

# Bird Diversity along Boat Touring Routes in Tha Ka Sub-District, Amphawa District, Samut Songkram Province, Thailand

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**Abstract**—This research aims to study species, abundance, status of birds, the similarities and activity characteristics of birds which reap benefits from the research area in boat touring routes in Tha Ka sub-district, Amphawa District, Samut Songkram Province, Thailand, from October 2012 – September 2013. The data was analyzed to find the abundance, and similarity index of the birds. The results from the survey of birds on all three routes found that there are 33 families and 63 species. Route 3 (traditional coconut sugar making kiln – resort) had the most species; 56 species. There were 18 species of commonly found birds with an abundance level of 5, which calculates to 28.57% of all bird species. In August, 46 species are found, being the greatest number of bird species benefiting from this route. As for the status of the birds, there are 51 resident birds, 7 resident and migratory birds, and 5 migratory birds. On Route 2 and Route 3, the similarity index value is equal to 0.881. The birds are classified by their activity characteristics i.e. insectivore, piscivore, granivore, nectivore and aquatic invertebrate feeder birds. Some birds also use the area for nesting.

**Keywords**—Bird 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. Tha Ka is a small sub-district in Amphawa District, Samut Songkram Province. The most attractive tourism sites are the Tha Ka floating market, watching the fireflies from a boat in the Tha Ka Canal and the home-style method of producing coconut sugar. Because the area is largely made up of coconut orchards and there are many canals snaking through the area, the riverine trees have an abundance of diverse bird species, especially the cork tree (*Sonneratia caseolaris*) which is the habitat of fireflies and many bird species, such as Little Egret (*Egretta garzetta*), Collared Kingfisher (*Todiramphus chloris*), Brahminy Kite (*Haliastur indus*) Streak-eared Bulbul (*Pycnonotus blanfordi*) etc. [1].

Therefore, if this study results in learning the bird species, abundance, status 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

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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 birds are a natural resource from which the community can profit.

## II. MATERIALS AND METHODS

### A. Study Area

Three boat touring routes in Tha Ka sub-district, Amphawa District, Samut Songkram Province; Route 1 (Tha Ka floating market – homestay), Route 2 (Tha Ka floating market – traditional coconut sugar making kiln), and Route 3 (traditional coconut sugar making kiln – resort).

### 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 Tha Ka Sub-district, Amphawa 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” [2] and “Birds of Laem Phakbia” [3] 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) Analyze the relative abundance value of the bird species [4].
- 3) Compare the similarities of birds in the survey area [5].
- 4) Classify activity characteristics of birds which reap benefits from the research.

## III. RESULTS AND DISCUSSION

### A. Bird's Species, Abundance and Status

It was found that there are 33 families and 63 species of birds along boat tour routes in Tha Ka Sub-district, Amphawa District, Samut Songkram Province. The greatest number of bird species was found on Route 3 (traditional coconut sugar making kiln – resort); numbering 56 species. 53 species were

found on Route 2 (Tha Ka floating market – traditional coconut sugar making kiln) and 48 species were found on Route 1 (Tha Ka floating market – homestay). The same 42 bird species were found in three routes i.e. Common Flameback (*Dinopium javanense*), Collared Kingfisher (*Todirhamphus chloris*), Blue-tailed Bee-eater (*Merops philippinus*), Common Kingfisher (*Alcedo atthis*) etc.

The following was found regarding abundance of birds along the boat tour routes: that along all three boat tour routes,

the abundance of bird species is at level 5 for 18 species, 28.57% of all bird species i.e. Collared Kingfisher (*Todirhamphus chloris*), Asian Koel (*Endynamys scolopaceus*), Greater Coucal (*Centropus sinensis*), Spotted Dove (*Spilopelia chinensis*) etc. In August, the greatest number of bird species that benefit from the area is found; 46 species. This is because it is the season that migratory birds come in to find food in the area as shown in Table I.

TABLE I  
DIVERSITY OF BIRD SPECIES SIGHTED ALONG THE BOAT TOURING ROUTES EACH MONTH, CATEGORIZED BY ABUNDANCE FROM OCTOBER 2012 – SEPTEMBER 2013

Abundance level	Number of Species	Percentage of number of bird species	Number of bird species benefiting from the research area in each month											
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.
5	18	28.57	18	18	18	18	18	18	18	18	18	18	18	18
4	3	4.76	3	3	3	3	3	3	3	3	2	3	3	3
3	8	12.70	6	7	3	4	6	6	5	4	4	6	7	5
2	22	34.92	10	8	6	6	10	6	4	10	4	7	15	8
1	12	19.05	2	2	-	2	-	-	1	1	1	4	3	3
Total	63	100.00	39	38	30	33	37	33	31	36	29	38	46	37

As for the status of the birds, there are 51 resident birds, 7 resident and migratory birds, and 5 migratory birds. Route 1 (Tha Ka floating market – homestay): In regards to bird status, there were 39 species of resident birds, 7 species of resident and migratory birds, and 2 species of migratory birds. Route 2 (Tha Ka floating market – traditional coconut sugar making kiln): In regards to bird status, there were 46 species of resident birds, 4 species of resident and migratory birds, and 3 species of migratory birds. Route 3 (traditional coconut sugar making kiln – resort): In regards to bird status, there were 46 species of resident birds, 7 species of resident and migratory birds, and 3 species of migratory birds.

#### B. Index Value of Bird Similarity

It is seen that the bird similarity index of Route 2 and Route 3 is 0.881, showing that the number of type of birds that benefit from both areas is very similar. This is because the environment of Route 2 and Route 3 is largely consists of coconut orchards and houses. Flowering and ornamental trees are planted along the canal, providing an area for various kinds of birds to find food, nest, and raise their nestlings as shown in Table II.

TABLE II  
BIRDS SIMILARITY INDEX OF BIRD DIVERSITY ALONG ALL THREE BOAT TOURING ROUTES IN THA KA SUB-DISTRICT, AMPHAWA DISTRICT, SAMUT SONGKRAM PROVINCE

Boat tour route	Bird Similarity Index
Route 1 and Route 2	0.851
Route 2 and Route 3	0.881
Route 1 and Route 3	0.865

#### C. Manner of Benefitting from All Three Routes of the Boat Touring Area

Feeding: Some bird species using the area for living shall adhere or stand still to catch aquatic animals as food i.e. Collared Kingfisher (*Todirhamphus chloris*), Javan Pond Heron (*Ardeola speciosa*), Little Egret (*Egretta garzetta*), Common Kingfisher (*Alcedo atthis*) etc. Some species shall adhere to catch insects as food i.e. Plaintive Cuckoo (*Cacomantis merulinus*), Pied Fantail (*Rhipidura javanica*), Black Drongo (*Dicrurus macrocercus*) etc. Some species shall adhere to wait for snatching or catching insects as food i.e. Blue-tailed Bee-eater (*Merops philippinus*), Barn Swallow (*Hirundo rustica*) etc. Some species eat pollen or flower honey as food i.e. Olive-backed Sunbird (*Cinnyris jugularis*), Brown-throated Sunbird (*Anthreptes malacensis*) etc. Some species eat plant seeds as food i.e. Red-Collared Dove (*Streptopelia tranquebarica*), Zebra Dove (*Geopelia striata*) etc. Some species eat fruits and insects i.e. Streak-eared Bulbul (*Pycnonotus blanfordi*), Racket-tailed Treepie (*Crypsirina temia*) etc.

Nesting and raising nestlings consisted of: Route 1 (Tha Ka floating market–homestay): White-breasted Waterhens (*Amaurornis phoenicurus*) and White-vented Myna (*Acridotheres grandis*) come to raise their nestlings. White-rumped Munia (*Lonchura striata*) come to make nests. Route 2 (Tha Ka floating market – traditional coconut sugar making kiln): White-breasted Waterhen (*Amaurornis phoenicurus*) come to raise their nestling. Javan Pond Heron (*Ardeola speciosa*), Olive-backed Sunbird (*Cinnyris jugularis*) and Pink-necked Green pigeon (*Treron vernans*) make nests and come to lay eggs. Route 3 (traditional coconut sugar making kiln -resort): Pied Fantails (*Rhipidura javanica*), Brown-throated Sunbird (*Anthreptes malacensis*) and Pink-necked Green pigeon (*Treron vernans*) come to nest and raise nestlings as shown in Figs. 1- 3.



Fig. 1 Brown-throated Sunbird's Nest



Fig. 2 Pied Fantail's Nest

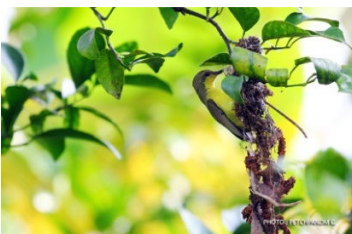


Fig. 3 Olive-backed Sunbird's Nest

#### IV. CONCLUSION

The birds are also an indicator of the environmental balance of the local ecosystem because the birds are of value to the environment in regards to pollination, spreading plant seeds and destroying harmful crop bugs. So the community should be supported in keeping the canals clean, and the fruit farmers should be supported to use organic techniques in order to conserve bird diversity and arrange eco-tours along the boat touring routes. This coincides with [6], 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.

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