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Short communication

Consumption of wild rice (*Oryza latifolia*) by free-ranging jaguars, pumas, and ocelots (Carnivora-Felidae) in northwestern Costa Rica

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ABSTRACT

There is limited information about plant consumption by felid species, yet anecdotal evidence suggests that plants and grass are a complementary component in the diet of domestic and wild carnivores. We report opportunistic evidence of wild rice (*Oryza latifoliaa*) consumption by free-ranging jaguar (*Panthera onca*), puma (*Puma concolor*) and ocelot (*Leopardus pardalis*) with a camera trap and scats collected in Santa Rosa National Park, Costa Rica. Hence this note provides the first photographic evidence of *O. latifolia* consumption by felid species in the wild. We speculate that these felids might benefit from the pharmacological properties and fiber of this grass.

Consumption of plants has been described as a common behavior in canids and felids (Bjone et al., 2007) suggest that plants and grass are a complementary component in the diet of domestic and wild carnivores. Despite the fact that plants nutritional value for carnivore species (Sunquist and Sunquist, 2002; Bjone et al., 2007; Mckenzie et al., 2010), grass consumption by felids in the wild has been described as a survival strategy. Plants can have various prophylactic effects, such as their use as a mechanism to control and remove pathogens and agents (Huffman and Caton, 2001; Sueda et al., 2008; Hart, 2011).

Several studies of wild felids have described the prevalence of vegetative contents in the feces and stomachs of large carnivores (Robinette et al., 1959; Chinchilla, 1997; Emmons, 1997; Garla, 2001; Moreno et al., 2006; Abreu et al., 2008; Silva-Pereira et al., 2011; Gómez-ortiz et al., 2015), including our previous field observations which have identified a prevalence of 80% of vegetative matter in various carnivore scats (personal observation).

Here we describe opportunistic observations of three felid species consuming grass in Santa Rosa National Park, northwestern Costa Rica. These observations come from a camera trap in our 30-camera survey array, that was located close to a mangrove zone in the park (10°53′1″ N, 85°46′30″ W) during the start of the dry season. Furthermore, we detected fresh scat from a big cat approximately 50 m from the camera trap location.

Here we document the consumption of wild rice *Oryza latifolia* by the jaguar (*Panthera onca*), puma (*Puma concolor*) and ocelot (*Leopardus pardalis*) during December in Santa Rosa National Park.

To our knowledge, this is the first confirmed report in the scientific literature where a camera trap documented wild rice consumption by these three felids species at the same location. Two days later, after confirming this event, we discovered presumed jaguar feces with a high content of vegetative material (Figs. 1.A, 2.A) 50 m from to the location where the camera recorded the grass consumption events.

We hypothesize that among the possible explanations for this behavior is that the consumption and digestion of wild rice (Fig. 2.B) may be associated with the beneficial properties described in humans for digestion, stomach sores, and flatulence (Umadevi et al., 2012). Digestive benefits to carnivores include the removal of elements such as bones, hair and other from their consumed prey that could potentially cause gastrointestinal issues (Cowen, 1990). The co-evolution of plant-animal consumer interactions has also to consumption of non-nutritional secondary plant compounds, sometimes toxic, suggesting

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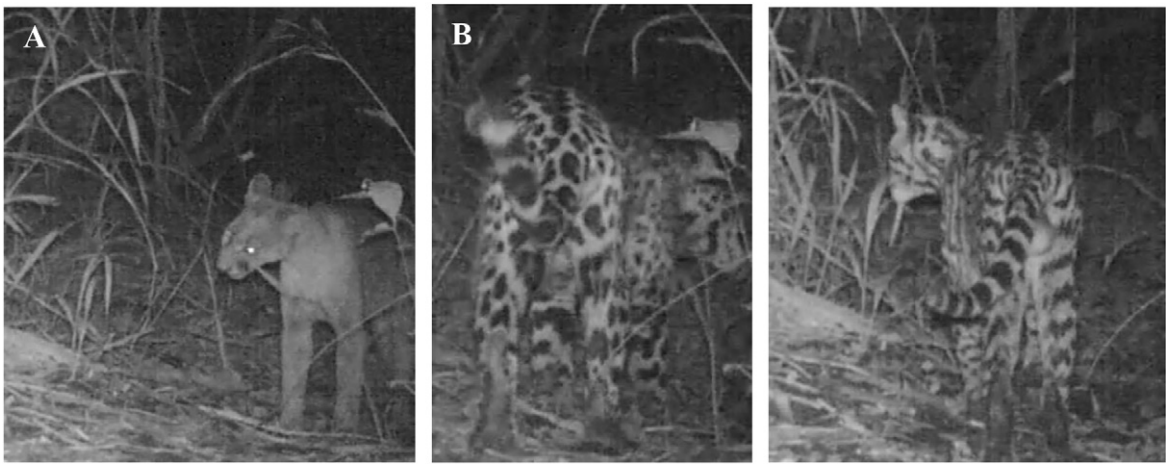

Fig. 1. (A) *P. concolor* (puma), (B) *P. onca* (jaguar) and (C) *L. pardalis* (ocelot) consuming leaves of *O. latifolia*, Santa Rosa National Park, Costa Rica. Photographs © Pograma Jaguar- ICOMVIS, Universidad Nacional de Costa Rica.

animal self –medication, i.e. primates swallow intact leaves, to control intestinal nematodes and also preventive control of parasites and pathogens according to Huffman (2003). Though plant ingestion in wild felids is poorly documented, there is some evidence suggesting plant prevalence in their diet (Robinette et al., 1959; Chinchilla, 1997; Emmons, 1997; Garla, 2001; Moreno et al., 2006; Abreu et al., 2008; Silva-Pereira et al., 2011; Gómez-ortiz et al., 2015), hence this partially supports Hart (2011) suggesting an alternative hypothesis of preventive animal self –medication through the use of wild rice. We speculate frequent ingestion of vegetative material in wild felids is probably due to its medicinal benefits, and this phenomenon has been widely described for primates and domestic dogs, who tend to masticate leaves to control stomach pH and facilitate digestion (Baker, 1996; Huffman, 1997; Bjone et al., 2007). An additional explanation for wild rice ingestion in wild felids could be related the presence of high concentrations of cyclooxygenase inhibitors, and other crude anti-inflammatory agents that provides relief from pain and inflammation symptoms (Cao et al., 2010). Nevertheless cyclooxygenase inhibitors also were reported in phytochemical studies of plants used in human-traditional medicine due to pyretic, thrombotic and neurodegenerative reliefs (Eldeen and Van Staden, 2008; Cao et al., 2010). Specifically for domestic canids and felids, Jones and Budsberg (2000) described the clinical role of cyclooxygenase inhibitors in therapies as anti-inflammatory agent, as well as treatment of lameness and colic (Karar and Kuhnert, 2017). Our field observation of wild rice ingestion from wild felids provides a possible new insight and, suggests wild rice provides some potential pharmacological benefits. Thereby this insight might inform management of these three species in captivity, as our observation suggests wild rice is a grass species with high potential for the enrichment of captive animals due to potential benefits of animal self–medication use by free-ranging felids.

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Fig. 2. Sample of *O. latifolia* (A) collected at the place where registered the consumption by three big cats, and (B) scat of *P. onca* (jaguar) collected nearby with high content of hair of *Tayassu pecari* and grass, Santa Rosa National Park, Costa Rica.
Photographs © Pograma Jaguar-ICOMVIS, Universidad Nacional de Costa Rica.

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