Extended Abstract Journal of Waste Recycling 2020
Vol.5 No.2

Assessment of Bird Diversity and Abundance from Waste Disposal Sites in and Around Gubre Subcity, Wolkite Town, South-western Ethiopia

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Abstract
Waste disposal sites are predominantly used as feeding sites for generalist birds. The main objective of this study was to assess the diversity and abundance of birds from three waste disposal sites in and around Gubre sub city, Guraghe zone in 2017. Data were collected using point count techniques from 6:00−10:00 a.m. in the morning and 4:00−6:00 p.m. in the afternoon for three consecutive days each in three study sites. During this study, a total of 2566 birds belonging to 17 species, 7 Families and 6 Orders were recorded. From the 17 identified species of birds, 11 species each were from site I and III, while the remaining 7 species were recorded from site II. Among the seven identified families, Accipitridae was numerically the dominant family represented with 7 species, while Columbidae and Scopidae were the least dominant families represented with 1 species each. At species level, Hooded vulture (Necrosyrtes manachus) was the most abundant bird species. The total abundance of birds was significant (ANOVA result, p=0.00) difference among the three sites. In general, highest number of individual birds were counted in site I (1210) followed by site III (974) and site II (382). A significant difference in the abundance of birds between morning and afternoon was also observed (t- test, p=0.044). Greater numbers of birds were counted in morning in all study sites (range: 93 in site II and 651 in site I). Site I was found to be with relatively higher value of species diversity (H'=1.2) than Site III (H'=1.01) and Site II (H'=0.90). In the study area, waste collectors, domestic dogs, cats and vehicles were considered as threats for waste dependent birds. More studies are required to make a complete list of available bird species in the study area.

Keywords
Abundance; Diversity; Threats; Waste disposal

Globally, greater number of human population inhabits in and around urban areas, which accounts more than 50% of the global human populations. According to Lee, urban expansion is still at an alarming rate particularly in the developing nations of Africa, Asia and Latin America. His urban expansion has a great impact on the survival, life history, demography and distributions of different species. Moreover, in urban ecosystem, altered or modified habitats are found encompassing massive garbage disposals which have a considerable impact on biodiversity of that area. In developing countries like Ethiopia, this problem is enhanced by continuous immigration of people from rural to urban centres. The study was carried out in and around Gubre sub city, Wolkite, Guraghe zone (Figure 1). Gubre sub city is located at about 12 km away from Wolkite town in South West direction. Wolkite town is the capital city of Gurage zone located at a distance of 337 km from Hawassa (capital city of Southern Nations, Nationalities and Peoples Region) and 158 km away from South West of Addis Ababa. He geographical location of the town is approximately 80 33'N latitude and 370 59' E longitude. He average elevation of the town is about 1870 m above sea level. The mean annual temperature of the zone ranges between 13-300c with annual average temperature of 320c. He town has weynadega climatic condition with the mean annual rain fall ranges 600-1600 mm.
During the present study a total of 17 species of bird belonging to 7 Families and 6 Orders were recorded from the study area. Family Accipitridae was numerically the dominant family represented with 7 species which accounts 41.2%, of identified species, while Columbidae and Scopidae were the least dominant families represented with 1 species each (Table 1). At species level, Hooded vulture was the most abundant species, while Hamerkop, White stork and Yellow billed duck were categorized under rare species. Two near endemic birds were recorded from the study sites named as Hick billed raven and Wattled ibis which contributing 11.76% of the identified species. From the 17 species of birds identified during the study period, 11 bird species were recorded from site I and III each, while the rest 7 species were recorded from site II. Among these, Hooded vulture, White-backed Vulture, Yellow billed kite and Hick billed raven were found in all sites and contributing around 72.48% of the total bird abundance of the study area.

During the present study various bird species were recorded from the waste disposal sites. From the present study it is clear that, the bird species composition and abundance varied spatially and temporally. Bird species abundance was higher in some sites and during morning hour related to the variation in food items, degree of threat presented and the location of site as well. Among the seven families identified Accipitridae was numerically the dominant family with seven representative species with scavenging mode of feeding.

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This work is partly presented at Joint Event on 10th World Convention on Recycling and Waste Management, October 21-22, 2019 Sydney, Australia