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## Integrating ultrasonography within the reproductive management of the collared peccary (*Tayassu tajacu*)

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### Abstract

Ultrasound imaging has been used to elucidate certain aspects of the reproductive biology of wild or endangered species. However, to our knowledge, this tool has not been used for reproductive monitoring of the collared peccary (*Tayassu tajacu*). In this study, real-time ultrasonography was used in 16 collared peccary females to diagnose early pregnancy status and predict gestational age. Based on the detection of an embryo, the earliest pregnancy diagnosis was made on Day 18 after mating, with the mean time needed for diagnosis being 22 days. Overall accuracies on Days 22, 26 and 28 were 56, 93, and 100%, respectively. On Days 26 and 28, all pregnancy and non-pregnancy diagnoses, respectively, were correct. The fetal measurements that best correlated with gestational age were crown-rump-length (CRL) and the length and diameter of the thorax. CRL was considered the most practical measurement because, contrary to thoracic fetometry, it could be determined when the embryo was first detected. Our findings revealed real-time ultrasound scanning to be a very accurate method for early pregnancy diagnosis and prediction of gestational age in the collared peccary.

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**Keywords:** Collared peccary; *Tayassu tajacu*; Ultrasonography; Pregnancy diagnosis; Gestational age

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## 1. Introduction

The collared peccary, *Tayassu tajacu*, belongs to a family within the Suiformes, Dicotylidae. This pig-like artiodactyl is an important source of meat for local people across the Amazon [1], and its distribution range spreads southwards from the Chihuahuan and Sonoran Deserts of southwestern Texas, New Mexico and Arizona, through Central America to northern Argentina. The inclusion of the collared peccary in captive breeding programs has been proposed as a way of alleviating hunting pressures on this species and exploiting renewable natural resources for use in tropical forests where there is considerable demand for wildlife products [2].

The reproductive biology of the collared peccary has not yet been well defined [3], but its most relevant features are: a gestation period ranging from 141 to 151 days [4,5]; an ovulation rate of 2–2.1 [3,6]; and a mean litter size of 1.7–1.9 fetuses or newborns [3,4,6–8]. In a recent study, we further characterized the follicular and luteal phases of the estrous cycle in this species by examining uterine and vaginal cytology [8].

Improved knowledge of reproductive physiology of some wild species has greatly enhanced their captive breeding success, thus creating self-sustaining populations. Ultrasonography has already proved useful for assessing the reproductive status of both wild and endangered species [9–13], and its applications such as pregnancy diagnosis and predicting parturitions are valuable tools for the reproductive management of these species in captivity [11–13].

To our knowledge, ultrasonography has not yet been exploited for evaluating pregnancy in the collared peccary. The aim of this study was to integrate this procedure within the reproductive management of the collared peccary as a method of: (1) early pregnancy diagnosis, and (2) obtaining fetal measurements to predict gestational age.

## 2. Materials and methods

### 2.1. Animals

Sixteen peccary females were kept in captivity on an experimental farm at EMBRAPA-UFPA, Belem do Para (Brazil) from June 2003 to January 2004. Paddock temperature ranged from 22 to 32 °C and animals were maintained under natural lighting conditions. The females were fed commercial sow food with a calorific supply of 2500 kcal and protein level of 14%. Water was always available. Prior to data collection, animals were subjected to a minimum 15-day adaptation period. All animals were in excellent health status throughout the study. Until diagnosed to be in estrus, females were kept away from males.

Upon secondary estrous signs of the females, through external genitalia and vaginal cytology examination, each female was presented to a single male for a maximum period of 3 days. Vaginal samples were collected daily during this period, and mating was confirmed by the presence of spermatozoa in vaginal smears. The day of mating was taken as Day 0 of a possible pregnancy. After mating or at the end of Day 3, females were again isolated from males.

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