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The fishing rhea: a new food item in the diet of wild greater rheas (*Rhea americana*, Rheidae, Aves)

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RESUMO. **A ema pescadora: um novo item alimentar na dieta de emas selvagens (*Rhea americana*, Rheidae, Aves).** A ema (*Rhea americana*, Rheidae, Aves) é a maior ave sul-americana, ocorrendo em grande parte do Brasil. Reconhecidamente onívoras, as emas ingerem preferencialmente matéria vegetal. O presente estudo fornece informações sobre a dieta de emas selvagens do Município de Felixândia, noroeste de Minas Gerais, Brasil. Um novo item alimentar é descrito para as emas; um peixe, identificado por vértebras e uma escama. A grande maioria dos itens consumidos tinha origem vegetal, em especial o capim braquiarão (*Brachiaria brizantha*, Gramineae); os insetos foram os itens animais mais consumidos (Coleoptera e Orthoptera).

PALAVRAS-CHAVE: Dieta, ema, *Rhea americana*.

KEY WORDS: Diet, greater rhea, *Rhea americana.*

The greater rhea (*Rhea americana*, Rheidae, Aves) is the largest South American bird. It inhabits open lands of Brazil, Paraguay, Bolivia, Argentina and Uruguay. It was once a common bird, easily seen throughout its range, but now, due to hunting, egg losses, habitat destruction and predation (Dani 1993), the greater rheas appears on the IUCN red list as near threatened (Bird Life International 2004).

Greater rheas are omnivorous birds, eating a great variety of plant matter (leaves, seeds, fruits and flowers), invertebrates and small vertebrates (Del Hoyo *et al*. 1992, Martella *et al*. 1996). The study of an animal's natural diet is important in understanding its role in the ecology of an environment, and to obtain information to enhance *in-situ* and *ex-situ* conservation efforts, because knowing what an animal eats is the first step to maintain the species in captivity (Oftedal and Allen 1996, Pereira *et al*. 2003).

This note presents the results of a 24-month field study (2004-2005) on the diet of wild greater rheas in Brazil, reporting fish as a new food item. The study was conducted in Felixlândia, northwest Minas Gerais State, southeastern Brazil. The study site was a 10,000 ha *Eucalyptus* farm owned by Plantar S.A. Reflorestamentos (79°30'N, 48°23'S) and its surrounding area, which are characterized as *cerrado* (savannah-like vegetation) and pasture lands. The Três Marias Reservoir borders most of the study area. Greater rheas were once abundant in the region, but nowadays, they are vanishing due mainly to hunting and habitat losses.

Data on the diet of the birds were collected through behavioural observations (rhea groups were followed daily for behavioural data recording and every plant observed being eaten by rheas was collected for identification; behavioural data will not be explored in this note), scats (the rheas were followed during the day and their scats collected as soon as they were defecated; 55 scat samples from adult birds and three from juveniles) and stomach content analyses (two stomachs were analysed; they were collected from dead rheas found in the study area). Scat search and collection was carried out monthly. In laboratory scat samples were soaked in water and then washed over a fine mesh screen and dried under GE infrared medical lamps (127 Watts) for an average of five hours. Furthermore, two greater rheas were found dead at the study site, and their stomach contents were also analysed. All food items were separated, analysed with a magnifying glass and identified to species (vegetal matter) and order level (animal matter) when possible. A quantitative analysis of the animal items consumed by the rheas was performed and the results are presented in this note.

Fifty-eight scat samples were collected. Some amphicoelous vertebrae and one ctenoid scale of an actinopterygian fish were found in a scat collected in October (2004). During that month, the water level in Três Marias Reservoir was low enough to exposure more than three meters of margins. At these margins, we found many dead fishes, which the rheas could have been feeding on. A. Faggioli (pers. com., 2005) has observed greater rheas apparently fishing on the margins of the Serra Azul Reservoir (1997) at Juatuba, Minas Gerais State, Brazil.

Twelve animal orders were found in the scats (Coleoptera,

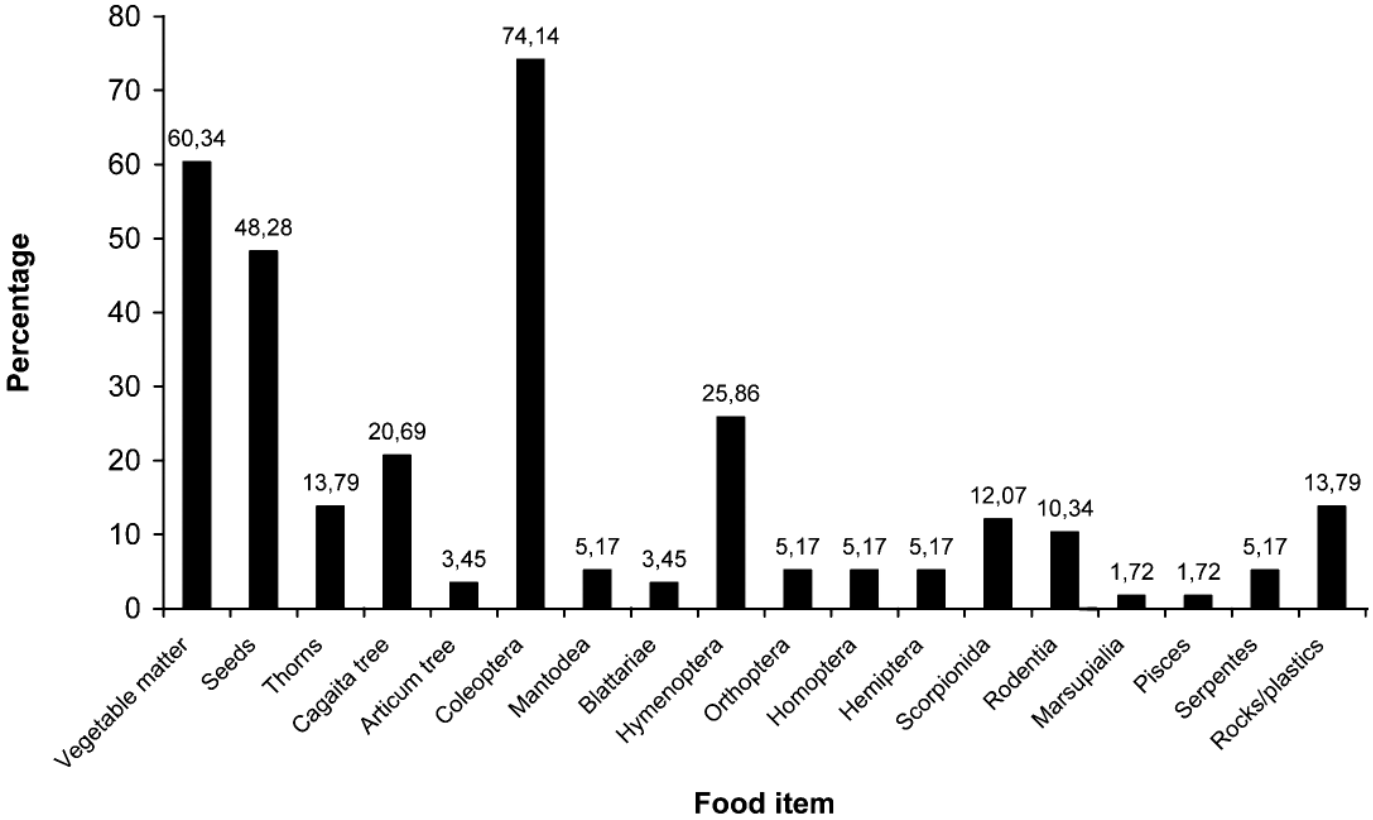

Figure 1. Percentage of food items consumed by greater rheas in an *Eucalyptus* farm and its surroundings in 2004 and 2005. Percentages were calculated based on the number of samples containing the food item divided by total number of scat samples.

Orthoptera, Hymenoptera, Blattariae, Mantodea, Homoptera, Hemiptera, Scorpionida, Rodentia, Serpentes, Actinopterygii and Didelphiomorphia). Invertebrates (beetles and locusts) were often found in the scats; whereas vertebrates were rarely found (however, one scat contained a Muridae mouse, one scat containing a Didelphimorphia marsupial and three scats containing snakes' ventral scales). Results of the quantitative analysis are shown in Figure 1.

The consumption of fifteen different plant species was recorded by behavioural observations (*Tabebuia aurea* Bignoniaceae, *Psidium cinereum* Myrtaceae, *Brachiaria brizantha* Poaceae, *Indigofera suffruticosa* Leguminosae/Faboidea, *Albizia lebbeck* Leguminosae/Mimosoidea, *Plathymenia foliolosa* Leguminosae/Mimosoidea, *Duguetia furfuracea* Annonaceae, *Eugenia dysenterica* Myrtaceae, *Hytis suaveolens* Labiatae/Lamiaceae, *Smilax brasiliensis* Liliaceae, *Solanum palinacanthum* Solanaceae, *Solanum lycocarpum* Solanaceae, *Persea americana* Lauraceae, and two non-identified species, being one Gramineae and one Angiospermae). Vegetable matter appeared in 60,34% of the total scat samples, being the major food items consumed by the rheas. Palisade grass (*B. brizantha*) was ingested in large quantities; it was common to observe the rheas grazing on palisade grass during all periods of the day, and this item was found in all scats containing green matter and in both stomach contents analysed. Other vegetal items were consumed rarely, and rheas also ate leaves, fruits and seeds, depending of the plant species. Fruits from the Cagaita tree (*Eugenia dysenterica*, Myrtaceae) and Araticum tree (*Duguetia furfuracea*, Annonaceae) were eaten in large quantities. We never observed rheas eating *Eucalyptus* leaves or seeds, and parts of this species were never found in scats or stomach contents, demonstrating that this species does not use *Eucalyptus* as a food resource. Pieces of porcelain, an aluminium soda tin and rocks were also found in stomach contents but not in faeces.

Greater rheas juveniles ate more animal matter than vegetable matter, differing from the adults, who ate more vegetable items than animal ones. Animal meals are known to have large amounts of proteins and energy; besides, it is much more digestible if compared to vegetable matter (Tully and Shane 1996). The differences observed in the diet of juveniles and adults could be related to the energy and protein necessities of the chicks to properly growth, but further studies should be conducted to corroborate this hypothesis.

Our results corroborate the findings of Moojen *et al*. (1941), Schubart *et al.* (1965), and Pereira *et al*. (2003) who found that the diet of greater rheas consisted mainly of vegetables, although variable quantities of animal items were also found. Plant species recorded in the diet differed according to the study site. These results show that greater rheas are opportunistic in their feeding habits, eating a great variety of food items.

Fish as a food item was previously unrecorded for greater rheas and fishing could be performed to acquire this item. Despite some authors report that rheas preyed upon snakes (Ollala 1938, Santos 1990), rests of these animals are find rarely

in scats or in stomach analyses (this study; Silva 2001) and the role of rheas in snake control is doubtful.

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