

The first population census of the Critically Endangered giant ibis in Western Siem Pang, northeastern Cambodia

TY Srun^{1,*}, YAV Net¹, Jonathan C. EAMES^{1,2}, SUM Phearun¹, HONG Lina³, THI Sothearen³, BOU Vorsak¹ & Robin LOVERIDGE¹

¹ BirdLife International–Cambodia Programme, No. 2, Street 476, Sangkat Toul Tompong 1, Khan Chamkarmon, P.O. Box 2686, Phnom Penh, Cambodia.

² BirdLife International, David Attenborough Building, Pembroke Street, Cambridge, CB2 3QZ, UK.

³ Centre for Biodiversity Conservation, Royal University of Phnom Penh, Russian Federation Boulevard, Toul Kork, Phnom Penh, 12101, Cambodia.

* Corresponding author. Email srunt@yahoo.com

Paper submitted 16 April 2016, revised manuscript accepted 7 June 2016.

មូលនិយមសង្ខេប

ត្រយង់យក្ស *Thaumatibis gigantea* ជាបក្សីជិតផុតពូជដែលមានមាឌធំជាងគេក្នុងចំណោមត្រយង់ទាំង៣៦ប្រភេទនៃអំបូរ Threskiornithidae ហើយវាក៏ជាមិនិរន្តរ៍បក្សីជាតិនៃប្រទេសកម្ពុជាផងដែរ។ ពីមុនមក ត្រយង់យក្សធ្លាប់មានវត្តមាននៅទូទាំងភូមិភាគអាស៊ីអាគ្នេយ៍ ប៉ុន្តែបច្ចុប្បន្ននេះវត្តមានរបស់វាស្ទើរតែទាំងអស់មានតែនៅភាគខាងជើង និងខាងកើតនៃប្រទេសកម្ពុជាប៉ុណ្ណោះ។ តាមការប៉ាន់ស្មាន មានត្រយង់យក្សពេញវ័យប្រហែល១៩៤ក្បាលប៉ុណ្ណោះនៅក្នុងពិភពលោក។ ការប៉ាន់ស្មាននេះគឺពឹងផ្អែកលើទិន្នន័យដែលមានប្រភពមិនច្បាស់លាស់ និងការប៉ាន់ស្មានរបស់អ្នកជំនាញប៉ុណ្ណោះ ដូច្នេះវិធីរាប់មួយចំនួនដែលមានសុពលភាពគឺត្រូវការជាចាំបាច់ចំពោះប្រភេទដែលពិបាកសិក្សានេះ។ នេះជាលទ្ធផលនៃការវាយតម្លៃជាប្រព័ន្ធដំបូងគេលើចំនួនរបស់ត្រយង់យក្សក្នុងទីតាំងមួយកន្លែង។ វិធីសាស្ត្រដែលបានប្រើសម្រាប់ការសិក្សាគឺជាការរួមបញ្ចូលគ្នារវាងការកត់ត្រា តាមរយៈការអង្កេតដោយផ្ទាល់ និងតាមរយៈការស្តាប់សំឡេងនៅតាមត្រពាំង។ វិធីសាស្ត្រនេះចំណាយថវិកាតិច ដោយផ្អែកលើអេកូឡូស៊ីរបស់ប្រភេទសត្វនេះ។ ហើយវិធីសាស្ត្រនេះត្រូវបានសិក្សាសាកល្បងនៅដែនជម្រកសត្វព្រៃសៀមប៉ាងលិច ភាគឥសាននៃកម្ពុជាដែលពីមុនគេស្គាល់ថា តំបន់សត្វស្លាប់សំខាន់ភាគខាងលិចសៀមប៉ាង នេះជាតំបន់មួយក្នុងចំណោមតំបន់ផ្សេងទៀតដែលមានចំនួនត្រយង់យក្សច្រើនជាងគេ។ យើងប៉ាន់ស្មានថាមានត្រយង់យក្សចំនួន៤៩.៥±១០ក្បាល នៅមានវត្តមាននៅក្នុងតំបន់នេះ។ យើងពិនិត្យយ៉ាងជាក់លាក់ទៅលើវិធីសាស្ត្រនេះ នឹងស្នើសុំឱ្យមានការផ្តល់យោបល់កែលម្អពីអ្នកជំនាញ។ ជាអនុសាសន៍ គឺស្នើឱ្យមានការរាប់ចំនួនឡើងវិញជាទៀងទាត់ ដោយប្រើវិធីសាស្ត្រស្តាប់ដំបូងគ្រប់តំបន់ការពារអាទិភាពនៃប្រភេទនេះ។ ជាលទ្ធផលគឺអាចឱ្យយើងដឹងពីបម្រែបម្រួលនៃចំនួន ក្នុងគោលបំណងវាយតម្លៃពីប្រសិទ្ធភាពនៃការអន្តរាគមន៍អភិរក្ស ព្រមទាំងការព្រមានទាន់ពេលវេលា ទប់ស្កាត់ការធ្លាក់ចុះនៃចំនួនប្រភេទសត្វដែលជិតផុតពូជនេះ។

Abstract

The Critically Endangered giant ibis *Thaumatibis gigantea* is the largest of 36 species in the Threskiornithidae and the national bird of Cambodia. The species historically occurred throughout Southeast Asia, but is now almost entirely restricted to northern and eastern Cambodia. The global population is estimated at 194 mature individuals. This estimate is based on incidental data and expert opinion, however, and a rigorous population census method has yet to be

CITATION: Ty S., Yav N., Eames, J.C., Sum P., Hong L., Thi S., Bou V. & Loveridge, R. (2016) The first population census of the Critically Endangered giant ibis in Western Siem Pang, northeastern Cambodia. *Cambodian Journal of Natural History*, 2016, 51–59.

validated for this elusive species. We report the results of the first systematic population assessment of giant ibis at a single site. Our method combines visual and auditory detections at forest pools (trapeang) and provides a cost-effective survey approach based on species ecology. This was tested in Prey Siem Pang Khang Lech Wildlife Sanctuary in North-east Cambodia, previously known as Western Siem Pang Important Bird Area, one of the last strongholds of the giant ibis. We estimate that 49.5 ± 10 birds still occur in the site and critically review our method, suggesting refinements. We conclude by recommending repeated surveys using a standard method at all priority protected sites for the species. This will enable the interpretation of population trends to determine the efficacy of conservation interventions and provide an early warning, should further declines occur in this Critically Endangered species.

Keywords

Auditory detections, census, giant ibis, survey methods, visual detections, Western Siem Pang.

Introduction

Southeast Asia is experiencing the fastest rate of habitat conversion in the world (Sodhi *et al.*, 2010) and recent studies suggest that Cambodia is experiencing faster rates of tree loss than any other country in the region (Hansen *et al.*, 2013; Peterson *et al.*, 2015). Many animals in Cambodia consequently face a high risk of extinction (Keo *et al.*, 2009). For instance, the giant ibis *Thaumatibis gigantea* (Threskiornithidae; Fig. 1) was formerly widespread across mainland Southeast Asia, particularly Thailand, Laos, Vietnam and Cambodia. However, its range has contracted dramatically and the largest remaining populations occur in Cambodia (Fig. 2), with a few individuals believed to persist in Vietnam and Laos (BirdLife International, 2015a). The species is now extirpated from Thailand.

The giant ibis occurs in isolated populations across Cambodia but in relatively higher densities in northern and eastern areas of the country, including Chhiep Wildlife Sanctuary (formerly Preah Vihear Protected Forest) and Kulen Promtep Wildlife Sanctuary (where 24 pairs were monitored in 2014; Loveridge & Ty, 2015), and Prey Siem Pang Khang Lech Wildlife Sanctuary (with approximately 40 pairs; H. Wright, in litt., 2012). Other areas with significant populations include Srepok Wildlife Sanctuary (formerly Mondulkiri Protected Forest) and Lomphat Wildlife Sanctuary. Sum *et al.* (2011, 2013) estimated at least 10–15 pairs of giant ibises inhabit Lomphat Wildlife Sanctuary, and incidental camera-trap data (Gray *et al.*, 2014) suggest a population of 50 birds in Srepok Wildlife Sanctuary (T. Gray, pers. comm.). Other confirmed, although older sightings suggest that approximately five pairs may exist in Seima Wildlife Sanctuary (formerly Seima Protection Forest), Phnom Prich Wildlife Sanctuary, Veun Sai–Siem Pang National Park (formerly Veun Sai–Siem Pang Conservation Area), Yok Don National Park in Vietnam and scattered across the extreme south

of Laos (BirdLife International, 2015b). In addition, the species has also recently been confirmed at five other sites: a stretch of deciduous dipterocarp forest north of Sre Ambel in Koh Kong Province (Evans & Goes, 2011), Sang Sahakum Rukhavoan Community Forest in Oddar Meanchey Province, one site on the Sesan River near Stung Treng, a proposed bird nest protection area along the Mekong River in Kratie Province and Prey Lang Wildlife Sanctuary (Hayes *et al.*, 2015). It is estimated that each of these sites contain at least one pair of giant ibis. However, further survey effort is required to improve understanding of these populations and their distribution ranges to prioritise conservation efforts.

The primary habitat of the giant ibis is deciduous dipterocarp forest, where it is generally widespread at very low densities. Within this forest, the species relies on a matrix of habitats including forest pools ‘trapeang’ (Fig. 3), grasslands, and undisturbed roosting and nesting sites (Keo *et al.*, 2009). It breeds during the wet season (June–September) (Keo, 2008a) and nests in trees, with a preference for large *Dipterocarpus* species, generally more than 4 km from human habitation (Keo, 2008b). The species generally calls twice a day, in the morning from 04:30 to 07:00 hrs and in the evening from 18:00 to 18:30 hrs, and calls more frequently during the mating season before eggs are laid in June and July (Ty, 2013). It generally occurs in singles, pairs or small parties (BirdLife International, 2015b) and feeds in open water and on soft and hard muddy substrates surrounding the edges of trapeang (Wright *et al.*, 2012; J. Eames, pers. obs.). Its diet comprises a variety of invertebrates, crustaceans, eels, frogs and reptiles. The giant ibis is threatened by loss of suitable forest habitat throughout its range due to: 1) wholesale forest clearance by agricultural developments known as Economic Land Concessions (ELCs), 2) habitat conversion by small-scale agricultural encroachment by local communities, and 3) infrastructure and development initiatives, such as road construction through key



Fig. 1 (left) Giant ibis *Thaumatibis gigantea* (© Jonathan C. Eames).

Fig. 2 (below) Distribution of, and priority conservation zone for the giant ibis, including Yok Don National Park (Vietnam), Xe Pian National Biodiversity Conservation Area (Laos) and all priority protected areas for the species in Cambodia: A) Kulen Promtep Wildlife Sanctuary; B) Chhep Wildlife Sanctuary (formerly Preah Vihear Protected Forest); C) Siem Pang Wildlife Sanctuary and Prey Siem Pang Khang Lech Wildlife Sanctuary (formerly Siem Pang Protected Forest and Siem Pang Proposed Protected Forest II); D): Veun Sai–Siem Pang National Park (formerly Veun Sai–Siem Pang Conservation Area); E) Lomphat Wildlife Sanctuary; F) O’Yadao Protected Forest; G) Srepok Wildlife Sanctuary (formerly Mondulkiri Protected Forest); H) Phnom Prich Wildlife Sanctuary.

