



The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015

"GLOBAL RAPTOR MIGRATION...BETTER MONITORING FOR CONSERVATION"



October 21st - 25th, 2015

Novotel Chumphon Beach Resort and Golf,
Chumphon, THAILAND

Website : <http://www.THEFLYWAYFOUNDATION.OR.TH>

E-mail : arrcn.thailand2015@gmail.com



Organized by



Asian Raptor Research and Conservation Network (ARRCN)



Chumphon Province



The Flyway Foundation, Thailand

Co-organized by

Ministry of Tourism and Sports

Tourism Authority of Thailand

Thai Tourism Promotion Association (TTPA)

Thailand Convention and Exhibition Bureau

Kasetsart University

Mahidol University

National Institute of Development Administration (NIDA)

Silpakorn University

King Mongkut's University of Technology Thonburi

Kasem Bundit University

Bird Conservation Society of Thailand (BCST)

Organizing Committee

Mrs.Rewadi	Lerdariyakit	Head of Committee
Dr.Kaset	Sutasha	Committee and secretary
Assistant Professor.Dr.Sutsan Suttipisan		Committee
Dr.Poramet	Boonnumsirikij	Committee
Mr.Chukiat	Nualsri	Committee
Mr.Sarut	Janganan	Committee
Mr.Athip	Jansuri	Committee

Scientific Committee

Dr.Toru	Yamazaki	Head of Committee
Dr.Kaset	Sutasha	Committee and secretary
Dr.Anita	Gamauf	Committee
Associate Professor.Philip D. Round		Committee
Associate Professor.Dr.George Andrew Gale		Committee
Associate Professor.Dr.Worawidh Wajjwalku		Committee
Assistant Professor.Dr.Sutsan Suttipisan		Committee
Dr.Gombobaatar	Sundev	Committee
Dr.Poramet	Boonnumsirikij	Committee

Acknowledgements

The organizing Committee of the 9th Asian Raptor Research and Conservation Network Symposium 2015, Chumphon, Thailand would like to express their sincere gratitude to the individuals and organization.

Thanks to our volunteers (undergraduate students from Kasetsart University, Kasem Bundit University and etc.) for their help.

Finally, the Keynote Speakers, Session Chairs, all presenters and Participants for having made this symposium possible.

Program Overview

The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015

Time	Speaker	Event
Day 1 (Wednesday 21 October 2015)		
15:00 – 22:00		Arrival at Chumphon, Thailand
Day 2 (Thursday 22 October 2015)		
07:00 – 09:00		Registration, Poster set up, Slide loading and booking for Morning birdwatching tour on next day.
09:00 - 09:10		Introduction to ARRCN Symposium on second floor of Novotel Chumphon Beach Resort & Golf Club.
09:10 - 09:20		Opening Speech from Mr.Somdee Kashayongyeen Governor of Chumphon province
09:20 - 09:30		Opening Speech from Assoc. Prof Chavanee Tongroach Vice Minister for Tourism and Sports
09:30 - 09:40		Opening Speech from Dr.Toru Yamazaki President of ARRCN
09:40 - 10:00		Opening Ceremony and group photo
Session 1	Keynote Speaker	“World Class, Face to Face” Chair: Associate Professor. Philip D. Round
10:00 – 11:00	Professor Ian Newton	The Ecology of Raptor Migration
11:00 – 11:30		Coffee break and Poster presentation
11:30 – 12:30	Professor Yossi Leshem	Migrating Birds Know No Boundaries” From a Local to Global Scale

The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015

Time	Speaker	Event
12:30 – 13:30		Lunch
13:30 – 14:30	Dr.Keith L. Bildstein	The Movement Ecology of Scavenging Birds of Prey: Examples from the Americas and Africa
14:30 – 15:00	Mr.Tatsuyoshi Murate	The result of the ARRCN Collaborative Research Project of Migratory Raptors
15:00 – 15:20		Coffee break and Poster presentation
Session 2		Current raptor conservation in Asia session At small meeting room on first floor Chair: Dr.Chuenchom Hansasuta
15:20 – 15:35	Chukiatt Nualsri	Current raptor conservation in Thailand
15:35 – 15:50	Satish Pande	Current raptor conservation in India
15:50 – 16:05	(Adam) A.Supriatna	Current raptor conservation in Indonesia
16:05 – 16:20	Inoue Takehiko	Current raptor conservation in Japan
16:20 – 16:35	Lim Kim Chye	Current raptor conservation in Malaysia
16:35 – 16:50	Gombobaatar Sundeav	Current raptor conservation in Mongolia
16:50 – 17:05	Hemanta Dhakal	Current raptor conservation in Nepal
17:05 – 17:20	Alex Tiongco	Current raptor conservation in Philippine
17:20 – 17:35	Tan Gim Cheong	Current raptor conservation in Singapore
17:35 – 17:50	Han-Kyu Kim	Current raptor conservation in South Korea
17:50 - 17:55	Yi-Jung Lin	Current raptor conservation in Taiwan

Time	Speaker	Event
19:00 – 21:30		Welcome Party at Plenary hall on second floor of Novotel Chumphon Beach Resort & Golf Club.
Day 3 (Friday 23 October 2015) Chulalongkorn Day (a public holiday to commemorate King Chulalongkorn (Rama V))		
06:00 – 08:00		Morning Bird Watching tour 5 USD per person and Booking for Optional Dinner.
Session 3		Conservation, Disease and Pollution session Plenary hall on second floor of Novotel Chumphon Chair: Yuda Pramana
09:00 – 09:15	Ausanee Bootyu	Application of ectoparasiticide for <i>Colpocephalum turbinatum</i> control in captive Barn Owl
09:15 – 09:30	Daniel Harjanto	The used of Barn Owl (<i>Tyto alba</i>) as rats control at rice-field in Yogyakarta
09:30 – 09:45	Hasber Salim	Secondary poisoning risks of anticoagulant rodenticides to barn owls in agricultural areas in Malaysia – A review
09:45 – 10:00	Lucia Liu Severinghaus	The diet of Black-winged Kite (<i>Elanus caeruleus</i>) in Eastern Taiwan
10:00 – 10:15	Md Lutfor Rahman	Raptor electrocution at medium voltage power lines: a case study in Mongolia
10:15 – 10:30	Randa, Bintang Rantau	Conservation of the Egyptian Vulture (<i>Neophron percnopterus</i>) in Beypazari, Ankara, Turkey
10:30 – 10:45	Yuan-Hsun Sun	Illegal hunting and feather use of Mountain Hawk-Eagles by local people in Southern Taiwan

Time	Speaker	Event
10:45 – 11:00		Coffee break and Poster presentation
Session 4		Taxonomy and Genetic session Plenary hall on second floor of Novotel Chumphon Chair: Wichyanan Limparungpatthanakij
11:00 – 11:15	Chien-Hung Yang	Plumage polymorphism in Oriental Honey Buzzards
11:15 – 11:30	Endah Handayani	First publishing Brown Hawk-Owl (<i>Ninox scutulata</i>) in Kondang Merak, East Java, Indonesia
11:30 – 11:45	Michael S. Sanchez	Relative abundance and Morphometric of the Philippine Scops Owl, <i>Otus megalotis megalotis</i> (Walden) in Mt. Makiling and Marinduque, Philippines
11:45 – 12:00	Riri Wiyanti Retnaningtyas	The Phylogenetic Study of The White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>) Based on DNA Barcoding Cytochrome-C Oxidase Sub Unit I (COI)
12:00 – 12:15	Siew Ann Yee	Vocal Individuality of Sunda Scops Owl (<i>Otus lempiji</i>) in Peninsular Malaysia
Session 5	Parallel Sessions	Environmental Issues and Related topics Small meeting room on first floor of Novotel Chumphon Chair: Asst.Prof. Dr.Sutsan Suttipisan and Dr.Supaporn Prasongthan
11:00 - 11:15	Nattaya Chanvithee	Green Marketing in Hotel Industry, Thailand

The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015

Time	Speaker	Event
11:15 – 11:30	Chalit Chiabphimai	The Awareness Reinforce Process through Raptor Migration observation at Kho Dinsor (Hawk Mountain of Asia), Chumphon, Thailand
12:30 – 13:30		Lunch
Side Event		Think Global, Do Local
10:00 - 12:00	Keynote Speakers	Meeting with local touring guide, teachers and students from Primary and Secondary School of Chumphon with translators
Session 6		Migration and Wintering Session Plenary hall on second floor of Novotel Chumphon Chair: Andrew J. Pierce
13:30 – 13:45	(Adam) A. Supriatna	Status and conservation of migratory raptors in Indonesia
13:45 – 14:00	Alex M. Tiongco	Identification of Raptor Migration Routes in the Philippines
14:00 – 14:15	Asman Adi Purwanto	Raptor Migration in Gunung Ciremai National Park - Preliminary Observation during 2014 Spring Migration Season-
14:15 – 15:00	Jelaine L. Gan	Distribution mapping of <i>Accipiter soloensis</i> and <i>Butastur indicus</i> based on occurrence data in Philippines
15:00 – 15:15	Johannes Jansen	Long-term raptor migration & illegal hunting monitoring along Eastern Black Sea flyway in Batumi, Georgia
15:15 – 15:30		Coffee break and Poster presentation

Time	Speaker	Event
15:30 – 15:45	Wichyanan Limparungpatthanakij	Khao Dinsor: a key site for monitoring raptor migration in the Indochinese Peninsula
15:45 – 16:00	Lee Oon Teik	Autumn passage of migratory raptors over Taiping, Perak, Peninsular Malaysia 2000 – 2010: abundance, species and seasonality
16:00 – 16:15	Richard P. Reading	Apparent Human-induced Migration of Cinereous Vultures (<i>Aegypius monachus</i>) from Mongolia to the Republic of Korea
16:15 – 16:30	Syartinilia	The important of small islands for stopover site during migration of Oriental Honey Buzzards in Indonesia
16:30 – 16:45	Yera putri rahayu	The development of raptor migration ecotourism as a conservation objective at Rupert Island, Sumatra, Indonesia
Session 7	Parallel Sessions	Reproduction, Habitat and Behavior session Small meeting room on first floor of Novotel Chumphon Chair: Dr.Gombobaatar Sundev
13:30 – 13:45	Dennis I. Salvador	Hope for Threatened Tropical Forest Raptors: Lessons from the Philippine Eagle Conservation Program
13:45 – 14:00	Adesh Kumar	Population Status and Distribution of Black Kite (<i>Milvus migrans</i>) in Sambhal District, Uttar Pradesh, India

Time	Speaker	Event
14:00 – 14:15	Amita Kanaujia	Impact of Upcoming Tourism and Running Railway Tract on Vultures in Deogarh, Lalitpur, Uttar Pradesh, India
14:15 – 14:30	Heru Cahyono	Saving the Last Forest of Kondang Merak using Raptor and Habitat Conservation through Ethnography, Ecotourism, Edutourism, and Soft Campaign (E3+S)
14:30 – 14:45	Gombobaatar Sundev	Ground nesting raptors of Mongolia
14:45 - 15:00	Han-kyu Kim	Trophic ecology of sympatric Northern Boobooks (<i>Ninox japonica</i>) and Oriental Scops Owls (<i>Otus sunia</i>)
15:00 – 15:30		Coffee break and Poster presentation
15:30 – 15:45	Hemanta Dhakal	First record of nests and breeding success of Red-headed Vulture (<i>Sarcogyps calvus</i>) and implementation of Vulture Conservation Programs in Nepal
15:45 – 16:00	Inge H.M. Tielen	Behavioral assessment methods to identify the degree of habituation in raptors
16:00 – 16:15	Md Lutfor Rahman	Post-fledging movements and survival of juvenile Saker Falcons (<i>Falco cherrug</i>) from artificial and natural nest sites in Mongolia
16:15 – 16:30	Muhammad Syafiq Yahya	Abundance of Spotted Wood Owl (<i>Strix seloputo</i>) in Relation to Environmental Factors in Malaysian Oil Palm Small holdings
16:30 – 16:45	Nur Azmi	The current conditions of Javan-Hawk Eagle's habitat remnants in West Java, Indonesia

Time	Speaker	Event
16:45 – 17:00	Shakeel Ahmed	Current Status of Breeding Osprey (<i>Pandion haliaetus</i>) in Abu Dhabi, United Arab Emirates
17:00 – 17:15	Yi-Hsin Liu	Dispersal behavior of young Tawny Fish Owls at Wulin, Taiwan
19:00 – 21:30		Regular Dinner at Lui Restaurant 5 mins walk from Novotel Chumphon Beach Resort & Golf Club and back to your accommodation.
	Optional program	
<ul style="list-style-type: none"> Dinner with Fire Fly Watching 40 seats only (500 bahts/person) 	<ul style="list-style-type: none"> Thai's crabs and seafood 40 seats only (600 bahts/person) 	<ul style="list-style-type: none"> Dinner at Night Market in Chumphon City (pay by your own)
Day 4 (Saturday 24 October 2015)		
07:00 – 16:00	Field trips to Khao Dinsor	
Optional Side Event	Barn Owl Conservation in Asia The Past, Present and Future At Chumphon Palm Oil Industry	
09:00 - 12:00	Pramana Puda,	Research and Conservation of Barn Owls in Indonesia
	Greangsak Hamarit,	Barn Owl Repopulation and Reintroduction for Rat Control in Thailand
	Benchapol Lorsunyalak,	Barn Owl Conservation Activity and Public Awareness In Thailand
19:00 – 22:00	Bazaar and Farewell Party	At Plenary hall on second floor of Novotel Chumphon Beach Resort & Golf Club.
Day 5 (Sunday 25 October 2015)		
09:00 – 11:00		Departure and Post-Symposium Tour

Poster session

Akalak kunsorn

A preliminary study of food habits of wintering circus harrier in Thailand

Anita gamauf

Habitat requirements of raptor communities in continental S and SE Asia: the importance of protected high quality forests

Dr. J. P. Baxi

A field study on vegetation of Washim district of Maharashtra state, India with special emphasis to raptor's habitat

Gombobaatar sundev

-Daily activity of breeding Amur Falcons (*Falco amurensis*) in Hustai National park, Mongolia

-Breeding biology of Amur Falcons (*Falco amurensis*) in Hustai National park, Mongolia

Gunawan

Facebook as media for raptor illegal trade in Indonesia

Krishna prasad bhusal

Ecological monitoring of four species of Vultures for five years in Arghakhanchi, Nepal

Adrian m. Constantino

Project northern light 2013-14: identifying spring migration exit points in Northern Luzon, Philippines

Maria katrina c. Constantino

Project southern crossing 2014: first observations of autumn raptor migration at Sarangani, Mindanao Island, Philippines

Oliver gray-read

Current population status and conservation interventions for three species of critically endangered vulture in Cambodia

Yu-cheng hsu

Satellite tracking of Common Buzzards (*Buteo buteo*) banded on Kinmen Island, Taiwan

Yung-kun huang

The movement and habitat use of juvenile Mountain Hawk-Eagle in Southern Taiwan.

Abstract

Plenary Talk

THE BIOLOGY OF RAPTOR MIGRATION

Ian Newton

Centre for Ecology & Hydrology,

Benson Lane, Crowmarsh Gifford, Wallingford,

OX1 8BB, United Kingdom.

Email: ine@ceh.ac.uk

This talk will be mainly concerned with the general biology of bird migration, emphasizing the special features of raptor migration. Comparisons will be drawn between the migration behavior of soaring raptors and the migrations of other birds which travel mainly by flapping flight.

Migration in birds can be regarded as an adaptation to avoid seasonal food-shortages on breeding areas. With increasing latitude, as winters become more severe, increasing proportions of breeding birds migrate southward for the winter. Among raptors, species which feed mainly on birds or mammals migrate shorter distances than species that eat cold-blooded prey, such as fish, amphibians, reptiles and insects. These latter species winter mainly in tropical regions, where these prey types remain active year-round.

In ideal conditions, soaring raptors and other birds can travel on migration more rapidly and more efficiently (at lower energy cost) than other birds that travel by flapping flight. Northern species that migrate to the tropics travel more rapidly than species that travel shorter distances, as shown by radio-tracing studies.

Methods of studying migration will be discussed, including the use of leg rings, observations by eye and by radar, and radio-tracking, and some examples of recent satellite-based radio-tracking will be discussed.

Keywords: migration, raptor, evolution, soaring flight

**What satellite tracking Turkey Vultures and Hooded Vultures
has taught me about raptor movement ecology and conservation**

Keith L. Bildstein,

Sarkis Acopian Director of Conservation Science, Hawk Mountain Sanctuary, USA

My colleagues and I have been tracking the widespread and abundant Turkey Vulture in the Americas since 2003. So far, we have followed the movements of 57 Turkey Vultures breeding in Pennsylvania, Arizona, Minnesota, and the Pacific Northwest, USA; Saskatchewan, Canada; and La Pampa, and Rio Negro, Argentina. We have discovered strong migration connectivity in some, but not all populations, remarkable winter site-fidelity in all populations, vastly different speeds of migratory travel among populations, considerable differences in home range sizes among individuals within and among populations, and indications of minimal migratory flight costs and nighttime torpor among migrants. All migratory vultures overwintered in areas with existing resident populations. One individual that was tracked for 11 years shifted from short-distance migratory behavior to sedentary behavior, and several individuals migrated along different tracks in different years. Overall, migration in Turkey Vultures has proved to be a far more complex “behavioral tool” than anticipated.

My colleagues and I have tracked the widespread but globally endangered Hooded Vulture in Africa since 2013. So far we have followed the movements of 17 Hooded Vultures breeding in The Gambia, Ethiopia, and South Africa. We have discovered considerable differences in home-range size among non-migratory populations in West Africa, East Africa, and South Africa, as well as considerable individual differences in home-range size within the three geographic populations, with birds in dense populations having smaller home ranges than those in sparse populations. We also have seen tracked vultures avoid areas where poaching has eradicated populations of large mammals.

Although still in its infancy, satellite tracking offers the “holy grail” for both raptor movement ecology and raptor conservation: the opportunity to follow individual birds of prey on a daily or even hourly basis, throughout both their long-distance migrations and their short-distance ranging flights. As miniaturization proceeds and costs decline, and as collaborative efforts among scientists and conservationists grow, this emerging technology promises to play an increasingly important role in both raptor movement ecology and raptor conservation.

Oral Presentation

Current raptor Conservation in Asia

Current Raptor Conservation in Thailand (2012 – 2015)

Chukait Nualsri

The Flyway Foundation, Thailand

The activity of Raptor watching in Thailand had seem to motive bird watchers all over Thailand which they had searched significant ecological site for observing the raptor migration seriously. Mostly seeking activity had been done by the small group of volunteers which love and enjoy to observe the raptor migration. The raptor migration observation has been changed considerably since 2012. According to various and strong activities to develop the conservation of raptors in Thailand. Those activities been not only promoted and supported but also investigated and collected data moreover protected and prevented as well as described as follow.

Promotion and Supporting Activities

The founding to organisation support funding. There are some group of people who intended to support by founding the organisation in order to manage and administrate systematically. The founding of The Flyway Foundation was contributed. The objective of this organisation has received charity fund and provided funding to observation raptor counter voluntaries in Thailand. The first donation to found this foundation were Mr. Nurak Israsena and Mr. Edmund W.Pease. Moreover both of them would pay additional of one half whenever any donation to the Flyway Foundation. The operation of the Flyway Foundation has been operated in the second years under the operation of Mrs. Chunchom Hansatsut as the president.

World class acknowledge in 2013, A textbook name “Migration Hotspots, The World’s Best Migration Sites” was published by The Royal Society for the Protection of Birds (RSPB), UK, it explore raptor watching activities in Thailand since 2002 which endorsed and guaranteed Khao Dinsor, Patew District, Chumphon Province, Southern of Thailand as one of the best spot to observe raptor migration in the world. The Raptor and Wild bird Rehabilitation Center (Wild Bird Care, KU) was established on 2014 by Faculty of Veterinary Medicine, Kasetsart University. The Wild Bird Care, KU was formed by Thai’s bird watchers and Kasetsart University launched the charity activity to get the donation from public to construct the Special Animal Hospital and Rehabilitation Center in order to cure raptors and other wild birds. The project has been operated very well.

Investigation and data collection,

As some groups and organisations have been working in this project to collect data of raptors in Thailand continuously. Raptors counter has been working under the groups of people which can give some example as follow. Lanna Bird and Nature Conservation Club

has been incorporation from bird watchers in Chiang Mai Province, Northern of Thailand. The observation site of this club is located at the Wat Phra Tard Doi Kham. The significant is it is best spot for observed Amur Falcons (*Falco amurensis*) which fly over this area heading west to Myanmar and then Africa. Another one is Thai Raptor Group (TRG), which is study the raptors at two sites. One of the sites is Kho Radar located at Bang Saphan Noi District, Prachubkirikhan Province, Southern of Thailand which is approximate 50 kilometers north from Kho Dinsor, Chumphon province. It is a site to observe the raptor toward Malay Peninsula of autumn migration. Moreover, this group also observes the Black-eared Kite (*Milvus Lineatus*) at Pak Phli District, Nakhon Nayok Province, Eastern of Thailand.

This year 2015, The Flyway Foundation are hiring raptor watchers to count and observe for full autumn migration since early September to mid-November. And The Flyway Foundation also received cooperation from government agency, The Wildlife Conservation Office, Department of National Park, Wildlife and Plant Conservation (DNP). The report will post on Facebook of The Flyway Foundation. The Raptor Banding or Ringing at Kho Dinsor which has been permitted by the Wildlife Conservation Office, Department of National Park, Wildlife and Plant Conservation (DNP) since 2011 – 2015. The data was collected from approximate 200 raptors for examples; Japanese Sparrowhawk (*Accipiter gularis*), Chinese Sparrowhawk (*Accipiter soloensis*), Shikra (*Accipiter badius*) and Black Baza (*Aviceda leuphotes*). Hopefully in 2016, we wrote proposal to looking for supporting the satellite tracking of raptors for 10 units.

Prevention and protection,

More and more difficult from social network especially Facebook and Line application. They are convenience and easy for raptor buyers to access wildlife trading which are increasing yearly. The black market for raptors was watched and tracked by Natural Resources and Environmental Crime Suppression Division. As the officer to arrest raptor hunters. At this point, Thailand has not allowing anyone keep native raptors as pets by law. As above activities in Thailand is not the efficient drive to conserve raptors but the less awareness of people to conserve the natural resources and wildlife. Moreover the expansion of the urban has been effect to the raptor habitat. Therefore, the driven of those three major activities are still necessary operate and also has to be done with education and contribution of public awareness in raptor conservation. Moreover, those has to pass to next generation as a future of raptors in Thailand and Asia. At least, raptors must have freedom to fly, have right to breeding and do migrating as their life belong.

Current Raptor Conservation in Indonesia

(Adam) A. Supriatna

General overview

Indonesia is mega biodiversity country and blessed with rich bird diversity. To date, there are c. 1600 species of birds recorded in the country - it is among the highest in the world; and 372 out of 1600 are endemic species. This high degree of endemism is also true for the birds of prey, with no fewer than 72 species of diurnal raptors (Supriatna 2014); 13 out of 72 are endemic species and 46 endemic subspecies.

Sadly, many of the Indonesian birds are being threatened; at least 121 species of birds in Indonesia being threatened with extinction (IUCN/ BirdLife (2011). Number of species with Critically Endangered status has drastically increased, from 4 species in 1995 to be 18 in 2010 (PHKA/ BirdLife International, IUCN 2011). Rampant habitat loss and exploitation are major causes facing birds in the country. Indonesia's lowland tropical forests, the richest in timber resources and biodiversity, are most at risk. During 2000-2005 for instance, Indonesia had lost 1.089560 ha of forests per year. They have been almost entirely cleared, i.e. Sulawesi (World Research Institute 2002).

Raptor diversity

In total, 72 diurnal raptors from Pandionidae (1 species), Accipitridae (61 species) and Falconidae (10 species) have been recorded in Indonesian, mainly consisting of both sedentary and migratory species as well as few vagrants (Supriatna, 2015).

In term of *endemism*, Indonesia is notable for high raptor endemism and it is made possible by, i.e. Oceanic islands in Wallacea that allows for allopatric speciation. Sulawesi for instance, it has 6 endemic species and 7 subspecies. Also, Moluccas and Lesser Sundas, each has 12 and 11 subspecies respectively. For the whole country, there are 13 endemic species (Table 1) and c. 68 subspecies. Given ongoing taxonomical studies on birds held lately, more splitting might be still possible in raptor for the genus *Spilornis* for instance. Recently, Gjershaugh *et al.* (2009) described subspecies *weskei* as a distinct species adding more species to the list.

Raptor migration -Totally 42 species are believed to migrate in at least part of their range (Table 2). Two of the world's principal raptor-migration flyways occur in the country: the East-Asian Continental Flyways and the East-Asian Oceanic Flyway (Bildstein 2006, Germe 2009). Data on this migration, in particularly its ecological migration, is still very

lacking either from the eastern or northern part of the archipelago. So that, not only migratory routes need to be further checked but also its ecology of migration is still less studied.

Raptor conservation

Currently 7 species are threatened by extinction; 2 Critically Endangered, 1 Endangered, and 4 Vulnerable. Five are Near Threatened (IUCN 2010, GRIN 2010). To compare with, PHKA/BirdLife International (1995) only considered 3 raptors were threatened: two species being Vulnerable (Guinea Eagle *Harpyopsis novaeguineae* and Wallaces's Hawk-Eagle *Nisaetus nanus*) and one being Endangered (Javan Hawk Eagle *Nisaetus bartelsi*). Plate 1 show a pair of Javan Hawk Eagle perching in a remaining forest in West Java. Table 3 shows significant status changes reflecting impacts of habitat loss and heavy exploitation compared to 1995.

Table 1. Endemic raptors of Indonesia

No	Endemic species	Main Island(s)
1.	Kinabalu Serpent-Eagle (<i>Spilornis kinabaluensis</i>)	Borneo (Indonesia, Malaysia and Brunei)
2.	Sulawesi Serpent-eagle (<i>Spilornis rufipectus</i>)	Sulawesi incl. Siau, Talisei, Lembeh, Selayar, Muna, Buton, Togian, Peleng and Banggai, Taliabu, Mangole and Sulabesi
3.	Sulawesi Crested Goshawk (<i>Accipiter griseiceps</i>)	Sulawesi
4.	Spot-tailed Sparrowhawk (<i>Accipiter trinotatus</i>)	Sulawesi incl. Talisei, Muna and Buton
5.	Moluccan Goshawk (<i>Accipiter henicogrammus</i>)	North Mollucas incl. Morotai, Halmahera and Bacan
6.	Sulawesi Small Sparrowhawk (<i>Accipiter nanus</i>)	Sulawesi
7.	Mollucan Sparrowhawk (<i>Accipiter erythrauchen</i>)	Mollucas incl. Morotai, Halmahera, Bacan, Obi, Buru, Ambon and Seram
8.	Vinous-breasted Sparrowhawk (<i>Accipiter rhodogaster</i>)	Sulawesi
9.	Simeulue Hawk Eagle (<i>Nisaetus vanheurni</i>)	Simeuleu northwest Sumatra
10.	Flores Hawk Eagle (<i>Nisaetus floris</i>)	Lesser Sundas
11.	Javan Hawk Eagle (<i>Nisaetus bartelsi</i>)	Java
12.	Sulawesi Hawk-Eagle (<i>Nisaetus lanceolatus</i>)	Sulawesi
13.	Moluccan Kestrel (<i>Falco moluccensis</i>)	Indonesia and East Timor



Plate 1. The Endangered and endemic Javan Hawk Eagle (*Nisaetus bartelsi*); female (left) and male (right) facing habitat loss and trade Photo by Nakajima Yasuo.

Table 2. Migratory Raptors found in Indonesia; C=complete, P=partial, I=irruptive (as explained by Kerlinger (1989); Zalles and Bildstein (2000). Conservation Status refers to IUCN (2011). List follows Sukmantoro *et al.* (2007) modified with Ferguson-Less & Christie (2005).

No	Species	Scientific Name	Migration			Status
			C	P	I	
1	Osprey	<i>Pandion haliaetus</i>	●			LC
2	Jerdon's Baza	<i>Aviceda jerdoni</i>		●		LC
3	Pacific Baza	<i>Aviceda subcristata</i>		●		LC
4	Black Baza	<i>Aviceda leuphotes</i>		●		LC
5	*Eastern Honey-buzzard	<i>Pernis orientalis</i>	●			LC
6	Black-shouldered Kite	<i>Elanus caeruleus</i>		●		LC
7	Black Kite	<i>Milvus migrans</i>		●		LC
8	Whistling Kite	<i>Haliastur sphenurus</i>		●		LC
9	Brahminy Kite	<i>Haliastur indus</i>		●		LC
10	White-bellied Fish-eagle	<i>Haliaeetus leucogaster</i>			●	LC
11	Lesser Fishing-eagle	<i>Ichthyophaga humilis</i>		●		NT
12	Grey-headed Fishing-eagle	<i>Ichthyophaga ichthyaetus</i>				NT
13	Short-toed Snake-eagle	<i>Circaetus gallicus</i>	●			LC
14	Crested Serpent-eagle	<i>Spilornis cheela</i>			●	LC
15	Western Marsh Harrier	<i>Circus aeruginosus</i>		●		LC
16	Eastern Marsh Harrier	<i>Circus spilonotus</i>		●		LC
17	Australasian Marsh Harrier	<i>Circus approximans</i>		●		LC
18	Spotted Harrier	<i>Circus assimilis</i>		●		LC
19	Pied Harrier	<i>Circus melanoleucos</i>		●		LC

The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015

20	Crested Goshawk	<i>Accipiter trivirgatus</i>		●	LC
21	Shikra	<i>Accipiter badius</i>		●	LC
22	Brown Goshawk	<i>Accipiter fasciatus</i>		●	LC
23	Japanese Sparrowhawk	<i>Accipiter gularis</i>		●	LC
24	Besra	<i>Accipiter virgatus</i>		●	LC
25	Grey-faced Buzzard-hawk	<i>Butastur indicus</i>	●		LC
26	Common Buzzard	<i>Buteo buteo</i>		●	LC
27	Indian Black Eagle	<i>Ictinaetus malayensis</i>		●	LC
28	**Greater Spotted Eagle	<i>Aquila clanga</i>	●		VU
29	Wedge-tailed Eagle	<i>Aquila audax</i>		●	LC
30	Bonelli's Eagle	<i>Hieraaetus fasciatus</i>		●	LC
31	Booted Eagle	<i>Hieraaetus pennatus</i>		●	LC
32	Little Eagle ¹²⁶	<i>Hieraaetus morphnoides</i>		●	LC
33	Rufous-bellied Hawk Eagle	<i>Hieraaetus kienerii</i>		●	LC
34	***Changeable Hawk Eagle	<i>Nisaetus cirrhatus</i>		●	LC
35	Common Kestrel	<i>Falco tinnunculus</i>		●	LC
36	Australian Kestrel	<i>Falco cenchroides</i>		●	LC
37	Northern Hobby	<i>Falco subbuteo</i>	●		LC
38	Oriental Hobby	<i>Falco severus</i>		●	LC
40	Australian Hobby	<i>Falco longipennis</i>		●	LC
41	Brown Falcon	<i>Falco berigora</i>		●	LC
42	Peregrine Falcon	<i>Falco peregrinus</i>		●	LC

* Recognized as subspecies (*Pernis ptilorhynchus orientalis*) by i.e. MacKinnon and Phillips (1993)

** Very rare, could be vagrant

*** Recognized as *Spizaetus cirrhatus* by i.e. MacKinnon and Phillips (1993)

Table 3. Threatened and Near Threatened Raptors found in Indonesia (IUCN 2011, GRIN 2011). IE= Island Endemic. (*) The species with asteriks has been threatened since 1995 and (**) the species is very rare in Indonesia or vagrant .

No	Falconiformers	Scientific Name	IE	IUCN	Major Threats
1	Lesser Fishing-eagle	<i>Ichthyophaga humilis</i>		NT	Loss of forest habitat along rivers, pesticide use
2	Grey-headed Fishing-eagle	<i>Ichthyophaga ichthyaetus</i>		NT	Loss of undisturbed wetlands and persecution.
3	Kinabalu Serpent-eagle	<i>Spilornis kinabaluensis</i>	■	VU	Habitat loss, degradation and fragmentation
4	Bawean Serpent-eagle ¹	<i>Spilornis baweanus</i>	■	CR	Illegal logging, burning, and recreational hunting
5	Sulawesi Small Sparrowhawk	<i>Accipiter namus</i>	■	NT	Forest loss in the lower-lying areas of Sulawesi
6	Doria's Hawk	<i>Megatriorchis doriae</i>		NT	Habitat loss (need further confirmation)
7	New Guinea Eagle*	<i>Harpyopsis novaeguineae</i>		VU	Logging roads also open up previously inaccessible areas to hunting
8	Greater Spotted Eagle**	<i>Aquila clanga</i>		VU	Declines in the availability of habitat and prey

¹ Bawean Serpent-eagle (*Spilornis baweanus*) is not threatened as full species by i.e. BirdLife (2011) but Global Raptor Network (see also Nijman 2006) suggested that the species should be threatened as Critically Endangered. This suggestion is followed in this report.

9	Gurney's Eagle	<i>Aquila gurneyi</i>	■	NT	Habitat loss and degradation.
10	Flores Hawk Eagle	<i>Nisaetus floris</i>	■	CR	Habitat degradation, destruction, and persecution
11	Javan Hawk Eagle*	<i>Nisaetus bartelsi</i>	■	EN	Habitat loss and trade
12	Wallace's Hawk Eagle*	<i>Nisaetus nanus</i>		VU	Habitat loss, degradation, and fragmentation as a result of large-scale commercial logging

Threats to Raptors per Region

To be easier I divide Indonesia as six biogeographic regions as shown in Figure 2 below. Threats to all raptor species in Indonesia can be grouped into habitat loss and exploitation. Table 2 below summarises threats facing raptors in Indonesia.



Figure 2. Avifauna regions of Indonesia

Table 4. Summary of threats to raptors in each region of Indonesia.

No	Region & endemism	Threats	Causes	Species involved
1	Sumatra: 4 endemic species 3 endemic subspecies	a) Habitat loss b) Illegal raptor trade and hunting	Land conversion into plantation, mining (ie. tambang batu bara, timah), and human settlement/housing development and investors with very strong capital. Weak law enforcement	All Black-winged Kite (<i>Elanus caeruleus</i>), Elang brontok (<i>Nisaetus cirrhatus</i>), Brahminy Kite (<i>Haliastur Indus</i>), White-bellied Sea

**The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015**

Eagle. (*Haliaeetus leucogaster*)

2	<u>Java and Bali:</u> 2 endemic species 4 endemic subspecies.	Illegal raptor trade	TV show using wild animal, Commercial advertisement using raptor (ie. cigarette)	Tiger and all raptor species. Raptors found were not only originally from Java but also from Sumatra, Kalimantan and Papua. Such TV show/ commercial ad has quickly stimulated people to possess Brahminy Kite as pet
3	<u>Kalimantan:</u> 1 endemic species 6 endemic subspecies	a) Habitat loss, forest degradation b) Illegal raptor trade and hunting c) Socio-economic life	Land opening and conversion Poor law enforcement ie. conflict of interest between local people and palm oil plantation	All All
4	<u>Nusa Tenggara (Lesser Sunda):</u> 1 endemic species 11 endemic subspecies	a) Habitat loss, degradation, destruction and hunting b) Hunting	Flores Hawk Eagle often catch domestic chicken	All
5	<u>Sulawesi:</u> 6 endemic species 7 endemic subspecies	a) Habitat loss, fragmentation, and degradation b) Hunting c) Pesticide use	Human population Poor law enforcement Farming	All
6	<u>Maluku:</u> 2 endemic species 12 endemic subspecies	a) Habitat loss b) Hunting		All
7	<u>Papua:</u> 4 endemic subspecies	Habitat loss	Land conversion	All

REFERENCES

- Andrew, P. 1992. *The Birds of Indonesia; A Checklist* (Peters' Sequence). Indonesian Ornithological Society. Jakarta.
- Beehler, M. B., Dewi M. Prawiradilaga, Yance de Fretes, and Neville Kemp. 2007. *A New Species of Smoky Honeyeater (Meliphagidae: Melipotes) from Western New Guinea*. The American Ornithologists' Union: *The Auk* 124(3): 1000-1009
- Bildstein, K. L. 2006. *Migrating Raptors of the World; Their Ecology and Conservation*. Cornell University Press, Ithaca, NY U.S.A.

- BirdLife International (2010). *The BirdLife checklist of the birds of the world, with conservation status and taxonomic sources. Version 3*. Downloaded from http://www.birdlife.org/datazone/species/downloads/BirdLife_Checklist_Version_3.zip [.xls zipped 1 MB] .
- BirdLife International. (2010). *IUCN Red List for birds*. Downloaded from <http://www.birdlife.org> on 19/12/2010.
- Departemen Kehutanan. 2009. *Eksekutif Data Strategis Kehutanan* (ISBN 979-606-075-2). Direktorat Jenderal Planologi Kehutanan. Jakarta
- Dickinson, E. C. (Editor). 2003. *The Howard & Moore Complete Checklist of the Birds of the World. 3rd Edition*. Christopher Helm, London.
- Ferguson-Lees, J. & Christie, D. A. 2005. *Raptors of the World: A Field Guide*. Christopher Helm. London.
- Gill, F. & Wright, M. 2006. *Birds of the World: Recommended English Name*. Christopher Helm. London.
<http://www.birdlife.org/datazone/species/search>
<http://www.iucnredlist.org/apps/redlist/details/150451/0>
<http://www.environment.gov.au/biodiversity/threatened/publications/recovery/f-andrewsi/executive.html#habcri>
<http://www.atlapedia.com/index.html>
<http://www.globalraptors.org/grin/indexAlt.asp>
- MacKinnon and Phillips. 1993. *A Field Guide to the Birds of Borneo, Sumatra, Java and Bali*. Oxford University Press, New York.
- Sukmantoro, W., M. Irham, W. Novarino, F. Hasudungan, N. Kemp & M. Muchtar. 2007. *Daftar Burung Indonesia (Checklist of Indonesian Birds) No. 2*. Indonesian Ornithologists' Union, Bogor.
- PHPA/ BirdLife International. 1995. *Burung-burung terancam punah di Indonesia*. Bogor.
- FWI/GFW. 2002. *The State of the Forest: Indonesia*. Bogor, Indonesia: Forest Watch Indonesia, and Washington DC: Global Forest Watch.
- Germi, F., George S. Young, Agus Salim, Wesley Pangimanen, and Mark Schellekens. 2009. *Over-mcean raptor migration in a monsoon regime: spring and autumn 2007 on Sangihe, North Sulawesi, Indonesia*. Forktail 25: 104-116.
- Gjershaugh, J. O., Heather R. L. Lerner, and Olah H. Diserud. 2009. *Taxonomy and distribution of the Pygmy Eagle (Aquila [Hieraaetus] weiskei)* (Accipitriformes: Accipitridae). Magnolia Press: Zootaxa 2326: 24–38

Current Raptor Conservation in Japan

INOUE TAKEHIKO

Asian Raptor Research and Conservation Network

1-25-9, Asahigaoka, Otsu, Shiga-prefecture, 520-0052. Japan

E-mail: goldeneagle@hera.eonet.ne.jp

In 2012, I have reported “the summary of the raptor conservation in Japan” at the ARRCN symposium in Korea. In this session, I introduce the following recent topics in Japan.

White-Tailed Eagle (*Haliaeetus albicilla albicilla*) and Steller's Sea Eagle (*Haliaeetus pelagicus*)

170 pairs of White-Tailed Sea Eagle has been breeding in Hokkaido and 700-900 individuals are wintering. The population of Steller's Sea Eagle is about 1400-1700 individuals in winter. The number of the individuals to be rescued is increasing. The main causes are traffic accidents, lead poisoning, and electric shock and windmill collision. The protection measures for both species are the following: rescue of wounded individuals, treatment and rehabilitation, monitoring food resource survey of wintering individuals, behavioral analysis research for preventing from windmill collision.

In addition, the carcass of the hunted Hokkaido Sika Deer (*Cervus nippon yezoensis*) is one of the main foods for eagles in winter. These deer were hunted with lead bullets and lead poisoning occurs by taking lead pieces left around the wound that bullet hit and in the carcass. Also some gun shot cases also are seen yet. Lead poisoning is confirmed in 160 individuals since 1996. Lead level of liver is usually less than 0.2ppm but in the cases of lead poisoning, 9.5-89ppm which equivalent to 47.5-445 times the normal numerical has been detected. As the countermeasures in Hokkaido, Law revision was made and the followings measures were taken by in 2004: The use of lead bullets was banned. The carcass of hunted deer is prohibited to be left in the field. The recovery boxes for the carcass were set in the hunting area.

Lead poisoning is seen among the Mountain Hawk-Eagle (*Nisaetus nipalensis orientalis*) also. Even now some individuals in lead poisoning are seen; we're concerned about that there are a few hunters using lead bullets yet and the lead contamination in the field still now.

Blakiston's Fish-Owl (*Ketupa blakistoni blakistoni*)

The Blakiston's Fish-Owl is a species that inhabit only in Hokkaido in Japan. In the 1970s, only 70 individuals inhabited because the upstream migration salmon as the main prey are all captured at the estuaries and the possible large trees for nest have been decreased. The

national conservation projects have started in 1984; such as the installation of artificial nest boxes, feeding fish, breeding in the zoo and traffic accident prevention measures have been carried out. Up to the present, live fish of 100-800kg per year have been fed in winter per one place on the 10 locations. 171 Nest box have been installed, the breeding has been confirmed in 46 boxes. In 2014, breeding success was confirmed in 18 boxes and in two natural wood-nests. Consequently 140 individuals have been confirmed in 2016. And because the half of individuals inhabit in the Shiretoko area and the habitat are divided, reintroduction have been carried out. Owls have been reintroduced to the eight places and individuals have settled themselves into the four places.

Grey-Faced Buzzard (*Butastur indicus*)

Grey-Faced Buzzard breeds in Japan and migrates to southern Asia countries in autumn. The species is considered to be susceptible to the situation of the arable land as the main hunting place. Comparing the survey result of the 1970s with the 1997 - 2002, the population has been dramatically decreased to nearly half (decrease from 40,000 to 20,000 in migration count). The main factor is the habitat loss due to the farmland abandonment and the land change. This hawk has been ranked in VU of the endangered in 2006 from the outside of the Red List. Moreover, in order to reduce the development impact in the habitat, the Ministry of the Environment has formulated the guideline to precede the conservation of the Grey-Faced Buzzard in 2013. In this guideline, Effective research and analysis methods are shown. And specific conservation measures are exemplified: two breeding seasons survey is needed to figure out of the habitat use of the pair, the project plan should be changed within 500 m from the nest as much as possible, the construction work within 200 m from the nest must not be carried out in the breeding season. In addition, the conservation policy in the future is described: promoting the basic research, preservation of farm land as the habitat and training experts for the conservation project.

Northern Goshawk (*Accipiter gentilis fujiiyamae*)

The rank of the Northern Goshawk in the Red List has been changed to NU in 2006 because the number of individuals has recovered sufficiently and the distribution has enlarged. As a result, the Goshawk has been selected as semi-endangered species not endangered. In the survey in 2008, about 6,000 individuals have inhabited in the Kanto region only. As a result, the Ministry of the Environment has been considering excluding the goshawk from the list of "domestic rare wild plant and animal species," and the legal revision will be carried out in this year. After excluded from the list, the protection level in importing, exporting and capturing will change but the Ministry of the Environment will maintain the

equivalent protection level with the aid of the other laws from the standpoint of conservation.

Golden Eagle (*Aquila chrysaetos japonica*)

Approximately 200 pairs inhabit Japan, but the 77 sites that the pair has disappeared from have been confirmed. The population is currently estimated to be about 500 individuals. In recent years, breeding success rate has decreased sharply to around 20%. And some cases of immature birds forming a breeding pair have been reported. Rapid decrease in the number of individuals in the near future is concerned. The main causes are considered to be the decrease of Japanese Hare (*Lepus brachyurus*) and Copper Pheasant (*Syrnaticus soemmerringii*) as major prey and the habitat loss due to the environmental change.

The Ministry of the Environment has formulated the guideline in 1996 in order to reduce the impact on Golden Eagle associated with the land development such as the dam construction. This guideline has brought improvement of the conservation level in the measures to a considerable extent.

And the guideline has been revised in 2012. It includes the new findings about the ecology of Golden Eagle, Mountain Hawk-Eagle and Goshawk, the improved research and the analyze methods for considering conservation measures taking into account the differences of natural conditions by region.

In addition, the Ministry of the Environment has conducted work to make the master plan of protection and proliferation for Golden Eagle since 2013. The exploratory committee are considering now the following proposed: breeding monitoring, artificial feeding, ensuring prey animals through improving the foraging environments by changing the method of the artificial forest logging and the releasing individuals by artificial breeding to the wild.

Current Raptor Conservation in Malaysia

Lim Kim Chye

Raptor Study Group

Bird Conservation Council, Malaysian Nature Society (MNS)

1. RAPTOR MIGRATION MONITORING AND FESTIVALS Tanjung Tuan Raptor Count and Raptor Watch 2015

Raptor Study Group (RSG) of Malaysian Nature Society (MNS) continued with its long-term monitoring of raptor migration at Tanjung Tuan (N 2° 24.4', E 101° 55.3') Malacca, Peninsular Malaysia. From 14 February to 29 March 2015, volunteers recorded a total of 48,548 raptors comprising 10 species, including Eurasian Hobby, a new record for the site. RSG also initiated the use of photography to determine gender and age groups in Oriental Honey-buzzards making landfall at the site. During the same period, MNS also organized Raptor Watch 2015 on 14 March, this being the 16th year that this popular public event has been held.

Report: Lim Kim Chye



Waiting for raptors to arrive at lighthouse An Oriental Honey-buzzard flying in from the sea

Raptor survey at Rupert island, south-east Sumatra, Indonesia

Rupert island is the staging point for raptors leaving Sumatra to cross the Straits of Malacca to Tanjung Tuan in Peninsular Malaysia. Rupert island is thus of great interest to RSG which had previously carried out two migration surveys there. As a follow-up to these surveys

and to look at the current situation there, RSG visited Rupert from 10 – 12 March 2015. Together with a local university student, we counted a total of 4,501 raptors, nearly all Oriental Honey-buzzards, flying out to sea at Teluk Rhu (N 2° 6.98', E 101° 40.22'). Teluk Rhu is now more developed but generally, conditions in the interior still remain relatively undisturbed. A villager was seen with a captive Oriental Honey-buzzard, leading us to worry that perhaps the locals are trapping the raptors. Efforts are needed to raise local community awareness about the need to protect the migratory raptors and the potential to promote raptor migration as an income-generating ecotourism product in Rupert island.

Report: Lim Kim Chye



Oriental Honey-buzzards at Rupert Island, Captive Oriental Honey-buzzard at Teluk Rhu

Taiping Raptor Festival 2014

Taiping (N 4° 52.24', E 100° 44.70') in north Peninsular Malaysia, is an important watch site for autumn migration, with some 60,000 raptors passing over the town every season. To raise public awareness about raptor migration, MNS Perak Branch has been organising the Taiping Raptor Festival (TRF) since 2010. TRF 2014 on 1 & 2 November held at Scott's Hill, Taiping had more than 400 visitors attending and 6,276 raptors of 9 species recorded over the week-end. The next TRF will be held on 7 & 8 November 2015.

Report: Lim Kim Chye



Explaining raptor migration to public
Taiping



Watching raptor migration at Scott's Hill,

Bedong raptor count 2013

Bedong (N 5° 44.37', E 100° 32.97') is a newly-discovered watch site in Kedah, north-west Peninsular Malaysia, with seasonal counts comparable to Tanjung Tuan and Taiping. In 2013, MNS Penang Branch organized the Bedong raptor count from 25 September to 5 November and recorded a total of 55,915 raptors. Thirteen raptor species were identified, making Bedong the site with the highest diversity of migratory raptors in Malaysia to date. The raptor migration workshop that took place during the same period on 27 October was very successful and included a talk on migration, discussions and field observation. It was well-attended, with 45 participants from government agencies, MNS members as well as the public.

Report: Tan Choo Eng



Monitoring raptor migration at Bedong, Kedah Workshop on raptor migration

2. FIELD STUDIES ON RAPTORS

Harrier study

Harriers *Circus spp* are winter visitors to the paddylands of Peninsular Malaysia and play an important role in controlling the population of the rodents that damage rice crops. In December 2011, RSG carried out a study on harriers at a roost in Ulu Dedap (N 4° 4.789', E 100° 55.40'), Perak and established that the roost hosted 150-180 harriers regularly. Future RSG plans on harrier study include investigating harrier hunting range, diet and prey intake. In order to keep up members' interest on harriers, RSG Chair Lim Aun Tiah organised a talk "Field Identification of Harriers" on 6 March 2015. This was followed by a trip to Ulu Dedap from 20 – 22 March to look for harriers. Sixteen participants joined the trip but unfortunately, only a few harriers were encountered and none were seen at the roost on 21 March. It was thought that the harriers had moved to another site after the observers had left the previous evening. The lack of ground cover, with 80% of the paddy fields already harvested, and the late season could be why harriers were scarce. However, the trip was not a total loss as two points were established. The first was that harriers have continued to return and use Ulu Dedap paddylands as their wintering site. This is proven by the report from MNS members that about 170 harriers were seen in mid February. The second point is that when harvesting starts and the fields are ploughed in preparation for the next planting session, the harriers would leave for areas with sufficient vegetation cover that offer shelter and protection. Report: Lim Aun Tiah



Field trip to look for harriers

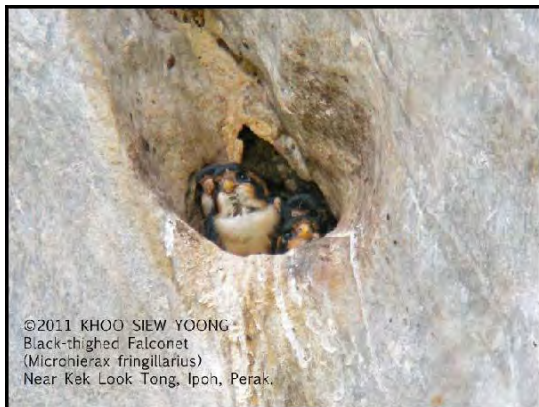


Eastern Marsh Harrier in harvested paddy fields

Black-thighed Falconet (*Microhierax fringillarius*)

Since 2008, Connie Khoo S. Y. has been studying the Black-thighed Falconets nesting in the cavities of karst outcrops in Ipoh (N 4° 33.34', E 101° 7.35'), Perak, Peninsular Malaysia. Her observations have revealed interesting and also new information on the breeding ecology and hunting behavior of these small raptors. Breeding has been observed in all months from January to June. Two and occasionally 4 chicks hatch after an incubation period lasting 3 to 3.5 weeks and chicks fledge after 2.5 to 3 weeks. Besides preying on small passerines, the adults also rob nestlings from the nests of other birds. The adults have also been observed flying after and capturing in flight the bats and swifts that live in the caves of the study area. On several occasions, “helpers” were seen coming in with prey to help in the feeding of the brood.

Report: Connie Khoo S Y (connieksw@hotmail.com)

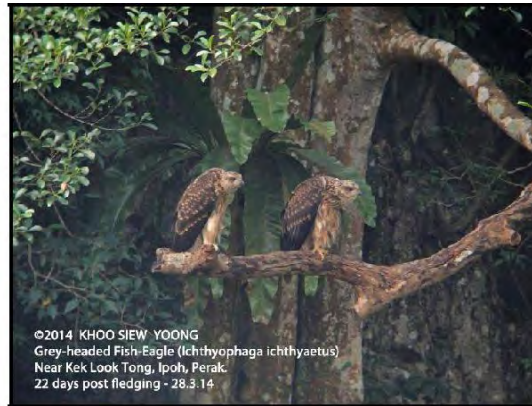
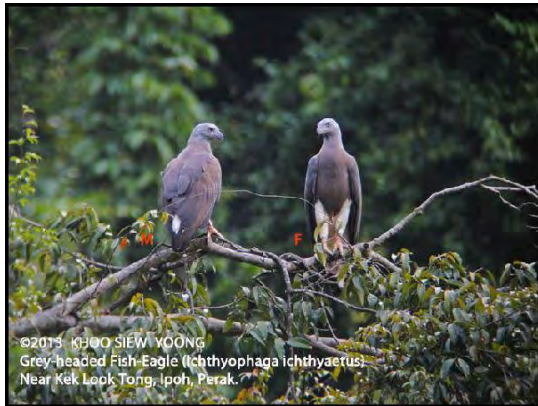


Black-thighed Falconet cavity nest with 4 chicks Black-thighed Falconet with nestling prey

Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*

The nesting of a pair of Grey-headed Fish-eagles have been observed by Connie Khoo over 6 seasons since 2009. The study site is in an extensive karst formation in Ipoh (4° 33.34', E 101° 7.35'), Perak, with steep, forested limestone outcrops enclosing former mining pools, some of which are used for aquaculture. The nest site was in limestone hill forest overlooking a large lake. Nest-building was noted to start in June/July and took about 8 weeks to complete. Egg-laying is thought to occur in early

September. The incubating period was about 24 days and the single chick that hatched left the nest after about 75 days. The usual clutch is one egg but in 2014 and 2015, the adults successfully raised 2 chicks. The juvenile stayed with the parents for about 108 days before being driven off by the male. The male was very aggressive during the nesting period and was observed attacking Purple Heron *Ardea purpurea* and White-bellied Sea-eagle *Haliaeetus leucogaster* that were in the vicinity of the nest. Fish was the main diet but the adult was also seen bringing back a snake and a squirrel to the nest. Report: Connie Khoo S Y (connieksw@hotmail.com)



The pair of male (left) & female (right) GHFEs The two juvenile GHFEs waiting for food

Malaysian Owl Research

The majority of the owl species in Malaysia is less studied. In the last three decades, only Barn Owl *Tyto alba javanica* has been commonly studied with respect to secondary poisoning, feeding habit, ranging behaviour and breeding ecology. Recently, the study of another common species, i.e. Sunda Scops Owl *Otus lempiji* has been carried out involving radio-telemetry and call playback methods. The practicality of both methods has been evidenced in lowland forests. Furthermore, recording of owl calls was made to assess the presence of vocal individuality in the Malaysian owls. Variations in their vocalizations were examined so as to differentiate individual birds based on their calls, which will facilitate the survey of owls without direct handling or capture.

Report: Dr Puan Chong Leong, Faculty of Forestry, Universiti Putra Malaysia, Selangor, Malaysia.

Some recently published papers on Malaysian Raptors

- Khaleghizadeh, A. & Anuar, S. 2014. *Nest tree selection by the Brahminy Kite (Haliastur indus) in a Rhizophora mangrove forest*. Tropical Zoology April 2014, Vol. 27 Issue: 2 p40-52, 13p

- Khaleghizadeh, A., Santangeli, A. & Anuar, S. 2014. *Clear-cutting decreases nest occupancy of Brahminy Kite (Haliastur indus) in a managed mangrove forest of Southeast Asia*. Ocean and Coastal Management June 2014 93:60-66.

- Khaleghizadeh, A. & Anuar, S. 2014. *Breeding landscape and nest spacing of two coastal raptors (Accipitriformes): White-bellied Sea Eagle (Haliaeetus leucogaster) and Brahminy Kite (Haliastur indus) in Peninsular Malaysia*. Italian Journal of Zoology. 2014, 81 3, p431-p439, 9p.

- Lim, K. C., Lim, A. T. & Khoo, S. S. 2014. *Harrier species and counts at a paddyland roost In Seberang Perak, Peninsular Malaysia*. Journal of Wildlife and Parks (2014) 28: 93-105.

- Tan, C. E., Lim, K. C. & Lim, K. H. 2014. *Bedong, Kedah – A major raptor migration site in Peninsular Malaysia*. Journal of Wildlife and Parks (2014) 28: 51- 62.

- Puan, C. L., Yeap C. A., Lim, K. C., Lim, A.T., Khoo, S. S & Cheung, N. 2014. *Northbound migration count of raptors at Tanjung Tuan, Peninsular Malaysia: Magnitude, Timing, and Flight Behavior*. Journal of Raptor Research, 48(2):162-172. 2014.

- Cik Mohd. Rizuan, Z. A., Noor Hisham, H. & Hafidzi, M.N. 2014. *Observations of the diet of Black-winged Kite (Elanus caeruleus) in the oil-palm plantations of the Sahabat area, Sabah, Borneo, Malaysia*. BirdingASIA 22 (2014):55-57.

Current Raptor Conservation in Nepal

Tulsi Subedi and Hemanta Dhakal

Introduction

Nepal is very rich in bird diversity. Among the 872 species of bird recorded in Nepal raptor occupies 81 species (9.29% of total species). Among the raptors 60 species are diurnally active predatory birds and 21 species are night active owls. Diurnal raptor species consists 18 species of eagle, 9 species of vulture, 11 species of falcon, 5 species of harrier, 5 species of accipiter/sparrowhawk, 4 species of buzzard/buteo, 4 species of kite, 2 species of Baza, Osprey and Oriental Honey buzzard. The high diversity of the raptors is due to the rugged topography, diverse vegetation, great altitudinal variation (76 m to 8848 m) and to the zoogeography of the country. According to Bird Life International five species of vulture (4 critically endangered and one endangered), four species of eagle (all vulnerable) and one species of falcon (endangered) found in Nepal are listed as globally threatened. Similarly two species of eagle, three species of vulture, two species of falcon and one species of harrier are listed as a near threatened species. Recent reports indicate 41% of raptors in Nepal are nationally threatened (Baral et al 2012). The impact of the veterinary drug diclofenac on vulture populations is well documented. Since a ban of diclofenac in 2006 and replacement with meloxicam along with several other conservation activities the decline rate in vulture numbers has reduced and now turning towards the stabilization.

Vulture Conservation Activities

After the formation of National Parks and Wildlife Conservation act in 1973, first national Park was established and the conservation activities were mostly focused on the mega mammalian fauna and their associated habitat. Although there is a long history of bird watching in Nepal, raptor conservation work has a very short history in the country. Active work on raptor conservation and research begun after dramatic population decline on the Asian vulture population observed in the Indian subcontinent that has collapsed the population of three species of Gyps vulture (White-rumped *Gyps bengalensis*, Slender-billed *Gyps tenuirostris* and Indian vulture *Gyps indicus*).

In 2000 the first nationwide survey on the vulture population and breeding was conducted with focus on lowland resident vulture species and the road transect survey (>1030 km) has been conducted that was led by a team of national and international scientists. This survey was repeated annually for few years that

showed marked decline on the population of white-rumped (annual decline >14%) and slender-billed vulture (Chaudhary et al. 2012). The complete loss of breeding white-rumped vulture was observed in Koshi area in 2004. For the conservation of remaining vulture population aggressive conservation work has been started since 2006. In the initial phase the conservation work came up with the package of education, advocacy and research/monitoring. The first measurable outcome of the conservation was the success towards banning on veterinary use, production, distribution and import of diclofenac that was effective from 06 June 2006. At the same time production and use of safe alternative meloxicam has been started. The remaining stock of the diclofenac in the market has been started to swap with the meloxicam. Birdlife Nepal has led on the conservation activity in collaboration with different local, national and International organizations. Together with the diclofenac monitoring and swapping activities; population /breeding monitoring program has been also started from 2006.

It was a big challenge to replace all the stock of existing diclofenac from the market very quickly, therefore with the aim to provide diclofenac free food for the vulture first community managed vulture restaurant has been established in Nawalparasi district inside the buffer zone area of Chitwan National Park. The several other (total 6) vulture restaurants has been established thereafter mainly in the western part of the country. After 5 years back in 2009 the breeding population of white-rumped vulture has reappeared in Koshi. After a few years of monitoring and conservation program 7th vulture restaurant has been established in the eastern Nepal where Himalayan Nature (NGO) took a led to operate community managed vulture restaurant.

In 2008 vulture conservation and breeding centre has been established in Chitwan National Park. More than 60 fledglings of White-rumped vultures captured from various parts of the country has been placed in the centre. The breeding center is doing well and in 2014 first egg was hatched.

Along with the vulture restaurant and the breeding centre several districts (total of 46 districts out of 75) covering 101160 sq. km. has been declared as diclofenac free districts in presence of local government authorities/stakeholders. Beside the NGOs there are some independent researchers also doing some conservation and research activities on different aspects of vulture species. This includes the educational activities, poster and leaflet production and distribution, breeding and

population survey of Himalayan vulture, Egyptian vulture and Red-headed vulture in their respective ranges.

Raptor migration monitoring and Conservation

There is a long history of opportunistic study/count on raptor migration in Nepal including in 1970s, by Robert Fleming Jr. and others, for example: 2 Nov 1976 - Fleming counted 305 Steppe Eagles just over one hour passing close to Dhampus ridge (probably the present Thoolakharka raptor migration watch site). He also saw a few Greater Spotted *Aquila clanga* and Imperial Eagles *A. heliaca*. In 1984 - 7 Oct - 3 Nov, Bijlsma made observations, while trekking, from two locations: along the Jomsom trek near Kande (about 1.5 km below from Thooklakharka) and Steppe Eagle migration peaked in late October (1332 raptors were counted including 1,169 Steppe Eagles), in 1985 – (20 Oct - 7 Nov) DeRoder, counted 7,852 Steppe Eagles above the small town of Kande, with maximum of 1,397 eagles on 1 November, in 1999 - (late Oct to early Nov), DeCandido counted 821 Steppe Eagles and 8 other migrating raptor species in his nine days of observation and in 2003 – (24 Oct - 5 Dec), Surya Gurung counted 6,503 migrating Steppe Eagles with a highest count of 571 raptors on 23 November.

Approximately 22 species of raptors are winter visitor to Nepal and some individuals of those species overwinter in the lowland area of the country. Our research on raptor migration from Thoolakharka raptor migration watch site indicates 37 species of raptors migrates through the foothills of Himalayas (Subedi et. al. 2013, 2014). Few raptor species including large number of Himalayan vulture *Gyps himalayensis* are altitudinal migrants here. Mainly juveniles and sub-adults migrate from high altitude breeding ground to the lowland for wintering that returns in the breeding ground till late spring to early summer.

After a short reconnaissance survey in November 2011, Tulsi subedi, Robert DeCandido and others are the one who started first full season raptor migration count starting from 15 September through early December. The migration count is continuous till now and we identified total of 37 species during migration and counted approximately 15000 individual species of raptors in each season. In the same program raptor conservation camps were conducted in 40 schools along the migration site (Lumle, Thoolakharka, Dhampus and north of Pokhara) and in the wintering sites at the lowland (Lumbini and Kapilvastu) area and around Pokhara valley.

Owl conservation activities

Owl conservation activities has been initiated in leadership of Raju Acharya. His team did study on ethno-owl relationship on 2008/09 inside Annapurna Conservation Area of Nepal. In his study he found there is a huge pressure on owl population due to trapping and trade. Similarly Tulsi Subedi in 2012 did study on bird hunting and trade with main focus on raptors. Both of the studies found there are some middleman who use the local peoples to capture owls and other birds to transport them to some of the international hubs. For the conservation of owl's population some non-for-profit organizations are now doing several awareness and educational camps to protect owl population. In each year a NGO named Friends of Nature (FON) organizes owl festivals to raise awareness on the public to protect owl's population on their potential area.

Challenges in Raptor conservation:

People and traders are often found mongering rumors without any scientific and medical proofs to increase the market price of the products made from raptors and owls. In Newakot, Itahari, Manang, Okhaldhunga and Khotang districts of Nepal people pay high price for Eurasian Eagle Owl (Dhakal and Subedi 2013). It is believed that if turmeric powder is put on the upper part of their wings they turn black, and if a packet of rice is kept under the wings it gets cooked, and if torch is directed into its eyes, they burst. Similar findings are mentioned in the study report by Acharya and Ghimire 2009. Some of the community fully depends on hunting and trafficking of raptors and owls for living. Others are found rearing chicks of raptors and owls and selling them to middlemen after they are fully grown. In some villages people also used the technique of taxidermy locally, to use skins of raptors and owls to adorn the wall of the house and for selling it in the market as they fetch good prices. Chicks, products of body parts of owls and raptors are collected locally. They are transported to the nearest city or district headquarters from where they are traded to bigger cities like Pokhara, Kathmandu, Itahari and Dhangadi. Chicks of raptors and owls after reaching the city are purchased by people for use as pets at a high price. They are subsequently traded to India, Bangladesh, China and other Middle East countries. This is also mentioned in the report of Acharya and Ghimire 2009.

The Conservation work is itself a challenging work in the developing country like Nepal. Conservation here is mainly focused on the large wild animals like tiger, leopard, rhino, elephant etc. very few people are only aware about the term wildlife conservation. Since few years back there are many programs running in Vulture and Owl Conservation, but still conservation efforts for other species of raptors are lacking. Today we lack strict law and its implementation, financial support, public awareness, raptor biologist, raptor rehabilitation centers for the conservation of raptors in Nepal

Current Raptor Conservation in Philippines
-: Identification of Raptor Migration Routes in the Philippines :-

Alex M. Tiongco, Ma. Teresa A. Cervero
alextingco@gmail.com; mtacervero@gmail.com

The Philippines has on record 31 species of raptors

Six (6) species are endemic: (1) Philippine Eagle *Pithecophaga jefferyi*; (2) Philippine Honey-buzzard *Pernis steerei*; (3) Philippine Serpent Eagle *Spilornis holospilus*; (4) Luzon Hawk-eagle *Nisaetus philippensis*; (5) Pinskiers Hawk-eagle *Nisaetus pinskeri*; (6) Philippine Falconet *Microhierax erythrogenys*

Eleven (11) species are sedentary: (1) Jerdon's Baza *Aviceda jerdoni*; (2) Black-shouldered Kite *Elanus axillaris*; (3) Brahminy Kite *Haliastur indus*; (4) White-bellied Sea-eagle *Haliaeetus leucogaster*; (5) Grey-headed Fish-eagle *Ichthyophaga ichthyaetus*; (6) Besra *Accipiter virgatus*; (7) Crested Goshawk *Accipiter trivirgatus*; (8) Crested Serpent-eagle *Spilornis cheela*; (9) Rufous-bellied Hawk-eagle *Lophotriorchis kienerii*; (10) Changeable Hawk-eagle *Nisaetus cirrhatus*; (11) Oriental Hobby *Falco severus*

Nine (9) species are purely migratory: (1) Black Kite *Milvus migrans*; (2) Eastern Marsh Harrier *Circus spilonotus*; (3) Japanese Sparrowhawk *Accipiter gularis*; (4) Chinese Sparrowhawk *Accipiter soloensis*; (5) Grey-faced Buzzard *Buteo indicus*; (6) Eurasian Kestrel *Falco tinnunculus*; (7) Merlin *Falco columbarius*; (8) Eurasian Hobby *Falco subbuteo*; (9) Amur Falcon *Falco amurensis*

Five (5) species are migrants with sedentary subspecies: (1) Osprey *Pandion haliaetus*; (2) Oriental Honey Buzzard *Pernis ptilorhyncus*; (3) Pied harrier *Circus melanoleucos*; (4) Common Buzzard *Buteo buteo*; (5) Peregrine Falcon *Falco peregrinus*

Except for the Philippine Eagle which is studied extensively by Dennis Salvador and the Philippine Eagle Foundation (PEF), there had been no systematic studies of our raptors consequently our data bank on these lovely creatures is almost empty.

This paper summarizes the most recent findings on the routes of the migratory species.

The Philippines is located along the East Asian Oceanic Flyway.

For Autumn the Philippines serves as a funnel receiving migrating raptors from Mainland Asia, Taiwan and Japan and distributes them further south to North Borneo and Indonesia. For spring the funnel is reversed.

Raptor Migration involves vast sea crossings

Migration is greatly influenced by the monsoon winds:- Northeast monsoon for spring and the Southwest monsoon for autumn. But typhoons and low pressure areas which abound during the migration seasons make the winds very whimsical. Every year, thousands of raptors come to winter in the Philippines or simply pass through, but their species, numbers, routes and migration ecology have not been systematically studied.

Starting the year 2012 with the encouragement of ARRCN, and our neighbouring countries, Malaysia, Thailand, Taiwan and Indonesia, a small group of hobbyists from the WBCP have taken up the challenge for structured studies in Raptor Migration.

A series of field work over the last 3 years have been undertaken to determine:

- 1) the exit, entry and choke points these birds use in the Philippines,
- 2) the routes which raptors take in their journey over the various islands,
- 3) the wintering and roosting places.

The aim is to raise awareness of the importance of raptors among the residents living along these areas in order encourage them to preserve the habitats and protect the raptors.

Studies have been conducted at the following sites:-

Sanchez Mira, Cagayan Valley (2013 Spring)

Claveria, Cagayan Valley (2013 Spring)

Sta.Praxedes, Cagayan Valley (2013 Spring)

Pagudpud, Ilocos Norte (2013, 2015 Spring)

Tanay, Rizal (2012, 2013, 2014, 2015 Spring, Autumn)

Malinsuno Island, Palawan (2013 Autumn)

Digos, Davao del Sur (2013 Autumn)

Cape San Agustin, Davao Oriental, (2013 Autumn)

Sta Ana, Cagayan Valley (2014 Spring)

Batulaki and Cross, Sarangani (Autumn 2014)

Whilst all the above areas look promising indeed, more time for study is required.

However, 4 of the above areas have already provided great results:-

Southern Luzon: Tanay, Rizal

Spring and Autumn Migration

Tanay, Rizal located at the foot of the southern Sierra Madre, 63 kilometers southeast of Manila. It is adjacent to the Santa Maria Watershed which is a protected forest area. From the results that we have so far, we suspect that this could be a major choke point for both spring and autumn migratory seasons.

Northern Luzon: Cagayan Valley and Ilocos Regions (Sanchez Mira, Claveria and Pagudpud) Spring Migration

Sanchez Mira, Cagayan Valley has been established to be a traditional roosting area for Spring Migration of the Grey-faced Buzzard.

Claveria and Sta. Praxedes, Cagayan Valley has been established to be the Spring Migration Flyway for the Grey-faced Buzzards, Chinese Sparrowhaks and other species of migratory raptors.

Pagudpud, Ilocos Norte has been established to be a major Spring Migration land's end. Eight species of migratory raptors were observed leaving the land mass from here.

Southern Mindanao

Cape San Agustin, Davao Oriental – Autumn Migration

Cape San Agustin is located at the southern most tip of the Island of Mindanao located about 100 Km south of Mt. Hamiguitan Range Wildlife Sanctuary which was this year declared to be a Unesco World Heritage site. The watch area is an old coconut plantation and essentially isolated from people.

This has been established to be the southeastern land's end for Autumn Migration for raptors, mainly Chinese Sparrowhawks on their journey southwards to Indonesia. A curious twist in their migration route was also discovered here. It was observed that after the raptors leave the Cape, they turned west and southwestward seemingly across the Davao Gulf towards Davao del Sur and Sarangani Provinces.

Barangay Cross, Glan, Sarangani – Autumn Migration

Sarangani province is located on the southernmost tip of the Davao Gulf with a coastline around Sarangani Bay and the Celebes Sea. South of the peninsula is the high island of Balut and the flat island of Sarangani.

This is another important autumn migration flyway for raptors mainly Chinese Sparrowhawks on their Journey towards Indonesia. It was observed that raptors do not reach the southernmost land's end of the Sarangani peninsula.

From Barangay Cross about 10 Kilometers from the lands end, Raptors veer southeastward towards Sarangani Island.

Conclusion:

The above studies are still at the initial exploration stages. More and detailed observations and monitoring of these places mentioned and other places in the Philippines need to be made to confirm and accumulate data so as to build a more accurate picture of species, number and habitat of these charismatic species.

Although we realise the value of the contributions of citizen scientists like the members of the Wild Bird Club of the Philippines, the immensity of the information that we have to obtain and process highlights our inadequacy. We need the involvement of the scientists and the academe.

In our brief study of the migration routes, we have found that the greatest threat to raptors in the Philippines is environmental degradation – be they small subsistence slash and burn farmers or property developers, or simply just natural disasters which is quite common in the Philippines.

Traditional hunting is another problem, although not quite as large and looming as environmental degradation.

The solution we can think of at the moment is education. The ARRCN and the WBCP - Raptor Group have been conducting mini seminars and talks to interested groups and universities in the Philippines.

In cooperation with the ARRCN and the WBCP - Raptor Group, the Cagayan State University will be doing full season monitoring of the roosting sites at Sanchez Mira in spring 2016. This watch will be led by an influential hunter whom we managed to convert to our side in the course of our several visits there. We were promised that other ex-hunters will be joining them.

The Northwestern University of Ilocos Norte and the LGU's of Adams and Pagudpud will be conducting full season count at Pagudpud which has proven to be a jump off point to Taiwan and the Palaearctic region.

We shall be talking to universities and townships and communities in the south as well and hope that we will receive the same cooperation as in the north.

Current Raptor Conservation of SINGAPORE

TAN Gim Cheong,
Nature Society (Singapore)

Raptor Migration in Singapore: a synopsis of the last 5 years (2010/2011 to 2014/2015)

Over the last five years, records from field observations during the autumn-to-spring migration periods and the single day island-wide raptor counts in November were compiled. Two initiatives were started to make the data more complete. The first was the extension of data compilation into the summer months in an attempt to monitor for signs of over-summering. The second was the first full season raptor count conducted in autumn 2014.

The Oriental Honey Buzzard (OHB) *Pernis ptilorhyncus* had been recorded in small numbers during the summer months throughout the last five years, supporting the suspicion of over-summering by juveniles. One of the objectives of the full season count in autumn 2014 was to look for signs of the Chinese Sparrowhawks *Accipiter soloensis* recorded in the thousands on passage in Peninsular Malaysia, however, very few were observed. In fact, the largest count was 2 flocks of 10 birds each in October 2013. Notably, the number of Japanese Sparrowhawks *Accipiter gularis* recorded almost match the autumn counts in Peninsular Malaysia.

Of the 25 migrant raptors in the Singapore checklist, 20 species were recorded and the OHB was the most abundant. Notably, a single-day record of 745 birds was made in November 2013 (compared to 374 previously in November 2009). In terms of monthly numbers, a high of 3235 birds were recorded in November 2014 (compared to 1587 in November 2009). For the Besra *Accipiter virgatus*, which is very rare in Singapore, there is a positive record which set the early arrival date forwards by 37 days (now 20 October). For the first time, the Brown Hawk Owl *Ninox scutulata* (very likely *japonica* form) was recorded on migration during daylight hours in November 2014. The only record of the Himalayan Vulture *Gyps himalayensis*, a rare vagrant was in February 2015. Notably, a rare pale morph *fulvescens* Greater Spotted Eagle *Aquila clanga* was photographed on 8 November 2012. There is now evidence of the Common Kestrel *Falco tinnunculus*, a rare passage migrant, over-wintering in the last 2 years.

First record of *burmanicus* form Crested Serpent Eagle in Singapore

The Crested Serpent Eagle *Spilornis cheela*, long held as rare resident, actually included the *burmanicus* form, of which a second-year individual 'wintered' in

Singapore for about three months from September to December 2014. This is probably the first time *burmanicus* had been recorded this far south of its range.

Potential changes in the abundance status of migrant raptors

There are now regular records of previously rare species and potential 'upgrades' in status include the Jerdon's Baza *Aviceda jerdoni* and Booted Eagle *Hieraaetus pennatus* from Rare to Uncommon. For the Jerdon's Baza, a relatively recent addition to the Singapore checklist, a high count of 11 birds was recorded in January 2012. The data for the Jerdon's Baza also set the arrival date forwards by 10 days (now 20 November) and extended the departure date by 19 days (now 13 March). The Booted Eagle's arrival date has also been set forwards by 16 days (now 18 October) and the departure date extended by 15 days (now 23 March). Potential 'downgrades' in status include the Black Kite *Milvus migrans* and Grey-faced Buzzard *Butastur indicus* from Uncommon to Rare, as both species are now harder to see in Singapore.

Interspecies interactions - mobbing of large migrant raptors

For inter-species interactions, the Greater Spotted Eagle was observed to be mobbed by resident raptors and crows (Black-winged Kite *Elanus caeruleus*, Brahminy Kite *Haliastur indicus*, White-bellied Sea Eagle *Haliaeetus leucogaster*) and the Large-billed Crow *Corvus macrorhynchos*. Additionally, a Greater Spotted Eagle on autumn migration was mobbed by a Booted Eagle holding winter territory and retreated back north into Malaysia. The Short-toed Snake Eagle *Circaetus gallicus* had also been observed to be mobbed by the Brahminy Kite.

Research on resident raptors

The Nature Society (Singapore) Bird Group [NSSBG] initiated the Small Grants Scheme in 2009 with the objective of supporting ecological research of birds in Singapore, particularly those that can provide tangible outcomes for bird conservation. The value of the grant is SGD1000 and has been used to fund a study on *The Status and Distribution of the Changeable Hawk-eagle in Singapore*. Another recent raptor study was *Eating Aliens: Diet of the Grey-headed Fish Eagle in Singapore*, which revealed that the abundance of alien fish species in Singapore's water bodies was benefiting the GHFE such that its population is increasing. The population is also expanding into other areas of Singapore and there is potential for the status of the GHFE to be revised from 'Critically Endangered' to 'Nationally Vulnerable'.

Raptor talks / workshops

Over the last several years, talks were conducted to promote interest in raptors. The topics included raptor migration, basics of identification and activities of the ARRCN. More in-depth workshops were also conducted to foster better understanding of raptor conservation and ecology in Singapore and equip

birdwatchers with raptor id skills in preparation of raptor counts. In 2010 and 2011, the NSSBG conducted the Raptor Biology and Conservation Workshop where topics included identification, breeding biology, migration, foraging ecology, conservation, basic research techniques. Participants were issued a booklet titled 'An introduction to the Raptors of Southeast Asia - Status, Identification, Biology and Conservation'. In 2012, the workshop focused on raptor identification.

Publications

The *Singapore Red Data Book* is published by the Nature Society (Singapore) and the status of threatened raptors highlighted with recommendations made for the conservation of each species. A full colour article on raptor migration in Singapore during the 2010/2011 season was published in the society's magazine *Nature Watch* to create more awareness amongst members about migrating raptors. The society's bi-monthly *NatureNews* also includes articles on raptors every now and then. Monthly electronic reports of raptors recorded during the migration season and quarterly reports during the summer months also serve to maintain an ongoing interest in raptors.

Bird Census

The NSSBG conducts a number of bird censuses each year where data on all birds, including raptors, are collected. Its Annual Bird Census is conducted in March (since 1986), Mid-year Bird Census in June (since 2000) and Fall Migration Bird Census in September (since 2004). The data showed an increasing trend for the numbers of Grey-headed Fish Eagle (very rare resident) and Changeable Hawk-eagle (rare resident). These data further support the trends observed through the monthly compilation of data on raptors.

Free 'Birds of Singapore' app for smartphones to promote birdwatching and build a support base for conservation

The 'Birds of Singapore' app was the result of the NSSBG's vision to have an electronic guide with photographs of *all* the birds in the Singapore checklist, including raptors. Bird calls are also available for a number of species. The app was made free in order to reach as many people as possible and is the NSSBG's contribution to Singapore to promote birdwatching as a hobby and to build up the support base for conservation. The iOS version was released in 2012 and the Android version in 2014.

Favorable attitudes towards raptor conservation - active WBSE nest protected till eaglet fledged

A member of the public photographed a pair of White-bellied Sea Eagle (WBSE) nesting in a patch of land sold to a property developer to build apartments and wrote to the national newspaper. The property developer engaged consultants to do a biodiversity study and accepted recommendations to start work at the other

end of the land farthest from the nest. Foundation works such as piling work was re-sequenced. The wooded patch including the nest tree was retained with protective hoarding until the eaglet fledged a few months later. The actions by the developer signaled a change in attitudes that would be unthinkable previously 'just to save' a common bird of prey, increasing costs to the developer and delaying the project.

Policy of 'greening' Singapore benefits raptors

Pockets of Greenery can support birds, even raptors. A pair of Crested Goshawks nested successfully in a park 300m wide, surrounded by high rise apartment blocks and a busy road, and a chick fledged successfully in August 2015. The nest was build high on a tall introduced African Mahogany tree!

Current raptor conservation in the Republic of Korea

Han-Kyu Kim¹, Chang-Yong Choi¹, Chang-Wan Kang²

¹*Department of Forest Sciences, Seoul National University,
Gwanak-gu, Seoul 151-921, Republic of Korea*

²*The Korea Association For Bird Protection Jeju Branch,
Jeju 697-340, Republic of Korea*

To document current raptor researches and conservation status in the Republic of Korea, we compiled available information on raptors between 2012 and 2015 from the published and unpublished sources. We found 19 published papers relevant to raptor studies during the period; the main topics of these articles were raptor monitoring and distribution (5 papers), diets and foraging behavior (4), home range and telemetry (3), conservation and threats (3), habitat selection (1), breeding biology (1), molecular analysis (1), and morphology (1).

These papers documented the new records of rare subspecies in the Eurasian Kestrel (*Falco tinnunculus tinnunculus*) and Peregrine Falcon (*Falco peregrinus pealei*), and updated breeding status of Grey-faced Buzzard (*Butastur indicus*) and Crested Honey Buzzard (*Pernis ptilorhynchus*). Diets and movements of the Eurasian Kestrel, Chinese Sparrowhawks (*Accipiter soloensis*), Peregrine Falcon and Eurasian Eagle Owl (*Bubo bubo*) were published, and there were anecdotal reports on window and aircraft collision of Sparrowhawks and kestrels as well as lead poisoning in Cinereous Vultures (*Aegypius monachus*). The other papers described tawny Owls (*Strix aluco*) using caves as roosting and breeding places, detailed breeding biology of Eurasian Kestrels, DNA barcoding of raptors, and sexual dimorphism of Chinese Sparrowhawks. Along with these published works, one active nest of the Eurasian Sparrowhawk (*Accipiter nisus*) was found at Paju City in Gyeonggi Province in May and June 2015, and this is the first breeding record of this species in Korea.

There was another study on morphology and niche separation between two sympatric forest owls using nest boxes and stable isotopic signatures during the summer of 2013 and 2014. In September and October 2013, raptor migration was monitored in two areas (Busan and Jeju) for the ‘Collaborative Survey of Migratory Raptors in South East Asia’ of the Asian Research and Conservation Network (ARRCN). Through this monitoring project, we counted 3,784 individuals of 13 species moving from Busan to Japan (dominated by Chinese Sparrowhawks) and 3,530 individuals of 10 species passing by Jeju Island (dominated by Oriental Honey-buzzards), and this new information enabled us to identify the peak season and local migration routes of migratory raptors.

In particular, we identified that the main pathway of Oriental Honey-buzzards connecting mainland Korea and Jeju Island, that was newly discovered by this project, is included in a proposed construction zone for off-sea wind farms (28 turbines of 3.6MW capacity; blades reaching up to 150m above sea level). Because this information was totally new and had never discussed during the initial planning of the massive wind farm construction, we have raised a new issue about the potential impacts on the safety of migratory raptors by submitting a short consulting report for the second Environmental Impact Assessment (EIA) process to the Ministry of Environment in May 2015.

Current raptor conservation in Taiwan

Yi-Jung Lin,

Secretary General of Raptor Research Group of Taiwan

Introduction

Taiwan is an island country with an area of 36000km². Forestland occupies 58% of the total island area. Among 543 species of birds recorded on Taiwan, 33 species are diurnal raptors and 13 species are nocturnal. Thirteen of these are residents. Raptors are all listed as protected species under The Wildlife Conservation Act of Taiwan. Protected species is classified in three categories: Endangered Species, Rare and Valuable Species and Other Conservation-Deserving Wildlife. Indian Black Eagle (*Ictinaetus malayensis*), Mountain Hawk Eagle (*Spizaetus nipalensis*), and Eastern Grass Owl (*Tyto longimembris*) are the only three resident raptors classified as Endangered Species (Table 1).

Raptor researches in Taiwan

Researches are focus on basic ecology of resident or common migratory raptors. In recent five years, more studies on endanger species conservation issues, trying to find out a better solution for raptor population sustainability (Table 1).

Raptor conservation

1. Legal status

Raptors are protected under Wildlife Conservation Act of Taiwan. They shall not be disturbed, abused, hunted, killed, traded, exhibited, displayed, owned, imported, exported, raised or bred, unless under special circumstances recognized in this or related legislation.

2. Conservation Issues

Although no historical data exist for comparison, local people suggest major decreases of raptors distribution on Taiwan in the last 50 years.

2.1. Habitat loss and degradation

The absence of raptors in lowland plains and foothills most likely resulted from major habitat loss or degradation. Although in accordance with Environmental Impact Assessment Act, an environment impact assessment is required for each new development or government policy. This involves the investigation, prediction, analysis, and assessment of the degree and scope of possible impact on the environment, including any affecting nature, society, the economy, culture, and people's livelihood. Habitat conservation seems often to lose in the face of hypothetical economic gains.

Eastern Grass Owl is a typical species affected by habitat loss. It lives on the plains and hides in tall grassland. This type of habitat in Taiwan is decreasing due to construction of roads, houses, or public infrastructure. The government

subsidies research and conservation projects lead by conservation NGOs and universities, in hoping to find out the population of grass owl.

2.2. Hunting pressure

Wildlife Conservation Act indicates that wildlife may be hunted or killed for traditional cultural or ritual hunting, killing or utilization needs of Taiwan aborigines. These activities shall be approved by authorities. The application process, hunting method, hunted species, bag limit, hunting season, location, and other regulations shall be announced by the national principal authority and the national aborigine authority.

The population number of the Mountain Hawk Eagle in Taiwan is very small. Because its plumage pattern is beautiful, in southern Taiwan, the Paiwan and Truku aboriginal tribes have traditionally used them in ceremonial wedding headdresses, symbolizing a lofty position, so they are highly valued. In addition, in earlier years in the raptor pet trade, the Mountain Hawk Eagle was the most highly prized raptor species, and so it suffered great hunting pressures. Although public selling is no longer seen in the lowlands, hunting in the deep mountains and the illegal market have not completely been eliminated. In 2000~2005, at least 50 birds were hunted, and the threat of extinction of this species still exists, so great efforts need to be made to resolve this issue.

In 2014, Mountain Hawk Eagle conservation conference was held. The conclusion is to reach a sustainable Mountain Hawk Eagle population, by autonomous tribe managing the plumage-wearing regulation.

2.3. Poison

The seriousness of environmental toxin on raptors is not as well known until in 2013, preliminary studies on rodenticide remains in raptors, Brodifacoum was found in five out of eight raptor carcass. This test also revealed agrochemicals was examined in raptors.

The rapid decline of the Black Kite (*Milvus migrans*) in recent years is assumed to be a result of environmental contamination. Formerly, this species was very common on the plains of Taiwan, but a 1990 investigation revealed that populations throughout most of Taiwan had sharply declined or disappeared. At that time, the total number in all of Taiwan was estimated to be 175 birds. Till now, Black Kite numbers was estimated from three to five hundreds.

Black Kites feed on small animal carcasses near water and leftover human food, the chance is great to encounter threats from environmental poisons, including all kinds of pollution and rodenticides. The authority this year has announced to cancel the weeklong campaign of rodents control in farmland by using rodenticides. This policy has been employed for over 30 years, now has called it an end. By 2017, the highly toxic liquid carbofuran will be banned to use.

3. Conservation efforts

3.1. Conservation education

Conservation education has long been promoted by enforcing into curriculum and informal education. In 2010, the Environmental Education Act has employed. All employees of government agencies and juridical associations who derive more than 50 percent of their income from government donations, as well as teachers and students of schools below the senior high school level shall participate in more than four hours of environmental education each year.

Works such as public education on not killing Grey-faced Buzzard (*Butastur indicus*), setting nest-boxes for Collared Scops Owl (*Otus bakkamoena*), promoting the love and understanding of Eastern Grass Owl, and calling for environmentally-friendly farming products for Black Kite are all devoted to raptor conservation. An increasing number of people have become interested in watching the hawk migration.

3.2. Public awareness

Citizens are more willing to understand their ethical relationship with the environment. Their knowledge, skills, attitudes and values with regard to protecting the environment has increased. The general public has become more and more concerned about the overuse of agrochemicals and the presence of other toxins in the environment. They tend to buy organic or chemical free crops, such as “Black Kite red bean” or “Crested Serpent Eagle bamboo shoot”.

Citizen science is thriving. People devote their leisure time in helping collecting science data, such as migratory raptor counts, reports of farmland poisoned birds and road-kill wildlife. All these works contribute to a better understanding of the relationship between wildlife, human and the environment.

3.3. Legal actions

In addition to Wildlife Conservation Act that protects raptor from being harmed, Animal Protection Act also helps by forbidding the sales of traps since 2011. Other progresses include policy cancelation of free rodenticides subsidy for farmland from 2015, and a future ban of using highly toxic liquid carbofuran.

Works of RRGT

Raptor Research Group of Taiwan (RRGT) is a citizens' group formed by raptor enthusiasts since 1994. The aim of the RRGT is to organize and promote raptor research and conservation.

1. Research

1.1. Research projects

Long-term migratory raptor investigation in the north and south part of Taiwan. Satellite tracking of Grey-faced Buzzard and Oriental Honey Buzzard (Chinese Goshawk next year).

Indian Black Eagle population monitoring.

Crested Goshawk (*Accipiter trivirgatus*) breeding ecology study.

1.2. Citizen science

RRGT conducts research projects suitable for citizen science. We use internet and social media such as Facebook to gather raptor information and manage our research volunteers. We hope to promote raptor research in Taiwan and let more people appreciate the beauty of raptors.

1.3. Raptor Research of Taiwan biannual journal

Published since 2003, it is the only raptor research journal in Taiwan.

1.4 Raptor ecological symposium

From 1995, RRGT has hosted the symposium every five years. The symposium not only encourages more amateurs and professionals to participate in raptor research, but also is an important platform for sharing and accumulating information, which is helpful for the conservation of raptors.

2. Education

2.1. Raptor investigation camps

To increase the identification of raptors for better training of our citizen scientists, we conduct this annual camp since 2001.

2.2. Raptor-watching activities

“Open Wings” is a monthly raptor-watching activity, which brings citizens to rural area and encounter raptors.

2.3. Raptor identification and guidebooks

Publish many raptor identification and guidebooks, so raptor information can become more accessible to the public.

2.4. Raptor documentary films and movies

These films bring the beauty of raptors to the public and attract more people to be concerned about the current status and crisis of raptors. The most important films are “Journey Migration. Love of Kenting” (2007), “The Oriental Honey Buzzard of ninety-night peaks” (2011), “Phantom of the Forest - the Black Eagle” (2011), and “Fly, Kite Fly” (2015). The last three received wildlife film awards.

2.5. Out-reach programs

Raptor lectures and ecological film festivals are held at schools and museums.

3. Future works

With the up-coming raptor movies “Fly, Kite Fly” first shown on the big screen, RRGT is ready to gather public attention on raptor conservation. We receive donation and support from the general public and enterprises, for raptor research and education works. In the future, we plan to build a raptor center for raptor rescue, rehabilitation, research and education, to continue our passion for raptors.

Table1. Status of Raptors in Taiwan

Species	Migration/Resident Status	Conservation status (IUCN Red List ^a / Wildlife Conservation Act of Taiwan ^b)	Research topics ^c
Common Kestrel <i>Falco tinnunculus</i>	Common winter visitor	LC/ II	N/A
Amur Falcon <i>Falco amurensis</i>	Vagrant	LC/ II	N/A
Merlin <i>Falco columbarius</i>	Rare winter visitor	LC/ II	N/A
Eurasian Hobby <i>Falco subbuteo</i>	Uncommon transient	LC/ II	N/A
Peregrine Falcon <i>Falco peregrinus</i>	Uncommon winter visitor and uncommon transient	LC/ I	1. Diet 2. Hunting behavior
Osprey <i>Pandion haliaetus</i>	Uncommon winter visitor	LC/ II	N/A
Black Baza <i>Aviceda leuphotes</i>	Rare transient	LC/ II	N/A
Oriental Honey Buzzard <i>Pernis ptilorhynchus</i>	Resident and transient	LC/ II	1. Breeding 2. Diet 3. Genetic 4. Habitat use 5. Movement 6. Olfaction*
Black-winged Kite <i>Elanus caeruleus</i>	Resident in its range	LC/ II	1. Diet*
Black Kite <i>Milvus migrans</i>	Resident	LC/ II	1. Citizen attitude toward conservation and ecotourism development* 2. Diet 3. Heavy metal pollution* 4. Poison* 5. Population*
Brahminy Kite <i>Haliastur indus</i>	Vagrant	LC/ II	N/A
White-bellied Sea Eagle <i>Haliaeetus leucogaster</i>	Vagrant (only 1 record)	LC/ II	N/A
White-tailed Sea Eagle <i>Haliaeetus albicilla</i>	Rare winter visitor	LC/ I	N/A
Cinereous Vulture <i>Aegypius monachus</i>	Rare winter visitor (1 record in many years)	NT/ II	N/A

The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015

Crested Serpent Eagle <i>Spilornis cheela</i>	Common resident	LC/ II	1. Activity pattern 2. Breeding 3. Diet 4. Genetic diversity 5. Habitat selection 6. Home range
Eastern Marsh Harrier <i>Circus spilonotus</i>	Rare winter visitor and uncommon transient	LC/ II	N/A
Northern Harrier <i>Circus cyaneus</i>	Rare transient and winter visitor	LC/ II	N/A
Pied Harrier <i>Circus melanoleucos</i>	Winter visitor	LC/ II	N/A
Crested Goshawk <i>Accipiter trivirgatus</i>	Common resident	LC/ II	1. Breeding 2. Diet 3. Nest-site selection
Chinese Goshawk <i>Accipiter soloensis</i>	Common transient	LC/ II	1. Migration
Japanese Sparrowhawk <i>Accipiter gularis</i>	Uncommon transient and rare winter visitor	LC/ II	N/A
Besra <i>Accipiter virgatus</i>	Uncommon resident	LC/ II	1. Breeding 2. Diet
Eurasian Sparrowhawk <i>Accipiter nisus</i>	Rare winter visitor	LC/ II	N/A
Northern Goshawk <i>Accipiter gentilis</i>	Rare winter visitor	LC/ II	N/A
Grey-faced Buzzard <i>Butastur indicus</i>	Common transient and rare winter visitor	LC/ II	1. Migration
Common Buzzard <i>Buteo buteo</i>	Uncommon winter visitor	LC/ II	1. Migration*
Upland Buzzard <i>Buteo hemilasius</i>	Irregular rare winter visitor	LC/ II	N/A
Rough-legged Buzzard <i>Buteo lagopus</i>	Rare winter visitor (1 record in many years)	LC/ II	N/A
Indian Black Eagle <i>Ictinaetus malayensis</i>	Rare resident	LC/ I	1. Breeding 2. Population monitoring
Greater Spotted Eagle <i>Aquila clanga</i>	Rare winter visitor	VU/ II	N/A
Eastern Imperial Eagle <i>Aquila heliaca</i>	Rare winter visitor (1 record in many years)	VU/ I	N/A
Mountain Hawk Eagle <i>Spizaetus nipalensis</i>	Rare resident	LC/ I	1. Breeding 2. Distribution 3. Food habit

**The 9th Asian Raptor Research and Conservation Network (ARRCN) Symposium 2015,
Novotel Chumphon Beach Resort and Golf, Chumphon, Thailand; October 21–25, 2015**

			4. Habitat use 5. Home range 6. Hunting pressure 7. Population 8. Seasonal movement
Mountain Scops Owl <i>Otus spilocephalus</i>	Common resident	LC/ II	1. Breeding 2. Habitat
Collared Scops Owl <i>Otus bakkamoena</i>	Common resident	LC/ II	1. Breeding 2. Habitat selection 3. Hematology*
Oriental Scops Owl <i>Otus sunia</i>	Uncommon transient	LC/ II	N/A
Elegant Scops Owl <i>Otus elegans</i>	Endemic subspecies on Orchid Island	NT/ II	1. Diet 2. Dispersal 3. Movement 4. Nest-site selection 5. Population genetics
Tawny Fish Owl <i>Ketupa flavipes</i>	Rare resident	LC/ II	1. Breeding 2. Diet 3. Distribution 4. Habitat 5. Home range 6. Population estimation
Brown Wood Owl <i>Strix leptogrammica</i>	Rare resident	LC/ II	1. Breeding 2. Diet
Tawny Owl <i>Strix aluco</i>	Rare resident	LC/ II	1. Activity pattern 2. Diet 3. Habitat selection
Collared Owlet <i>Glaucidium brodiei</i>	Common resident	LC/ II	N/A
Little Owl <i>Athene noctua</i>	Vagrant (only 1 record)	LC/ II	N/A
Brown Hawk-Owl <i>Ninox scutulata</i>	Uncommon resident and transient	LC/ II	1. Diet 2. Hunting behavior
Long-eared Owl <i>Asio otus</i>	Rare winter visitor	LC/II	N/A
Short-eared Owl <i>Asio flammeus</i>	Uncommon winter visitor	LC/ II	1. Diet
Eastern Grass Owl <i>Tyto longimembris</i>	Rare resident	LC/ I	1. Captive breeding 2. Field Survey 3. Population monitoring system*

^a. IUCN Red List: VU(Vulnerable), NT(Near Threatened), LC (Least Concern)

^b. Wildlife Conservation Act of Taiwan:

I (Endangered Species): those wildlife species whose population size is at or below a critical level so that their survival is in jeopardy.

II (Rare and Valuable Species): endemic species or those species with a very low total population.

^c. N/A: Not any.

*: Within 5 years

Oral Presentation

Conservation, Disease and Pollution Session

**Application of ectoparasiticide for *Colpocephalum turbinatum* control in
captive Barn Owl (*Tyto alba*)**

Ausanee Bootyu

*Fifth years student of Faculty of Veterinary Medicine, Kasetsart University,
Thailand*

This study compared the efficacy of three commercial products pesticides (Etofenprox, Permethrin, D-limonene) and used them to control *Colpocephalum turbinatum*. Six breeding pairs of captive Barn Owl (*Tyto alba*) with large infestation were divided into three groups. Blood samples were collected to determine their health status (Day₀, Day₂₁), three pesticides were sprayed (Day₀, Day₇) and physiological response after spraying were observed. The result shown that Etofenprox, Permethrin and D-limonene can eradicated all *Colpocephalum turbinatum* in two weeks and there were no physiological change of barn owl's health from these pesticides. Therefore, these three commercial pesticides can applied to control *Colpocephalum turbinatum* and to manage Barn Owl's health program in the captivity. Because these pesticides are extra-label drugs used, so apply them carefully.

The used of Barn Owl (*Tyto alba*) as rats control at rice-field in Yogyakarta

**Daniel Harjanto, Heri Susanto, Retnawan, Vinsensius Ronal, Anggita
Reizda & Pramana Yuda***

Fakultas Teknobiologi, Universitas Atma Jaya Yogyakarta,

Jl Babarsari 44 Yogyakarta 55281, Indonesia

*Correspondent author: danielharjanto6@gmail.com , pramyd@mail.uajy.ac.id

Barn owl (*Tyto alba*) has been used successfully as natural pest control in Palm oil plantation in Sumatra and on rice- field in some parts of Sumatra and Jawa. Following the success story in those areas, farmers of Sumber Agung Village of Moyudan (Yogyakarta, Indonesia) adopted the method since September 2012. Initially six birds from Demak of Central Java were purchased by the farmers and additional ten birds then were donated from surrounding area. *Rubuha* (the house of barn owl) have been set up at almost at all rice-field in the area. Recently it was estimated more than one hundreds barn owl lived in the area. However, not all of the *rubuha* was occupied by the birds. According to the farmers the present of the barn owl has provide a significant positive impact to the rice production at Moyudan. The rice harvest per hectare was increasing about 20 %. The awareness of the villagers about the important of Barn owl was still need to be improved. Hunting of the birds was still reported. In this village there was a place that used by local people to breed Barn Owl but still need to be improved.

Key words: barn owl, rat control, rice-field, Yogyakarta

Secondary poisoning risks of anticoagulant rodenticides to barn owls in agricultural areas in Malaysia – A review

**Hasber Salim^{1*}, Hafidzi Mohd Noor², Noor Hisham Hamid³
and Cik Mohd Rizuan³**

¹ *School of Biological Sciences, University Sains Malaysia, 11800, Minden, Penang, Malaysia*

² *Department of Plant Protection, Faculty of Agriculture, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia.*

³ *Crop Protection Division, FELDA Agricultural Services Sdn Bhd, PPP Tun Razak, 27000, Jerantut, Pahang, Malaysia*

Chemical control using anticoagulant rodenticides integrated with biological control using barn owls, *Tyto alba javanica* has been adopted since the late 70's against rat populations in agricultural areas in Malaysia. However application of second generation anticoagulant rodenticides in combination with the natural propagation barn owls has raised concerns of potential secondary poisoning to the latter. Initially researchers have proposed combining the barn owls with application of first generation anticoagulant rodenticide warfarin to control rats, however prolonged exposure triggers resistant of rats to warfarin. New and more toxic anticoagulants have been introduced in the early 1990's to deal with rodenticide resistance. The actions of more recent rodenticides are more toxic and exhibit relatively longer biological half-lives in tissues thus enhance the potential of compounds to cause secondary poisoning to barn owls that consumes rats in 98 % of their diet. Monitoring programs on exposure of anticoagulant rodenticides in United States and Europe have shown evidence of extensive contamination of anticoagulant rodenticides in raptors in particular of barn owls. Barn owls have been reported declining in numbers when anticoagulant rodenticides were introduced in farmlands against rodent pests. Anticoagulant rodenticide poisoning has emerged as a significant concern for conservation and management of wildlife.

In this paper, the literature dealing with secondary poisoning studies and concerns with the use of anticoagulant rodenticides in Malaysia are reviewed. This review includes studies on secondary poisoning risks of second generation both of laboratory and field study of anticoagulant rodenticide on barn owls in rice field, oil palm plantations and cocoa plantations. Such information is important for better understanding of rat management and for conservation of barn owls in plantations. The information will improve the implementation of rat control in agriculture areas of Malaysia having barn owls like the type of rodenticide use and the method of application.

Keywords: barn owls, secondary poisoning, anticoagulant rodenticide

The diet of Black-winged Kite (*Elanus caeruleus*) in Eastern Taiwan

Lucia Liu Severinghaus¹, Jer-Chung Chien¹, and Yu-Cheng Hsu^{1,2}

1. Raptor Research Group of Taiwan, 2F., No. 149-2, ChangChun Rd., 10459,
Taipei, Taiwan. zobbowl@gate.sinica.edu.tw

2. Department of Natural Resources and Environmental Studies, National Dong
Hwa University, 97401, Hualien, Taiwan.

The Black-winged Kite (*Elanus caeruleus*) is a small rodent specialist of open areas with scattered trees. It was widespread in Africa, Iberian Peninsula, Indomalaya ecozone, and New Guinea, but not found in Taiwan. In 1998, the first Black-winged Kite was recorded in Gongliao, New Taipei City, Taiwan. Now it is found throughout Taiwan. The objective of this study is to document the diet and foraging efficiency of this species in a recently colonized area - Hualien County, eastern Taiwan.

In our study area, we found 4 nests in 2013 with 14 adults and 8 fledglings, and in 2014 we found 6 nests with 20 adults and 14 fledglings. This suggests that the Black-winged Kite population is increasing in Hualien County, Taiwan. By analyzing 128 pellets, we identified 157 prey items, including rodents and passerine birds. Prey species were primarily Black Rats (*Rattus tanezumi*), Formosan Striped Field Mice (*Apodemus agrarius*) and Brown Country Rats (*Rattus losea*). In terms of biomass, the Black Rats, Nepal Bandicoot Rats (*Bandicota indica*), and Formosan Striped Field Mice were the most important prey species. Our rodent survey trapped six species in four sites. The most abundant species were Musk Shrew (*Suncus murinus*), Formosan Mice (*Mus caroli*), Formosan Striped Field Mice, and Brown Country Rats. These results show that the main preys of the Black-winged Kites in Hualien were the common farmland rodents. Thus the Black-winged Kite could function as a control agent of farmland rodents.

Subheading: The diet of Black-winged Kite

Keywords: Diet, Black-winged Kite, Rodent control

**Raptor electrocution at medium voltage power lines:
a case study in Mongolia**

**Md Lutfor Rahman, Batbayar Galtbalt, Batmunkh Davaasuren, Batbayar
Bold, Nyambayar Batbayar and Andrew Dixon**

*Md Lutfor Rahman and Andrew Dixon, International Wildlife Consultants Ltd,
P.O. Box 19, Carmarthen, SA33 5YL, United Kingdom
Batbayar Galtbalt, Batmunkh Davaasuren, Batbayar Bold and Nyambayar
Batbayar, Wildlife Science and Conservation Center of Mongolia, Union
Building, B-802, Ulaanbaatar 14210, Mongolia*

Electrocution of birds at medium voltage electricity distribution lines is a widespread problem particularly in Asia where the electricity distribution network is growing rapidly. Though this phenomenon potentially has significant conservation implications, relatively few studies have been conducted in Asia. We estimated mortality rates of raptors at different types of power poles along a 15 kV electricity distribution line running 56 km across open steppe in Mongolia. We investigated the influence of prey availability on raptor electrocution rate. We evaluated the efficacy of mitigation measures (insulation, two and four spike deflectors, brush deflectors, mirror deflectors) to reduce electrocution mortality rates for raptors. In our study, the globally endangered Saker Falcons (*Falco cherrug*) comprised more than a quarter of all birds killed. We also monitored 27 and 26 medium voltage power lines throughout the Mongolia during 2013-2014 to investigate extent of electrocution in the country. We suggest mitigation measures those are relatively inexpensive to implement and represent a cost-effective method to reduce the frequency of raptor electrocution events in these regions where cost is a key factor determining whether or not any form of mitigation is used.

Key words: electrocution, raptors, mortality, mitigation, deflectors

CONSERVATION OF THE EGYPTIAN VULTURE (*NEOPHRON PERCNOPTERUS*) IN BEYPAZARI, ANKARA PROVINCE, TURKEY

RANDA, BINTANG RANTAU

bintangranda@gmail.com

Department of Animal Science, Ankara University, Turkey

Some people say that vulture is an ugly and gross bird. But actually this species plays important role in keeping our ecosystem health and clean. When a vulture eats dead animal, the acid in its stomach which is highly corrosive will kill the germ of certain disease such as anthrax, cholera and rabies that can be very dangerous to people and other scavengers.

More than half of vulture population in Europe is in Turkey, especially in Beypazari, one of district in Ankara Province. There are four vulture species in Turkey, Griffon, Cinereous, Bearded, and Egyptian. The Egyptian vulture (*Neophron percnopterus*) is the most endangered species and already become global concern. Its position shifted from Least Concern to Endangered in 2007. This research focused on major factors lead to decreasing Egyptian vulture.

Method used during this study were direct observation, literature research and interview. From the research, I found that 1) The vulture which usually looking for food in the dumpsite was poisoned by poisonous dead cattle, 2) Weakness of government control cause dumpsite full of non-organic materials, 3) The excessive of industrial development and 4) High competition among other vultures for food.

This research proposes that it is very important for government and people to protect the vulture population such as protecting the dumpsite from poisonous dead cattle. Vulture has to be saved because this bird keep our ecosystem health and clean

Illegal Hunting and Feather use of Mountain Hawk-Eagles by local peoples in Southern Taiwan

Yuan-Hsun Sun¹ and Yung-Kun Huang²

¹*Institute of Wildlife Conservation, National Pingtung University of Science and
Technology, Pingtung 912, Taiwan*

²*Graduate Institute of Bioresources, National Pingtung University of Science
and Technology, Pingtung 912, Taiwan*

We investigated illegal hunting and feather use of the Mountain hawk eagle (*Spizaetus nipalensis*) by local people in southern Taiwan with highest poaching pressure during 2004-2007 and during 2009-2010. A total of 164 hunters and 54 local leaders were interviewed from nine and six aboriginal townships, respectively. Of those hunters 63 (38.4%) claimed they once hunted the bird before. The number of birds captured by each hunter ranged from one to 220 eagles, and most (69.8%) claimed they caught less than 10 birds. Birds were mostly caught by steel jaw traps, followed by musket. In the 1950s-1960s, the estimated amount of eagles caught was <5 birds/year, increasing since then and reaching a high (40.2 birds/year) in the 2000s. Trapped birds were mostly sold for feathers used by tribe leaders who used to get feathers as a tribute in old days. However, most local leaders (90.7%) said they are willing to stop buying feathers once they can get feathers from government or NGO for free. In 2015 We set up a website (<https://sites.google.com/site/eaglefeatherdatabase/home>) hopefully to collect feathers from domestic and oversea collectors such bird garden, zoo and rescue center for future use, and we wish this will ease the threat the bird faces.

Keywords: culture, feather, mountain hawk eagle, *Spizaetus nipalensis*.

Oral Presentation

Taxonomy and Genetic

Session

Plumage polymorphism in Oriental Honey Buzzards

Chien-Hung Yang and Lucia Liu Severinghaus

Raptor Research Group of Taiwan

About one-third of raptor species have various degree of plumage polymorphism. Among them, the diverse pattern of Oriental Honey Buzzard (*Pernis ptilorhynchus*) is especially well known, but the persistence and variation of the patterns have not been closely examined before. We ringed 80 adult and 72 immature Oriental Honey Buzzards between 2004 and 2013. Both adults and immatures of both sexes have plumage polymorphism. Using the amount of dark feathers on the belly and underwing coverts of each bird, we grouped them into dark, intermediate, and light morphs. The ratio of the three morphs were 44:31:5 for adults and 32:33:7 for immatures. Altogether, 34 individuals (20 adults and 14 immatures) were caught at least twice with photographs taken at each capture. We examined the photographs of the same birds over time to discern their morphological stability. The plumage pattern of all the 20 adult Oriental Honey Buzzards remained the same between years in both sexes, regardless how dark or light its plumage was. Only 4 immatures remained the same between years, three of them were the dark morphs and the fourth one was in the intermediate morph. The plumage of 10 immatures changed from being pale at the belly, underwing coverts or head area to darker plumage over time, until they reached adult stage. Apparently the plumage of immature Oriental Honey Buzzards tend to darken with age, unless they were dark to start with. Whether this kind of color change exists in other populations of Oriental Honey Buzzards remain to be examined.

**First publishing Brown Hawk-Owl (*Ninox scutulata* raffles, 1822) in
Kondang Merak, East Java, Indonesia**

**Endah Handayani, Bima Diwanata, Alfi Laila Zuhriansah, Fetty Hariyanti,
Daysi Wulandari, Heru Cahyono**

Jl. Semarang No.5, Malang, East Java, Indonesia

E-mail: endah.handayani97@gmail.com

The Brown Hawk-owl (*Ninox scutulata* Raffles, 1822) is an owl species found in several regions in Asia including Indonesia, particularly in Sumatra, Borneo, Java, Bali, and Sulawesi. In East Java, the distribution of an endemic race had been reported only in Alas Purwo and Baluran National Parks, although no documentation or specimen is available. This research is aimed to study the population of this species in Kondang Merak, South Malang, where the vegetation is similar to the aforementioned locations: lowland tropical forest. Main data collected consists of morphological identification, vocalization, and photographic documentation. Method undertaken is direct observation at night and in the morning, conducted in several spots. Results include time, intensity, and location of encounters with the species, vocalization, and first ever documentation in Java. The whole data shows new distribution record of the Brown Hawk-owl in Kondang Merak, South Malang, East Java.

Keywords: Brown Hawk-Owl, New Area Distribution, Kondang Merak.

Relative abundance and Morphometrics of the Philippine Scops Owl, *Otus megalotis megalotis* (Walden) in Mt. Makiling and Marinduque, Philippines

Michael S. Sanchez

University of the Philippines-Los Baños, College, Los Baños, Laguna

The Philippine Scops Owl (*Otus megalotis megalotis*), a common yet an important lowland owl species to be protected from environmental degradation. This owl is only found in mainland Luzon and the isolated islands of Marinduque and Catanduanes and recently recorded in Polillo. Breeding of this owl in captivity thru natural pairing has been successfully done since 2000. A survey of this species of raptor was conducted using playback calls to gain more information on its relative abundance. External body measurements and weights of live and museum specimens were also subjected to morphometry to identify differences between sexes and geographical variation.

One hundred twenty eight broadcast survey points each site were conducted in Gasan, Marinduque and Mount Makiling, Los Baños, Laguna. Relative abundance and rate of detection rate was found to be higher in the Gasan, Marinduque survey site ($t=5$, $p=0.0007$, 30.46%) than in Mount Makiling study area. This study found out that this owl's detection rate decreases as the distance from the broadcast station increased. The distance and response time in both study sites were affected by terrain and vegetation.

Meanwhile, live owls' sexes differed in weight and ulnar length while disparity in the measurement of beak, middle toe, and total body length were observed in museum specimens. Tarsus length was also found to be of significant sexual geographical differences between males while live juvenile owls were bigger than the adult counterpart. This geographical variation possibly depends on hunting mode, prey items and habitat type.

Keywords: Philippine scops owl, relative abundance, morphometry, geographical variation

**The Phylogenetic Study of the White-bellied Sea Eagle
(*Haliaeetus leucogaster*) Based on DNA Barcoding
Cytochrome-C Oxidase Sub Unit I (COI)**

Riri Wiyanti Retnaningtyas¹, Windri Hermadhiyanti¹, Dwi Listyorini¹

¹*Department of Biology, Faculty of Mathematic and Natural Sciences, State
University of Malang, Jl. Semarang 5, Malang, Indonesia 65145
E-mail:riri.suryadinata@gmail.com*

The White-bellied Sea Eagle (*Haliaeetus leucogaster*) is one of the top predators living in the coastal area of Indonesia. This species has the distribution range all across Indonesian archipelago. However, this raptor population decreases particularly in the Java southern seas due to illegal hunting and the decreasing quality of their natural habitat. Meanwhile, this bird is still poorly studied in Indonesia. This research focuses on the identification of *Haliaeetus leucogaster* and the phylogenetic study of this species by means of morphometrical analysis and DNA barcode cytochrome-c oxidase sub unit I (COI) in regards to the conservation of this species. The method used in this research is by measuring the morphological characteristics and mitochondrial DNA isolation using Forward primer BirdF1 5'- TTC TCC AAC CAC AAA GAC ATT GGC AC-3' and Reverse primer BirdR2 5' ACT ACA TGT GAG ATG ATT CCG AAT-3'. The phylogenetic analysis using MEGA 6 with Maximum Likelihood method shows that *Haliaeetus leucogaster* in this study is closely related to *Haliaeetus albicilla*, *Haliaeetus leucocephalus* dan *Haliaeetus pelagicus*.

Keywords: phylogenetic study, *Haliaeetus leucogaster*, morphological characteristics, DNA barcoding, Cytochrome-c Oxidase Sub Unit I (COI)

Vocal Individuality of Sunda Scops Owl (*Otus lempiji*) in Peninsular Malaysia

Siew Ann Yee ^a, Chong Leong Puan ^{a, b, *},
Badrul Azhar ^{a, b}, Phooi Kuan Chang ^a

^aDepartment of Forest Management, Faculty of Forestry,
Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

^bBiodiversity Unit, Institute of Bioscience, Universiti Putra Malaysia,
43400 Serdang, Selangor, Malaysia

Nocturnal habit, secretive nature and cryptic coloration of many owl species cause difficulties in their monitoring using conventional survey techniques. In the past two decades, bioacoustics method had been used as an alternative way of surveying owl species mostly in the temperate regions. The objective of this study was to describe the vocal characteristics of Sunda Scops Owl (*Otus lempiji*) and determine whether their calls were individually distinct. A total of 24 recordings produced by eight male and four female Sunda Scops Owls were obtained between December 2014 and April 2015 in a lowland forest located in southern Selangor state, Peninsular Malaysia. Seven vocalization variables were extracted and measured from vocalization spectrogram. The call of both male and female owls comprised of a series of single notes spaced at a fixed interval of 10-12 seconds. The mean note duration of males was 0.24 ± 0.04 seconds with a frequency of 0.5-1.1 KHz. For females, the mean note duration was 0.18 ± 0.01 seconds and the frequency ranged from 0.5-1.3 KHz. Results of Mann-Whitney U test indicated a significant difference ($P < 0.001$) between the sexes in terms of note duration, start frequency, end frequency, lowest frequency, highest frequency and center frequency, except internote duration. Based on ANOVA, significant differences ($P \leq 0.001$) were found for all variables among individual owls of each sex. Our results demonstrated that both male and female Sunda Scops Owls can be differentiated based on their vocalizations. Assessing vocal individuality can be useful as a non-invasive method for identifying individual Sunda Scops Owls and this would facilitate the survey of the species in the future.

Keywords: *Otus lempiji*, vocal individuality, spectrogram, Malaysia

*Corresponding author. Email: chongleong@upm.edu.my

Oral Presentation

Environment issue and related topic Session

Green Marketing in Hotel Industry, Thailand

Nattaya Chanvithee, Naphatsanan Vinijvorakijkul

Kasem Bandit University

10/195 LPN Pattanakarn, Suanluang, Bangkok, Thailand

Given the growing globalization of tourism market, the United Nation World Tourism Organization (UNWTO) despite occasional shocks, tourism has shown virtually uninterrupted growth. International tourist arrivals have increased from 25 million globally in 1950, to 278 million in 1980, 527 million in 1995, and 1133 million in 2014. Likewise, international tourism receipts earned by destinations worldwide have surged from US\$ 2 billion in 1950 to US\$ 104 billion in 1980, US\$ 415 billion in 1995 and US\$ 1245 billion in 2014 (UNWTO, 2015). In 2014, Asia and the Pacific welcomed 263 million international tourists, 14 million up from 2013 (+5%). The region earned US\$ 377 billion in tourism receipts, up by US\$ 16 billion over 2014 (+4% in real terms). Asia and the Pacific accounts for 23% of worldwide arrivals and 30% of receipts (UNWTO, 2015).

Throughout times Thailand tourism market is recent growth economic by the Tourism Authority of Thailand (TAT) 2014 report. In 2014 Thailand had reached 1.13 billion baht from tourism industry with tourists around 24.64 million persons (TAT Intelligence Center, 2014). Tourism and hospitality companies today face a scenario of exceptional uncertainty and change with the new economic and social growth henceforth market by a new geopolitical and economic balance with new poles of development (Yeoman, 2008).

In the hotel business we also witness the growth and development of huge international hotel chains like *Accor*, *Starwood*, *Marriott* or *Intercontinental*. Such growth is both quantitative and qualitative. If on the one hand the hotel chains have proven their commitment to the development of a worldwide supply (with recent and frequent openings in emerging destinations like the Middle East), on the other they have also developed their brand portfolio aiming even more to an increasingly specialized demand (Nuno, 2013). The Accor group, for example, has now four different levels that vary from budget to luxury and upscale (ex: *Fórmula 1* -1 star-, *Ibis* -2 star-, *Mercure* -3 star, *Novotel* -4 star- and *Sofitel* -5 star) (Accor, 2011) and has recently launched the brand *hotelF1*, slightly different from the more traditional *Formula1* because it is not just a budget hotel, but a design budget hotel (Nuno, 2013).

The objective of this paper is to focus on the roles that the hotel industry can perform in the preservation of the natural environment by incorporating the green marketing. As Kerin, Hartlet and Rudelius say “Sustainability has been a topic of interest for some retailers for many years. Recently, however, it has become a movement for the entire industry. What happened? A combination of factors contributed to the change: environmental consciousness among consumers has reached an all-time high, publicity related to global warming has increased, “green” has become an important element of company image and reputation and most environmental initiatives save retailers money! (Kerin, Hartle, Rudelius, 2011)

We can decide how important of the green tourism and hospitality Thailand industry by the TAT campaign named “7GREENS”. As TAT mentioned on their website “World travel industry, according to UNWTO, also contributes to this problem as it released 1,307 million tons of greenhouse gas to the atmosphere (2006) or 5 percent of the total greenhouse gas emission. The amount comes from air transportation 40 percent, 32 percent from land transportation, 3 percent from other transportation, 21 percent from hotel and accommodation and 4 percent from tourism activities. That's the figure from the past 5 years whereas the growth target of travel industry is constantly on the rise. This means the impact from the tourism industry on the environment would inevitably be increased (TAT, 2015).

These days many hotels and indeed whole multinational hospitality groups are “going green” and drawing up detailed sustainability management plans to accomplish that goal.

They are doing this partly to help to ensure that there is still a healthy market for their products and services going forward, partly, let's be honest, to save cost, and partly because their customers are increasingly basing their selections at least partly on whether a hotel is perceived as caring for the sustainability of our planet which, as we all know, faces challenges to its very existence.

The moves by the hotels in Thailand give both individual and corporate customers the opportunity make green choices, whether because of their personal values or to reinforce their public image of being environment-friendly.

In the case of hotels that are implementing a clear strategy, it may be of their own device or set out for them by their corporate head office. Either way, the details are similar: they endeavour to reduce electricity, water, paper, printer ink and plastic consumption. Ultimately the goal is to reduce the hotel's carbon footprint – the amount of the greenhouse gas its operations put into the atmosphere – to a minimum. The actual measures taken can be little things like choosing not to have plastic water bottles at meetings and instead getting your water from jugs as you require. Or giving guests the option not to automatically have their sheets and towels changed every day. Or turning the air conditioning to a cold enough, instead of freezing, 25 C. In food and beverage terms it can mean sourcing more products locally and avoiding produce that puts a lot of CO₂ into the air.

Whatever the motivations, it can only be a good thing for everyone if these efforts continue to be encouraged and supported by everyone, whether inside or outside the industry.

The marketing of hotel as “green” or “sustainable” has emerged in recent years as an important constituent of the promotion arsenal used by the lodging industry. The reason is simple, both business and leisure travels are increasingly looking for places to stay that protect the environment as well as the health of their guests. In addition, many meetings and convention planners now function under orders that call for selection of only facilities that are sustainable (Ashrafi, 2014). So, the green marketing should be the option to promote the new trends for hotel industry in Thailand.

Keyword: greenhotel, greenmarketing, hotelthailand, marketing, hotelmarketing

**The Awareness Reinforce Process through Raptor Migration
Observation at Kho Dinsor (Hawk Mountain of Asia),
Chumphon, Thailand**

Chalit Chiabphimai, Chana Kramkratoke, Athip Jansuri

Kasem Bandit University

1761 Pattanakarn Rd, Suan Luang, Bangkok, Thailand

Ecotourism is a form of tourism that visitors have to be conscious of protecting natural environment, especially some areas where natural richness, habitat, and food source have. Kho Dinsor or Hawk Mountain of Asia in Chumphon province is the place where have many migratory raptors. Therefore, there are many visitors, birdwatchers, and photographers interest in this place because the raptors are in the eye level closely. It is an amazing nature in the world; it is necessary for supporting ecotourism in Chumphon.

In ecotourism, tourist should be conscious during journey for having the least effect on Kho Dinsor. Hence, this study has the awareness reinforce process in order to support the consciousness in ecotourism. There are six elements to create awareness: Motivation, response, making popularity and attitude toward response, organizing a worth system by considering from the worth that happened to practical and reliable way, making habit from the worth system which has been prepared and assessing and following up. These steps were used with travelers who are conscious of ecotourism and all officers who involve the travelling part. Kho Dinsor remains plentiful and it also has balance of ecosystem as a visitant's food source. It is a good point of travelling that is important in new travelling activities which give visitors more experiences, knowledge during journey, including has more income to province from "Don't miss 12 towns in Chumphon project".

Keyword: raptor migration, ecotourism, environment, amazing nature

Oral Presentation

Migration and Wintering

Session

Status and Conservation of migratory raptors in Indonesia

(Adam) A. Supriatna

*SMP Negeri 2 Cipanas, Jalan Bukit DanauTegallega, Palasari,
CipanasCianjur, West Java, INDONESIA.E-mail: asianraptor7@gmail.com*

Colin R. Trainor

*Research Institute for the Environment and Livelihoods, Charles Darwin
University, Northern Territory, 0909, Australia, 0909.E-mail:
Halmahera@hotmail.com*

In terms of migratory raptor, about 42 species are known to migrate to/ pass Indonesian territories, six are complete migrants. Dominant raptor species regularly seen in Indonesia are Oriental Honey Buzzard *Pernis ptilorhynchus*, Chinese Goshawk *Accipiter soloensis* and Japanese Sparrowhawk *Accipiter gularis*. These 42 species, mostly partial migrants, are believed to migrate in at least part of their range. Two of the world's principal raptor-migration flyways occur in the country: the East-Asian Continental Flyway and the East-Asian Oceanic Flyway. Recently the first Indonesian record of Eurasian Sparrowhawk *Accipiter nisus* was confirmed. The status of two additional rare migratory raptors (Black Baza *Aviceda leuphotes* and Grey-faced Buzzard *Butastur indicus*) will also be discussed. These raptors use Indonesia for wintering areas and recent work has also confirmed that Chinese Goshawks winter as far as Papua. Recent fieldwork have documented new distributions of these migratory raptors in the country. This paper reviews the status and conservation of migratory raptors in Indonesia based on direct field observations like in Bangka and Rupert island (south eastern Sumatra) and published and unpublished literature. Threats to migrant raptors in Indonesia are discussed including loss of critical habitat such as in Rupert island, south-eastern Sumatra (a resting site and exit of the species migration from and to Indonesia through the Malayan Peninsula), fire and agriculture, hunting, and illegal trade.

Keywords: raptor migration, Indonesia, status review, conservation, migration flyways, threats

Identification of Raptor Migration Routes in the Philippines

Alex M. Tiongco¹, Ma. Teresa A. Cervero¹, Jelaine Gan^{1,2}, Adrian M.
Constantino^{1,3}, Maria Katrina C. Constantino^{1,4}

alex Tiongco@gmail.com

¹Wild Bird Club of the Philippines

²Institute of Biology, College of Science, University of the Philippines, Diliman,

³Birding Adventure Philippines

⁴Department of Biology, School of Science and Engineering, Loyola Schools,
Ateneo de Manila University

There are 31 species of diurnal raptors in the Philippines of which 6 species are endemic, 11 others are sedentary, 9 species are fully migrants and 5 are migrants with sedentary subspecies. There is still much to be learned of Philippine raptors, for example, there was a very recent first record of a nesting Eastern Buzzard, *Buteo japonicus*, previously identified as a migrant (Common Buzzard, *Buteo buteo*), and it is not known if the breeding raptor is a local subspecies.

This paper reports on the most recent findings on the routes of the migratory species. Only the Chinese Sparrowhawks (*Accipiter soloensis*), Grey-faced Buzzards (*Butastur indicus*), Crested Honey Buzzards (*Pernis ptilorynchus*), Western Ospreys (*Pandion haliaetus*) and Peregrine Falcon (*Falco peregrinus*) appear to be common migrants. Until recently, there has been a dearth of information on migratory routes and no conclusive findings can yet be obtained on whether or not different flyways are utilised in the autumn and the spring seasonal movements.

Using both the Chinese Sparrowhawks and the Grey-faced Buzzard as indicators, we have so far identified 4 important migratory sites: (1) Tanay in Rizal Province and (2) Barangay Pancian in Ilocos Norte, both on Luzon Island for Spring Migration; (3) Cape San Agustin in Davao Oriental and (4) Barangay Cross in Sarangani Province which are located on Mindanao Island for Autumn Migration.

Habitat destruction and degradation all over the Philippines is the most serious threat to raptor conservation followed by hunting and trapping which is more prevalent in the northern Philippines where the weather is harsher during spring migration due to tropical storms and cyclones. Identification of key migration routes can help establish a raptor monitoring strategy and also contribute to the conservation and protection of migratory raptors and their habitats.

Keywords: raptor, migration, Philippines, Luzon, Mindanao

Raptor Migration in Gunung Ciremai National Park - Preliminary Observation During 2014 Spring Migration Season-

Asman Adi Purwanto

The migration of raptors in the East Asian Flyway from northeast to Southeast Asia is still poorly understood (McClure 1998, Zalles and Bildstein 2000, DeCandido *et al.* 2004). Most raptors in eastern Asia migrate in a north to south direction in autumn, and south to north direction in spring (Clark, W.S *in* Newton 1990).

Indonesia is an important wintering area for several species of birds breeding in the eastern Palaearctic. The archipelago has important sites that serve as the migration route, stop over location and wintering area of migrating Oriental Honey Buzzard (*Pernis ptilorhyncus*) (Syartinilia *et. al.* 2010). Fifty-five raptor species are known to migrate in Asia and of these, twenty-five species have been recorded in Indonesia (Yamazaki *et.al* 2012; Purwanto *et.al* 2014 in prep.). The first systematic data on raptor migration in Indonesia were collected by Ash (Ash 1984, 1993) and this has been continued by individuals or group of researchers at several locations on Java and elsewhere in the country. However, particularly during spring migration season, the data is poorly known, with little or no systematic collection of data yet.

Gunung (mountain) Ciremai National Park, located in West Java, is one of the mountainous areas in the northern part of the island which have been predicted to lie on the migration route of raptors during spring. A preliminary observation was conducted from 5 March to 5 April, 2014 at several locations along the eastern part of the park, with the aim to undertake the first counts of raptors migrating across the park during spring and to locate the main migration routes and crossing points in the park.

A total of 2,124 migratory raptors were counted crossing over several locations along the eastern part of the park during spring. Six locations in the eastern part of the park that had been predicted as being on the traditional migration route had 5.7-46.8 *ind/h* of raptors crossing over during spring, with most raptors likely appearing from four main locations i.e. Mt. Ungaran (230-250 km), Mt. Dieng (160-175 km), Mt. Slamet (80-85km) and Mt. Mayana (30-35 km).

Keynote: raptor, spring migration season, Ciremai National Park, preliminary observation.

Distribution mapping of *Accipiter soloensis* and *Butastur indicus* based on occurrence data in the Philippines

Jelaine L. Gan^{1,a}; Carmela P. Española^{1,b}

¹*Institute of Biology, University of the Philippines, Diliman, Quezon City 1101*

^ajlgan@up.edu.ph , ^bcpespanola@up.edu.ph

The migratory behaviour of certain raptors poses a problem to their conservation since these species cross international borders. The conservation of the raptor species must then extend to countries under the major flyway, of which Philippines contribute little raptor data. In the Philippines, locating flyway bottlenecks and key monitoring sites are of utmost importance in the protection of these migratory birds. The Chinese Sparrowhawk (*Accipiter soloensis*) and the Grey-faced Buzzard (*Butastur indicus*) are the most common migrant raptors in the Philippines, yet their movement across and within the country remains largely unknown. This study mapped the occurrence of the two raptors in the Philippines using recent, from 2004-2014, and historical data. Interestingly, although larger in numbers, the Chinese Sparrowhawks were observed in only 29 islands, compared to 46 islands for the Grey-faced Buzzards. Based on the recent data, a total of 54 new localities, which were not found in the historical data, were recorded for the sparrowhawks, while the buzzards had 56 new localities. Sites that had more than 500 counts in a single day were classified as potential watch sites for population monitoring. These include Calayan Island, Cagayan; Tanay, Rizal; and Pagudpud, Ilocos Norte during spring, and Governor Generoso, Davao Oriental; Digos, Davao del Sur; and Glan, Sarangani during the autumn. Inferring from the map, three possible autumn exit points were identified: through land tips of Palawan, Sulu, and Davao. The Babuyan Islands at the northern border appeared to be important roosting or stopover sites before the raptors cross the sea to Taiwan during spring migration. Full or partial season counts are recommended to assess the importance of these exit points and to monitor raptor populations and movement.

Key words: Raptors, Migration, Philippines

Long-term raptor migration & illegal hunting monitoring along Eastern Black Sea flyway in Batumi, Georgia

Johannes Jansen

Batumi Raptor Count, Lostraat 48, 9000 Gent, BELGIUM
ohannes.jansen@batumiraptorcount.org

The migration bottleneck in Batumi along the Eastern Black Sea coast is a key component in the flyways of many of the Eurasian migratory raptor species. Taking into account the difficulty to conduct large-scale monitoring on these species' breeding grounds, the bottleneck provides a unique opportunity to detect trends in raptor populations originating from the huge landmass of East-Europe and West Siberia.

For several complete long-distance migratory raptors the Batumi Raptor Count covers a highly significant portion of the migrants expected from presumed source areas in northeastern Europe, the western Caucasus and western Russia: Eurasian Honey-buzzard, Black Kite, Lesser Spotted Eagle and Booted Eagle. Especially remarkable are the counts for Black Kite and Marsh, Montagu's and Pallid Harrier. They are the highest total counts for these species ever registered during a single migration season. Observed migrants also included a number of internationally threatened migrants.

The BRC explicitly chooses to monitor only a selection of species, with sufficient observers for a predefined duration of the season with daily counts. In this way we aim to increase the quality of data obtained through ground-based counts, to reduce the necessary count effort and to make it more realistic that the monitoring will be continued in the future. With this protocol we strive to obtain useful information on primary species populations, as a primary warning system for population declines, breeding success or shifting migration or wintering strategies.

Recent monitoring has shown that up to 35 bird of prey species use this flyway and more than one million individuals passed through in the last four autumn seasons. But the illegal shooting of all raptor species is a common practice in the area. The impact on the migrating populations is unclear and drivers behind this local tradition are poorly understood. Therefore a monitoring of the illegal hunting is carried out simultaneously. From the count stations, the amount of gunshots fired were recorded. Additionally from a fixed point behind one of the watchsites, the ridges are being scanned for amount of hunters and their activity. To obtain an approximation to the species composition of the birds shot at the end of every season a standardized transects in four hunting hotspots is examined by which dead bird remains are being counted and identified ("body count"). With this protocol, we aim to provide a better estimation of the scale of illegal shooting of migratory raptors in a strictly non-confrontational manner. The results of the monitoring will be used as a first step towards the understanding of the effect of the shooting on the migratory populations, evaluating conservation actions as well as for finding mutually acceptable ways to solve this conservation conflict on the long run. The first results of the raptor migration and illegal hunting monitoring will be presented.

Khao Dinsor: a key site for monitoring raptor migration in the Indochinese Peninsula

**Chukiat Nualsri, Kaset Sutasha, Chuenchom Hanasuta, Wichyanan
Limparungpatthanakij, Khemthong Tonsakulrungruang, Andrew J. Pierce
& Philip D. Round***

For four out of the last five years (2010-2014), complete counts of raptors on southwards migration along the Thai-Malay Peninsula Flyway have been attempted at Khao Dinsor, Pathiu District, Chumphon Province, Thailand, and counting for a fifth consecutive season 2015 is ongoing. Annual totals have varied from 168,254 (2011) to 287,386 (2014) of 25 migratory raptor species. Reliable comparison of differences among years is confounded by differences in coverage (range of dates, number of observers), and highly variable weather conditions, *etc.* (the migration takes place during the seasonal transition between the south-west and north-east monsoons). The largest count (2014) was possible due to the engagement of The Flyway Foundation in mobilizing volunteer counters and interns to supplement preceding years' efforts, and occurred in spite of lighter headwinds in that particular year, enabling raptors to pass on a broader front, making them less liable to be counted, depressing the totals of some species (e.g., Chinese Sparrowhawk *Accipiter soloensis*).

The migration of Black Bazas *Aviceda leuphotes* (>150,000) is the largest recorded for any site, and is spectacularly concentrated; that for Chinese Sparrowhawks (c. 90,000) is second only to the East Asian Coastal Flyway. Unexpected or elsewhere undocumented was the substantial occurrence on migration of species hitherto thought resident, such as Jerdon's Bazas *A. jerdoni* (c. 100 per year), Crested Serpent Eagles *Spilornis cheela* (c. 300 per year), Shikras *A. badius* (up to 6,000 per year), scarcer regular migrants (Besra *A. virgatus*, Rufous-winged Buzzard *Butastur liventer*) and genuine rarities (Bonelli's Eagles *Aquila fasciata*). The site also offers opportunities for study of non-raptor diurnal and nocturnal migrants.

Few data are available for northwards (spring) migration as the migration front passes largely to the west of Khao Dinsor.

As migratory birds come under a greater range of threats so the importance of population monitoring along flyway locations, such as Khao Dinsor, will increase. Consistency of coverage and adoption of new technologies should be improved so as to improve the confidence of yearly estimates.

* Corresponding author

**Autumn passage of migratory raptors over Taiping, Perak,
Peninsular Malaysia 2000 – 2010: abundance, species and seasonality**

**Lim Kim Chye, Lim Aun Tiah, Khoo Swee Seng,
Lee Oon Teik & Mark Ng Meng Yong**

*Raptor Study Group, Bird Conservation Council - Malaysian Nature Society,
JKR 641, Jalan Kelantan, Bukit Persekutuan, 50480 Kuala Lumpur, Malaysia*

In October 2000, large flocks of raptors were discovered passing over Taiping, Perak, north-west Peninsular Malaysia. From 2000 - 2009, we carried out opportunistic autumn counts of migrating raptors, varying from 33 to 62 days of observation and recorded totals ranging from 7 492 to 52 554 individuals. Migration was observed as early as September 15, with passage continuing through October until at least 22 November. Typically, Japanese Sparrowhawk *Accipiter gularis* and Chinese Sparrowhawk *Accipiter soloensis* arrived first at the study site in mid September and early October, followed by Oriental Honey-buzzard *Pernis ptilorhyncus* and Grey-faced Buzzard *Butastur indicus* in late September and October and finally by Black Baza *Aviceda leuphotes* in late October and early November.

In 2010, we carried out the first full season count over 58 days from 25 September to 21 November. A total of 63 920 raptors of 10 species were recorded, with Black Baza, Chinese Sparrowhawk and Oriental Honey-buzzard making up 92.3 % of the total. Peak flight of Black Baza occurred on 9 November when 6 046 individuals were recorded; Chinese Sparrowhawk flight peaked on 28 September with 3 638 individuals counted and Oriental Honey-buzzard flight peaked on 26 September with 785 individuals counted.

To date, 18 migratory raptor species have been recorded in Taiping, with Black Baza, Chinese Sparrowhawk and Oriental Honey-buzzard maximum counts of 31 866, 26 358 and 7 174 individuals respectively. The season total, species diversity and species totals in Taiping were lower when compared with autumn 2010 counts carried out at Chumphon, peninsular Thailand. Observer skill, location of observation site and the passage of raptors along routes that by-pass Taiping were thought to be contributing factors for the disparity. The predictable autumn passage of significant numbers of Black Baza, Chinese Sparrowhawk and Oriental Honey-buzzard and other migratory raptors over Taiping demonstrates the potential of the site for monitoring regional raptor migration as well as for education and ecotourism.

Key words: autumn passage, migratory raptors, Taiping

Potential ecotourism for Oriental Honey Buzzards migration stopover in Karangasem, Bali, Indonesia

Paraditio Bryan Prakoso^{1*}, Syartinilia^{1†}, Hiroyoshi Higuchi²

¹Department of Landscape Architecture, Bogor Agricultural University,
Indonesia; *bryanprakoso@yahoo.com, † syartinilia@ipb.ac.id

² Graduate School of Media and Governance, Keio University, Endo 5322,
Fujisawa, Kanagawa 252-0882, Japan

Knowledge of landscape characteristics of stopover habitats Oriental Honey Buzzards (OHBs, *Pernis ptilorhynchus*) is a prerequisite to understanding their stopover ecology for managing their habitats. Ecotourism is one of the way to manage the stopover habitat based on community approach for landscape sustainability. The OHB's migration routes to eastern stopover ground in Indonesia usually stopover in Bali island especially Karangasem. Based on satellite tracking data recorded 1–4 days in Karangasem, Bali. The study aimed to analyze a potential of ecotourism based on OHBs migration stopover sites in Karangasem, Bali. The main method was analyzed satellite-tracking data using grid method through Hawth's tools in ArcGIS. The result of this study was obtained three potential locations for OHBs ecotourism-based which represented different period of tourism activities. We suggested to combine OHBs ecotourism-based activities with the other ecotourism activities in Bali for increasing public awareness of migratory raptor especially OHBs.

Keywords: GIS, landscape characteristics, *Pernis ptilorhynchus*, satellite-tracking, stopover habitat.

**Apparent Human-induced Migration of Cinereous Vultures
(*Aegypius monachus*) from Mongolia to the Republic of Korea**

**Richard P. Reading^{1*}
& (alphabetically) John Azua¹, Nanette Bragin¹, Onolragchaa Ganbold²,
Travis Garrett¹, David Kenny¹, Hansoo Lee³, Woon Kee Paek⁴, Mary Jo
Willis¹**

¹ Denver Zoological Foundation, 2300 Steele Street, Denver, Colorado 80205 USA.

² Mongolian Conservation Coalition & Denver Zoological Foundation – Mongolia
Program, Ulaanbaatar, Mongolia.

³ Korea Institute of Environmental Ecology, 754 Gwanpyungdong, Yusunggu Daejeon
305-301, Republic of Korea.

⁴ Korean National Science Museum, Republic of Korea.

* +1 (720) 337-1545; FAX +1 (720) 337-1406; rreading@denverzoo.org

Many species, especially birds, undergo seasonal migrations presumably to increase fitness, although this remains poorly documented. Generally, juvenile birds learn migration routes from their parents or their ability appears innate (i.e., requires no learning). Here we report on an apparent human-induced migration of juvenile Cinereous, or Eurasian Black, Vultures (*Aegypius monachus*) from their breeding grounds in Mongolia to wintering grounds in the Republic of Korea (i.e., South Korea). We used global positioning system (GPS)/satellite and GPS/cell phone telemetry units to track movements of Cinereous Vultures in Mongolia and South Korea, and then employed a geographic information system (GIS) to map home ranges and migration routes. We found that juvenile vultures migrate thousands of km from Mongolia to winter in South Korea and spend the rest of the year in Mongolia. Adult vultures from Mongolia do not migrate, but remain in Mongolia year round. It appears that provisioning of food for vultures in “vulture restaurants” in South Korea that began in the late 1990s induced an increased migration pattern in Cinereous Vultures. Migration of only juvenile birds is apparently rare and this seemingly “new,” human-induced migration appears to be unique and demonstrates the flexibility of these birds seem in finding and exploiting new food sources far from their natal areas. These results have important implications for conservation, such as the need to protect migratory paths and stop-over points between Mongolia and Korea. Our results also suggest flexibility in at least some species of birds that may serve them well as the world’s climate changes.

Key Words: Eurasian Black Vulture, movement patterns, satellite telemetry, vulture restaurant

The important of small islands for stopover site during migration of Oriental Honey Buzzards in Indonesia

Syartinilia^a, Anggi Mardiyanto^a, Hendry Pramono^b, Afra D. N. Makalew^a,
Yeni A. Mulyani^b, Hiroyoshi Higuchi^c

^aDepartment of Landscape Architecture, Faculty of Agriculture, Bogor Agricultural
University (IPB), Meranti St. IPB Darmaga, Bogor 16680, Indonesia

^bDepartment of Forest Resources Conservation and Ecotourism, Faculty of Forestry, Bogor
Agricultural University (IPB), Jl. Meranti, Kampus IPB, Darmaga, Bogor 16680, Indonesia

^cGraduate School of Media and Governance, Keio University, Endo 5322, Fujisawa,
Kanagawa 252-0882, Japan

Small island is an area, which is highly vulnerable to disturbances (human induced) and changes (climate change). Oriental Honey Buzzards (OHBs, *Pernis ptilorhynchus*) are migratory raptors, which have satellite-tracked since 2003. They often use small islands as resting site before they reach their wintering habitat in Indonesia. Some of small islands have critically important role for succeeding the migration. Destruction of stopover habitats may influence the survival of migratory raptors. This paper provides information on landscape characteristics of stopover habitat and recommendation for managing the habitat. This study was conducted in Rupert and Belitung Island, Indonesia. Based on satellite-tracking data, Rupert and Belitung Island have already known as the important stopover site before entering Sumatra and Borneo Island, respectively. Analysis was conducted by integrating satellite-tracking data and Geographical Information System (GIS), and direct observation. Landscape characteristics of stopover habitat were predicting using presence data derived from satellite tracking data through the application of Logistic Regression (LR) coupled with RAMAS GIS. Totally we used twenty-four individuals of satellite-tracked OHBs (2003-2009) data that have stopover habitat in Rupert and Belitung Island. Results of this study showed that Rupert and Belitung islands have important role as stepping-stone before entering the big island in Indonesia. The main landscape characteristics were highly influenced by OHB's need for food which showing that they preferred to select the site with characteristics for hunting area. Stopover habitat characteristics also affected the behavior of OHBs during their stay. Identification of these landscape characteristics provides baseline information for ecological-based development particularly for managing small island as important stopover habitat for migratory raptor.

Keywords: landscape characteristics; logistic regression, *Pernis ptilorhynchus*; satellite-tracking; stopover habitat

East to West Migration of Steppe Eagle (*Aquila nipalensis nipalensis*) and other raptors at Thoolakharka Nepal

Tulsi Subedi¹, Sandesh Gurung², Surya Gurung³ and Robert DeCandido⁴

¹Himalayan Nature, P.O.Box: 10918, Lazimpat, Kathmandu, Nepal, ² Tribhuvan University, Kathmandu, Nepal ³Dhikur Pokhari VDC 6, Kaski District, Gandaki Zone, Nepal, ⁴Dr. Robert DeCandido, 1831 Fowler Avenue, The Bronx, New York 10462

This study on the east to west migration of the Steppe Eagle *Aquila nipalensis nipalensis* was conducted in central west Nepal in the small mountain town of Thoolakharka (28018.188' N, 083049.788'; Elevation 2,050 m). We counted Steppe Eagles and 36 other raptor species on migration from mid-September through early December in 2012-2014. Our counts ranged from 6,000 to 8,000 Steppe Eagles per year leaving the Tibetan plateau and northern Asia, and heading southwest through the Himalayan Mountains to winter in Nepal and points to the west. Steppe Eagle migration began each year in early October and continued through early December. The highest single hour count was 308 Steppe Eagles between 14h00 to 15h00 on 21 Nov 2013, and the highest daily count was 1,102 eagles on 20 November 2013. Though migrating eagles were observed from 08h00 to 17h00, the peak of the flight occurred in the afternoon hours (12h00 to 16h00), with highest numbers between 14h00 to 15h00. In 2012-2014 only 33% of Steppe Eagles passed before 12h00, while 67% passed between 12h00 to 17h00.

At our Thoolakharka watch site, >60% Steppe Eagles that passed overhead were aged during 2012-2014. Of these, we placed each migrating eagle into one of three age classes based upon plumage characteristics: Juvenile (birds hatched that year); Sub-adult (second to fourth year birds); and Adult (individuals five or more years old). Overall in 2012-2014, we counted 20% juveniles, 37% sub-adults and 43% adults with a median passage date of 15 November for juveniles; 18 November for sub-adults; and 19 November for adults. A t-test for juvenile vs adults ($t= 3.55$, $df = 83$, $p=0.0006$), and juvenile vs sub-adults ($t=3.64$, $df = 98$, $p=0.0004$) shows that juvenile Steppe Eagles are seen on migration earlier than adults and sub-adults. Similarly an ANOVA test ($F = 0.96$, $df = 196$, $p = 0.38$) shows there is not any significance difference of the migration dates of the different age classes of Steppe Eagles 2012-2014. Although different raptor species have their own timing of migration at Thoolakharka, our data show mid-November as the best time to see the largest movement of Steppe Eagles.

Key words: Steppe Eagle, Migration, Thoolakharka, Nepal

The development of raptor migration ecotourism as a conservation objective at Rupert Island, Sumatra

Yera putri rahayu

*Biology Dept. In Andalas University, Indonesia
and Raptor Study Group Malaysian Nature Society*

Rupert Island, off south-eastern Sumatra, is on the migration corridor and stop over site for migratory raptors in eastern Asia. Rupert has an area of 1,500km² and is covered by mangrove swamp forest and production forest. Clearing of forest for timber production and plantations, forest burning that cause haze and the capture of migrant raptors for sale affect the survival of migratory raptors that fly into and out of Rupert during the migratory season. Due to the situation in Rupert and to detect the effect of haze on the migratory raptors, we carried out observations on raptor migration with the objective of developing basic tourism for conservation.

We compared the abundance of migratory raptors in spring and autumn seasons and identified their habitats in order to develop raptor migration as an ecotourism product for conservation. Data for this research were obtained from direct observations, interviews and questionnaires. Observations of migratory raptors adopted the point count method and started at around 06h30 hrs, roughly 30 minutes after sunrise, and ended at 16h00 hrs. The research samples included all migratory raptors that arrived in and flew out of Rupert, the local people and visitors. During 10 days of observation from 19 - 28 October 2014 (autumn migration), we recorded 518 raptors, including 336 Oriental Honey Buzzards, 43 Black Bazas, 84 Chinese Sparrowhawks, 42 Japanese Sparrowhawks, 1 Peregrine Falcon and 12 unidentified raptors. During 3 days of observation from 10-12 March 2015 (spring migration), we recorded 4,501 raptors, including 4,499 Oriental Honey Buzzards and 2 Chinese Sparrowhawks.

Our results showed that the abundance of raptors in October 2014 was lower compared to March 2015. The low number of raptors in October 2014 was due to the 4 days of haze and 2 days of rain which caused the migratory raptors to make landfall at Tanjung Punak. Although haze occurred in Rupert in March 2015, there was good weather at the observation site in Teluk Rhu and migration appeared not to be affected. The assumption that migratory raptors roost in Teluk Rhu before migrating across the Straits of Malacca was confirmed in March 2015 with sightings of an Oriental Honey Buzzard perched on a coconut palm behind houses and many others taking off from the mangrove forest.

Our research concluded that Rupert island important stop over site for migrant raptors. However, changes in forest cover and forest clearing by burning are threatening the habitat of migratory raptors. To suppress such threats, there is a need to carry out conservation of migratory raptors and their habitats. Raptor migration has become an attraction for bird enthusiasts from all walks of life and can be used as a product of ecotourism to attract locals. The results of interviews and questionnaires showed that Rupert island has become a beach resort with cultural attractions and is drawing local residents as well as visitors from outside the region. With tourism already established in Rupert Island, a conservation program for migratory raptors can be developed into an ecotourism event that can benefit the local population and the government.

Oral Presentation

Reproduction, Habitat and Behavior Session

Hope for Threatened Tropical Forest Raptors: Lessons from the Philippine Eagle Conservation Program

Dennis I. Salvador and Jayson C. Ibañez.

*Philippine Eagle Foundation. Philippine Eagle Center, Malagos District,
Davao City. 8000. Philippines.*

djisalvador@gmail.com, ibanez.jayson@gmail.com

The Philippine Eagle (*Pithecophaga jefferyi*) is an IUCN critically endangered species that is found only in the Philippine archipelago where it is country's national bird. Because of the massive decimation of its primary forest habitat and continuing human persecution, the species remains at the verge of extinction. Is the Philippine's top forest predator doomed to extinction? We review four decades of conservation efforts, focusing on the results in wild population monitoring, habitat protection, community-based conservation, public education, test releases, policy formulation and law enforcement, including new ecological information generated from the four islands where the species exists. And, not all hope is lost. Although the status of the Philippine Eagle remains precarious, we conclude that the breadth of success indicators in the four major islands where it is historically found are promising and that the efforts to save the Philippine Eagle from extinction as a flagship for forest biodiversity conservation in the Philippines is not a lost cause.

Keywords: Philippine eagle, Philippines, holistic conservation, Philippine Eagle Foundation

Population Status and Distribution of Black Kite (*Milvus migrans*) in Sambhal District, Uttar Pradesh, India

Adesh Kumar and Amita Kanaujia

Biodiversity & Wildlife Conservation Lab, Department of Zoology

University of Lucknow, Lucknow-226007

Uttar Pradesh, India

adesh.science@gmail.com

The Black Kite is perhaps the world's most abundant bird of prey. Not surprisingly for a species with such a colossal range, up to 12 subspecies have been described, with between six and eight commonly recognized. Unlike others of the group, Black Kites are opportunistic hunters and are more likely to scavenge. Although still large in number, the population is declining when compared to past but in our study area the trend of population growth is continuously increasing. There is no survey on black kite was previously conducted in western Uttar Pradesh. This lack of information makes it complicated to take effective measures for their management. The present study was performed to assess the distribution and population status of Black Kite in Sambhal District of Uttar Pradesh from June 2013 to March 2015. Survey is being carried out seasonally, on foot or vehicle according to the area. Observations are being carried out using 'encounter transect' and 'roost count' method with the aid of 10x50 binoculars and data is supported with photography using Canon EOS 1000 DSLR camera. The study revealed that black kite distributed throughout the district and distribution is influenced by food availability and nesting site. Total 53 roosting, 36 feeding and 74 breeding sites were recorded in study region. The estimated population sizes were 4,245 and 4,861 in 2013-14 and 2014-15 respectively. Maximum population was seen in Begumpur and Tasspur and minimum population were observed in Fateullah Srai and Betla respectively during study period. Study area abode of a good population of black kite because there are much food availability and nesting and roosting sites. Sambhal district is famous for bone and horn handicraft work and a big supplier of frozen meat all over the country. In study region 36 slaughter house and 12 bone mills are situated which provide fine amount of food for Black Kite. Although study area has good population size but due to cutting of nesting trees, unsustainable development and increase in human population caused shrinking of habitat of black kite which may limit the Black Kite population in coming years. The study recommends the protection Black Kite habitat as well as promotion of trees preferred for nesting by Black Kite.

Keywords: Black Kite, Population, Nesting Site, Habitat

Impact of Upcoming Tourism and Running Railway Tract on Vultures in Deogarh, Lalitpur, Uttar Pradesh, India

Amita Kanaujia and Sonika Kushwaha

Biodiversity and Wildlife Conservation Lab, Department of Zoology

University of Lucknow, Lucknow-226007 Uttar Pradesh, India

kanaujia.amita@gmail.com

The declining vulture population from last few decades has attracted many biologists to find out the exact reason of sudden decline of their population. There is no single reason which can be claimed as the foremost reason for their decline. A single global reason of diclofenac has been claimed by most of the ecologists as the major cause but actually there are other local reasons which have inflicted the vulture population in their respective areas. The most alarming example is the Bundelkhand region which constitutes some of the districts of both Madhya Pradesh and Uttar Pradesh, within the boundaries of India. The most promising population of *Gyps* species is found in the Bundelkhand region at Deogarh, Lalitpur, U.P. Approximately 500 vultures are breeding successfully in the cliffs of Deogarh along the side of River Betwa. The maximum numbers are of *Gyps indicus* (Long-billed Vultures) followed by *Neophron percnopterus* (Egyptian Vulture) which is further followed by few breeding pairs of *Sarcogyps calvus* (King Vulture).

Deogarh, Lalitpur is situated along the coordinates and 24°31'33.6" N & 78°14'16.8" E and 24.6800° N, 78.4200° E respectively, is an area with lots of cliffs running about 10 km next to river Betwa. The area is part of Mahaveera Swami Sanctuary popularly nomenclature on the name of Jain lord Mahaveera and hence there are several Jain temples. The temperature Ranges from 24°C to 49°C during summer and during winter 2°C to 35°C. Deogarh as the name depicts is the fort of Gods and Goddess, abodes large numbers of temple related to several Gods and Goddesses of Indian mythology. Recently the Archeological Department of India have excavated large number of wall painting related to lord Mahaveera inside the cliffs. Hence Deogarh has become the place with ecological and archeological significance. It attracts large number of tourists throughout the year including Archeologist, Geologist, Historians, Educationists, Janis and Researchers from different fields.

On the efforts of Archeological Department of India and Ministry of Culture now the Deogarh is being connected to the rest of part of state with better roadways as well as a broad gauge railway line passing to Lalitpur touching the boundary of Deogarh, which connects the North India to others parts of central India. Every year so many tourists come to Deogarh at places which are next to vultures colonies. Some of the sadhus have stationed themselves permanently within the cliffs next to vulture's colonies such as Muchkund's Cave. Ranchorr Temple which used to be a symbolic hundreds of years old small temple of Lord Krishna has now been converted into a huge temple covering several hectares of land.

Lot of ceremonies and rituals are performed from time to time now in that area which was once to be a neglected one. People in Deogarh are involved in agriculture as well as livestock management. The livestock data is very high but mostly the cattle, cow, buffalos and goats are of low breed and once they are old they are abundant to roam about as feral animals. The starved animals unfortunately dies on the railway track on which then the vultures feeds voraciously and the secondary data reveals that often the vultures die on the railway track as they are run off by the passing trains. On the other side promoting tourism is an important part of Indian economy but the monitored tourism will help in restoring the population of schedule I bird" vultures " in their natural abode over which the government is spending Crores of money. Prohibition on capturing of land in unprotected area on the name of religion and culture and total ban on uncontrolled activities which destroy the environmental sanctity is must to control the situation.

Keywords: Vultures, Deogarh, Lalitpur, Temple

**Saving the Last Forest of Kondang Merak using Raptor and Habitat
Conservation through Ethnography, Ecotourism, Edutourism
and Soft Campaign (E3+S)**

Andik Syaifudin & Heru Cahyono

Jl. Graha Dewata JJ5 No.10 Malang – East Java, Indonesia

hc_garuda@yahoo.com

Located in South Malang, East Java, the area of Kondang Merak covers a beach and a 1,989-Ha protection forest. 120 bird species including 17 raptors have been recorded here, with the Javan Hawk-Eagle (*Nisaetus bartelsi*) as one of the key species despite the rich biodiversity, the protection and environmental education levels are seemingly low, as marked by the high number of poaching and bird hunting. Other threats comes from iron-sand exploitation and road opening which cuts right through the heart of the forest. Several efforts have been taken to solve these problems, like environmental education and information dissemination. Being discontinuous, the efforts were not effective. Thus, ethnographic approach had to be taken, by doing participant observation which involved a key informant. It was followed by ecotourism, edutourism, and soft campaign with the local people for four years. As results, we witnessed a successful breedings of a Crested Hawk-Eagle (*Nisaetus cirrhatus*) and two of the Javan Hawk-eagle. These efforts is also effective in reducing the number of poaching and bird hunting in Kondang Merak.

Keywords : protection, conservation, E3+S, Kondang Merak, raptor

Ground nesting raptors of Mongolia

^{1,2}Gombobaatar Sundev*, ³Reuven Yosef,
⁴Eugene Potapov, ¹Odkhuu Biraazana, ¹Usukhjargal Dorj

¹*School of Arts and Sciences, National University of Mongolia*

²*Mongolian Ornithological Society*

³*Department of Life Sciences, Ben Gurion University, Israel*

⁴*Bryn Athyn College, USA*

Mongolia is one of the important breeding grounds for steppe raptors in Asia. To date, 44 species were recorded, of which 25 species breed from the Siberian boreal forest to Central Asian Gobi desert covering steppe, forest steppe, and desert steppe ecological zones. In the Mongolian steppe, Saker Falcon (*Falco cherrug*), Steppe Eagle (*Aquila nipalensis*), Upland Buzzard (*Buteo hemilasius*), Golden Eagle (*Aquila chrysaetos*), Cinereous Vulture (*Aegypius monachus*), Lesser (*F. naumanni*) and Common Kestrels (*F. tinnunculus*) breed in on the ground, on cliffs, rock boulders, tree patches, and artifacts. Among the steppe raptors, Saker Falcon, Steppe Eagle, and Upland Buzzard are true ground nesters. The 303 breeding pairs of Saker Falcon observed between 1998-2006, were found in 21 types of substrates: 26% on cliff ledges and cavities, 16% on rock column, 1% on the ground, 0.7% in trees, and 0.3% in sandy precipices, and 57% in artificial nest substrates. Most ground nesting Sakers used old Upland Buzzard nests. An average of four chicks fledged from these nests. All ground nests had a choice of available vacant nests built by Upland Buzzard and Raven (*Corvus corax*) on artificial and natural substrates. Ground nesting Saker pairs were located close to busy car road and/or a dwelling of local herdsman. We believe that such juxtaposition of nest is predetermined by a desire to minimize disturbance from predators such as Grey Wolf (*Canis lupus*) and Eurasian Badger (*Meles meles*). The major food source in the area was Brandt's Vole (*Lasiopodomys brandti*). We conclude that the primary reason Saker Falcons opt to nest on the ground is food abundance and ease of access. The Steppe Eagle is a breeding migratory species in Mongolia. We monitored 49 breeding pairs between 1998-2007 during varying conditions of food availability, altitudes and regions of the country. Eagles selected seven types of natural nest substrates—91% nested on the ground (48% in rock column, 33% in breaking rocks, 9% on cliffs, 2% in trees) and 9% on artifacts (car cabin (4%), car tire (2%) and artificial nest platforms (2%)). Breeding pairs prefer to nest in the midst of 20-30 m high rocks, or on top of rock columns, or on hillsides in the center of active colonies of Brandt's Vole. There was no difference between type of nesting substrates and number of eggs laid and hatched, or number of young fledged. Food availability and abundance appear to be a limiting factor for ground nesting Steppe Eagles in the steppe. The Upland Buzzard is a resident breeding species in the country. We found a total of 24 different nest sites from 1998 to 2007. Most nests were on the ground (23%, n=69), artificial nest substrates (three-legged pole, single pole, car tire on poles, pylons) (20%, n=60), rocky outcrops with column (17%, n=51) or cliffs (9%, n=27), A-type wooden utility poles (5%, n=16), and others (26%). We found that breeding pairs built their nests on the ground depending on the density of Brandt's Vole. Our data show that one of the main reasons for reduced clutch size and number of chicks was the vole availability in the steppe. We documented egg desertification and high mortality of chicks caused by starvation, cannibalism and predation as result of a crash of the vole population in the area; and is the reason for a high and positive correlation between average number of chicks fledged and vole density. Golden Eagle and Cinereous Vulture occasionally build their nests in small rock boulders and cliffs up to 1-3 m on hill side and mountain slopes in the steppe. Lesser and Common Kestrels use rock crevices and holes in small cliff face and rocks of 0.5 m height. We conclude that the continued survival of the ground nesting raptors on the Mongolian steppe is heavily dependent on the health of Brandt's Vole populations, and of conservation concern.

Trophic ecology of sympatric Northern Boobooks (*Ninox japonica*) and Oriental Scops Owls (*Otus sunia*)

Han-kyu Kim¹, Woo-shin Lee

200-7213, CALS, Seoul National University,
San56-1, Shinlim-dong, Gwanak-gu, Seoul, Korea

¹Cyaneus87@gmail.com

Two sympatric species that have similar trophic niche may compete over prey resources, or avoid such competition by separating their use of prey type, foraging dimension, and/or foraging timing. In raptors, study of diet has been often used to show the difference of trophic ecology of two or more species from the same community. Prey remains, pellet castings, fecal analysis, and/or direct observation of prey taken by birds are the most common and direct method to understand species' prey use. However, the field application of these methods for studying prey use of two forest dwelling insectivorous owl species, Northern Boobooks (*Ninox japonica*) and Oriental Scops Owls (*Otus sunia*), is difficult in dense forests in Korea. These two owl species are both migratory breeders that has short window of study period since they breed during May to August, and migrate to wintering grounds at South-east Asia during September and October. In addition, small pellet castings that decompose quickly in frequent precipitation and high temperature in summer months prohibit studying pellet compositions. Northern Boobooks and Oriental Scops Owls are known to have majorly insectivorous diet, which produce relatively soft pellets than those of birds that use vertebrate preys. Recently, stable isotope ratio analysis has been increasingly used in trophic ecology of birds and other organisms, especially for organisms that have prey types and/or foraging behavior difficult to study with classical methods. To compare trophic positions and diet use of two owl species, carbon and nitrogen stable isotope ratio of potential prey items and whole blood of owls were analyzed to estimate prey composition of each owl species at Gwang-neung Forest, Korea. Potential preys were pooled into 4 distinct groups (aerial insects, ground/foilage insects, rodents, and birds), by their behavioral aspect and taxonomic group. Based on Bayesian multi-source mixing model (R package 'siar'), Northern Boobooks utilized more rodents and birds than invertebrate prey, and aerial insects consisted higher proportion than ground/foilage insects. Oriental Scops Owls, on the other hand utilized more ground insects and rodents than birds and aerial insects. Northern Boobooks and Oriental Scops Owls were described as mainly insectivorous species in literature, however, in this stable isotope approach, more vertebrate prey were assimilated in their tissue during early breeding period. Also, this approach shows their differential prey composition by different hunting behavior, as Oriental Scops Owls are more gleaners and ground foragers, not like Northern Boobooks, which prey on aerial insects. Overall, Northern Boobooks had c. 3.0‰ higher nitrogen stable isotope ratio and larger variance in carbon Stable Isotope Ratio. Oriental Scops Owls and Northern Boobooks at Gwang-neung forest showed clear difference in trophic niche and found to be using different food sources, as well as utilizing different spatial structure in the forest.

Keywords: *Otus sunia*, *Ninox japonica*, Stable isotope, mixing model, trophic niche

**First record of nests and breeding success of Red-headed Vulture
Sarcogyps calvus and implementation of Vulture Conservation Programs
in Nepal**

Hemanta Dhakal

Local Organization for Research and Development (LORD)

Subhkamana Path, Lakeside, Pokhara-6, Nepal

hdforecology@gmail.com

The Red-headed Vulture *Sarcogyps calvus* (RHV) was historically common in the West Himalayan foothills but its population has declined in the entire Indian subcontinent (Nadeem *et al.* 2007 and Cuthbert *et al.* 2006). The objectives of our study were to detect the nest sites and document breeding success of the critically endangered Red-headed Vulture (RHV) in the West Himalayas. We surveyed 14 districts (Arghakhanchi, Palpa, Gulmi, Syanga, Pyuthan, Dang, Lamjung, Kaski, Surkhet, Baglung Parbat, Tanahu, Damauli and Jajarkot) of Western Nepal. We observed 28 RHV were encountered flying, roosting, nesting and feeding. Three nests, two from Palpa and one from Jajarkot were recorded between December 25, 2011 to January 2014. Breeding success at two nests was 100%. During the survey Vulture Conservation Awareness Programs were implemented.

Behavioral assessment methods to identify the degree of habituation in raptors

Inge H.M. Tielen

*Wanicare Foundation, Cikananga Wildlife Rescue Center,
Sukabumi, West-Java, Indonesia.*

ingetielen@yahoo.com

Although all raptor species in Indonesia are protected by law, the illegal trade of wild-caught raptors is not decreasing and on average about 100 raptors are being confiscated every year from private owners or traders.

Releasing these confiscated raptors is a great challenge, not only due to the lack of suitable habitat, but mainly because most individuals are habituated to humans. Released raptors are frequently observed near human settlements, as these raptors learned in the past that humans provide food. The survival rate of these individuals is low and in addition it can cause conflicts as raptors have been confirmed attacking people to defend their territory close to human settlements. Behavioural features or problems that arise when raptors are habituated to humans have been described, but behavioural research is limited. Developing methods to measure the degree of habituation and identify which individuals can be rehabilitated and released is one of the biggest challenges for raptor programs in Indonesia. Recent long term behavioural research gave new insights in the time budget, behavioural development and feeding behaviour of raptors with different histories.

Individuals that spend less time in captivity showed a quicker increase of time spent on foraging and extra alertness when people were close. In addition our first results also give new understanding in feeding behaviour, as results indicate that vigilance episodes between ingesting their prey are more frequent in raptors with a greater fleeing response, which is again related to time and conditions in captivity. We aim to use these results to develop a new approach to select eagles for rehabilitation and release, however limited data about release success currently slows this process. Nevertheless are these results a big step forward to a better understanding of the consequences of captivity on raptor behaviour.

Keywords: raptors, rehabilitation, habituation, foraging, feeding behavior

**Post-fledging movements and survival of juvenile Saker Falcons
(*Falco cherrug*) from artificial and natural nest sites in Mongolia**

**Md Lutfor Rahman¹, Nyambayar Batbayar²,
Gankhuyag Purev-Ochir² and Andrew Dixon¹**

*1. International Wildlife Consultants Ltd,
P.O. Box 19, Carmarthen, SA33 5YL, United Kingdom
lutfor.rahman@falcons.co.uk*

*2. Wildlife Science and Conservation Center of Mongolia, Union Building,
B-802, Ulaanbaatar 14210, Mongolia*

We used patagial tags, VHF radio transmitters, satellite-received transmitters, ring recoveries to investigate the movements and survival of juvenile Saker Falcons (*Falco cherrug*) fledged from artificial nests in open landscapes and natural nest sites in hilly areas in Mongolia during 2006-2014. We have found that duration of the post-fledging dependence period (PFDP) was 40 days (range: 31-52 days). During the post-fledging dependence period juveniles progressively moved farther from their nest until dispersal from the natal area. Natal home ranges were larger for juveniles fledged at artificial (Mean 100% MCP: $0.81 \pm 0.11 \text{ km}^2$, n=53) than natural sites (Mean 100% MCP: $0.18 \pm 0.03 \text{ km}^2$, n=46) and the distance moved by juveniles during PFDP was positively related to fledging date and brood size. The mean distance moved by juveniles from artificial and natural sites was $1.5 \text{ km} \pm 0.09 \text{ km}$ and $0.7 \text{ km} \pm 0.05 \text{ km}$ respectively. Over the PFDP, juvenile survival being higher in early fledged broods from natural sites compared to artificial sites. Predation was identified as a major cause of mortality, especially in open landscapes where artificial nests were erected. However, because artificial nests produced more fledglings, we found that overall productivity of juveniles to dispersal at artificial and natural nests sites did not differ significantly. We further tracked five juvenile Saker Falcons which were deployed satellite-received transmitters. Following dispersal from the natal range, whether and where juveniles established temporary settlement areas (TSAs) before initiating long distance migration was also investigated.

Key words: post-fledging, Saker Falcons, survival, dispersal, migration

Abundance of Spotted Wood Owl (*Strix seloputo*) in Relation to Environmental Factors in Malaysian Oil Palm Small holdings

Muhammad Syafiq Yahya¹, Chong Leong Puan^{1,2*}, Badrul Azhar^{1,2},
Mohamed Zakaria¹, Sharifah Nur Atikah¹ & Amal Ghazali¹

¹Faculty of Forestry, Universiti Putra Malaysia
43400 UPM Serdang, Selangor, Malaysia

²Biodiversity Unit, Institute of Bioscience, Universiti Putra Malaysia
43400 UPM Serdang, Selangor, Malaysia

*Corresponding author: chongleong@upm.edu.my

Spotted Wood Owl (*Strix seloputo*) is usually associated with semi-open habitats including urban parks and agricultural areas. To date, there is little ecological information on Spotted Wood Owl in oil palm plantations. This study examined the abundance of Spotted Wood Owl in oil palm smallholdings in Selangor state, Peninsular Malaysia as well as environmental factors (at local and landscape levels) that influenced its relative abundance. Distance sampling was conducted from January to August 2014 at 90 points located more than 800 m between points and the survey was repeated for six times at each point. The density of Spotted Wood Owl was estimated at 0.07 ± 0.01 birds per ha, i.e. about seven to eight birds in every 100 ha. Generalized Linear Models (AIC = 89.57; $R^2 = 22.87$) indicated two predictor variables, i.e. height of oil palms (slope = 0.537) and number of houses in a 100 m radius (slope = -0.060) significantly influenced the relative abundance of the Spotted Wood Owls in oil palm smallholdings. Our results suggested that the availability of mature palms as perching sites and presence of human settlements may affect the distribution of the owls in the study areas. Due to its occurrence in oil palm smallholdings, this study proposed the potential of using native owl species such as Spotted Wood Owl to provide biological control of rodent pests similar to the sympatric Barn Owl (*Tyto alba*).

Keywords – *Strix Seloputo*, Nocturnal bird density, Oil palm, Distance sampling

The current conditions of Javan-Hawk Eagle's habitat remnants in West Java, Indonesia

Nur Azmi^{1a}, Syartinilia^{1b}, Yeni Mulyani²

¹*Department of Landscape Architecture, Bogor Agricultural University,
Jl. Meranti, Kampus IPB Darmaga, West Java, ^anur_azmi88@yahoo.com;*

^bsyartinilia@yahoo.com

²*Department of Forest Resources Conservation, Bogor Agricultural University,
Jl. Meranti, Kampus IPB Darmaga, West Java,*

yamulyani@gmail.com

Javan Hawk-Eagle (JHE, *Nisaetus bartelsi*) which endemic in the natural forests of Java, Indonesia is categorized as one of the endangered raptors based on IUCN Red List of Threatened Species. Small population size, severe habitat loss, forest fragmentation, and illegal hunting have all contributed to the “endangered” status of this species. Moreover, JHE have selected as one of priority species from 14 species, which has been incorporated into government regulations that its populations must be increased up to 3%. Unfortunately the lack of information about current conditions of the distribution of JHE's habitat remnants caused the proposing conservation strategies for this species become difficult. Our previous study (2002) was examined the high proportion of JHE's habitat remnants mainly scattered in West Java. Therefore, this research aimed to observe the current conditions of JHE's habitat remnants in West Java and compared to the previous one. In this study, we updated the predicted probability model using the same Logistic Regression model equation resulted from our previous study that is applied in RAMAS GIS v4.0 software. The satellite images used in this study composed to four scenes of Landsat 8 captured in April to June, 2014 with 30x30 m resolution. Results of this study identified 14 remnant habitat patches (3788 km²) scattered in West Java. The comparison with the previous study showed the size and number of patches was increased. Based on this fact, we recommend that JHE's habitat remnants should be connected each other for increasing the survival of JHE in the natural habitat remnants in West Java.

Keywords: GIS, Habitat remnants, Logistic regression, *Nisaetus bartelsi*

**Breeding ecology of Lesser Kestrels (*Falco naumanni*)
in Ikh Nart Nature Reserve, Mongolia**

**Onolragchaa Ganbold¹*, Richard P. Reading² & (alphabetically)
John Azua², Munkhbaatar Munkhbayar¹, Chimedbat Bat-Erdene¹**

¹ *School of Mathematics and Natural science, Mongolian National
University of Education*

² *Denver Zoological Foundation, 2300 Steele Street, Denver, Colorado
80205 USA.*

We studied the breeding ecology of Lesser Kestrels (*Falco naumanni*) inhabiting Ikh Nart Nature Reserve, Mongolia from May 2012 to August 2014. Lesser kestrels do not construct nests, but instead use small rock crevices and caves in Ikh Nart. Nest holes varied greatly in structure, with no two the same. We found a mean (\pm SD) nest's depth of 32 ± 6.2 cm (range = 24-44.5 cm), a mean inner width of 17.1 ± 1.3 cm (range = 15-19 cm), a mean height of 24 ± 19.7 (range = 12-61 cm), and mean distance between the nest and the ground of 20.3 ± 6.03 m (range = 10.4-30.2 m). Lesser Kestrels breed in nesting colonies, sometimes in association with Common Kestrels (*F. tinniculus*). In Ikh Nart, the mean number of nests per colony was 4.1 ± 2.7 (range = 2-8). We studied 9 kestrel colonies during our work, with a mean distance between nests of 99.7 m (range = 1-361m). Lesser Kestrels laid eggs between 24 May and 2 June each year. The mean clutch size was 4.0 ± 0.7 , with a mean incubation period of 28 ± 2 days. We recorded an overall hatching success rate of 84.2% (214 of 254 eggs) and an overall fledgling success rate of 89.7% (192 of 214 nestlings). During the breeding period, male spent the most time incubating and brooding (61% of the time, compared with females who incubated and brooded 36% of the time). Neither parent incubated or brooded the clutch 3% of the time. Parents did not leave their clutches more than 30'. Small raptors, we recorded the following mean adult Lesser Kestrel body sizes: body weight = 164.3 ± 23.4 g, wingspan = 66.6 ± 6.6 cm, and toe and talon = 2.99 ± 0.2 cm. During the nesting period, adults preyed on a variety of insects (mostly grasshoppers; 77.2% of their prey ;), lizards (mostly toad-headed agamas, *Phrenocephalus versicolor*; 11.4%), small mammals (7.46%), and small birds (3.94%).

Current Status of Breeding Osprey (*Pandion haliaetus*) in Abu Dhabi, United Arab Emirates

**Shakeel Ahmed, Shahid.B.Khan, Junid.N.Shah, Sálím Javed,
Abdullah. A. Al Hamadi, Eissa. A. Al Hamadi**
Environment Agency – Abu Dhabi, P. O. Box 45553,

Abu Dhabi, United Arab Emirates

In United Arab Emirates (UAE) Osprey (*Pandion haliaetus*) breeds in winter months on almost all undisturbed offshore and near shore islands of Abu Dhabi Emirate. It is one of the regional priority species identified for conservation in the UAE. Environment Agency – Abu Dhabi (EAD) has identified all the breeding sites and regular monitoring surveys have been carried out since 2008. In 2014, we conducted a comprehensive survey at the previously identified islands. A total of 40 islands were visited, out of these only 32 had breeding ospreys. A total of 68 nests were recorded from all the sites; 62 were active nests and six were attended nests. The highest number of six active nests were recorded from Yasat north island (24.23178 N 52.01264 E) followed by five active nests from Mohayyat south island (24.49045 N 51.73281 E). The number of breeding pairs recorded in 2014 were less than those recorded from the same sites in 2011. A nearly 25% decrease in the number of active nests was witnessed from 2011 to 2014. Human disturbance is viewed as the single largest cause of such decline. Several offshore islands have recently witnessed increased human activity resulting in decrease of breeding pairs. As part of conservation efforts, EAD has installed man-made osprey nesting platforms at sites where the number of active nests has plummeted due to disturbance and predation. Moreover, satellite tracking of osprey is also undertaken to study the local movement and migration of the species and to identify habitats for protection and conservation planning.

Dispersal behavior of young Tawny Fish Owls at Wulin, Taiwan

**Yi-Hsin Liu, Chen-Lin Wang, Shiao-Yu Hong,
Jian-Wei Zeng, Yuan-Hsun Sun**

*Institute of Wildlife Conservation, National Pingtung University of Science
and Technology, Pingtung 912, Taiwan*

None was known about the dispersal behavior of young Tawny Fish Owl (*Ketupa flavipes*). We radio-tracked four young Tawny Fish Owls (two females and two males) from three nests in different years and sites in 2010-2015. These young birds started to leave their parents' territories about 8 months after fledging during late May and early June, and occasionally they returned several times before the non-return journal. One young female was found breeding 44 km away from its natal site in the fourth year, one young male wandered around its parent's territory and settled down and paired at nearby stream section in the third year. Another young male behaved in a similar pattern except that it leave Wulin in the third year and its radio signal was lost about 12 km south of the study area. One female's transmitter dropped before leaving its natal site.

Keywords: dispersal, fledging, roost, Tawny Fish Owl

"The Asian Raptor Research and Conservation Network (ARRCN) and The Flyway Foundation of Thailand (TFF) in partnership with government agencies, academic institutions, and NGOs will jointly convene a symposium. The mission of ARRCN is the exchange of information among its members, to coordinate research on both resident and migratory species, and through training, education and improved public awareness to promote the conservation of raptors"

KEYNOTE SPEAKER BIOGRAPHY

Professor Ian Newton

Topic: "The Ecology of Raptor Migration"

Ian earned a Ph.D. at Oxford University under the tutelage of David Lack. He has served as President of the British Ornithologists' Union and the British Ecological Society, as Chairman of the RSPB, The Peregrine Fund, the British Trust for Ornithology and SAVE (concerned with Asian vulture conservation). He has received numerous awards, including Order of the British Empire, the Union Medal and Goodman-Salvin Medal of the British Ornithologists' Union, and the Elliot Coues Award of the American Ornithologists' Union.



Dr. Keith L. Bildstein

Topic: "The Movement Ecology of Scavenging birds of prey: Examples from the Americas and Africa."

Keith L. Bildstein is Sarkis Acopian Director of Conservation Science at Hawk Mountain Sanctuary in Kempton, Pennsylvania, USA. He currently is Adjunct Professor of Wildlife Biology at the State University of New York-Syracuse. He is a Fellow of the American Ornithologists' Union, and has been President of the Wilson Ornithological Society and the Waterbird Society, and Vice-president of the Raptor Research Foundation. Bildstein has authored or coauthored more than 150 papers in ecology and conservation, including more than 50 on raptors.



Professor Yossi Leshem

Topic: "Migrating Birds Know No Boundaries" - From a Local to Global Scale

When Israelis mention birds, the name Yossi Leshem is never far off. A world renowned ornithologist, Leshem has been involved in many aspects of nature conservation, with an emphasis on bird research, for close to 43 years. In 2008, he received a Lifetime Achievement Award for Environmental Protection as part of Israel's 60th anniversary celebrations. He is a professor at the Department of Zoology in the Faculty of Life Sciences at Tel Aviv University, and is the founder and director of the International Center for the Study of Bird Migration.



REGISTRATION

- Early bird registration 150 USD (deadline April 30th, 2015)
- Regular registration 175 USD (deadline June 30th, 2015)
- Late registration 220 USD (deadline September 30th, 2015)

