SHORT COMMUNICATION

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PREVALENCE OF BLOOD PARASITES IN THREE MIGRATORY RAPTOR SPECIES FROM TAIWAN

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Avian blood parasites occur in birds throughout all continents except Antarctica (Valkiunas 2005). Studies on raptor blood parasites have revealed complex and diverse distributions of parasite taxa. In a study of 14 European raptor species, Krone et al. (2008) detected Plasmodium, Haemoproteus, and Leucocytozoon parasites and revealed that some Plasmodium strains found in passerines were also detected in raptors. Haemoproteus and Leucocytozoon, but no Plasmodium parasites were present in Red-tailed Hawk (Buteo jamaicensis), Red-shouldered Hawks (B. lineatus), and Cooper’s Hawks (Accipiter cooperii) sampled in California (Ishak et al. 2010). In a study of blood parasites from 43 species of raptors, raptor-specific clades were found in Parahaemoproteus, but not in Plasmodium parasites (Outlaw and Ricklefs 2009). Leucocytozoon from European and Californian Accipiter spp. were phylogenetically closely related (Sehgal et al. 2006). Leucocytozoon haplotypes from Buteo spp. from Kazakhstan and California form a monophyletic lineage (Sehgal et al. 2006).

Blood parasite prevalence in Asian raptors has been little studied. Records on their prevalence in Asian raptors were primarily included in regional surveys of multiple species. For example, in a study on avian haematozoa involving 1132 species of eastern and southern Asian birds, including 49 species of raptors, McClure et al. (1978) found 25 raptor species were infected with haematozoa. Manwell et al. (1976) studied the prevalence of blood parasites in 193 Taiwanese bird species, including four resident raptor species; among them, one Besra (Accipiter virgatus), one Tawny Fish-Owl (Ketupa flavipes), two Indian Scops-Owls (Otus hokkaidona) and one Mountain Scops-Owl (O. sipocephalus) were infected by Plasmodium parasites.

In the Philippines, avian haemosporidian parasites were detected in Chinese Goshawks (Accipiter soloensis), Besra, Luzon Boobook (Ninox philippensis), and Luzon Lowland Scops-Owl (Otus megalotis; Silva-Iturriza et al. 2012). The only two published reports on blood parasites focused on Asian raptors were a prevalence survey of Eastern Imperial Eagles (Aquila heliaca), Steppe Eagles (A. nipalensis), and White-tailed Sea-Eagles (Haliaeetus albicilla) from Kazakhstan (Leppert et al. 2004) and a study on the Plasmodium infection in the White-rumped Vultures (Gyps bengalensis) of India, which indicated that the Plasmodium parasites may contribute to the decline of this critically endangered raptor (Poharkar et al. 2009).

Our goal was to survey hematozoan parasite prevalence in Taiwanese raptors. Taiwan is located on the East Asia-Australasian flyway of many migratory raptors. During spring and autumn migration, hundreds of thousands of Chinese Goshawks and tens of thousands of Grey-faced Buzzards (Butastur indicus) migrate through Taiwan (e.g., Sun et al. 2010, Yang et al. 2012). The Eurasian Kestrel (Falco tinnunculus) is a common winter visitor that inhabits grassland and farmland (Lin 2012). We here report the prevalence of blood parasites in the three species. To our knowledge, this is the first study using molecular methods on the blood parasites of Asian migratory raptors.

Methods

We used blood samples collected concurrently with a banding program on migratory raptors at Kenting National Park (KNP; 21°57′N, 120°48′E; Chiang et al. 2008) and a telemetry project on Grey-faced Buzzard (Severinghaus et al. 2010). All Chinese Goshawks were caught by mist-netting in September and October, 2005–2007. Thirty-four Grey-faced Buzzards were caught in October, 2005–2011 using mist nets at KNP, and five were caught at Mt. Bagua, Changhua County (24°4.7′N, 120°33′E) during spring migration (March 2010). The Eurasian Kestrels...