

นิเวศวิทยาและการประเมินความหนาแน่นของนกหัวในป่าบาลา

Ecology and Density Estimates of Great Argus (*Argusianus argus*)
in Bala Forest, Narathiwat, Thailand

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บทคัดย่อ

การศึกษานิเวศวิทยาและการประเมินความหนาแน่นของนกหัวในป่าบาลา จังหวัดนราธิวาส โดยดำเนินการสำรวจบันทึกการเห็นตัว เสียงร้อง ข้อมูลด้านชีววิทยา และการเลือกใช้พื้นที่ในการดำรงชีวิต และตั้งกล้องดักถ่ายภาพจำนวน 5 ชุด ทุก 2 เดือน ในเส้นทางสำรวจ 11 เส้นทาง ระยะทาง 74.4 กิโลเมตร ระหว่างเดือนมกราคม 2544–เดือนเมษายน 2545 และประเมินประชากรของนกหัวโดยใช้ DISTANCE software (Buckland *et. al.* 1993) พบว่านกหัวมีการแพร่กระจายอยู่ในระดับความสูง 100 - 900 เมตร รทก. โดยเลือกใช้ที่ระดับ 401 - 500 เมตร รทก. (23.9%, N= 301) มากที่สุด และร้อยละ 85.7 ของภาพถ่ายของนกหัวที่บันทึกได้จากกล้องดักถ่ายภาพ แสดงให้เห็นว่านกหัวมีพฤติกรรมชอบอยู่โดดเดี่ยวมากกว่า อยู่เป็นคู่ ความถี่ของเสียงร้องของนกหัวในแต่ละเดือนเป็นสิ่งที่บ่งชี้ถึงช่วงฤดูผสมพันธุ์ของนกหัว ซึ่งพบอยู่ระหว่างเดือนมีนาคม-เดือนสิงหาคม (17.3%, N=301) ลานนกหัวที่นกตัวผู้ใช้เป็นเขตครอบครอง และแสดงพฤติกรรมเกี้ยวพาราสีมีจำนวน 20 ลาน และพบมากที่สุดที่ระดับความสูง < 100-100 เมตร รทก. และ 501-600 เมตร รทก. (25%, N=20) รังนกพบสร้างห่างจากลาน 100-300 เมตร อยู่บนดินระหว่างพุ่มของต้นไม้ใหญ่ ไข่มีจำนวน 2 ฟอง ระยะฟัก 27-29 วัน ศัตรูที่ล่าลูกนกหัวกินเป็นอาหารได้แก่ งูเส้าหางม้าเทา (*Boiga cyanodon*) การผลิตขนเกิดขึ้นในช่วงเดือนตุลาคม-เดือนพฤศจิกายน หรือหลังจากลูกนกอายุประมาณ 2 เดือน พ่อแม่จะเริ่มผลิตขน

จากการประเมินประชากรของนกหัวในป่าบาลาที่ระดับความเชื่อมั่น 95 % พบจำนวนเฉลี่ย 50 ตัว (32-80 ตัว) มีความหนาแน่น 0.45 ตัว ต่อตารางกิโลเมตร (0.29-0.74 ตัว ต่อตารางกิโลเมตร)

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Abstract

The study on the ecology and density estimates of Great Argus (*Argusianus argus*) in Bala Forest, Narathiwat, Thailand has been conducted by surveying and call count method, observing, and camera trap setting in 11 trails totaling of 74.4 kilometers between January 2001 to April 2002. The density estimates were developed using DISTANCE software (Buckland *et. al.* 1993).

The results reveal that Great Argus is found at the altitude ranging from 100-900 m.s.l. but most frequently occurred between 400 - 500 m.s.l. (23.9%, N= 301). 85.7% of individual pictures from camera traps indicated that Great Argus is solitary. The breeding period of Great Argus as indicated by frequency of calls was between March and August and peaked in July (17.3%, N=301). There were 20 breeding grounds found in the area at the altitude between <100 - 700 m.s.l. with half found at <100 - 200 m.s.l. and 501- 600 m.s.l. (25% each). Each breeding ground was marked as male territory. The nesting ground was found 100-300 m away from the breeding ground with clutch size of 2 eggs. Hatching period took 27 to 29 days. The main predator of chick was *Boiga cyanodon*. The molting period was either after the breeding period or after the chick was two months old (October - November). The density of Great Argus was 0.45 individual per km² (range = 0.29 - 0.74) (estimated at 95% confidence intervals), or the average of 50 individuals (range = 32 - 80) of Great Argus in Bala Forest.

Introduction

Great Argus, *Argusianus argus* (Linnaeus) 1799 is classified in family Phasianidae. Its distribution is from South Tenasserim, Myanmar, Peninsular and southwest Thailand, Sabah, Sarawak and Peninsula Malaysia, Brunei, Kalimantan and Sumatra, Indonesia. Great Argus is uncommon resident bird in Thailand and announced as the protected animal under the WARPA (1992). Its status is near threatened in Asia (Birdlife International, 2001).

Bala Forest, covering 16,900 hectares at the altitude <100-963 m.s.l. is in Hala-Bala wildlife sanctuary, Narathiwat province, Thailand. This area is considered tropical lowland evergreen forest and enclosed the watershed of Sugai Kolok river. It is rich and diverse in wildlife. More than 345 bird species have been recorded and Great Argus is common and abundant.

The purposes of this research are to study the ecology and density estimates of Great Argus in Bala Forest for conservation and commercial propagation management.

Methodology

The study on the ecology and density estimate of Great Argus in Bala Forest has been conducted during January 2001-April 2002. The method for data collection were

1. Using arial maps (scale 1:50,000), 11 survey trails (total of 74.7 kms) covering all habitats in Bala Forest. UTM positions at every 100 m were plotted along the trails.
2. Monthly records of birds seen or calls along the trails were kept along with the UTM positions, direction and distances of the birds or calls.
3. Density were estimated using DISTANCE software (Buckland *et.al.*, 1993)
4. Habitat use, territories and behaviors including courtship and dancing grounds using 5 camera traps were collected every 3 weeks. Maps showing altitudes, dancing grounds, nesting grounds and positions where birds were taken picture (shown in Figure 1) were then plotted using Arcview software.
5. Meteorological data; temperature, relative humidity, rainfall, from meteorological station at Waeng district (about 10 kms from the study area) were shown in Figure 2 and 3.

Results and Discussions

Habitat use

- Great Argus was found in all area of Bala Forest (altitude ranging from <100-900 m.s.l.) but most frequently occurred at 300-600 m.s.l. (23.9%, N=301) as shown in Figure 4.
- There was 20 dancing grounds indicated as male territory at the altitude between <100-700 m.s.l. However, half of them were found at the altitude 101-200 m.s.l. and 501-600 m.s.l. (25% each)

Breeding ecology

- Calls: calls were heard since the start of the study in January 2000 and peaked in August (Figure 4).
- The fact that dancing grounds and nests were found during the same period as calls from June August implied that the calls at these time were defending a territory. This finding agreed with other investigation (Davison, 1981).
- The nesting ground was found 100-300 m away from the dancing ground with clutch size of 2 creamy white eggs (Figure 6) Ground nest were found in tree buttress, with dried leaves and twigs. Female were seen pecking twigs to make fences (70 cm High). (See Figure 7). Hatching period took 27 to 29 days while captive breeding in Malaysia (Well, 1999) was 24-25 days. The main predators of chick was Dog-toothed Cat Snake, *Boiga cyanodon*. The molting period was either after the breeding period or after the chick was two months old (October-November), while Well (1999) reported that molting period was in May- October.

Density

- The density of Great Argus was 0.45 individual per km.² (range = 0.29-0.74), that was estimated at 95% confidence intervals. The average of 50 individuals (range = 32-80) of Great Argus in Bala Forest was calculated which is less than those in hilly terrain in west-central Malaysia (1.5-2.25 individual per km²)

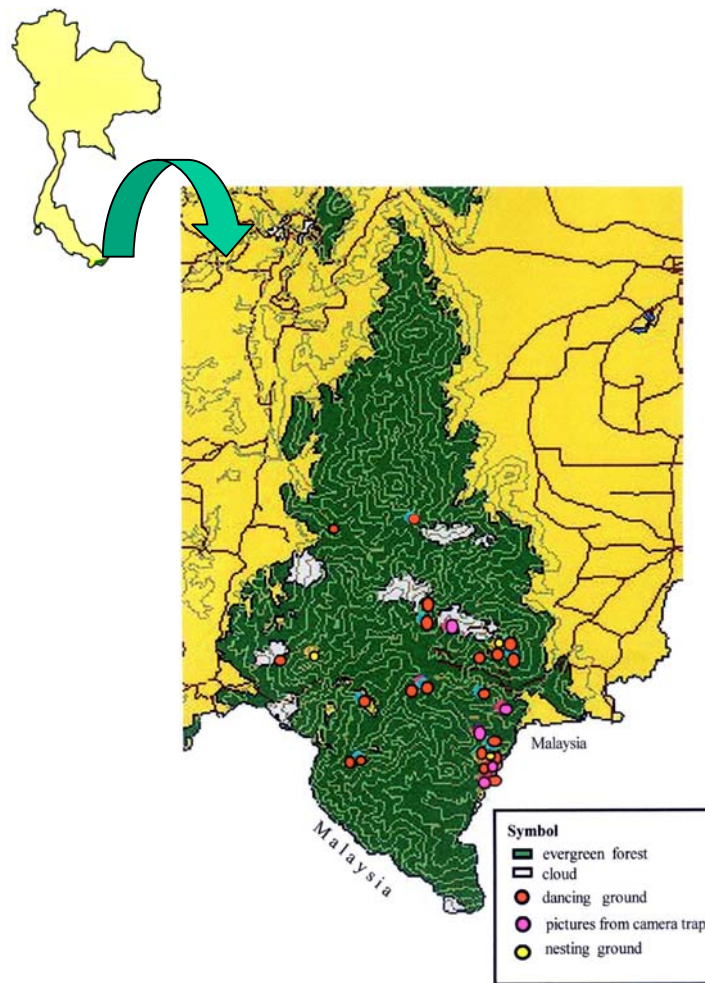


Figure 1 Map of the study area (Bala Forest, Narathiwat Province) and distribution of Great Argus

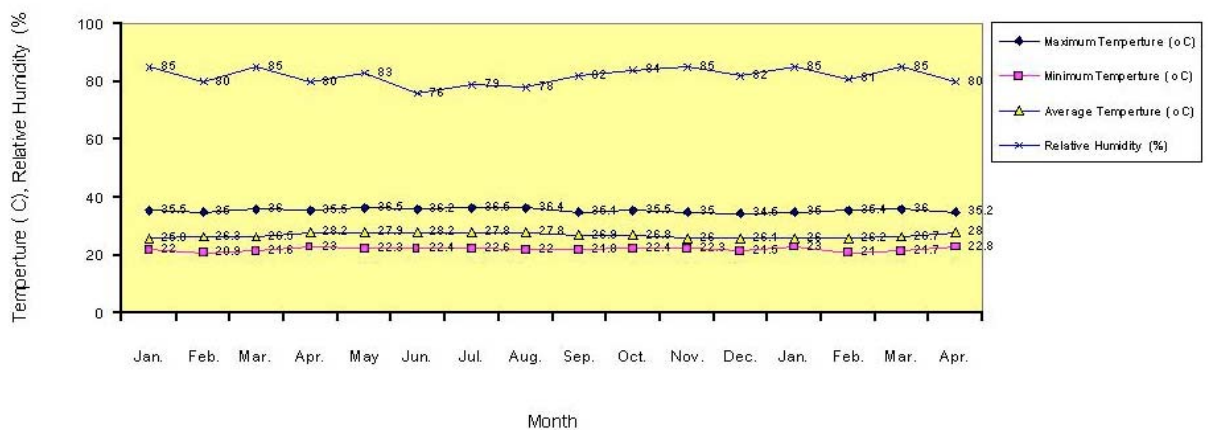


Figure 2 Graph showing temperature and relative humidity of the study area

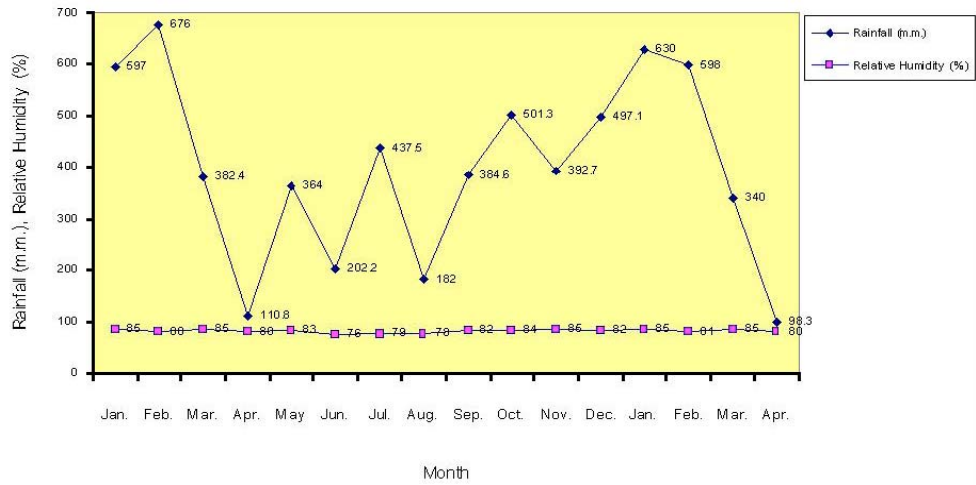


Figure 3 Graph showing rainfall and relative humidity of the study area

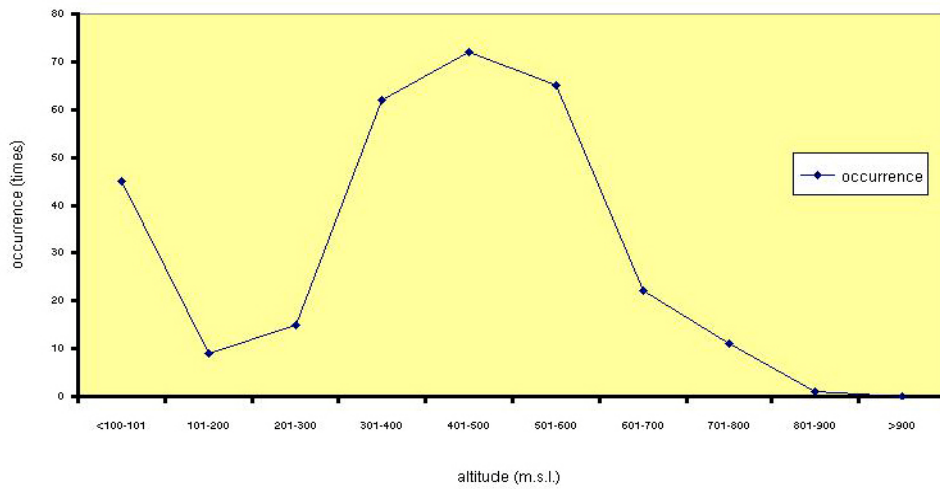


Figure 4 Graph showing comparison of occurrence of Great Argus with altitude (m.s.l.)

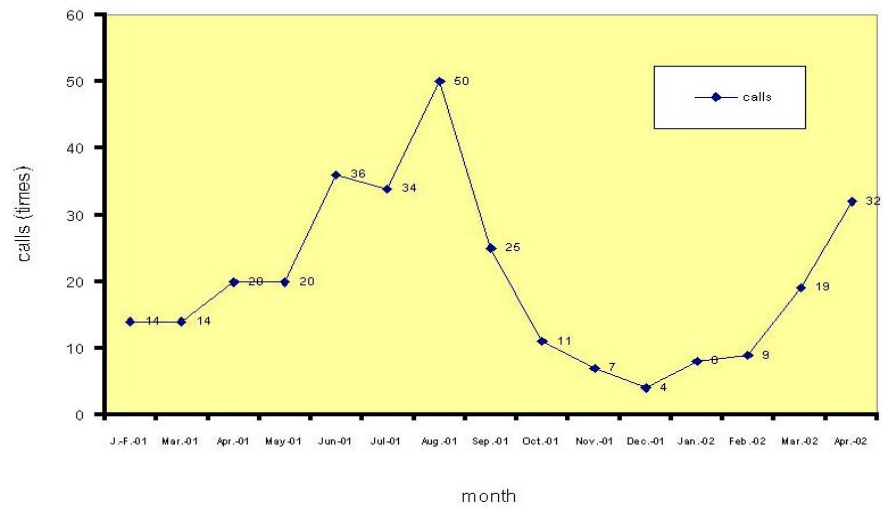


Figure 5 Graph showing calls of Great Argus during January 2001 - April 2002

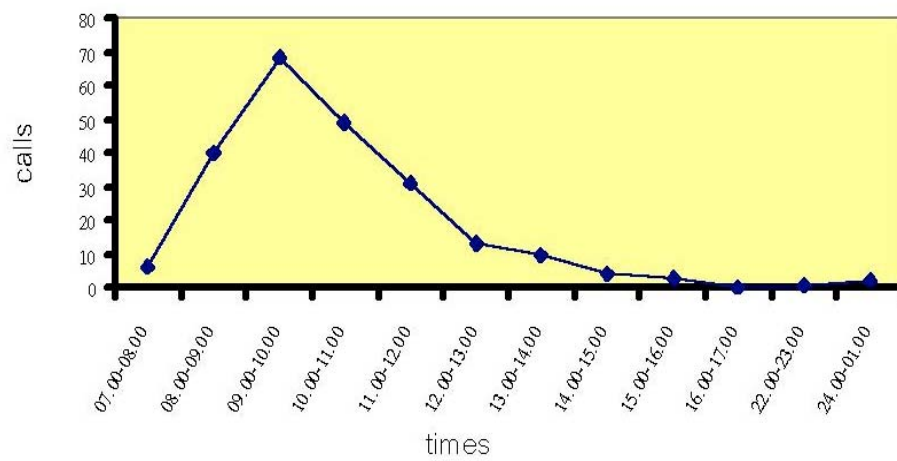


Figure 6 Graph illustrating times when calls were recorded



Figure 7 Eggs and chick (one week old) of Great Argus



Figure 8 Fenced nest of Great Argus



Figure 9 Male and Female taken by camera trap

Acknowledgement

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