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Records of three new butterfly species from the Chittagong University Campus of Chittagong in Bangladesh

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Abstract
A study was conducted on the butterflies of the Chittagong University Campus at Chittagong in Bangladesh during June 2013 to July 2014. Three species of butterflies (*Euploea eunice* under the Family Nymphalidae, and *Ampittia dioscorides* and *Unkana ambasa* under the Family Hesperiidae) are newly recorded for the first time in Bangladesh. Brief descriptions of these species and photographs have been presented.

Keywords: Butterflies, Record, Description, Distribution, Bangladesh.

1. Introduction
Butterflies (Lepidoptera: Insecta) are beautiful flying animals. They are closely associated with plants, help in pollination as important natural resources and important ecological indicators. Since the early 18th Century about 19,238 species of butterflies have been documented worldwide (Heppner, 1998). The exact number of extant species of butterfly is not known but there are about 16,823 species spread throughout the world (Landing, 1984); of which 1,501 species have been recorded in India, 651 Nepal, 242 Sri Lanka, 237 Japan, and 1,182 species in Malaysia (Islam, 2011). Although few studies on the butterfly fauna are well documented in Bangladesh, but more studies are needed to describe the total number of species found in the country, because the new records are being added every now and then.
In Bangladesh, some regional works have been done on butterfly checklist. Alam and Ullah (1995) reported 21 species of butterfly from the Chittagong University Campus (CUC); Hossain *et al.* (2003) listed 51 species of butterfly from Jahangirnagar University; Khan (2001) accounted 49 species from Tangail district; Islam (2011) annotated 158 species from Savar, Dhaka; Hossain (2014) reported 37 species from the Sundarbans and Khandokar *et al.* (2014) recorded 160 species from Lawachara National Park, Moulavibazar. Chowdhury and Mohiuddin (2003) accounted 121 species from eastern border (Sylhet and Moulvi Bazar districts in Sylhet division, and Chittagong and four hill districts in Chittagong division) of Bangladesh. Larsen (2004) annotated list of butterflies and mentioned 236 species from Bangladesh, Ahmad *et al.* (2009) enlisted 148 species in the country. Chowdhury and Hossain (2013) enlisted 225 species from Bangladesh and forecasted that the number of species will exceed 400. When we started capturing photographs of butterflies in the CUC as amateur and after some time became interested to look for recording new species in the country.

2. Materials and Methods
While watching birds on regular basis mostly in the weakened in the CUC and capturing photographs also, we became interested to take photographs of beautiful butterflies. Butterflies were primarily identified directly in the field by capturing through insect sweep nets and/or photography by using camera (Canon EOS 600D; lens: 75-300 mm). A paired of binoculars was also used for better observation (Vixen 8x32). In facts, the specimens were caught using sweep nets, placed in a plastic jar and carried to laboratory for further identification and study. Collected butterflies were identified using, identification keys (e.g., Evans, 1932), field guides (e.g., Chowdhury and Hossain, 2013; Kehimkar, 2013). After studying the specimens were

released to their natural habitats. The CUC (Fig. 1) is situated at Zubra village under Fatehpur union parishad of Hathazari upazila (sub-district) in Chittagong district, Bangladesh (22° 27′ 30″ to 22° 29′ 0″N and 91° 46′ 30″ to 91° 47′ 45″E). It is about 22 km north of the Chittagong city, 3 km south-west of Hathazari uapzila and about 6 km east from the Bay of Bengal. The CUC is surrounded by hills of Chittagong hill region and bisected by a small stream. It is decked with about 72% hills, lakes, ponds and plain lands and valleys are 15.9 m high from the sea level (Islam *et al.*, 1979). It is a quite large area comprising 7.10 km² (1,754 acres) of land. About 60% land area of the CUC is covered by steep and very steep hills (Hossain *et al.* 2013). The vegetation is semi-evergreen (Ahsan and Khanom, 2005). A total of 665 plant species under 126 families and 404 genera are found in CUC, of which 550 are dicotyledons and 115 are monocotyledons (Alam and Pasha, 1999).

3. Results and Discussions

Three species of butterflies under 3 genera and 2 families have been recorded from the Chittagong University Campus (CUC) at Chittagong in Bangladesh, which are new to the country. Distributional ranges and morphological features of each species have briefly been described and discussed.

I. Blue-branded king crow (*Euploea eunice* Godart, 1819) (Fig-2).

Family: Nymphalidae

Sub-family: Danainae

E. eunice (Blue-branded king crow) is recorded for the first time in Bangladesh at about 09.00 AM (GMT + 06.00 hours) on 11 June 2014 (GPS Coordination: N 22° 27′ 59″and E 91° 47′ 19″; Elevation: 19 m msl). This species is distributed in India (Evans, 1932); China and South-East Asia (Ades and Kendric, 2004); Thailand, Laos and Vietnam (http://yutaka.it-n.jp); Indo-China, South-east Asia, China, Taiwan, Sumatra, Java, Bali and Lesser Sunda (http://haliaster.web.id); Myanmar, Lankawi, Malaysia, Tioman and Singapore (http://yutaka.it-n.jp). Besides *E. eunice*, six species of the Genus (*Euploea*) have so far been recorded from Bangladesh. These species are *E. mulciber*, *E. core*, *E. algae*, *E. midamus*, *E. klugii* and *E. crameri* (Larsen, 2004).

Morphological characteristics

Wingspan of *E. eunice* 75-85 mm; brownish black in color and underside dark brown. Fore wing almost triangular with prominent bluish white spots. Underside of the forewing with double series of small and almost rounded white spots, submarginal series extended up to apical vein but marginal series ended in terminal vein. A prominent round white spots in costa region; two white spots in each post and median veins. Hind wing almost oval in shape, underside with double series of small and almost rounded white spots, submarginal series inwardly conical and extended up to costa region but the marginal series often ended in apical vein. The significant character of this species is no white spot in discal cell in underside of hind wing and adjacent regions that differ *E. eunice* from other *Euploea* spp. *E. klugii* and *E. tulliolous* also have no white spot in discal cell but in *E. klugii* submarginal spots are much larger than *E. eunice* and almost rectangular and *E. tulliolous* (wingspan: 60-70) [http://www.Butterflycircle.com] is much smaller than *E. eunice*.

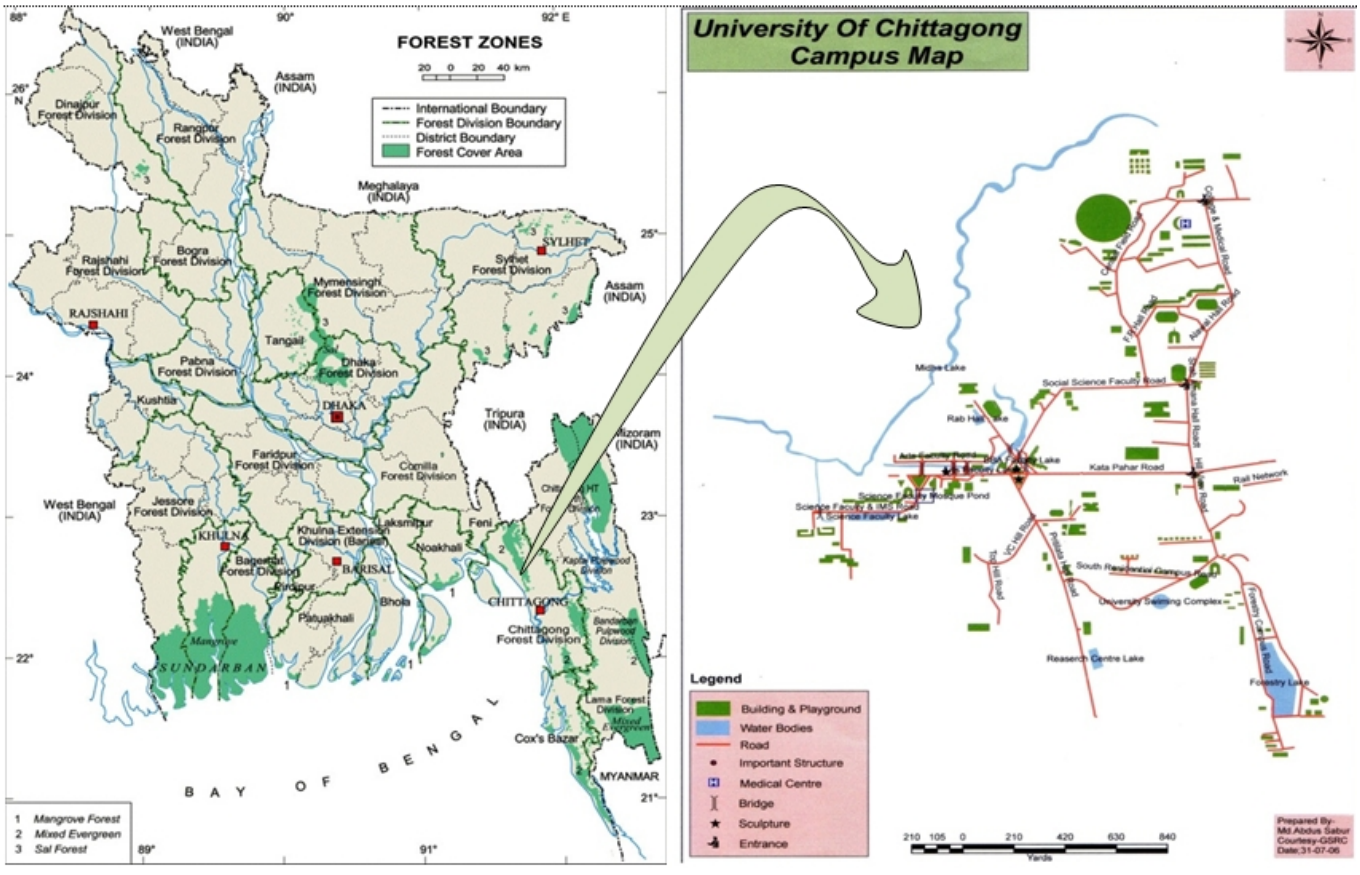

Fig 1: Map of Chittagong University Campus from where butterflies are recorded.

Fig 2: *Euploea eunice*

Fig 3: *Ampittia dioscorides* (Male)

Fig 4: *Ampittia dioscorides* (Female)

Fig 5: *Unkana ambasa*

II. Bush hopper (*Ampittia dioscorides* Fabricius, 1793) (Figs-3 & 4).
Family: Hesperiidae
Sub-family: Hesperiinae
It is recorded for the first time in Bangladesh at about 08.30 AM (GMT + 06:00) on 18 April 2014 (GPS Coordination: N 22° 27′ 43″ and E 91° 47′ 30″; Elevation: 14 m msl). This species has so far been reported from India (Evans, 1932); China, South-East Asia and Sri Lanka (Ades and Kendric, 2004); Vietnam and Taiwan (http://www.afcd.gov.hk); Myanmar, Thailand, Laos, Cambodia, Yunnan (China), Malaysia, Singapore, Borneo, Sumatra, Nias, Java and Bali (http:// yutaka.it-n.jp). Larsen (2004) reported it from Calcutta and Cachar (India), and Arakan (Myanmar), and he guessed that it may occur in Bangladesh; but the occurrence of this species has not yet been confirmed from Bangladesh by other workers. Literature search reveals that no species under the Genus *Ampittia* has yet been recorded from Bangladesh.

Morphological characteristics
A small butterfly with 20-22 mm wingspan. Males have a tendency to open and close their wings repeatedly as they stop and perch, unlike other skippers. The male has more extensive orange on the forewings above, compared to the female, which is predominantly brown in appearance with smaller yellowish spots. The underside is orange with spots and streaks.

III. Hoary palmer (*Unkana ambasa* Moore, 1858) (Fig-5).
Family: Hesperiidae
Sub-family: Pyrginae
U. ambasa (Hoary palmer) is recorded for the first time in Bangladesh at about 09.30 AM (GMT + 06:00) on 10 June 2014 (GPS Coordination: N 22° 27′ 54″and E 91° 47′ 21″; Elevation: 17 m msl). It is distributed in India (Evans, 1932); Sundaland, Burma (Myanmar), Thailand and Philippines (Jong and Treadaway, 1903); Vietnam, Thailand, Langkawi (Malaysia), Malaysia, Singapore, Borneo and Sumatra (http:// yutaka.it-n.jp). There is no record of any species under the Genus *Unkana* from Bangladesh.

Morphological characteristics
Quite large compare to the other hesperiid butterflies. Wingspan of adult Hoary palmer is 50-65 mm. Both sexes are dark brown in color with hyaline spots on the fore wings. There are a large spot in the cell, 4 post-discal spots in spaces 2-5 and 3 sub-apicals in spaces 6-8. In males, spots are pale yellow, but white in female. The female has a large white patch on the hind wings. Underside of hind wing more whitened between the veins except the apical and tornal regions but fore wings partially whitened.

4. Conclusion
Recording of three new species of butterflies from Bangladesh is very significant for updating the status and distribution of butterfly fauna in the country. This addition is also important to enrich the butterfly checklist of Bangladesh.

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