Reproductive strategies of the 10 most hunted wild mammals in the Amazonia

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Objectives

Describe the reproductive strategies of ten Amazonian mammals subjected to high hunting pressure. Thus, explain what elements define these strategies and what are the factors that describe their reproductive productivity. By finding the relationship between different factors that directly or indirectly affect reproduction, we could then improve conservation programs.

Introduction

In recent years there has been growing concern about the accelerated disappearance of species, due to the great impact of climate change and human actions. Wild populations oscillate over time and, therefore, reproduction plays a key role, as it allows replacing those individuals that die and recover populations.

Species present different reproductive strategies focused on maximizing the survival. These are linked to a set of diverse intrinsic factors of each species. Mammals have developed different life strategies in response to **periodic environmental variations** and based on a forecast of **energy demand**. Reproduction is a highly demanding activity, giving birth coinciding with a greater availability of food.

Key points

The **degree of development** of the neonate is closely linked to postpartum **parental care**. Mammals have developed a wide variety of reproductive strategies. We find a wide range of degrees of fetal development, from **altricial** species to highly **precocial** ones. The altricial offspring are immature and are often born without hair, closed eyelids and a great parental dependence during a long postnatal period. Precocial species, in contrast, produce much more mature offspring, usually with early sensory and motor capacity, and being independent from the mother much earlier.

$\mathbf{R_{max}}$ is the **intrinsic rate of natural increase**. It indicates the greatest possible population increase of the species. Is often used when designing conservation programs. An overestimation could lead to a significant impact on wild populations.

Results

Figure 1. Relationship between fetal development rate and litter size in ten species of Amazonian mammals.

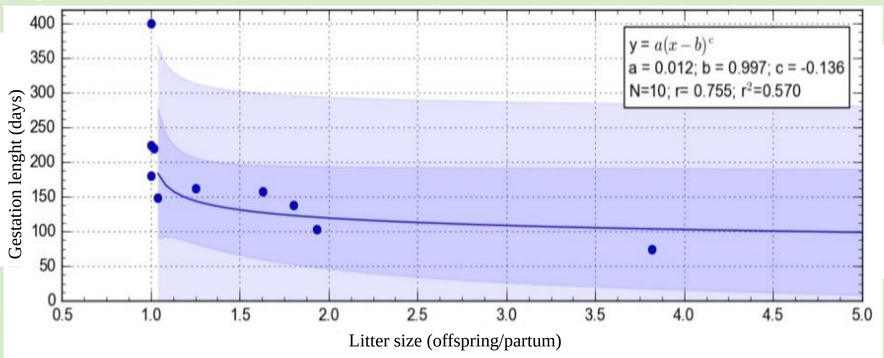


Figure 2. Relationship between gestation length and litter size in ten species of Amazonian mammals.

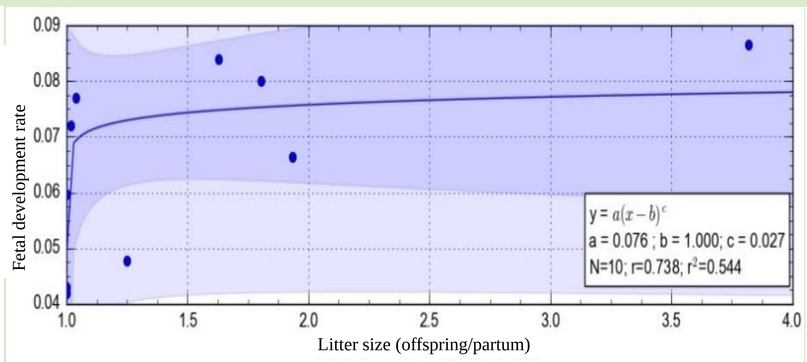
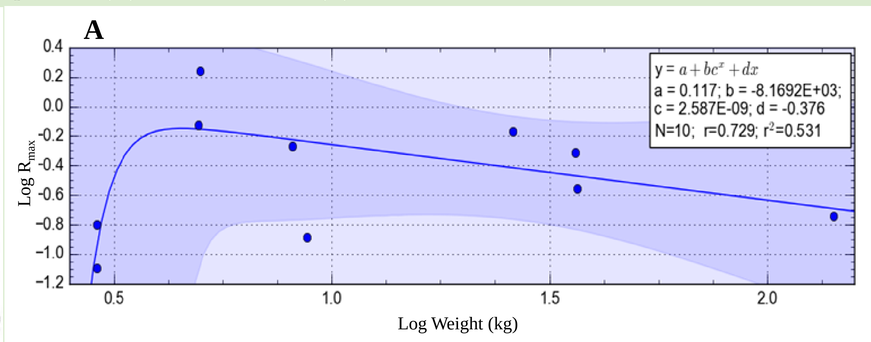


Figure 3. Relationship between r_{max} and live weight in ten species of Amazonian mammals. The blue line represents the model that best fits the points including the primates (A) and without them (B).



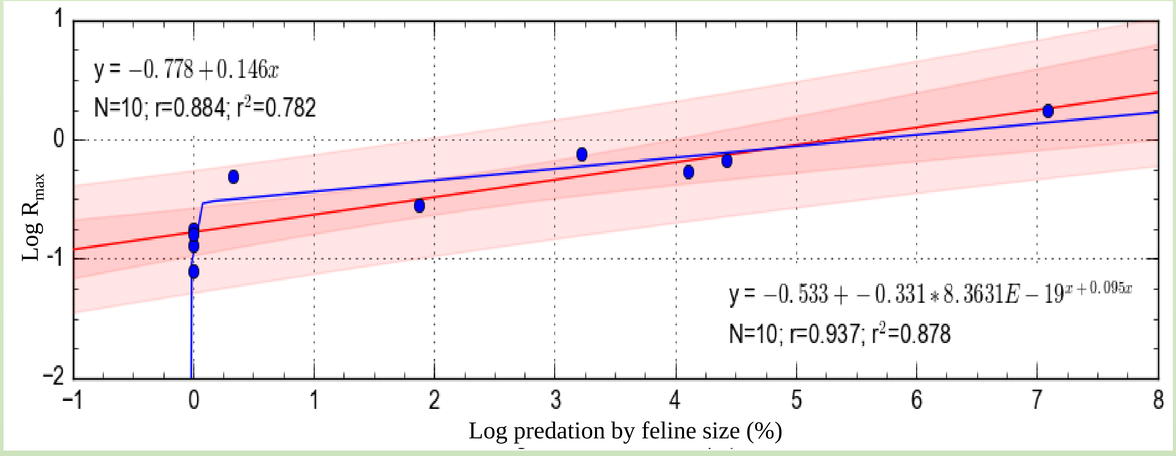


Figure 4. Relationship between r_{max} and predation by felines in ten species of Amazonian mammals. The blue line represents the non-linear model that best fits the points, while the red line represents the linear model.

Species	*Cuniculus paca* Rodentia	*Dasyprocta fuliginosa* Rodentia	*Nasua nasua* Carnivora	*Mazama americana* Artiodactyla	*Pecari tajacu* Artiodactyla	*Tayassu pecari* Artiodactyla	*Tapirus terrestris* Perissodactyla	*Lagothrix poepiggi* Primates	*Cacajao calvus* Primates	*Sapajus macrocephalus* Primates
Litter size	1,04	1,93	3,82	1,02	1,8	1,63	1	1	1	1,25
Gestation length (days)	149	104	75	220	138	158	400	225	180	162
nº birth/year	1,54	1,77	1,12	0,71	0,97	0,93	0,65	0,43	0,51	0,49
Interbirth time	237	206	327	512	376	394	565	848	720	749
Fetal development rate	0,077	0,067	0,087	0,072	0,080	0,084	0,060	0,042	0,043	0,048
R_{max}	0,54	1,75	0,75	0,28	0,68	0,49	0,18	0,13	0,08	0,16
Weight (kg)	8,15	5	4,96	36,68	26,03	36,3	141,5	8,8	2,9	2,9
Hunting pressure (%)	6,71	1,35	1,66	4,17	18,62	36,24	4,48	7,63	1,74	1,4
Predation by felines (%)	4,102	7,09	3,22	1,87	4,42	0,33	0	0	0	0

Table 1. Reproductive and non-reproductive parameters of the ten species studied according to their taxonomic order

Conclusions

Mazama americana

Tayassu pecari

Pecari tajacu

Artiodactyla
- Medium-long gestation
- Litter size: 1-2 offspring
- Precocial
- ↑ ↑/ ↓ Fetal development rate
- ↑ / ↓ ↓ R_{max}

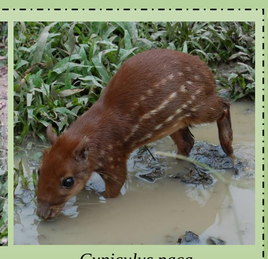
Tapirus terrestris

Perissodactyla
- Long gestation
- Litter size: 1 offspring
- Precocial
- ↓ Fetal development rate
- ↓ R_{max}

Nasua nasua

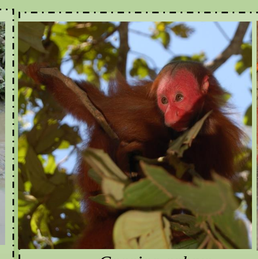
Carnivora
- Short gestation
- Litter size: 2-6 offspring
- Altricial
- Parental care
- ↑ ↑ Fetal development rate
- ↑ R_{max}

Dasyprocta fuliginosa



Cuniculus paca

Rodentia
- Long gestation
- Litter size: 1-2 offspring
- Precocial
- ↑ Fetal development rate
- ↑ ↑ /↑ R_{max}
- Nest



Cacajao calvus

Lagothrix poepiggi

Sapajus macrocephalus

Primates
- Long gestation
- Litter size: 1 offspring
- Altricial
- Long parental care
- Arboreal
- ↓ Fetal development rate
- ↓ ↓ R_{max}

- Predation is an important driver for the evolution of species and is highly correlated with the rate of population increase.
- Reproductive strategies do not depend on a single factor but are defined under a combination of them acting together.

References

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Images provided by Pedro Mayor