Species

ISSN 2319 – 5746 EISSN 2319 – 5754

ANALYSIS

Study of food habits of migratory water birds of some selected wetlands from eastern India

Shubhasree Ganguly

School of Oceanographic Studies, Jadavpur University, India

Publication History
Received: 23 January 2015
Accepted: 12 March 2015
Published: 18 March 2015

Citation
Shubhasree Ganguly. Study of food habits of migratory water birds of some selected wetlands from eastern India. *Species*, 2015, 13(39), 23-25

ABSTRACT

Distribution of migratory water birds was conducted in six major wetlands of Eastern India. Food habits of the observed migratory birds were studied thoroughly in each of the selected wetlands.

Key words: Migratory birds, modeling of food habits.

1. INTRODUCTION

Six wetlands such as Tilpara reservoir, Bakreswar reservoir, Tank1, Tank2 and Tank3 of Birbhum district and Purbasthali of Burdwan district of Eastern India have been studied for the present work. All these wetlands of Eastern India have been visited several times in the span of last few years. Relationship between food habits and bird counts has been found out by finding out the number of molluscs and macrophytes of the studied wetlands.

2. MATERIAL AND METHODS

All the selected wetlands have been visited several times in the span of last few years. Purbasthali wetland of Burdwan district of Eastern India is a natural wetland which is an oxbow lake whereas the five wetlands of Birbhum district of Eastern India namely Tilpara, Bakreswar, Tank 1, Tank 2 and Tank 3 of Ballavpur Wildlife Sanctuary are man made wetlands. During the visit to these wetlands, water bird counts have been performed in the middle of January every year. Birds were observed by using a binocular and they were identified by following the methodology of (Grimmet et al., 2001) and (Ali and Ripley, 2001). Number of macrophytes and molluscs has been found out of the studied wetlands by quadrat method.

Shubhasree Ganguly,
Study of food habits of migratory water birds of some selected wetlands from eastern India,
Species, 2015, 13(39), 23-25,

3. RESULTS

Year wise average number of 14 migratory water birds is shown in the following table. Migratory birds have started coming from the year 2006 in Tank1 and in case of Tank2 of Ballavpur Wildlife Sanctuary of Eastern India, migratory birds have started coming from the year 2008. In 2010 there were no migratory birds in Tank3 due to mist netting because of bird flue.

Table 1

Year wise average of 14 migratory water birds taken over the wetlands

Year	Tilpara	Bakreswar	Tank1	Tank 2	Tank3	Purbasthali
2004	7240	1630	0	0	5521	3312
2005	4379	1612	0	0	994	3218
2006	2137	886	270	0	2024	2450
2007	2762	1219	616	0	4588	1672
2008	4716	5238	208	170	2864	1215
2009	3272	1984	38	264	4424	962
2010	4531	3280	91	0	2896	231

In case of all the six wetlands (Tilpara, Bakreswar, Tank1, Tank2, Tank3 and Purbasthali), quantities of molluscs, fishes and macrophytes are shown in the following table below:

Table 2

Quantities of molluscs, fishes and macrophytes of the studied wetlands

Name of Wetlands	Molluscs /unit area	Fishes/unit effective area ■■	Macrophytes / unit area
Tilpara	$4*10^7$	39.85	15.5
Bakreswar	$10*10^7$	38.84	10.45
Tank1	$0.06*10^7$	36.83	7
Tank2	$0.03*10^7$	36.83	31.25
Tank3	$0.08*10^7$	36.83	44.9
Purbasthali	$6*10^7$	407.84	10

N.B. ■■ (Sources: Assistant Director of Fisheries, Burdwan & Birbhum)

For **modeling of the food habits** of migratory birds by taking yearly average number of birds of different wetlands as responses and amount of macrophytes, molluscs and fishes as the regressors, we have tested several models by trial and error method and consequently monitored them with the corresponding R-sq value which is the indicator of the efficacy value of the corresponding model. In course of a thorough search, finally it is found that –

a) Average number of birds is not significantly dependent on the quantity of fishes
b) Average number of birds is significantly dependent (atleast at 5% - 10% level of significance) on the quantity of macrophytes and molluscs with apparently non-conventional functional dependence described through the following model -

$y = \text{constant}. (\ln x_1)^{\beta 1}. (\ln x_2)^{\beta 2}. e^{u}$

Shubhasree Ganguly,
Study of food habits of migratory water birds of some selected wetlands from eastern India,
Species, 2015, 13(39), 23-25,

where y = average number of birds with respect to years

x_1 = average quantity of macrophytes /quadrant

x_2 = average quantity of molluscs /unit area

u = random error/ disturbance term usually used in statistical model (with normal distribution assumption).

A comparatively presentable form of the above model is indeed –

$\ln y = \text{constant} + \beta_1 (\ln x1) + \beta_2 (\ln x\ 2) + u$

Positive values of β_1 and β_2 indicate that amount of macrophytes as well as molluscs have positive impact on the bird counts. In other words, the number of birds will significantly increase with the increment in these two food resources.

From MINITAB 16 findings obtained are as follows:

Regression Analysis: lny versus lnlnX1, lnlnX2

The regression equation is
lny = 0.29 + 4.44 lnlnX1 + 1.91 lnlnX2

Predictor	Coef	SE Coef	T	P
Constant	0.293	1.717	0.17	0.876
lnlnX1	4.436	1.412	3.14	0.052
lnlnX2	1.9087	0.4576	4.17	0.025

S = 0.734711 R-Sq = 86.8% R-Sq(adj) = 78.0%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	10.6602	5.3301	9.87	0.048
Residual Error	3	1.6194	0.5398		
Total	5	12.2796			

Source	DF	Seq SS
lnlnX1	1	1.2674
lnlnX2	1	9.3928

4. DISCUSSION

Quantities of macrophytes as well as molluscs have positive impact on the bird counts. In other words, the number of birds will significantly increase with the increase in these two food resources. Average number of birds is not significantly dependent on the quantity of fishes whereas average number of birds is significantly dependent (at least at 5% - 10% level of significance) on the quantity of macrophytes and molluscs.

ACKNOWLEDGEMENTS

The author acknowledges University Grant Commission, India for financial support of this work.

REFERENCES

1. Ali S, Ripley S D. Handbook of Birds of India and Pakistan. Oxford University Press, New Delhi, 2001, 1 & 2.
2. Grimmett RC, Inskipp T. Pocket Guide to the Birds of Indian Subcontinent. Oxford University Press, New York, 2001