

Feral cats steal milk from northern Elephant Seals

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Abstract

Feral cats abound at Isla de Guadalupe; they forage on birds, mice, and placental tissue as well as carcasses of northern elephant seals (*Mirounga angustirostris*), Guadalupe fur seal (*Arctocephalus townsendi*), California sea lions (*Zalophus californianus*) and stranded cetaceans such as Cuvier's beaked whale (*Ziphius cavirostris*). We have found that feral cats are also drinking elephant seal's milk, stealing it directly from the teats of nursing females. The amount of energy obtained this way might be significant for feral cats in the northern elephant seal rookeries on the island.

Key words: Feral cats, northern elephant seal, milk, Isla Guadalupe.

Resumen

Los gatos ferales abundan en la Isla Guadalupe, se alimentan de aves, ratones y tejido placentar, así como también de los cadáveres de elefante marino (*Mirounga angustirostris*), lobo fino de Guadalupe (*Arctocephalus townsendi*), lobo marino de California (*Zalophus californianus*) y de cetáceos varados como el zifio de Cuvier (*Ziphius cavirostris*). Se observó que los gatos ferales también se alimentan de leche de elefante marino, robándola de las tetas de las hembras que están amamantando. La cantidad de energía obtenida de esta manera por los gatos asilvestrados puede ser significativa en las colonias de elefantes marinos de la isla.

Palabras clave: Gatos asilvestrados, elefante marino del norte, leche, Isla Guadalupe.

Introduction

While censusing, satellite tagging adult males and rototag tagging weaned pups of northern elephant seals (*Mirounga angustirostris*) at Playa Norte, Isla de Guadalupe (14 - 19 February, 2003), we opportunistically observed the stealing of elephant seal's milk by feral cats (*Felis catus*) and western gulls (*Larus occidentalis*). Western gulls have been previously reported stealing milk from female northern elephant seals in several elephant seal colonies (J. P. Gallo-Reynoso personal observations; Pierotti and Annett

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1995), and this behavior has also been observed in other seabirds such as the Pale-faced sheathbill (*Chionis alba*), feeding on southern elephant seal (*M. leonina*) milk (Favero 1996). However, this is the first report that focuses on feral cats stealing milk from elephant seals.

The elephant seal harems at Playa Norte (North beach), during the reproductive season of 2003, were composed of 182 females, 179 pups, 21 adult males, 23 sub-adult males, several yearlings, and 1,084 weaners. The total population of elephant seals at this site was estimated at 2,634 individuals (adding one female for each weaner and each dead pup). The number of pups born on that beach in 2003 was 1,324 (dead pups accounted for 61 or 4.6 % of total pups). Thus an equal number of milk bearing females were available, considering that the mean milk transfer to pups equals 137.7 kg during four weeks of nursing (Ortiz *et al.* 1984), these females roughly will be delivering to suckling pups an equivalent of 182,300 kg of elephant seal milk.

Three different cats were opportunistically observed to steal elephant seal's milk. A striped male that was observed on three different nights; the other two, a lactating female and a black male, were only seen on one occasion each. Although observed only once, this does not mean that these cats did not steal milk before or after the recorded observations. These three, and another two smaller, marginal cats were observed around our campsite. We have more observations of the striped male as this cat was easier to spot.

Observations were done mainly at sundown, but once early in the morning and once at night using several lamps that allowed us to observe the black cat. The striped cat was usually moving between female elephant seals at dusk and dawn, while the black cat was at the harem at night. These cats avoided female elephant seals positioned in the center of the harem because they responded more to external threats than peripheral females. Therefore, all of the milk stealing activity was observed to take place on peripheral females. Cats that were caught licking a teat were chased by the mother of the pup, and on several occasions by other female elephant seals that either observed the cat's approach, or stealing of milk. These cats were also observed to compete with seagulls for portions of fresh placentas and decomposing elephant seal carcasses.

To be able to get to a female elephant seal's teat and milk, the striped cat approached the elephant seal pup and harassed it by tapping repeatedly on the head with a paw (claws extended). The pup would then move away from its mother, sometimes protesting, and as milk continued to drip out from the female's teat, the cat would lick it. However, we never observed a behavior that resembled suckling and we only observed that the tongue licked the dripping milk but none of the three cats were observed touching the female with their paws. The effort (time) that feral cats dedicated to searching for a female in good position once entering the harem, and the time spent stealing milk were measured (Table 1). We estimated that cats were successful at stealing milk 40.7 % of the total time that they spent looking for a suitable female from which to steal milk.

A similar behavior was carried out by western gulls; they approached a pup and pecked on the pup's head, causing it to retreat, and then positioned their beak sideways to receive the milk dripping from the teat of the female elephant seal. This was observed several times during our stay at Guadalupe, always during daylight hours. The perpetrators were adult gulls and second year chicks.

Table 1. Observations of feral cat effort (search for a suitable female in a good position), and success to obtain milk (time licking the perfused milk) from female elephant seals. Data shows the Mean \pm SD.

Cat	N	Effort to obtain milk (min)	Time spent licking (min)
Stripped male	3	2.2 \pm 0.4 range: 1.8 - 2.8	1.5 \pm 0.1 range:1.3 -1.7
Black male	1	2.7	1.2
Female	1	3.1	0.5
Total	5	2.7 \pm 0.4 range: 3.1 – 1.8	1.1 \pm 0.4 range: 1.7 – 0.5

What is the reproductive cost for a female elephant seal with such a loss of milk transfer to the pup? It is difficult to calculate how much milk is actually stolen in this way from any particular female, or from all the females on the beach. We estimate that if there were 182 females nursing pups at the end of the reproductive season, the amount of milk available for pups, and with potential to be stolen, was more than 25,000 kg. Assuming that the milk transferred from mothers to pups is the same as calculated by Ortiz *et al.* (1984) of about 137.7 kg of milk to their pups for the whole nursing period of 28.2 days, or 4.9 kg / day; and taking into account that the stomach capacity of a cat is around 300 g (Grandage 2003), and assuming that they were successful filling themselves up twice each day, then the maximum amount of milk available to be stolen each day by the three cats would be 1.8 kg. The variable that intervenes here in favor of the pups is that cats do not steal milk from the same females; they stole the milk from a different female each time. Perhaps the amount of milk stolen from an individual female elephant seal is not significant for the development of elephant seal pups or the parental investment and reproductive success of their mothers. On the other hand, cats will try to steal elephant seal milk due to its availability and its rich energy content which is a large surplus (with an energy content of 543.8 Kcal/ 100 g, with 54.4% fat, 9 % protein, 32.8 % water and 0.7 % ash (Le Boeuf and Ortiz 1977)), translating into a significant gain in their survival. Cats that performed this behavior were in good condition, highly territorial and actively excluded other cats from the area.

What would be the cost for pups losing time suckling milk (and kilocalories) to develop? Pups refrained from nursing for a few minutes will not be deprived from large quantities of milk. The amount of milk that pups might lose for the time they are deprived from suckling, ranges from 4.6 kg/ day to 4.9 kg/ day (Ortiz *et al.* 1984). This amount will not significantly affect their development if a given female is only perpetrated once a day. Even if the cat stole that amount of milk from the same female each day for the nursing period (about 8.5 kg, or 0.74×10^5 kcal) this amount would still not be significant.

Pups were not significantly injured by cats, only a few scratches that were healed in a few days, compared to the pecking of sea gulls on their heads and eyes that can pose a threat to the defenseless small pups. Also, cats can not spend much time licking the female; their scaled tongue alerts the female that something is wrong and she will respond to it by chasing away the cat or turning her belly down, denying access to her teats.

This situation raises some questions of conservation concern to the northern elephant seals on the island. The feral cat population on Isla de Guadalupe is quite large, cats are found in all areas of the island (Keitt *et al.* 2005). They primarily feed on birds, feral

mice (*Mus musculus*), adults and chicks of Laysan Albatrosses (*Phoebastria immutabilis*), other birds; pinniped, cetacean (Cuvier's beaked whale (*Ziphius cavirostris*)) and feral goat carrion (Gallo-Reynoso *pers. obs.* 1993, 2010; Keitt *et al.* 2005); they also eat the placenta of elephant seals, Guadalupe fur seals (*Arctocephalus townsendi*) and California sea lions (*Zalophus californianus*). By stealing milk from this threatened species, feral introduced cats can pose a direct threat by coming into contact with the female's body. The concern is that by licking the teats, entero-bacteria, protozoans and viruses can be passed in the saliva from cats to female elephant seals with the possibility of an infection. Diseases that could be caused by feral cats on Isla de Guadalupe pinnipeds should be sought and evaluated, due to the finding of a northern elephant seal with encephalitis, infected with toxoplasmosis (*Toxoplasma gondii*) cysts (Dubey *et al.* 2004), also present in other marine mammals (Dubey *et al.*, 2003). Toxoplasmosis is known to be transmitted by cats (Frenkel *et al.*, 1970); if cats result in a threat to elephant seals, then it is imperative that they be subject to management by the Reserva de la Biosfera Isla de Guadalupe (Isla Guadalupe Biosphere Reserve).

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