台灣四種有蹄類動物糞粒的形態測量和排糞率

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為了比較山羌 (*Muntiacus reevesii micrurus*)、水鹿 (*Cervus unicolor*)、梅花鹿 (*Cervus nippon taiouanus*) 和長鬃山羊(*Capricornis crispus swinhoei*)四種台灣產有蹄類動物的糞粒形態並收集羌、水鹿及梅花鹿的排糞率 (defecationrate) 資料，於1988年8月間，以台北市立動物園內圈養的動物為研究材料，收集其糞便。結果共紀錄了每種動物糞粒的八項變數一長、寬、高、長／寬、長／高、寬／高、體積和粒重，並求得每組之平均值。糞粒的大小為水鹿＞梅花鹿＞長鬃山羊＞山羌。山羌和長鬃山羊可以長、寬和體積互相區分並與兩種鹿區分開來；兩種鹿糞粒的八項變數很相近不易區分。除了長以外，山羌糞粒的每項變數都存有性別差異，以寬和長／寬的差異最為顯著 (P ≦ 0.005)。無論水鹿或梅花鹿，成鹿和一歲幼鹿糞粒各在七項變數有顯著差異，而以寬和體積的區分能力最佳。以長和長／寬二個變數做成的判別函數可區分雌雄梅花鹿糞粒達85.37%；以長做成的判別函數可區分雌雄水鹿糞粒達78%。水鹿成體和幼體的排糞率分別為10.3回／日和6.6回／日，每回平均104.8粒；梅花鹿成體和幼體的排糞率分別為9.0回／日和7.5回／日，每回平均83.0粒。山羌的排糞率經推算每日約為 7回左右。

前言

　　動物園中有關動物糞便的研究至少具有兩方面的意義。

　　首先，詳細而完整地瞭解動物的排便情形，有助於建立基本的生理狀況資料和病理診斷憑據 (Miquelle, 1983)；排糞量的變化則可做為瞭解動物消化情形(Milchunas et al., 1978)，營養吸收(Belovsky and Jordan, 1981) 和水分平衡的指標，這方面的研究和記錄對於飼育人員和獸醫人員能夠確實掌握動物的健康狀況應十分重要。其次，糞便資料是研究野生動物的野外工作者所主要憑藉的工具之一。對於研究野生動物生態和經營管理的人而言，最有用的莫過於動物糞便的分布(distribution)和累積(accumulation)情形，掌握這兩項因子的詳細資料，便可估算動物族群的數量、生物量、年齡甚至性別結構、棲地利用和領域範圍等等(Putman, 1984)。事實上，上述研究國外學者早已行之有年，特別是針對草食性動物，例如麋鹿(*Alces alces*)和白尾鹿(*Odocoileus virginianus*)等都是已有相當研究歷史的極佳例子(Eberhardt and Etten, 1956; Narns, 1968; Belovsky and Jordan, 1981; Mooty and Karns, 1984)，其中不會出自於圈養或半圈養動物的研究報告，且均具有極重要的參考價值。

　　國內動物糞便的研究始終未獲應有的重視，因而長久以來不免坐失許多從糞便蒐集就可得到

Faecal Pellet Dimensions and Defecation Rates of Four Taiwanian Ungulates in Capativity

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Faecal pellets from known age and sex classes of barking deer *(Muntiacus reevesii micrurus),* sambar *(Cervus unicolor swinhoei),* sika deer *(Cervus nippon taiouanus)* and Formosan serow *(Capric · orniscrispus swinhoei)* were measured and weighed. Their defecation rates were examined in penned enclosures. The mean values for the variables measured were greater for larger species as well as individuals than the smallers, with sambar sika deer⟩ Formosan serow⟩barking deer; adults⟩ yealing in sambar and sika deer; male⟩ female in barking deer, sambar and sika deer. Based on max. length, max. width and volume, pellets of adult barking deer and Formosan serow can be 100% identified. Based on max.width, 87.5% of pellets of barking deer can be identified as originated from males and females. Max.width and volume can be used to claasified pellets from adults and yealings in sika deer and sambar respectively. Discriminant functions based on max.length and max.length/max.width can identified 85.37% of pellets as originated from male and female sika deer. Based on max.length, 78.5% of sambar pellets can be identified as originated from correct sexes. The defecation rates averaged 10.3 and 6.6 groups/day for adult and yealing sambars, 9.0 and 7.5 groups/day for adult and yealing sika deer respectively. There was an average of 104.8 pellets/group for sambar and 83.0 pellets/group for sika deer. The defecation rate of barking deer was estimated about 7 groups/day.