

GROWTH AND REPRODUCTIVE POTENTIAL OF FREE-RANGING CYNOMOLGUS MONKEY (*MACACA FASCICULARIS*) IN 9 SELECTED REGIONS OF THAILAND

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ABSTRACT

The first intensive field study of Thai cynomolgus monkeys were carried out in collaboration with Japanese scientists from Kyoto and Nagoya Universities during August–September, 1988. A total of 279 monkeys were temporary trapped from 9 selected sites. Preliminary informations indicated that complete weaning under natural conditions can not beachieved earlier than 10 months old and growth rate during the first 10 months is extermely slow, particularly in monkeys obtained from Nakorn–Sawan and Khao Ngu, Rachaburi. Pubertal ages are 3 years in females and 4 years in males. Males from 8 years old and over are capable of being the leader of the group (α -male). The earliest lactating age was 4 years. None of the lactating mothers were able to ovulate and carry another pregnancy during the entire period of lactation.

There is no breeding season for this type of monkey, but the most successful period of fertile mating was found to be during late summer and early rainfall (from late April until June). Other seasons of the year supported a lesser degree of successful pregnancy due to lesser availability of adult cycling females. Approximately 80% of trapped lactating mothers were 6–7 years old.

The first intensive field observation on growth and reproductive potential of cynomolgus monkeys was carried out in 9 selected regions of the country in collaboration with Japanese scientists during the rainy season of August–September 1988. Selected sites included 2 in the south (Pattalung & Songkla); 2 in the northeast (Mahasarakarm & Roi-et); 1 in the north (Khao Noh, Nakorn Sawan); 1 in the east (Wang Kaew, Rayong); 2 in the centre (Khao Gnu & Wat Huaytakang, Rachaburi) and 1 in the west (Tham Chompol, Western district of Rachaburi). Field work activities are presented in figure 1.

A total of 279 monkeys were trapped with either a single or twin (5m×5m×2m) unbreakable nylon net in the morning and early afternoon. Trapped monkeys were anesthetized

with intramuscular injections of 10 mg/kg ketamine hydrochloride. Age of monkeys were estimated individually according to the absence or the presence of teeth by Dr. Juri Suzuki.¹ Age ranges were found as young as 1–2 days up to 10 years and older.

With the exception of 7 identified pregnant females by abdominal palpation, combined growth curves of both sexes are presented in figure 2. It can be seen that puberty in females and males started around 3 and 4 years respectively. It is of interest that the majority of lactating mothers trapped were 6–7 years old (46 out of 57). Older mothers have a tendency to lose weight to below the level of non-lactating females of the same age group. Contrary to the report of Lekagul and Mc Neely,² we never found embryos and foetuses present in the uterine bodies of any of the lactating mothers.

Comparative growth patterns among prepubertal monkeys from different trapping sites are further presented in histogram (figures 3a & b). It can be seen that suckling infants from Khao Noh and Khao Gnu have retarded growth and show relatively lower body weight than monkeys from other sites. The weaning age of monkeys from these sites usually delayed beyond 1 year, at least until a critical body mass exceeding 1.5 kilograms is reached.

Observed variation in estimated gestation periods as well as in infant ages of these free-ranging cynomolgus monkeys may further confirm our observation (of the breeding colony in Bangkok) that this type of monkey has no breeding season.^{3,4} Prolonged lactation in certain areas may be one of the major natural limiting factors that control population growth of the monkeys in each region.

It is worthwhile to correct some important misleading information, i.e. that monkeys in Kosumpee park of Mahasarakarm province are indeed the cynomolgus monkey (*Macaca fascicularis*) and not the rhesus monkey (*Macaca mullata*) as incorrectly described on the big board inside the entrance gate. In addition, the cynomolgus monkey in the breeding colony in Bangkok has a gestation period of 158–174 days⁴ rather than 180–185 days as described at the Chiangmai Zoological park. A similar gestation period for this species (159–178 days) is also reported at the Zoological Institute in Jena.⁵ The well established gestation period has made it possible for us to calculate the fertile mating months from young monkeys trapped at 9 sites throughout the country. The most favorable conditions for fertile mating of cynomolgus monkeys in natural habitat prevail soon after fruit ripening in late summer (late April and May) and remain until the beginning of the cool season from October up to January. In contrast, animals showed minimal successful fertile mating records during the hot early summer months with scarce rainfall, in late February and March.

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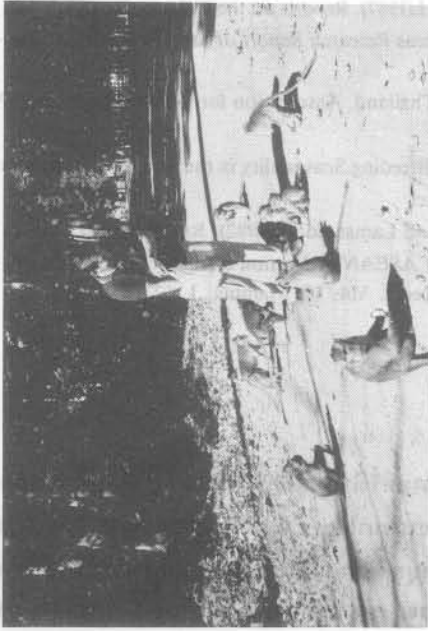
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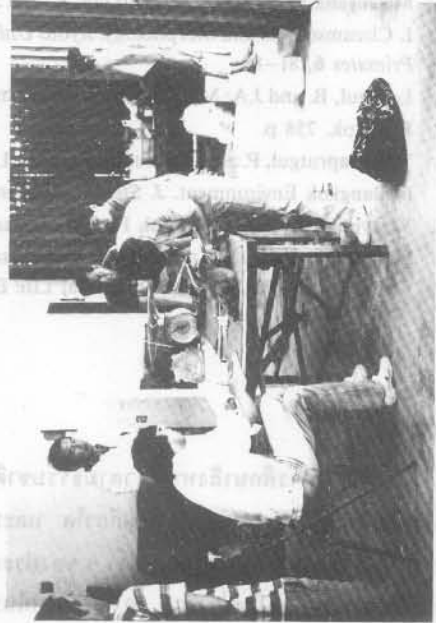
บทคัดย่อ

จากการศึกษาลิงหางยาวตามธรรมชาติภาคสนามครั้งใหญ่เป็นครั้งแรกในประเทศไทยร่วมกับคณะนักวิทยาศาสตร์ญี่ปุ่นจากมหาวิทยาลัยเกียวโต และมหาวิทยาลัยนาโกยา จับลิงที่ระดับอายุต่างๆ กันได้รวมทั้งสิ้น 279 ตัว จาก 9 แหล่งตามภาคต่างๆ ของประเทศ ข้อมูลที่ศึกษาเบื้องต้นพบว่าลูกลิงจะยังไม่หย่านมก่อนอายุ 10 เดือน และลูกลิงในช่วงอายุ 10 เดือนแรกในบางบริเวณ เช่น เขาหน้อ และเขาขง มีอัตราการเติบโตน้อยมาก ลิงจะเข้าสู่วัยพิวเบอร์ตี เมื่ออายุ 3 ปี ในตัวเมีย และประมาณ 4 ปี ในตัวผู้ ลิงตัวผู้จะโตเต็มวัยและสามารถเป็นหัวหน้าฝูงได้เมื่อมีอายุเกิน 8 ปี ลิงตัวเมียอาจคลอดลูกได้เมื่ออายุเพียง 4 ปี ระหว่างเลี้ยงลูกอ่อนและให้นม แม่ลิงจะไม่สามารถดกไข่ และตั้งครรภ์ใหม่ได้อีก

ลิงในธรรมชาติจะไม่มีฤดูผสมพันธุ์ในช่วงใดของปีโดยเฉพาะ แต่ก็พบว่าการผสมพันธุ์และตั้งครรภ์ได้มากที่สุดตอนฤดูผลไม้และต้นฤดูฝน ตั้งแต่ปลายเดือนเมษายน, พฤษภาคม และมิถุนายน ส่วนในช่วงอื่น ๆ ของปีจะมีโอกาสตั้งครรภ์ได้น้อยลง เนื่องจากลิงตัวเมียที่โตเต็มวัยส่วนมากอยู่ในภาวะตั้งครรภ์และเลี้ยงลูกอ่อน ประมาณ 80% ของแม่ลิงที่เลี้ยงลูกทั้งหมดมีอายุอยู่ในช่วง 6-7 ปี



b. Selected site at Gu Pra Gona



d. Field works at Pattalung



a. Selected site at Gosumpee Park



c. Selected site at Khao Ngu

Fig. 1 Field work activities.

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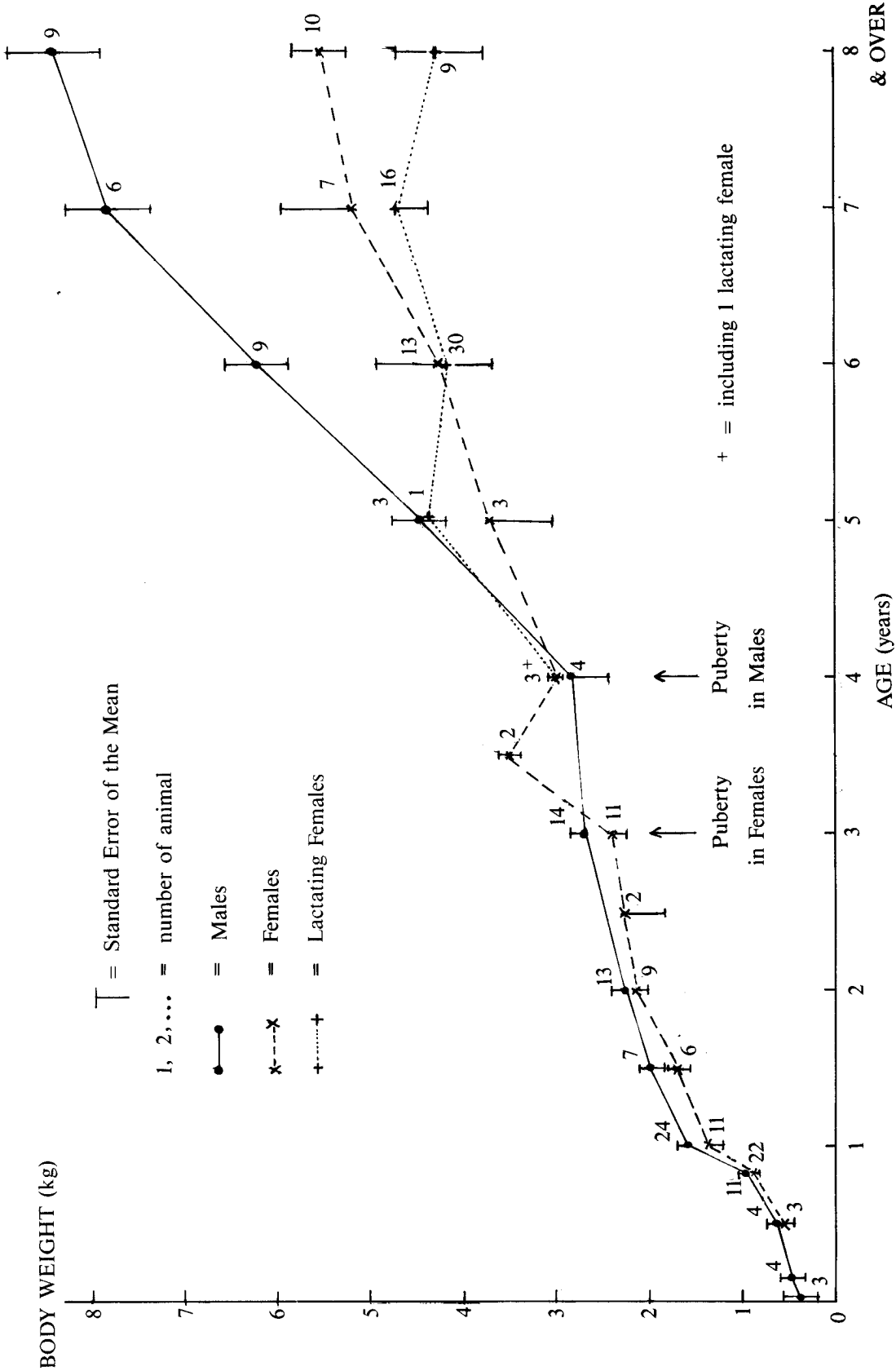


Fig. 2 Combined growth patterns of free-ranging monkeys in 9 trapping sites.

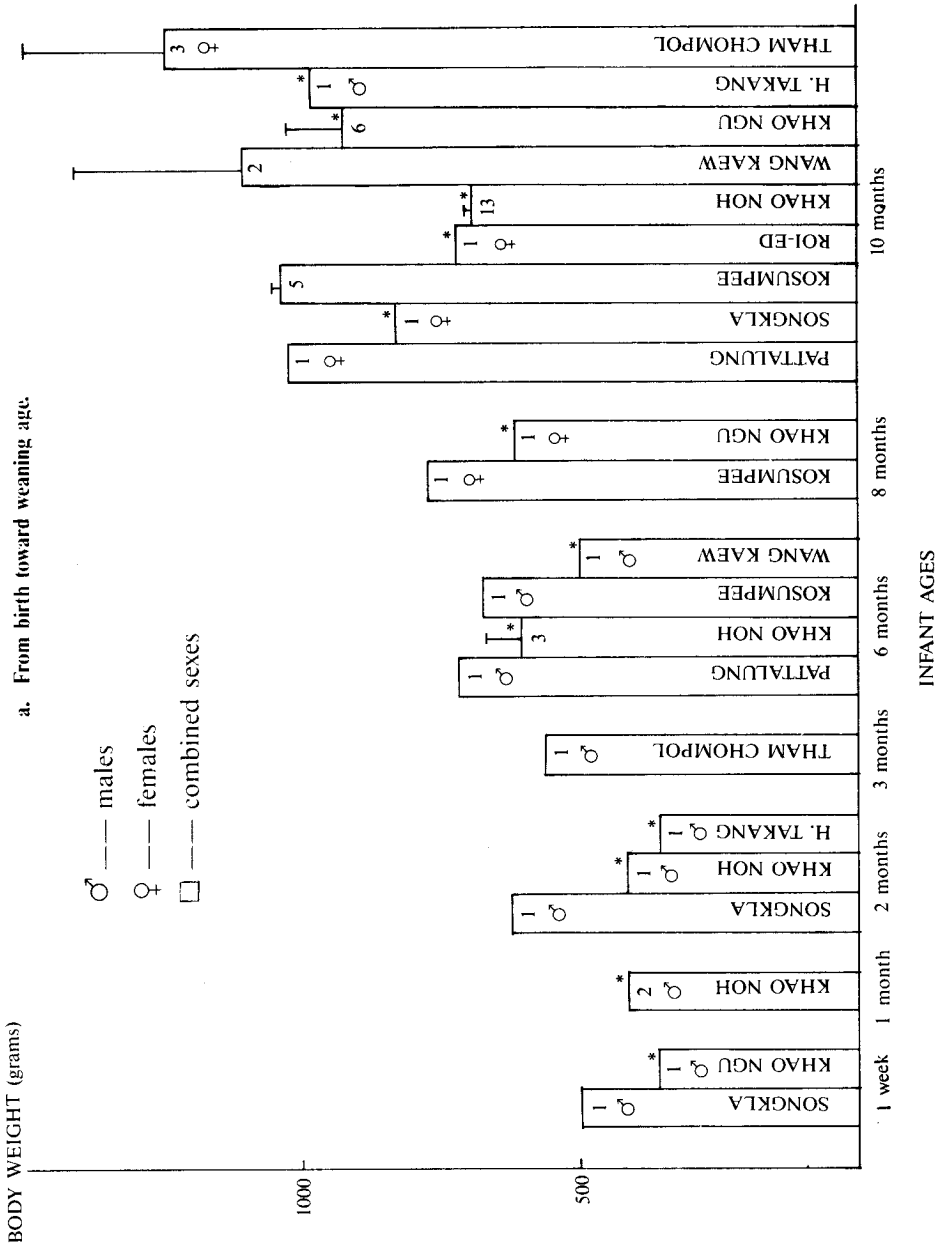


Fig. 3 Variations in body growth of free-ranging.

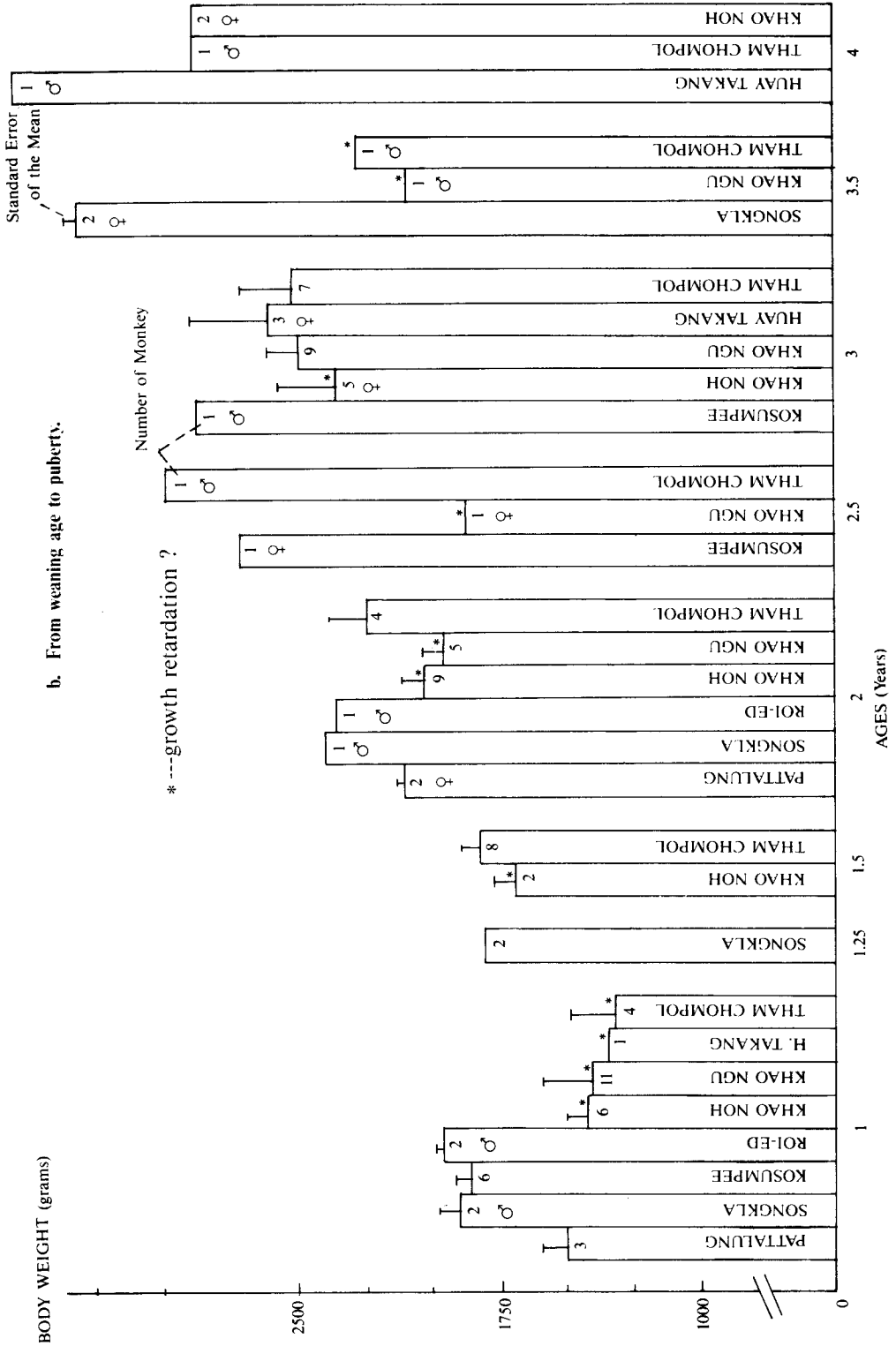


Fig. 3 (Continued)