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## PREDATION IMPACTS BY A SINGLE FERAL CAT IN A CUBAN RURAL FARM

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**ABSTRACT:** We are reporting the impacts assessment and the economic loss by the predation of 46 chickens by a single feral cat during four nights in a Cuban farm, in Corralillo, Villa Clara province, Cuba. Assessing only the loss of the consumable part of the animal, the cost for an economy of subsistence was of 165 CUC (141.9 USD) or 3974.4 CUP during this short time. A list of invasive mammals and their impacts in rural farms studied is provided.

**KEYWORD:** predation, cat, farm impact, economy lost, invasive mammals.

**RESUMEN:** *IMPACTO POR DEPREDACIÓN DE UN SOLO GATO FERAL EN UNA GRANJA RURAL CUBANA.* Se reporta la evaluación del impacto y las pérdidas económicas por la depredación de 46 pollos por un solo gato feral durante cuatro noches en una granja en Corralillo, provincia de Villa Clara, Cuba. Valorando solo la parte consumible de los animales, el costo para una economía de subsistencia fue de 165 CUC (141.9 dólares estadounidenses) o 3974.4 pesos cubanos durante este corto tiempo. Se lista los mamíferos invasores y sus impactos en las granjas rurales estudiadas.

**PALABRAS CLAVE:** depredación, gato, impactos en granjas, pérdida económica, mamíferos invasores.

touristic areas producing human and ecological conflict (Borroto-Páez *et al.*, 2013; Mancina *et al.*, 2014). However, efforts to document the distribution and the true impact on biodiversity, economy and human health in Cuba are insufficient.

In Cuban rural areas the feral cat is of continuing concern to farmers because of affects production on domestic farm animals, especially farming birds, chicks and eggs, and the impact on the subsistence economy of farms. However, the impacts have not as yet been evaluated, exist a level of farmer tolerance by the invasive species presence, considering the impact as unavoidable or normal and only take control measures when the losses are at extreme levels and the damages is done.

Moreover, the presence of a single individual of an invasive species is not considered as an environmental or conservation problem (the concept of an invasion process does not consider a single individual of an introduced species as an invasion, according to Simberloff and Rejmánek (2011) and their impact is contemptible or underestimated. However, a single individual of a non-native predator can cause serious and variable types of damages in a short time periods, including extinctions (Buller, 1905; Lever, 1994; Vázquez-Domínguez *et al.*, 2004) and the damages by hyperpredation can reach high economic cost. In some parthenogenetic reptile species like geckos, with all-female population, only is needed a single female to conform an invader population (Alonso and Borroto-Páez, 2017).

As a result of a survey with interview of farmers and local peoples for looking for information about introduced and invasive vertebrates and their impacts, we visited several rural areas and farms, around Marti town, Matanzas province, and Corralillo town, Villa Clara province.

## RESULTS

In July 2014 in the farm know as La Manuela, located to 2 km at east of Corralillo, Villa Clara province, the owner Sr. Carlos Ortiz Ruiz informed us about the worst affects suffered in their subsistence operation resulting from the predation of a single cat (*Felis silvestris catus*) on their domestic chickens including chicks and he shown some of the trace of remains. In only four nights a single wild

## INTRODUCTION

The domestic cat (*Felis silvestris catus*) is considered among the 100 of the world's worst invasive species (Lowe *et al.* 2000), due to its wide distribution and impacts around the world, especially in islands where the species has a significant record of impacts on biodiversity by predation, driving to the extinction to many natives species of vertebrates (Nogales *et al.*, 2004; 2013; Campbell *et al.* 2011).

In Cuba wild or feral cats are known as "gato jíbaros" are present in many important areas for conservation as protected areas (40), and offshore islands (21) in the Cuban archipelago (Borroto-Páez, 2009, 2011; Borroto-Páez and Mancina, 2017), and they are abundant and frequent in

cat predated 46 chickens from a total of 52, leaving feather, blood and remains throughout different parts of the farm. Some chickens were stolen and brought to the surrounding scrubland, but others were killed, with heads and necks bitten and abandoned. The feral cat was hunted and removed in the fifth night after the beginning of the damage.

If we assess the economic impact in base of consider that the body weight of an adult marketable chicken adult is 1.5 kg and in the four nights the accumulated losses were 69 kg of meat and other consumable parts. Considering existing Cuban market prices the loss for the farmer for this single predation event was 165 CUC (141.9 USD) or 3974.4 CUP\*, to a reason of 993.4 CUP (35.47 USD per day). It is an important economic loss for a substance economy in a developing country like Cuba. It is only a fraction of the total cost to the farmer considering that this value does not include all costs for buying the chicks, their attention, maintenance and feeding of the chicks for around 4 months prior to the occurrence. It is a case showing the extremely high level of impact of only one individual of an introduced species in a short period of time by hyper-predation. The fact gives us an idea of how could be the real impact of a single individual of an introduced species before reproduce, establish a population, spread,

and become in an invasive species.

Other secondary impacts, very difficult to evaluate here, are related to the presence in the farm of other invasive predator mammals as the black rat (*Rattus rattus*) and the mongoose (*Herpestes auro-punctatus*) that can spread the remains of chickens left by the feral cat predation, creating a focus for flies and insects, which can disseminate diseases to humans and farm animals. Moreover, on other occasions in the farm feral cats have been observed preda-tion on native fauna as limpkins (*Aramus guarauna*) and their chicks, and *Anolis* lizards.

During the survey in rural farms around central Cuba, we get additional information about other invasive mammals and their recognized impacts by farmers (Table 1) and the high abundance of other invasive mammals like black rat (*Rattus rattus*), mice (*Mus musculus*) as pest in crops and agriculture storage, brown rat (*Rattus norvegicus*) in local places like pigsty and rice crop, but only action for their control were executed when the damage and the infestation are extraordinary. Feral cat (*Felis silvestres catus*), Feral dogs (*Canis lupus familiaris*) and mongoose (*Herpestes auro-punctatus*) are not so abundant but few individual can cause continue and important loss on farm animals and eggs. All are important concern for public health and con-

TABLE 1. Invasive mammals and their impacts in rural farms recognized by the survey to Cuban farmer (N= 25) around Corralillo town, Villa Clara province and Marti Town, Matanzas province, Cuba.

TABLA 1. Mamíferos invasores y sus impactos en granjas rurales reconocidos en las encuestas a granjeros (N=25) en los alrededores de los pueblos de Corralillo, provincia de Villa Clara y Martí, provincia de Matanzas, Cuba.

Invasive mammals in farm	Impact	Target
Feral cat ( <i>Felis silvestris catus</i> )	Predation	Chickens, chicks and eggs and other farm birds
Feral dog ( <i>Canis lupus familiaris</i> )	Predation	Chickens, chicks and eggs, sheeps, goats, small pig
Mongoose ( <i>Herpestes auro-punctatus</i> )	Predation	Chickens, check, eggs, and other farm birds
Brown rat ( <i>Rattus norvegicus</i> )	Predation	Chickens, check, eggs, other farm birds and pigs.
	Perturbation	Pigsty places.
	Crop Pest	Rice
	Diseases	Several undetermined
Black rat ( <i>Rattus rattus</i> )	Damages by burrow construction	Floor collapse
	Predation	Chicks and egg, rabbits litter
	Damages and contamination	Grain and viands storages
Mouse ( <i>Mus musculus</i> )	Diseases	Several undetermined
	Crop pest	Sugar cane, fruits, pineapple.
	Damages and contamination	Grains and viands storage
Rabbit ( <i>Sylvilagus floridanus</i> )	Crop pest	Sugarcane, sweet potato, tomato, beans, cucumber, vegetable, etc.
		Pineapple

servation of biodiversity too.

Note: \* CUC, Cuban convertible peso; CUP, Cuban peso; USD, United States dollar. Exchange rate, 1 USD = 0.86 CUC; 1 CUC= 24 CUP.

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