

# Species Diversity of Migratory Birds along Boat Touring Routes in Klong Kone Sub-District, Muang District, Samut Songkram Province, Thailand

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**Abstract**—This research aims to study the species, feeding behavior and activity characteristics of birds which reap benefits from the research area in boat touring routes in Klong Kone Sub-district, Muang District, Samut Songkram Province, Thailand from October 2013 – May 2014. The results from the survey of birds on all three routes found that there are 11 families and 22 species. Route 1 (Klong Kone canal) had the most species, 20 species. According to feeding behavior, there were insectivorous, piscivorous and aquatic invertebrate feeder birds. Activity characteristics of birds which reap benefits from the research were finding food, nesting and raise nestlings along boat touring routes.

**Keywords**—Bird species diversity, boat touring routes, Samut Songkram.

## I. INTRODUCTION

SAMUT Songkram Province is a small province, located at central of Thailand near the mouth of the Mae Klong River. Klong Kone is a small sub-district in Muang district, Samut Songkram Province. The most attractive tourist attraction is plentifully 990 acre mangrove which was planted by local people. Its ecosystem is good for education and research of many educational institutes. It is also a good eco-tourist attraction which local community has organized various kinds of touring activities i.e. mangrove ecosystem sightseeing, local people lifestyle sightseeing, collecting blood cockles (*Tegillarca granosa*), visiting Asian green mussel (*Perna viridis*) farm, mangrove planting activity etc. Many kinds of birds such as the Little Egret (*Egretta garzetta*), Collared Kingfisher (*Todirhamphus chloris*), Brahminy Kite (*Haliastur indus*), mangrove whistler (*Pachycephala grisola*) etc. come to use the area. [1]. In October-April, many migratory birds come to reap benefits from mudflat in Klong Kone area. Winter visitor and passage migratory birds migrate from Russia, China, Korea and Japan to Malaysia, Indonesia and Australia through Thailand in August-September and migrate back in March-May. Some bird species spend their winter time in Thailand such as shorebirds, raptors etc. [2]. Therefore, if this study results in learning the bird species, feeding behavior and activity characteristics of birds which reap benefits from the area, it can be used as a resource database for the community. This knowledge of bird species

can be beneficial to eco-tour activities for tourists along the boat touring routes. This activity can create income for the community and support the community in efforts to conserve the diversity of birds that is an indicator of the natural balance of the local ecosystem, because they are natural resources from which the community can profit.

## II. MATERIALS AND METHODS

### A. Study Area

Three boat touring routes in Klong Kone Sub-district, Muang District, Samut Songkram Province; Route 1 (Klong Kone canal), Route 2 (Thai gulf mudflats) and Route 3 (Klong Chong canal).

### B. Research Equipments

- 1) Environment record form of boat touring routes
- 2) Survey form of bird species and activity characteristics in boat touring routes.

### C. Methodology

A survey research has been conducted in boat touring areas in Klong Kone Sub-district, Muang District, Samut Songkram Province as the following

- 1) The bird species survey is done by binoculars, camera and bird categorization according to the book “A guide to the Birds of Thailand” [3] and “Birds of Laem Phakbia”[4] by spending time for survey in the morning from the sunrise until 11:00 a.m. and in the afternoon from 3:00 p.m. until the sundown. One survey was made each month from October 2012 to September 2013. The birds were classified by their species and status.
- 2) Classify feeding behavior, activity characteristics of birds which reap benefits from the research area.

## III. RESULT AND DISCUSSION

### A. Bird's Species

It was found that there are 11 families and 22 species of birds along boat touring routes in Klong Kone Sub-district, Muang District, Samut Songkram Province. The greatest number of bird species was found on Route 1 (Klong Kone canal); numbering 20 species. 14 species were found on Route 2 (Thai gulf mudflat) and 13 species were found on Route 3 (Klong Chong canal). The same 12 bird species were found in three routes i.e. Black-capped Kingfisher (*Halcyon pileata*),

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Common Kingfisher (*Alcedo atthis*) etc. as shown in Tables I-II.

TABLE I

BIRD SPECIES FOUND ALONG BOAT TOURING ROUTES IN KLONG KONE SUB-DISTRICT, MUANG DISTRICT, SAMUT SONGKRAM PROVINCE FROM OCTOBER 2013 – MAY 2014

No.	Common name	Scientific name
	Family <i>Alcedinidae</i>	
1	Black-capped Kingfisher	<i>Halcyon pileata</i>
2	Common Kingfisher	<i>Alcedo atthis</i>
	Family <i>Laniidae</i>	
3	Brown Shrike	<i>Lanius cristatus</i>
	Family <i>Accipitridae</i>	
4	Black Kite	<i>Milvus migrans</i>
5	Osprey	<i>Pandion haliaetus</i>
	Family <i>Oriolidae</i>	
6	Black – napped Oriole	<i>Oriolus chinensis</i>
	Family <i>Scolopacidae</i>	
7	Common Sandpiper	<i>Actitis hypoleucos</i>
8	Eurasian Curlew	<i>Numenius arquata</i>
9	Whimbrel	<i>Numenius phaeopus</i>
10	Black – tailed Godwit	<i>Limosa limosa</i>
11	Common Redshank	<i>Tringa totanus</i>
12	Marsh Sandpiper	<i>Tringa stagnatilis</i>
13	Wood sandpiper	<i>Tringa glareola</i>
	Family <i>Laridae</i>	
14	Whiskered Tern	<i>Chlidonias hybrida</i>
15	Brown – headed Gull	<i>Larus brunnicephalus</i>
16	Caspian Tern	<i>Hydroprogne caspia</i>
	Family <i>Ardeidae</i>	
17	Gray Heron	<i>Ardea cinerea</i>
18	Chinese Pond Heron	<i>Ardeola bacchus</i>
	Family <i>Anatidae</i>	
19	Lesser Whistling-Duck	<i>Dendrocygna javanica</i>
	Family <i>Charadriidae</i>	
20	Lesser Sand Plover	<i>Charadrius mongolus</i>
21	Pacific Golden Plover	<i>Pluvialis fulva</i>
	Family <i>Sylviidae</i>	
22	Pale-legged Leaf Warbler	<i>Phylloscopus tenellipes</i>



Fig. 1 Common Kingfisher

TABLE II

BIRD SPECIES FOUND IN THREE ROUTES IN KLONG KONE SUB-DISTRICT, MUANG DISTRICT, SAMUT SONGKRAM PROVINCE FROM OCTOBER 2013 – MAY 2014

No.	Common name	Boat touring routes		
		Route 1	Route 2	Route 3
1	Black-capped Kingfisher	✓	✓	✓
2	Common Kingfisher	✓	✓	✓
3	Brown Shrike	✓		
4	Black Kite	✓		✓
5	Osprey	✓	✓	✓
6	Black – napped Oriole	✓		
7	Common Sandpiper	✓	✓	✓
8	Eurasian Curlew	✓	✓	✓
9	Whimbrel	✓	✓	✓
10	Black – tailed Godwit	✓	✓	✓
11	Common Redshank	✓		
12	Marsh Sandpiper	✓	✓	✓
13	Wood sandpiper	✓		✓
14	Whiskered Tern	✓	✓	✓
15	Brown – headed Gull	✓	✓	✓
16	Caspian Tern		✓	
17	Gray Heron	✓		
18	Chinese Pond Heron	✓	✓	
19	Lesser Whistling-Duck	✓	✓	✓
20	Lesser Sand Plover	✓	✓	✓
21	Pacific Golden Plover		✓	
22	Pale-legged Leaf Warbler	✓		
Total		20	14	13

#### B. Feeding Behavior

Insectivorous birds; Pale-legged Leaf Warbler (*Phylloscopus tenellipes*), Brown Shrike (*Lanius cristatus*), Black-napped Oriole (*Oriolus chinensis*) etc.

Frugivorous bird; Black-napped Oriole (*Oriolus chinensis*)  
Piscivorous birds; Black-capped Kingfisher (*Halcyon pileata*), Common Kingfisher (*Alcedo atthis*), Chinese Pond Heron (*Ardeola bacchus*), Whimbrel (*Numenius phaeopus*), Whiskered Tern (*Chlidonias hybrid*), Osprey (*Pandion haliaetus*) etc.

Carnivorous bird; Black Kite (*Milvus migrans*)

#### C. Activity Characteristics of Birds Which Reap Benefits from the Research Area

To find food; Most migratory birds emigrate to reap benefits from the research area by feeding. Some piscivorous birds find fish, shrimp etc. in the mudflat i.e. Whimbrel (*Numenius phaeopus*), Black- tailed Godwit (*Limosa limosa*), Lesser Sand Plover (*Charadrius mongolus*), Pacific Golden Plover (*Pluvialis fulva*) etc. Some birds find their prey along the canals i.e. Balck-capped kingfisher (*Halcyon pileata*), common kingfisher (*Alcedo atthis*), common sandpiper (*Actitis hypoleucos*), Brown shrike (*Lanius cristatus*) etc.

#### IV. CONCLUSION

The birds are also an indicator of the environmental balance of the local ecosystem because they are of value to the environment This coincides with [5], who stated regarding eco-tourism that activities suitable for eco-tourism are

activities that give opportunity to experience nature close up and learn from nature and lifestyles that create income for the local people, as well as activities that have a conservatory effect, not damaging to the nature conditions and local ways of life.



Fig. 2 Whiskered Tern

#### ACKNOWLEDGEMENT

This research was supported by National Research Council of Thailand and Suan Sunandha Rajabhat University. Special thanks also extended to the Samut Songkram staff that helped and Support this research.

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