trail at Bang Kaew Sub-district, 31 migratory bird species and 7 resident and migratory bird species were found (Plailek, Chitman, Charoenpokaraj, 2016). So the researchers were interested in studying species checklist and abundance of birds in salt field areas and aquaculture areas along the coastal land in Bang Kaew Sub-district, Muang district, Samut Songkhram Province.

The aim of the research is to study the species checklist, abundance, feeding behavior, status of

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birds and group of migratory birds in the research areas.

2. Methodology

The research methodology was shown as follows;

2.1 Area study

Salt field areas and aquaculture areas along the coastal land around the Mangrove Natural School of Bang Kaew Sub-district, in Muang district, Samut Songkhram Province, Thailand.

2.2 Data collection and analysis method

Step 1: Survey the birds

Observe and survey the birds and their behaviors by using binoculars and camera then identified the birds as found according to the books "A Guide to the Birds of Thailand" by Boonsong Lekagul and Philip D. Round (1991), " A Field Guide to the Birds of Thailand and South-East Asia" by Craig Robson (2008). The survey areas were Area 1 (salt field), Area 2 (shrimp pond) and Area 3 (cockle pond). The survey was conducted from 7 a.m. - 6 p.m. depending on high and low tide. The survey was made once a month from August 2015 - July 2016.

Record the species of birds and their behaviors sighted directly and from their calls by using point transects method.

Step 2: Classify the bird species, feeding behaviors, status, group of migratory birds and threatened status according to the checklist of the birds of Thailand by Bird Conservation Society of Thailand (2016).

Step 3: Analyze the abundance of birds (Pettingill, 1969).

Step 4: Conclusion and report the results.

3. Results

The showed found that 10 orders, 24 families and 51 species of birds were found in the research area of coastal land. 13 bird species in order *Charadriformes* and *Passeriformes* were found the most. 9 orders, 17 families and 35 bird species were found in Area 1 (salt field). 10 orders, 22 families and 44 bird species were found in Area 2 (shrimp pond). 7 orders, 16 families and 32 bird species were found in Area 3 (cockle pond).

In December, bird species were found the most in Area 1 (salt field). In February, bird species were found the most in Area 2 (shrimp pond) because it was migratory season for many migratory birds in the research area, as shown in Figure 1. Bird abundance in the research area was grouped into five categories namely level 5 abundant, level 4 common, level 3 moderately common, level 2 uncommon and level 1 rare.

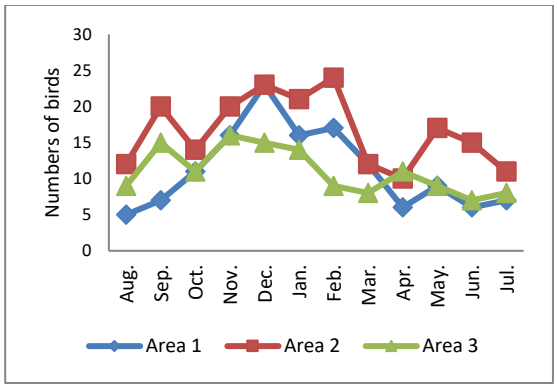

Figure 1. Bird species found in 3 areas, in Bang Kaew Sub-district, Samut Songkram Province in each month.

Six bird species were in level 5. It was 11.76 % of all bird species. 6 bird species were in level 4, 11.76 %. 17 bird species were in level 3, 33.34 %. 12 bird species were in level 2, it was 23.53 % and 10 bird species were in level 1, 19.61 %. The highest number of bird species is 36 species in December and 27 species in February accordingly because it was migratory season of migratory birds in salt field areas and aquaculture areas. Abundance of birds in salt field areas and aquaculture areas were shown in Figure 2.

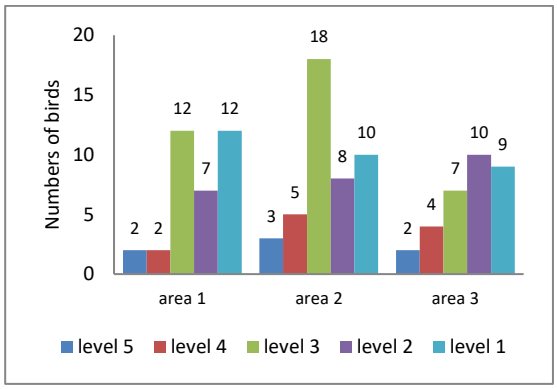

Figure 2. Abundance of Birds in salt field areas and aquaculture areas in Bang Kaew Sub-district, Samut Songkram Province.

Feeding behaviors: it was found that there were 20 species of piscivorous birds such as Caspian Tern (*Hydroprogne caspia*), Common Kingfisher (*Alcedo atthis*) and so on. There were 19 species of aquatic, benthic invertebrate feeder birds such as Little Ringed Plover (*Charadrius dubius*), Long-toed Stint (*Calidris subminuta*) and so on. There were 12 species of insectivorous birds such as Green Bee-eater (*Merops orientalis*), Lanceolated Warbler

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(*Locustella Lanceolata*) and so on. There were 4 species of granivorous birds such as Chestnut Munia (*Lonchura atricapilla*), Zebra Dove (*Geopelia striata*) . There were 1 frugivorous bird namely Streak-eared Bulbul (*Pycnonotus blanfordi*). There are 1 carnivorous bird namely Brown Shrike *(Lanius cristatus)* and 1 omnivorous bird White-breasted Waterhen (*Amaurornis phoenicurus*) was found.

As for birds' seasonal status, there were 24 resident birds, 7 resident and migratory birds, and 20 migratory birds. In Area 1 (salt field), there were 12 resident birds, 7 resident and migratory birds, and 16 migratory birds. In Area 2 (shrimp pond), there were 21 resident birds, 7 resident and migratory birds, and 16 migratory birds. In Area 3 (cockle pond), there were 13 resident birds, 6 resident and migratory birds, and 13 migratory birds because this area is rich of invertebrates which are foods of migratory birds.

According to the group of migratory birds, there were 12 species of shore birds such as Pacific Golden Plover (*Pluvialis fulva*), Whimbrel (*Numenius phaeopus*). There were 4 species of terrestrial birds such as Black-capped Kingfisher (*Halcyon pileata*) , Common Kingfisher (*Alcedo atthis*) . There were 3 species of sea birds such as Caspian Tern (*Hydroprogne caspia*), Whiskered Tern (*Chlidonias hybrida*). There were 1 species of predator namely Western Osprey (*Pandion haliaetus*).

As for IUCN Threatened Status, Painted Stork(*Mycteria leucocephala*), Eastern Black-tailed Godwit (*Limosa melanuroides*), Red-necked Stint (*Calidris ruficollis*) and Eurasian Curlew (*Numenius arquata*) were near-threatened (NT), as shown in Figure 3-5.

Figure 3. Eastern Black-tailed Godwit

According to this research, near-threaten bird species, Painted Stork (*Mycteria leucocephala*), Eastern Black-tailed Godwit (*Limosa melanuroides*), and Eurasian Curlew (*Numenius arquata*), were found. These bird species were attractive for birders and tourists who were interested in birding activity because the research areas were in the area of Don Hoi Lot which was the 1099th Ramsar Site. Moreover, these research areas were valuable for being birding site because a group of local people worked hard for protecting mangrove forest and birding foraging areas and could be a local guide for those who wanted to watch the birds, and there were lots of accommodation for tourists.

Figure 4. Eurasian Curlew

Figure 5. Painted Stork

4. Discussions

Most of migratory birds found in Thailand used East Asian Australasian Flyway which started from Arctic to Southeast Asia, Australia and New Zealand (Erftemeijer and Jugmongkol, 1999). A migration of birds is an important circle of life in living among season change. Most of birds will migrate to the place that is plenty of foods by heading south to tropical region and migrate back home for nesting when the winter is gone (Jukmongkol 2002; Kober 2004). So the result of this research indicated that the land used area in salt field, cockle pond and shrimp pond in Bang Kaew Sub-district participated in the coastal land conservation by hosting mangrove plantation activity, local fishery and Meder's mangrove crab releasing. It encouraged species checklist of migrant shorebirds foraging in the land used area such as salt field, cockle pond, and shrimp pond and so on. So these areas played an important

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role as birding sites for tourists in local community's eco-tourism and knowledge center for local communities. It is related to Chuchat (2001) who said that ecotourism is to get a chance defined as close and experience the nature and local people's life style, acknowledge the value of resources and offering jobs and income to local people.

5. Conclusion

It was found that there were 10 orders, 24 families and 51 species of birds. According to abundance of birds, 6 bird species were in level 5, 6 bird species in level 4, 17 bird species level 3, 12 bird species in level 2 and 10 bird species in level 1. According to their feeding behavior, there were 20 species of piscivorous birds, 12 species of aquatic and benthic invertebrate feeder birds, 12 species of insectivorous birds, 4 species of granivorous birds, 1 species of frugivorous birds, 1 species of omnivorous bird, 1 species of carnivorous birds and 1 predator bird. As for bird seasonal status, there were 24 resident birds, 7 resident and migratory birds, and 20 migratory birds. According to the group of migratory birds, there were 12 shore birds, 4 terrestrial birds and 3 sea birds.

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