

THE CAPYBARA, ITS BIOLOGY AND MANAGEMENT

J. Ojasti

Instituto de Zoología Tropical, Facultad de Ciencias, UCV, Venezuela.

Keywords: Breeding, capybara, ecology, foraging, *Hydrochoerus*, management, meat production, population dynamics, savanna ecosystems, social behavior, South America, wetlands.

Contents

1. Introduction
 2. Origin and Classification
 3. General Characters
 4. Distribution
 5. Biological Aspects
 - 5.1. Semi-aquatic habits
 - 5.2. Foraging and diet
 - 5.3. Digestion
 - 5.4. Reproduction
 - 5.5. Growth and Age
 - 5.6. Behavior
 6. Population Dynamics
 - 6.1. Estimation of abundance
 - 6.2. Population densities
 - 6.3. Birth, mortality and production rates
 7. Capybara in the Savanna Ecosystems
 8. Management for Sustainable Use
 - 8.1. Hunting and Products
 - 8.2. Management of the Harvest
 - 8.3. Habitat Management
 - 8.4. Captive Breeding
- Glossary
Bibliography
Biographical Sketch

Summary

The capybara is the largest living rodent and last remnant of a stock of giant rodents which evolved in South America during the last 10 million years. It is also the dominant native large herbivore and an essential component in the function of grassland ecosystems, especially floodplain savannas. Adult capybaras (*Hydrochoerus hydrochaeris*) of South American lowlands measure about 120 cm in length, 55 cm in height and weigh from 40 to 70 kg. The lesser capybara (*Hydrochoerus isthmius*) of Panama and the northwestern corner of South America is usually less than 100 cm in length and 30 kg in weight. Capybaras live in stable and sedentary groups of a dominant male, several females, their young, and some subordinate males. They occupy a home range of 6 to 200 ha (average 10), with a permanent body of water, pastures, some

woody cover and dry ground to rest. They are selective grazers preferring the leaves of high quality grasses and digest very fibrous forages. The female attains sexual maturity in about 1.5 years, gives one or two litters a year of 1 to 8 (average 4) precocious young of about 1.5 kg. The growth rate of the young varies according to age and diet from 40 to 120 g per day. Population densities are low along the rivers in forested areas, but may reach from 1 to 4 individuals per ha in good habitats of floodplain savannas. Capybaras are hunted widely for their meat for domestic consumption. They are also managed for commercial hunting, especially in the Llanos. In southern South America they are hunted mainly for hides, tanned to the esteemed “carpincho” leather. Due to heavy hunting, the distribution and abundance of the capybara are decreasing. Efficient measures are required for the conservation and sustainable use of this valuable rodent. The raising of social groups of capybaras in captivity is another promising option for its sustainable use.

1. Introduction

Large and medium-sized rodents, such as the agoutis, capybaras, coypus, pacas, and vizcachas, are often the principal herbivorous mammals in many ecosystems of South America, occupying the ecological functions of the ungulates in similar situations in other continents. The present account is dedicated to the capybara, which deserves special attention for its status as the largest extant rodent. It is widely distributed in tropical South America and is the dominant grazing herbivore especially in floodplain savanna ecosystems, wetlands, and riversides. Due to its size and abundance in many areas, it is also an important food source for local communities, with a high potential for meat production under an appropriate management system.

Written information on the capybara existed as early as the sixteenth century, but even in the 1960s the field ecology of this giant rodent was almost unknown. Since then, however, many field studies on its ecology, behavior, and field biology have been conducted, especially in Argentina, Brazil, Colombia, and Venezuela. Furthermore, management experience for sustainable harvest exist in some Latin American countries. Most of the original information about the capybara is in Spanish or Portuguese, and largely unpublished or poorly known. Accordingly, the purpose of this account is to summarize and disseminate the existing information in order to promote the knowledge, conservation, and management of the capybara.

2. Origin and Classification

The capybara belongs to the hystricomorph rodents which arrived in South America from Africa or North America in the late Eocene era about 40 million years ago. It is the last living remnant of the family Hydrochoeridae, which appeared in the fossil record of South America about 10 million years ago. This family includes at least 36 known species of medium-sized to very large rodents related to the cavies or guinea pigs. The capybara probably evolved from an unknown species of *Cardiatherium* about 2 million years ago in southern South America. It is closely related to the extinct genus *Neochoerus*, a much larger and more specialized rodent with five known species widely distributed in South America, Mexico, and southern United States. According to the most recent classification of mammals, the capybara belongs to the order Rodentia, infraorder Hystricognathi, family Caviidae, and subfamily Hydrochoerinae. This new

arrangement is based on recent molecular evidence of a close evolutionary link between the capybara and the rock cavy (*Kerodon rupestris*).

Three species of capybara are currently recognized: *Hydrochoerus hydrochaeris* in South America, the lesser capybara *Hydrochoerus isthmus*, and an extinct species (*Hydrochoerus ballesterensis*) from Argentina. The generic name of capybara *Hydrochoerus*, proposed by Brisson in 1762, comes from the Greek: *hydro* = water, *choiros* = pig. Linnaeus named the capybara *Sus hydrochaeris* in the 12th edition of *Systema Naturae*, based on field notes by Georg Marcgrav (1601-1644) from Brazil, linking it with the pigs (genus *Sus*) rather than rodents. The unusual size and bulky appearance of the capybara for a rodent may explain this confusion. The proposed living subspecies of the capybara are the nominal subspecies *Hydrochoerus hydrochaeris hydrochaeris*, *H. h. dabbenei* from Argentina, *H. h. notialis* from Paraguay, and *H. h. uruguayensis* from Uruguay and eastern Argentina. The lesser capybara described from Panama has also been treated as a subspecies of the South American species by many authors, but the geographical variation of the capybara is still poorly known, and the validity of the subspecies is doubtful and demands more research, including the field of molecular genetics.

The common name capybara in English comes from its Brazilian name capivara (written capibara in the Spanish-speaking countries), derived from *capi-uara* of the Guarani language (*capi* = grass and *uara* = proper to). Other vernacular names exist in different countries: cabiai (French, French Guyana), capihuara (Bolivia, Paraguay), carpincho (Argentina, Uruguay), chigüire (Venezuela), chigüiro (Colombia), kapoewa (Surinam), piropiro (Venezuela; *H. isthmus*), poncho (Panama; *H. isthmus*), ronsoco (Peru, Ecuador), wasserschwein (Germany) and watrash (Guyana). In addition, there are many local names in the South American native languages.

-
-
-

TO ACCESS ALL THE 18 PAGES OF THIS CHAPTER,
Visit: <http://www.eolss.net/Eolss-sampleAllChapter.aspx>

Bibliography

Aldaña-Domínguez J., Vieira-Muñoz M.I. and Angel-Escobar D.C. (2007). *Estudios de Ecología del Chigüiro (Hydrochoerus hydrochaeris) Enfocados a su Manejo y Uso Sostenible*, 183 pp. Bogotá, Colombia: Instituto Alexander von Humboldt. [Presents research on population density and structure, habitats, diet, values and marketing of the capybara in Casanare, Colombia]

Azcarate de T. (1980). Sociobiología y Manejo del Capibara (*Hydrochoerus hydrochaeris*). *Doñana Acta Vertebrata* 7(6), 1-228. [A pioneer dissertation on the behavior of capybara: daily activities, fixed action patterns, structure,

Giraldo Hernández D. and Ramírez Perilla J. (2001). *Guía para el Manejo, Cría y Aprovechamiento Sostenible del Chigüiro, Chigüire o Capibara (Hydrochoerus hydrochaeris)*, 76 pp. Bogotá, Colombia: Convenio Andrés Bello. [A guide for breeding capybara in small farms: the animal, its products, production systems, enclosures, breeding groups, feeding and management of the animals]

González-Jiménez E. (1995). El Capibara (*Hydrochoerus hydrochaeris*). Estado Actual de su Producción. *Estudio FAO. Producción y Sanidad Animal* **122**, 1-110. [Animal production approach including feeding, digestion, reproduction, genetics, parasites, diseases, case studies on extensive and intensive production systems, and the capybara as a domestic animal]

Herrera E.A. (1998). Reproductive Strategies of Female Capybaras: Dry Season Gestations. *Symposia of the Zoological Society of London* **71**, 281-296. [Presents data and discussion on gestations during the less favorable (dry) season as a reproductive strategy and its relation with the management of the habitats]

Lord R.D. (2009). *Capybaras. A Natural History of the World's Largest Rodent*, 159 pp. Baltimore, USA: Johns Hopkins University Press. [First book in English on the biology, ecology, behavior and management of capybara, based in the author's research in the Venezuelan Llanos and a comprehensive literature review]

Mones A. (1991). Monografía de la familia Hydrochoeridae (Mammalia, Rodentia). *Courier Forschungsinstitut Senkenberg* **134**, 1-235 [A review of the paleontology, evolution and taxonomy of the capybara family, with a characterization of 14 genera and 36 species, most of them extinct, and a list of 1340 references on living and extinct capybaras]

Nogueira Filho S.L.G. (1996). *Crição de Capivara*, 50 pp. Viçosa, Brazil: Centro de Produções Técnicas. [Booklet and a one-hour film about the production of capybara in captivity, with emphasis on biological, technical, legal and economic aspects in Brazil]

Ojasti J. (1973). *Estudio Biológico del Chigüire o Capibara*, 275 pp. Caracas, Venezuela: Fondo Nacional de Investigaciones Agropecuarias. Caracas, Venezuela. [Results of a field study (1966-1969) of the capybara in Venezuela: habitats, nutrition, reproduction, growth, age, behavior, population dynamics and experiences on its management]

Ojasti J. (1991). Human Exploitation of Capybara. *Neotropical Wildlife Use and Conservation* (eds. J.G. Robinson and K.H. Redford), 236-252. Chicago University Press. [A review of the utilization, products and management of the capybara in Latin America, with an evaluation of the Venezuelan program for sustainable harvest]

Schaller G.B. and Grawshaw P.G. (1981). Social Organization in a Capybara Population. *Säugetierkundliche Mitteilungen* **29**, 3-16 [The first contribution to the ecology, population dynamics, behavior and social structure of capybaras in Pantanal, Brazil]

Biographical Sketch

Juhani Ojasti Born in Viipuri, Finland, is Emeritus Professor of Animal Ecology and Wildlife Management at the Faculty of Sciences, Central University of Venezuela. He has conducted research on the ecology and management of the capybara in the Venezuelan Llanos since 1966, including his dissertation at the University of Georgia, USA (1978), and consulting on wildlife management in Argentina, Brazil, Ecuador and Nicaragua..