International Journal of Primatology (2024) 45:407–438
https://doi.org/10.1007/s10764-023-00408-0

Tourist Knowledge of and Beliefs about Wild Capuchin Monkeys (*Sapajus nigritus*) at Iguazú National Park, Argentina

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Received: 31 October 2023 / Accepted: 20 November 2023 / Published online: 19 December 2023
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Abstract

People's attitudes toward wildlife and how humans perceive themselves in relation to the natural environment are essential components of human-wildlife interactions. Iguazú National Park (INP), in northern Argentina, is visited daily by thousands of tourists. We studied tourists' knowledge of the diet and daily activity patterns of capuchin monkeys (*Sapajus nigritus*) and tourists' beliefs about why monkeys and people interact. We administered a questionnaire ($N = 601$) at four locations where tourists tend to concentrate between December 2015 and February 2016. We used generalized linear models to examine factors influencing tourists' knowledge. Our results indicate that tourists had accurate knowledge of the monkeys' daily activities and diet. Visual contact with monkeys and the presence of a tour guide was linked to better knowledge about daily activities but not about diet. People older than age 50 years with a university degree and/or a profession had higher levels of knowledge about diet than younger people without it. We found no effect of whether tourists came from regions with or without monkeys as native fauna or sex on tourists' levels of knowledge. Most of the tourists believed that monkeys approach people because they are looking for food. Taking photos, curiosity, and feeding monkeys were the most important reasons given for why people approach the monkeys. We found no differences between the sexes in their beliefs about interactions taking place because of food. Our results strengthen the need to move the focus of management strategies from wildlife behavior to human behavior, knowledge, and perceptions about wildlife if we want to improve conservation strategies.

Keywords Humans · Incidental tourism · Interactions

Handling Editor: (Jo) M. Setchell

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Introduction

Tourism is an industry that has experienced a significant growth in recent decades and is an important economic activity in many low and middle-income countries (Lee & Chang, 2008). In many of these countries, eco-tourism is a promising industry focused on wildlife watching, including wild primates (Russon & Wallis, 2014). Most tourist sites in primate habitat countries have some degree of incidental tourism related to primates, where primates are present at touristic locations and tourists and primates interact, although this interaction is not the primary motivation of the tourism visit (Grossberg *et al*., 2003; Sengupta & Radhakrishna, 2020). Some authors (Davis *et al*., 1997; Orams, 2002) suggest that the "best" tourism experiences involve interaction with wild animals, because visitors often want close encounters with wildlife (Curtin, 2008). It has been suggested that watching wildlife promotes both cognitive and affective benefits, such as an increase in knowledge and awareness about animals (Reibelt *et al*., 2017), pleasure, curiosity, and a sense of wonder (Bird, 2007).

Studying people's attitudes to and beliefs about wildlife and how humans perceive themselves in relation to the natural environment is essential to our understanding of human–wildlife interactions (Curtin, 2008). Although there are many studies of knowledge about, attitudes to, beliefs about, and perceptions of wildlife, few such studies define these concepts clearly (Kansky & Knight, 2014; Niu *et al*., 2019), leading to confusion when designing management and conservation programs. By strict definition, "knowledge" is a personal cognitive framework that makes it possible for humans to analyze and synthesize information and implies understanding processes, whereas "information" is data that has been categorized and implies only the understanding of relationships (Zins, 2007). Beliefs are individual's judgements based on experiences (Raymond, 1997) and are usually not clearly distinguished from knowledge (Österholm, 2010). Both knowledge and beliefs are the bases on which perceptions are constructed (Vargas Melgarejo, 1994).

The positive impacts of wildlife tourism on visitors' environmental knowledge and their attitudes to and beliefs about wildlife have been demonstrated in several situations (Ballantyne *et al*., 2007; Lee & Moscardo, 2005). Knowledge, attitudes, and beliefs are influenced by sociodemographic variables, such as culture, ethnicity, religious background, education level, age, or sex (Ballantine & Eagles, 1994; Czech *et al*., 2001; da Silva Costa *et al*., 2023; Ellwanger *et al*., 2015; Jacobs *et al*., 2022; Kellert & Berry, 1987; Meric & Hunt, 1998; Miller & McGee, 2000; Sanborn & Schmidt, 1995). Many studies suggest that a high education level (i.e., university education) or traditional knowledge of people from local communities with a low and middle level of education are related to higher levels of knowledge about wildlife (Ballantine & Eagles, 1994; Curtin, 2010; da Silva Costa *et al*., 2023; Karimullah *et al*., 2022; Meric & Hunt, 1998; Nekaris *et al*., 2013; Nyhus *et al*., 2003). In the case of formal education, this relationship relates to the way knowledge is improved at the interplay between tacit (obtained through first-hand experiences and difficult to explain to others) and explicit knowledge (codified and

written, and available to others) and it is at this point where education makes their largest contribution to knowledge improvement (Bird, 1994). Some studies also suggest that age and sex influence people's knowledge about wildlife, with older people scored higher than young people (Carretero, 2005; da Silva Costa *et al*., 2023; Ladio & Lozada, 2004), and men scoring higher on knowledge that stresses a utilitarian or practical view of wildlife, while women scored lower on this type of knowledge but higher on affective and protective behaviors toward wildlife (Gilligan, 1982; Kellert & Berry, 1987; Miller & McGee, 2000; Nyhus *et al*., 2003). In addition to sociodemographic characteristics and the fact that watching wildlife increases tourist's knowledge of animals (Reibelt *et al*., 2017), the presence of a tour guide influences the knowledge obtained by tourists during a visit (Çetinkaya & Öter, 2016; Chiang & Chen, 2014; Huang *et al*., 2010; Tsai *et al*., 2016), improving their understanding of the site visited (Weng *et al*., 2020).

Human interactions with primates may differ from interactions between humans and other mammals (Fuentes, 2006; Waters *et al*., 2019). Humans and nonhuman primates share biological, phylogenetic, and behavioral features, such as prehensile hands, big brains in relation to body size, vision as a prominent sense, long infant dependency periods, and complex social behaviors (Fuentes, 2006). Therefore, humans are more likely to anthropomorphize nonhuman primates and their behaviors than they do for other animals (Epley *et al*., 2007; Fuentes & Wolfe, 2002).

Studies of interactions between humans and nonhuman primates describe a wide range of effects on the species involved (Fuentes, 2013; Grossberg *et al*., 2003; Lee & Priston, 2005; Mansell & McKinney, 2021; Pathare *et al*., 2012; Sabbatini *et al*., 2006). Some species show changes in behavioral patterns, such as less time invested in foraging on natural resources and more time spent resting (Dhawale *et al*., 2020; McKinney, 2011; Sabbatini *et al*., 2008; Saj *et al*., 1999; Sengupta & Radhakrishna, 2018), habituation to human food provided either directly or indirectly by having access to garbage (Maréchal *et al*., 2011; McKinney, 2011; Saj *et al*., 1999; Sengupta & Radhakrishna, 2018), an increase in intra- and interspecific aggression that leads to injuries (Fuentes & Gamerl, 2005; Mansell & McKinney, 2021; Ruesto *et al*., 2010), and higher levels of physiological stress (Maréchal *et al*., 2011, 2016). Another potential cost of interactions is an increase in the likelihood of pathogen transmission either from or to humans (Fuentes & Gamerl, 2005; Jones-Engel *et al*., 2006; Muehlenbein *et al*., 2010; Orams, 2002).

An important characteristic of human–nonhuman primate interactions is the human food that is involved in most of these encounters (Sabbatini *et al*., 2006; Sharma *et al*., 2010). It has been suggested that humans use food to establish a relationship with animals (Lorenz, 1999) by mediating or facilitating an approach, and this is the most frequent type of interaction at tourist sites (Dubois & Fraser, 2013; Sabbatini *et al*., 2006). Some studies describe a tendency among women to think that animals are hungry, because the forest does not offer enough food for them (Kellert & Berry, 1987; Sengupta & Radhakrishna, 2020; Tujague, Pers. Obs.), perhaps because women are socialized to emphasize a role as nurturer and caretaker (Gilligan, 1982; Kellert & Berry, 1987; Lepczyk *et al*., 2004).

Omnivorous animals generally prefer food with high energetic content (Galef, 1996; Laska *et al*., 2000). Industrialized human foods (e.g., cookies, fried potato

snacks, and hamburgers) are high in energy compared with the food available in the forest and spatially concentrated in places where there are more people (e.g., bars and restaurants at tourist sites). Recent studies suggest that omnivorous primates of medium size and with some terrestrial behaviors are more likely to interact with humans and become more tolerant to human presence than other primates (Bicca-Marques *et al*., 2020; de Almeida-Rocha *et al*., 2017; Estrada *et al*., 2012; Galán-Acedo *et al*., 2019). Features, such as the ability to solve problems, learn socially, cooperate, incorporate diverse food types into their diet, and access embedded or hard to process foods by hand or by using tools, also allow some primates to inhabit anthropogenic landscapes (Humle & Hill, 2016).

Tufted capuchin monkeys (*Sapajus nigritus*) are omnivorous, medium-sized, show some terrestrial behaviors, are extractive foragers, and have cognitive abilities for solving problems (Fragaszy *et al*., 2004), making them very prone to interacting with people. Capuchin monkeys are diurnal primates with a diet based mainly on fruits and arthropods. They do not eat mature leaves but do consume the foliage base of leaves and buds of bamboo, bromeliads, and other epiphytes (Brown & Zunino, 1990). At Iguazú National Park (INP) in northern Argentina, capuchins live in multi-male, multi-female groups of between 7 and 44 individuals with philopatric females (Janson *et al*., 2012). In INP, capuchins have access to human food at an area with tourist presence, either from people or trash cans that people leave open. Since 2000, contact between monkeys and tourism at INP has increased in conjunction with an increase in the number of tourists visiting the park. Within the Cataratas Area, which is accessible to tourists, monkeys have begun entering bars and restaurants, stealing food and objects, and directing aggressive behaviors to park rangers, park employees, and researchers who tried to drive them off (Tujague, Pers. Obs.). INP is the only protected area in Argentina that combines a large amount of tourists (~ 1,000,000 per year, Administración de Parques Nacionales [APN], 2022) and primates whose home ranges overlap with 200 ha of touristic trails and activity centers (i.e., restaurants, souvenir shops, viewpoints, open theaters). Understanding the factors that promote these interactions will provide tools to design management strategies to mitigate any negative effects from these tourists–capuchin interactions. These factors include the knowledge and beliefs that tourists have about monkeys and how all of these change in relation to tourist demographic characteristics.

Our goal was to analyze tourists' knowledge of the natural history of capuchin monkeys, including their daily activities and diet, and tourists' beliefs about why monkeys and people interact at INP. To achieve these goals, we explored the effect of sociodemographic variables (the origin of tourists, their age, sex, education level, and occupation) and also variables related to the context of the park visit (the presence of a tour guide and also whether tourists had seen monkeys during the visit) on tourists' knowledge levels about daily activities and diet. With respect to beliefs, we explored the importance of food as a driver of interactions between people and monkeys and tested for differences between sexes in beliefs about food as a reason for monkeys to approach people to interact.

Methods

Study Site and Subjects

We conducted the study at INP, in Northeastern Argentina (25°40'S, 54°30'W; Fig. 1). Tourists at INP come from all over the world and include different profiles of age, sex, education, and religion. The number of tourists visiting INP has increased significantly in recent years (number of tourists per year retrieved from APN, 2022: 652,336 [2003] to 1,636,694 [2019]) and interactions between humans and tufted capuchin monkeys (categorized as Vulnerable in Argentina; Tujague et al., 2019) also have increased. Capuchins have both direct access to human food as the result of visitors feeding them and indirect access from garbage cans.

Two study groups of capuchins in the park (Macuco group, N individuals during the study = 24–27; Laboratorio group, N individuals during the study period: up to 21) interact with tourists almost daily (Tujague, unpublished data), making this site suitable to explore the interaction between humans and capuchins and the knowledge and beliefs that humans have about their ecology and behavior. Both study groups are habituated to human presence, as they have been the focus of intermittent study by the Caí Project, an interdisciplinary project that includes researchers from Argentina and other countries, since 1990. The Caí Project has provisioned one of the two groups included in the present study for research projects authorized by park authorities that included experiments (Janson, 1998, 2007), but these studies stopped

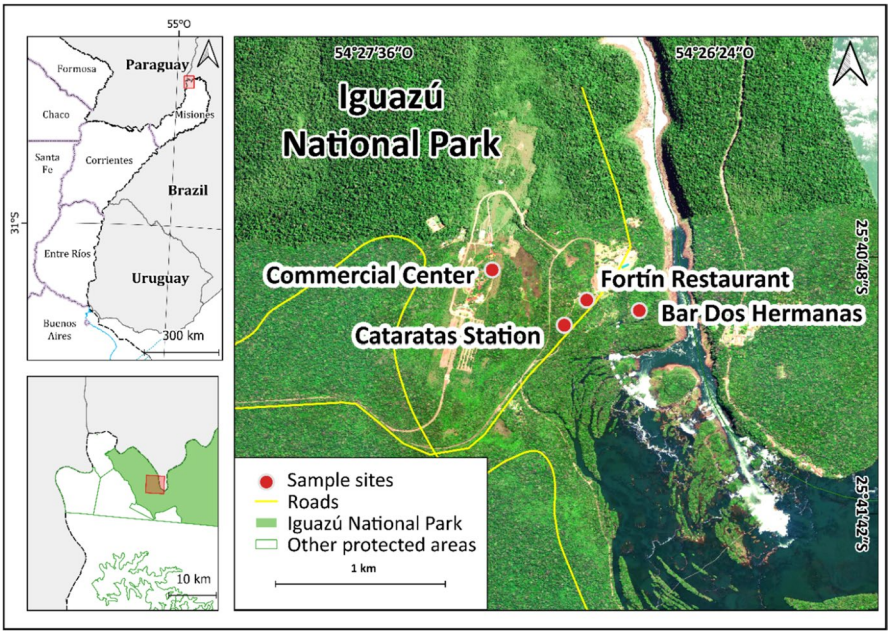

Fig. 1 Misiones province (Argentina), Iguazú National Park and location of the study site (Cataratas Area).

in 2013. Although the National Parks Authority prohibits the feeding of wildlife at INP, tourists occasionally feed the capuchins (Tujague, Pers. Obs.). The ecology and behavior of capuchins at the park is similar to other sites with slight differences (e.g., behavioral differences in subgrouping formation, ranging patterns, and food processing in relation to resource availability, variability in anointing behavior) as a consequence of differences in the type of forest (Lynch Alfaro *et al*., 2012).

Data Collection

We performed a self-administered questionnaire between December 2015 and February 2016 to examine tourists' knowledge of capuchin natural history and tourists' beliefs about capuchin monkeys and their interaction with people at INP (N = 601 questionnaires). Previous studies at the site (Tujague *et al*., 2016; Tujague & Janson, 2017; Tujague, unpublished data) helped with the design of the questionnaire, providing information about the general and cognitive ecology of capuchins at the site, and information about interactions between tourists and capuchins (locations where interactions take place, preliminary observations about sex and age differences during interactions, types of foods involved in interactions, and information about tourists beliefs about capuchins diet; Tujague, unpublished data).

We chose to use questionnaires rather than interviews based on the ways that visitors move across the park, with very brief stops at many different points due to the number of people visiting the park. A qualitative interview gives a deeper understanding of knowledge and beliefs than a quantitative survey (Setchell *et al*., 2017), but it is not possible to conduct interview studies in the context of the INP tourism, because most tourists do not want to (or cannot) spend time participating in an interview during their visit.

Two of the authors (MPT and MPC) and a local research assistant administered the questionnaires to tourists in Spanish, English, and Portuguese. MPC trained the research assistant before data collection began. We adopted a "drop-and-collect technique" (Bernard, 2006), delivering the questionnaire on paper to tourists and going back later to collect it. We conducted the surveys at four locations within the park where tourists tend to concentrate (Commercial Center, Cataratas Station, Fortín Restaurant, and Bar Dos Hermanas; Fig. 1). We distributed the questionnaires between 11:30 am and 4:30 pm, while people were having lunch and resting before continuing their walk. We intended to recruit every tourist that had lunch or a snack at the food sites, but some of them did not agree to complete the questionnaire. Each questionnaire contained a brief, written introduction about the goals and scope of the research project. Participation was voluntary, and the participants could decide whether to be anonymous or not.

Questionnaires contained questions about the nationality, age, sex, occupation, and education level of the respondent, as well as multiple-choice questions and yes/no questions about the monkeys. We assessed the general knowledge of tourists about the natural history of capuchins by asking them questions about features of capuchin daily activities and social organization, as well as their diet, and by asking

people to identify foods that capuchins usually consume from a list of items. We use the word "knowledge" to refer to tourists' previous knowledge and information acquired during their visit to INP (questions 1 to 3, Table I). Finally, to examine the tourists' beliefs about interactions between monkeys and humans, we asked tourists to mark with an X a list of predefined reasons why monkeys approached people and vice versa (questions 4 and 5, Table I).

Although it is possible that tourists were not thinking about capuchins while answering the questionnaire, all the signs and pamphlets with information for tourists included capuchin monkeys only and capuchins are the only monkeys that tourists could observe at the area. Although two primate species are found in INP (black-and-gold howler monkeys [*Alouatta caraya*] and black tufted capuchins), only capuchins have been present in the Cataratas Area (where tourists have access) since at least 1991, when the Caí Project started.

Data Analysis

To analyze tourists' knowledge about daily activities and diet, we used multiple logistic regression analysis using generalized linear models with binomial family and the response variables "General knowledge" and "Knowledge of diet." We analyzed both the complete data set (N = 591) and a subsample of Argentine tourists (N = 329). We analyzed the Argentinian subset separately considering that, although the study site receives tourists from all regions of the world, Argentine tourists comprise the highest proportion of visitors (61% of our data set).

Both response variables ("General knowledge" and "Knowledge of diet") followed a binomial distribution and were expressed as the proportion of correct answers out of the total number of answers (correct and incorrect answers) given by the respondents for daily activities and diet separately. We used the *cbind* function in R to combine correct and incorrect answers to calculate the level of knowledge of the respondent for each type of knowledge (*cbind*[Correct answers, Incorrect answers]). The resulting parameter *pi* is the probability that an answer is correct.

Levels of general knowledge could range from 0 (zero correct answers) to 4 (all answers correct). To give an example, we have a number of correct and incorrect responses given by a tourist for general knowledge, and a number of correct and incorrect responses for knowledge about diet. If an individual provides 4 correct answers and 0 incorrect answers, from the total of 4 possible answers for general knowledge, then the level of knowledge will be 4 correct answers/(4 correct answers + 0 incorrect answers) = 4/4 = 1. If an individual gives 2 correct answers and 2 incorrect answers, the level of knowledge will be = 2/(2 + 2) = 2/4 = 0.5. If an individual gives 0 correct answers and 4 incorrect answers, then 0/(0 + 4) = 0/4 = 0.

Levels of knowledge of diet could range from 0 (zero correct answers) to 6 (all answers correct). If an individual provides 6 correct answers and 0 incorrect answers, from the total of 6 possible answers, then the level of knowledge will be 6 correct answers/(6 correct answers + 0 incorrect answers) = 6/6 = 1. If an individual gives 2 correct answers and 4 incorrect answers, the level of knowledge will be = 2/(2 + 4) = 2/6 = 0.3. If an individual gives 0 correct answers and 6 incorrect answers,

Table I Questions, response options and number of responses in the self-administered questionnaire designed to investigate tourists' knowledge of and beliefs about *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016

Question number	Question	Response options	No. responses
1	Have you seen monkeys during your visit to the park?	Yes / no	591
2	Could you mark with an X which of the following features are characteristics of monkeys that you have seen or you know that live in the park?	They live in groups / solitary	591
		They move using the trees / on the ground	
		They sleep in trees / nests / ground	
		They take care of their infants: yes / no	
3	Could you mark with an X which of the following foods monkeys eat?	Fruits / leaves / eggs / insects / birds / mice / others (mention them)	591
4	Have you seen monkeys approaching people?	Yes / no	500
	Mark with an X the reasons why you think monkeys approach people:	Because they are hungry / because they are curious / to steal things / to play / others (mention them)	509
5	Have you seen people approaching monkeys?	Yes / no	522
	Mark with an X the reasons why you think people approach monkeys:	Curiosity / to feed them / to take pictures of them / to be in close contact with nature / other (mention it):	526

then 0/(0 + 6) = 0/6 = 0. All food items included as options in question 3 are part of the capuchins' diet, so we coded an answer as incorrect when the respondent did not tick one or more of the food items.

Logistic regressions included seven predictor variables (Table II). We classified occupation in five categories: "Career," including professions and also careers related to nature (e.g., economist, lawyer, web designer, doctor, architect, biologist, resource management, vet, tour guide, and teaching); "No Career," "Retired," and "Student." We categorized people who did not answer about their occupation as No Response (NR).

We asked people about their level of ongoing or completed education, from "primary school" (or elementary school¨) (category 1), "secondary school" (or ¨high school¨) (category 2), "tertiary education" (category 3): tertiary or associate's degrees that take 2–3 years; and "university education" (category 4): bachelors or professional degrees that take more than 3 years to complete. For the logistic regressions, we divided people into two groups: category 1 and 2, and category 3 and 4.

We also asked people about their sex (male/female). We acknowledge that this does not represent gender identities and that gender is not binary.

Following Sabbatini *et al*. (2006), we categorized the age of respondents as: "young," aged 14–30 years; "adult," aged 31–50 years; and "adult > 50," aged 51 years or older. People aged 14–18 years were all in the company of an adult when answering the survey. We categorized people who did not answer about their age as NR.

Finally, we divided countries of origin of the respondents (complete data set) into regions with or without monkeys as part of the native fauna. For the Argentine subsample, we assigned each respondent to a geographical region: regions with (Formosa, Chaco, Corrientes, Misiones, Jujuy, Salta, and Santa Fé) and without wild monkeys (Neuquén, Río Negro, Chubut, Santa Cruz and Tierra del Fuego, San Juan, Mendoza, San Luis, Entre Ríos, Santiago del Estero, Tucumán, Catamarca, La Rioja, Córdoba, La Pampa, and Buenos Aires).

We performed all analyses by using the packages *glm* and *MuMin* in R (version 4.2.2) (R Core Team, 2022).

We divided predictor variables into two groups: variables that describe the intrinsic characteristics of the respondents or "Sociodemographic variables" (Origin, Age, Sex, Education, and Occupation of the respondents), and variables related to the context of the park visit or "Park experience variables" (Guide and See Monkeys).

We ran one model for both data sets and both types of knowledge, including only sociodemographic variables (Sociodemographic Model) and another (Sociodemographic and Park Model), including the sociodemographic variables plus Park experience variables.

We selected models following three complementary criteria: 1 – the effect of each individual variable by checking the summary of each model ("Sociodemographic Model" and "Sociodemographic and Park Model"); 2 – the effect of each variable using ANOVA to evaluate each model; and 3 – Akaike's Information Criterion (AIC) differences between models (ΔAIC), selecting the model with the lowest AIC. The larger ΔAIC between models is, the less plausible it is that the model with higher AIC value is the best model (ΔAIC 0–2 substantially plausible, 4–7

Table II Predictor variables used to analyze tourists' knowledge of the natural history of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016

Predictor variable	Description	Categories	N
Saw monkeys or not	If respondents have seen monekys or not during their visit to the park	Complete data set	
		Monkeys seen	263
		Monkeys not seen	317
		NR	11
		Argentine subsample	
		Monkeys seen	160
		Monkeys not seen	162
		NR	7
Origin of respondent	Regions with or without monkeys as part of the native fauna	Complete data set	
		With monkeys	453
		Without monkeys	3
		NR	135
		Argentine subsample	
		With monkeys	103
		Without monkeys	226

Table II (continued)

Predictor variable	Description	Categories	N
Occupation	Respondent's occupation	Complete data set	
		Career	199
		No Career	155
		Retired	25
		Student	75
		NR	137
		Argentine subsample	
		Career	113
		No Career	108
		Retired	12
		Student	42
		NR	54
Education level	Level of ongoing or completed education	Complete data set	
		Primary-secondary	141
		Tertiary-university	439
		NR	11
		Argentine subsample	
		Primary-secondary	113
		Tertiary-university	211
		NR	5

Table II (continued)

Predictor variable	Description	Categories	N
Have interacted with a tour guide or not	If respondents interacted with a tour guide during their visit to the park	Complete data set	
		Guide	236
		No guide	213
		NR	142
		Argentine subsample	
		Guide	147
		No guide	111
		NR	71
Sex	Biological sex of the respondent	Complete data set	
		Male	275
		Female	315
		NR	1
		Argentine subsample	
		Male	166
		Female	162
		NR	1

Table II (continued)

Predictor variable	Description	Categories	N
Age	Age category of the respondent	Complete data set	
		Young	263
		Adult	177
		Adult > 50 year	109
		NR	42
		Argentine subsample	
		Young	149
		Adult	102
		Adult > 50 year	60
		NR	18

considerably less plausible, > 10 essentially not plausible) (Burnham & Anderson, 2002). Finally, we estimated the odds ratio and their 95% confidence intervals and predicted probabilities from the selected models.

To examine sex differences in tourists' beliefs about food as a reason for interactions, we used responses to questions 4 and 5 (Table I). Respondents selected one, two, or all the response options in questions 4 and 5, resulting in responses that included different combinations of options for each respondent. We classified responses selected by tourists into two categories: 1) responses that mentioned food as a reason ("because monkeys are hungry") for monkeys to approach people (Looking for food category); and 2) food as a reason ("to feed them") for people to approach monkeys (Feed category), against all responses that did not mention "hungry" or "feed" as reasons. We used a chi-square test with Yates' continuity correction in R to compare tourists' beliefs between males and females.

Ethical Note

Our research followed the principles outlined in the ethical code for research by the Argentine Research Council (CONICET, 2006) and the International Society of Ethnobiology Code of Ethics (ISE, 2006, with 2008 additions).

Conflict of Interest The authors declare that they have no conflict of interest.

Data Availability All data generated or analyzed during this study are included in Appendices S1 to S5.

Results

We obtained 591 complete questionnaires, from 275 male and 315 female visitors (only 1 person did not answer about sex). The median age of the sample was 31 years (mean = 36, range 14–90). Most of the respondents were from Argentina followed by Brazil, the United States of America, Germany, Italy, Colombia, France, Paraguay, and 33 other countries with a frequency lower than 2% (Table III). The median educational level was 4 (range 1–4; 1st Q = 3; 3rd Q = 4), indicating that most of the interviewed people had university-level education (degrees that take more than 3 years to complete from a university).

Most visitors responded that monkeys live in groups, move through the canopy, sleep in trees, and take care of their infants (Table IV). When questioned about the capuchins' diet, visitors cited fruit, leaves, and insects as the main food categories eaten by the monkeys (Table V).

For the complete data set (Appendix S1 and S3), the Sociodemographic and Park model best explained the levels of general knowledge (AIC Sociodemographic and Park model = 1789.7, AIC Sociodemographic model = 1880.6, ΔAIC = 90.9), including significant effects of seeing monkeys and the presence of a tour guide during the visit (Table VI). For knowledge of the capuchins' diet, the best model

Table III Nationality of the respondents to the questionnaire to analyze tourists' knowledge of the natural history of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016. "Others" includes 33 other countries with a frequency lower than 2% (12 with native primates, underlined): Australia, Belgium, Bolivia, Bulgaria, Canada, Chile, China, Korea, Costa Rica, Denmark, Spain, Estonia, Holland, Hungary, India, Israel, Japan, Lithuania, Malaysia, Mexico, Nicaragua, New Zealand, Peru, Poland, Puerto Rico, Russia, Singapore, South Africa, Switzerland, and the United Kingdom

Nationality	Percentage	No. respondents
Argentina	61	364
Brazil	7	44
USA	3	21
Germany	3	16
Italy	2	14
Colombia	2	12
France	2	11
Paraguay	2	10
Others	18	109

Table IV Responses to question 2 from the questionnaire to analyze tourists' knowledge of the natural history of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016. Respondents could select more than one option

Question 2	No. responses	Percentage
Live in groups	433	72
Live solitary	65	11
NR	99	17
Move through the trees	452	68
Move on the ground	123	18
NR	93	14
Sleep in trees	406	67
Sleep in nests	28	5
Sleep on the ground	20	3
NR	152	25
Take care of their infants	449	76
Do not take care of their infants	15	2
NR	127	22

was the Sociodemographic and Park model (AIC Sociodemographic and Park model = 1884.3, AIC Sociodemographic model = 1897.8, ΔAIC = 13.5), including a significant effect of presence of a tour guide during the visit (Table VII). Although the age of the respondents and their occupation showed an effect in the summary of both Sociodemographic and Sociodemographic and Park models, we found no effect of the two variables with the ANOVA tests applied to each model (Table VII).

For the Argentine subsample (Appendix S2 and S4), the Sociodemographic + Park model best explained the levels of general knowledge (AIC Sociodemographic + Park model = 960.3, AIC Sociodemographic model = 1003.5,

Table V Responses to question 3 from the questionnaire to analyze tourists' knowledge of capuchins (*Sapajus nigritus)*' diet at Iguazú National Park, Argentina, between December 2015 and February 2016. Respondents could select more than one option

Question 3	No. responses	Percentage
Fruits	512	42
Leaves	264	21
Insects	221	18
Eggs	90	7
NR	53	4
Others	41	4
Mice	25	2
Birds	22	2

Table VI Models that best explained levels of tourists' general knowledge of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the complete data set

General Knowledge		Sociodemographic + Park model					
		Model summary				Anova	
Variable		Estimate	± SE	Z	*P*	Deviance	*P*
Intercept		−0.012	0.72	−0.02	0.98		
Regions (df = 2)	With monkeys	−0.068	0.61	−0.10	0.91	0.646	0.72
	Without monkeys	0.015	0.62	0.02	0.98		
Age (df = 3)	Adult > 50	0.008	0.13	0.06	0.94	4.854	0.20
	NR	−0.248	0.19	−1.30	0.20		
	Young	−0.112	0.10	−1.03	0.30		
Sex (df = 1)	Male	0.011	0.08	0.13	0.89	0.277	0.60
Education (df = 2)	Primary-secondary	0.375	0.35	1.06	0.28	3.741	0.20
	Tertiary-university	0.186	0.34	0.54	0.58		
Occupation (df = 4)	No career	−0.138	0.12	−1.13	0.25	5.146	0.30
	NR	−0.195	0.12	−1.56	0.10		
	Retired	−0.348	0.24	−1.45	0.14		
	Student	0.129	0.15	0.86	0.38		
Monkeys seen (df = 2)	**NR**	**−1.573**	**0.42**	**−3.72**	**< 0.001**	**79.668**	**< 0.0001**
	Yes	**0.568**	**0.08**	**6.51**	**< 0.0001**		
Guide presence (df = 2)	**NR**	**−0.246**	**0.11**	**−2.17**	**0.03**	**19.257**	**< 0.0001**
	Yes	**0.248**	**0.10**	**2.46**	**0.01**		

Bold font significant effect of predictor variables

df degrees of freedom

ΔAIC = 43.2), with a significant effect of seeing monkeys during the visit (Table VIII), whereas for knowledge about diet, the best model was the Sociodemographic model (AIC Sociodemographic model = 1003.1, AIC Sociodemographic + Park model = 1008.4, ΔAIC = 5.3), including a significant effect of age (Table IX). Occupation showed a significant effect in the summary of both Sociodemographic and Sociodemographic + Park models.

Table VII Models that best explained levels of tourists' knowledge of diet of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the complete data set

Knowledge of diet		Sociodemographic + Park model					
		Model summary				Anova	
Variable		Estimate	±SE	Z	*P*	Deviance	*P*
Intercept		−0.656	0.60	-1.09	0.30		
Regions (df = 2)	With monkeys	−0.431	0.49	-0.87	0.40	1.739	0.40
	Without monkeys	−0.331	0.49	-0.66	0.50		
Age (df = 3)	**Adult > 50**	**0.263**	**0.11**	**2.32**	**0.02**	5.6238	0.10
	NR	0.004	0.16	0.02	0.90		
	Young	−0.073	0.09	−0.79	0.40		
Sex (df = 1)	Male	0.142	0.07	1.93	0.05	1.7933	0.20
Education (df = 2)	Primary-Secondary	0.382	0.32	1.19	0.20	5.3193	0.07
	Tertiary-University	0.386	0.31	1.22	0.20		
Occupation (df = 4)	No Career	−0.193	0.10	−1.87	0.06	8.9666	0.06
	NR	−0.019	0.10	−0.18	0.80		
	Retired	**−0.428**	**0.20**	**−2.08**	**0.03**		
	Student	0.151	0.12	1.22	0.20		
Monkeys seen (df = 2)	NR	−0.374	0.29	−1.25	0.20	3.6113	0.20
	Yes	−0.115	0.07	−1.56	0.10		
Guide presence (df = 2)	**NR**	**−0.265**	**0.09**	**−2.65**	**< 0.001**	**17.894**	**< 0.001**
	Yes	0.149	0.08	1.78	0.07		

Bold font significant effect of predictor variables.

df degrees of freedom.

In the complete data set, seeing monkeys during their visit (N = 263) increased the respondents' level of knowledge by 77% compared with people who did not see monkeys (N = 317) (Fig. 2; Table S1; Fig. S1—Appendix S5). Additionally, the presence of a tour guide during the visit (N = 236) increased knowledge levels by 28%, and people who did not answer about the presence of a guide (N = 142) showed 22% less knowledge than people with no guide during the visit (N = 213). For diet, people older than age 50 years (N = 102) showed a 30% more accurate level of knowledge than adults age ≤ 50 years (N = 177) (Fig. 3; Table S2; Fig. S2—Appendix S5), whereas retired people (N = 25) showed 35% less knowledge than respondents with a career (N = 199). People who did not answer about the presence of a guide showed 23% less knowledge than people with no guide during the visit.

For the Argentine subsample, people who saw monkeys during their visit (N = 160) showed 89% better level of general knowledge than people who did not see monkeys (N = 162) (Fig. 4; Table S3; Fig. S3 – Appendix S5), regardless of whether they had a tour guide during the visit. Adults older than age 50 years (N = 60) showed 62% more knowledge about diet than adults ≤ 50 years (N = 102). Retired people (N = 12) showed 49% less knowledge than people with a career (N = 113) (Fig. 5; Table S4; Fig. S4—Appendix S5).

Table VIII Models that best explained levels of tourists' general knowledge of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the Argentine subsample data set

General knowledge		Sociodemographic + Park Model					
		Model summary				Anova	
Variable		Estimate	±SE	Z	*P*	Deviance	*P*
Intercept	0.221	0.56	0.39	0.70			
Regions (df = 1)	Without Monkeys	−0.203	0.12	−1.58	0.10	1.663	0.20
Age (df = 3)	Adult > 50	−0.05	0.18	−0.27	0.80	1.245	0.70
	NR	−0.156	0.28	−0.54	0.60		
	Young	−0.093	0.14	−0.62	0.50		
Sex (df = 1)	Male	0.038	0.12	0.31	0.70	0.174	0.70
Education (df = 2)	Primary-Secondary	0.108	0.53	0.20	0.80	0.75	0.70
	Tertiary-University	0.024	0.53	0.04	0.90		
Occupation (df = 4)	No Career	−0.05	0.15	−0.31	0.70	0.74	0.90
	NR	−0.124	0.18	−0.66	0.50		
	Retired	−0.354	0.34	−1.01	0.30		
	Student	−0.12	0.20	−0.59	0.50		
Monkeys seen (df = 2)	**NR**	**−1.447**	**0.47**	**−3.02**	**< 0.01**	**48.757**	**< 0.0001**
	Yes	**0.634**	**0.11**	**5.33**	**< 0.0001**		
Guide presence (df = 2)	NR	0.063	0.16	0.39	0.70	2.485	0.30
	Yes	0.206	0.13	1.54	0.10		

Bold font significant effect of predictor variables.

df degrees of freedom.

When asked why monkeys approach people (question 4), 43% of the tourists (N = 219) said that monkeys are hungry, whereas 57% said that monkeys initiated this interaction for other reasons (N = 290), including curiosity and stealing objects (Fig. 6). Only 31% of tourists (N = 166) believed that feeding monkeys was the main reason why people approach monkeys (question 5); most of them (68%) believed that other reasons were important (N = 360), including taking photos and curiosity (Fig. 7). In both cases, food was not the only important item promoting interactions.

We found no differences between males and females in their beliefs about food as a reason for interactions (monkeys approaching people: χ^2 with Yates' continuity correction = 2.51, degrees of freedom (df) = 1, $P = 0.11$; people approaching monkeys: χ^2 with Yates' continuity correction = 0.14, df = 1, $P = 0.70$). Finally, we found a significant association between tourist beliefs about food as a reason for monkeys to approach people and whether they saw monkeys or not during the visit (χ^2 with Yates' continuity correction = 5.25, df = 1, $P = 0.02$) but not about food as a reason why people approach monkeys and the fact that tourists saw monkeys or not during the visit (χ^2 with Yates' continuity correction = 0.05, df = 1, $P = 0.81$).

Table IX Models that best explained levels of tourists' knowledge of diet of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the Argentine subsample data set

Knowledge of diet		Sociodemographic model					
		Model summary				Anova	
Variable		Estimate	±SE	Z	*P*	Deviance	*P*
Intercept	**−1.234**	**0.51**	**−2.41**	**0.01**			
Regions (df = 1)	Without Monkeys	0.179	0.10	1.66	0.09	1.1392	0.30
Age (df = 3)	**Adult > 50**	**0.483**	**0.14**	**3.25**	**< 0.01**	**14.029**	**< 0.01**
	NR	−0.25	0.24	−1.00	0.30		
	Young	−0.188	0.12	−1.51	0.10		
Sex (df = 1)	Male	0.081	0.10	0.81	0.40	0.3187	0.60
Education (df = 2)	Primary-secondary	0.38	0.48	0.77	0.40	4.1143	0.10
	Tertiary-university	0.468	0.48	0.95	0.30		
Occupation (df = 4)	No career	−0.134	0.13	−1.01	0.30	**9.3781**	**0.05**
	NR	−0.114	0.15	0.72	0.50		
	Retired	**−0.666**	**0.30**	**−2.20**	**0.03**		
	Student	0.256	0.16	1.53	0.10		

Bold font significant effect of predictor variables.

df degrees of freedom.

Discussion

We found that general knowledge about daily activities of capuchins was better explained by the combination of sociodemographic characteristics of the tourists and their experience of visiting the park than it was by these two factors separately. Experiences during the visit (the presence of a tour guide and seeing monkeys) had the strongest effect on levels of accurate knowledge about the monkeys' daily activities. Likewise, accurate levels of knowledge about diet of capuchins were better explained by the combination of sociodemographic characteristics of the tourists and their experience of visiting the park, with age and occupation of the respondents and the presence of a tour guide being the variables with the strongest effect on accurate levels of knowledge. In contrast, in the Argentine subsample data set, levels of knowledge of diet were better explained only by sociodemographic variables (with age and occupation being the variables with strong effect), and not by the combination of sociodemographic characteristics of the tourists and their experience of visiting the park.

The most frequent reasons tourists gave for why monkeys approach people were curiosity, hunger and stealing objects, whereas taking photos, curiosity, and feeding them were the more important reasons tourists provided for why people approach the monkeys. We found no sex differences in beliefs about the reasons why monkeys and people interact. We also found that tourist beliefs about the reasons why monkeys approach people were significantly associated with whether they saw monkeys during the visit, but there was no association between the reasons why people approach monkeys and whether they had seen monkeys during the visit.

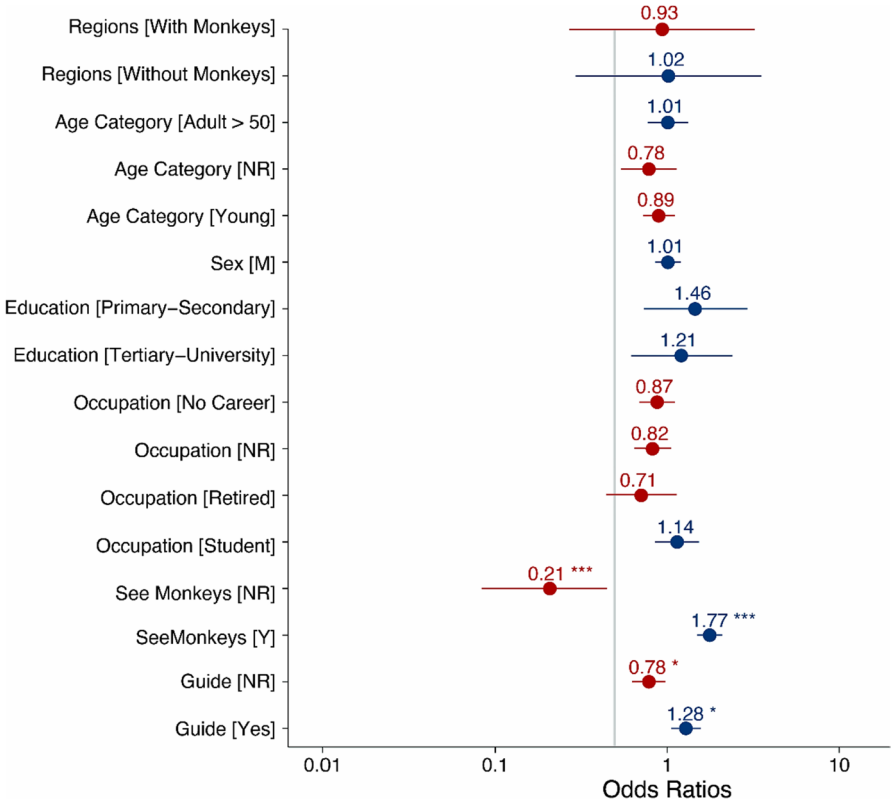

Fig. 2 Odds ratio and 95% confidence intervals of predictor variables for GLM that best explained levels of tourist's general knowledge of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the complete data set. NR = no response; $*P < 0.05$; $***P < 0.0011$.

Knowledge of Capuchin Daily Activities and Diet

We found that our respondents had accurate knowledge of the daily activities of capuchin monkeys and about their diet: capuchins are omnivorous but spend most of their time feeding on ripe fruit and cryptic arboreal invertebrates (Janson, 1990). Although tourists cited leaves almost as frequently as insects as part of the diet, they cited fruit most often (42%), with other food items cited less.

When analyzing the complete data set, we found that seeing monkeys during the visit and the presence of a tour guide improved an individual's general information about capuchins' daily activities but only the presence of a tour guide improved their knowledge about capuchins' wild diet composition. When analyzing the Argentine subsample data set, we found that seeing monkeys improved tourist's general information about daily activities but not about diet. Although we could not exclude the possibility that tourists generalized their knowledge about the daily activities of other mammals (e.g., coatis—*Nasua nasua*) to capuchins,

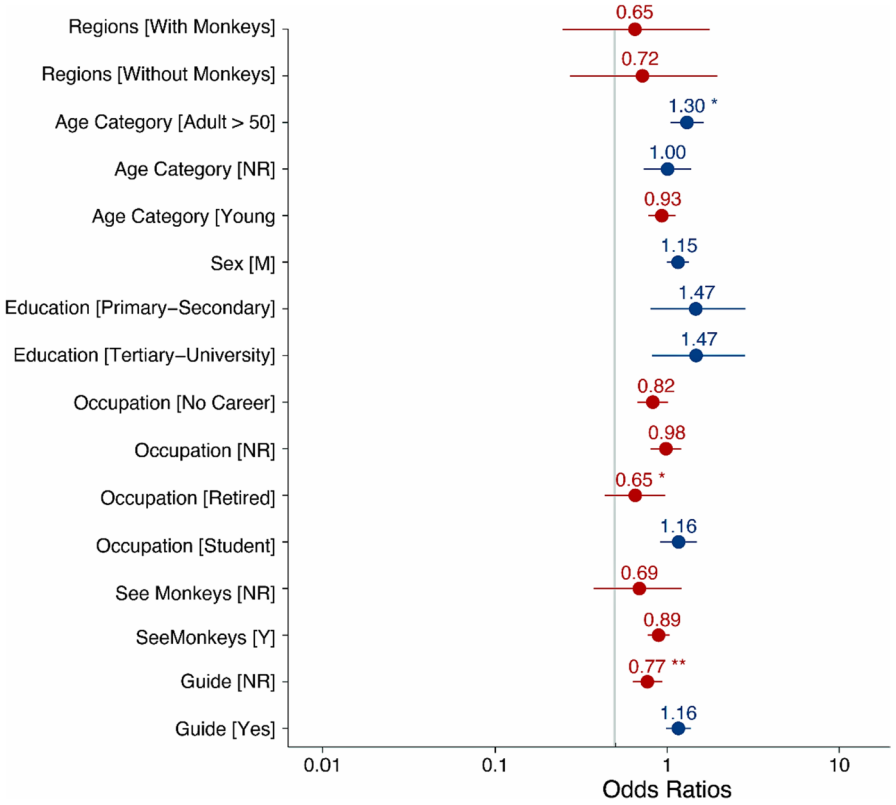

Fig. 3 Odds ratio and 95% confidence intervals of predictor variables for GLM that best explained levels of tourist's knowledge of diet of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the complete data set. NR = no response; $*P < 0.05$; $**P < 0.01$.

we found evidence for accurate levels of both types of knowledge (general and dietary knowledge), suggesting the presence of two cognitive constructions: information obtained during the visit about the daily activities of capuchins, and previous knowledge about their diet, although this previous knowledge may not be necessarily accurate. In concordance with Bird (2007) and Reibelt *et al.* (2017), we suggest that tourists acquired new information about the capuchins' daily activities through their contact with them at INP, but this new acquired information cannot be considered appropriated knowledge that has been processed and given meaning (Zins, 2007). However, because we did not ask respondents if they had visited the park before, we cannot ascertain whether a previous visit could have influenced their levels of knowledge of capuchin behaviors.

We found no evidence that older people or those with a high education level or a profession had more accurate general knowledge about capuchins than younger people or those without a profession or a high level of education. However, we found

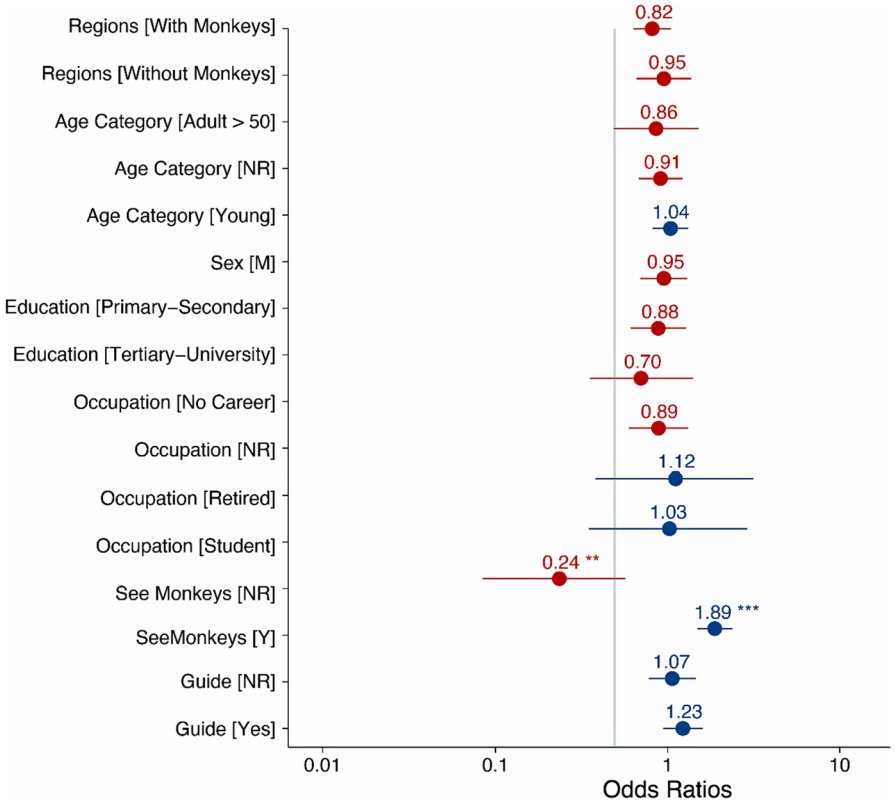

Fig. 4 Odds ratio and 95% confidence intervals of predictor variables for GLM that best explained levels of tourist's general knowledge of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the Argentine subsample data set. NR = no response; $^{**}P < 0.01$; $^{***}P < 0.001$.

evidence that age, a profession, and a high level of education improved the accuracy of knowledge about capuchins' diet in the Argentine subsample in accordance with a pattern of gradual accumulation of knowledge (Carretero, 2005; Ladio & Lozada, 2004) and higher knowledge related to higher education levels (Ballantine & Eagles, 1994). Occupation and age categories were both important in relation to levels of knowledge, indicating that professional adults and those > 50 years old) had a better understanding of the capuchins' diet than younger people or those without a career or retired. Unfortunately, due to the low number of cases (e.g., careers related to nature, N = 8 of 199), we could not estimate the relationship of occupations related to natural sciences to level of knowledge about primates.

We did not find any effect of the presence of a tour guide on knowledge about the capuchin's behavior in the Argentine subsample. Foreign tourists accompanied by tour guides showed a level of knowledge > 10% higher for capuchin daily activities and 4% higher for diet than foreign tourists that were not accompanied by a tour guide. In contrast, Argentine tourists accompanied by tour guides showed only

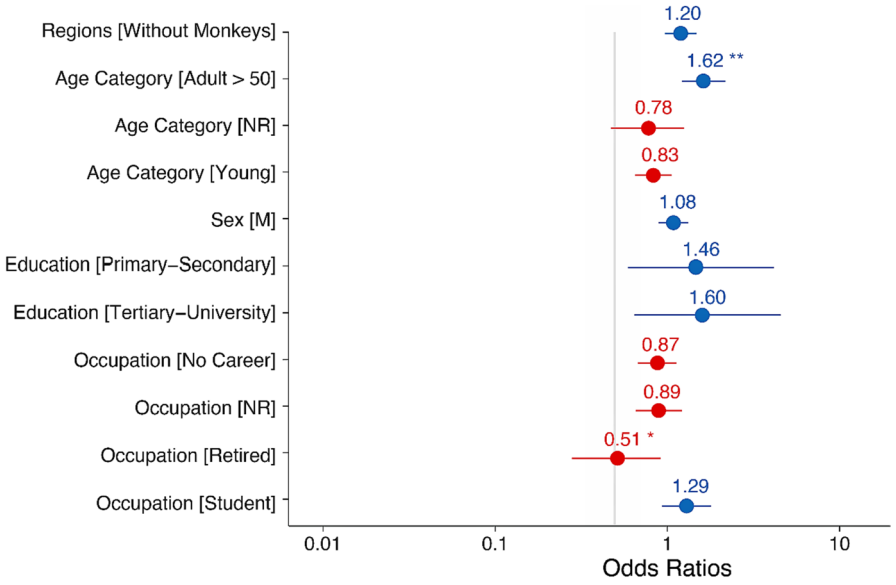

Fig. 5 Odds ratio and 95% confidence intervals of predictor variables for GLM that best explained levels of tourist's knowledge of diet of *Sapajus nigritus* at Iguazú National Park, Argentina, between December 2015 and February 2016, for the Argentine subsample data set. NR = no response; $*P < 0.05$; $**P < 0.01$.

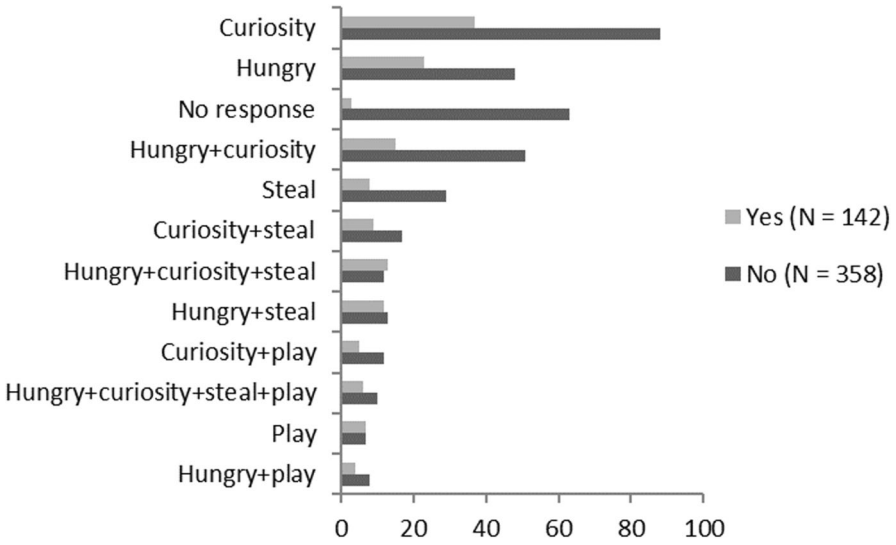

Fig. 6 Number of responses to the question "Mark with an X the reasons why you think monkeys approach people" divided by the fact that they have seen monkeys approaching people or not during the visit (question 4). *Sapajus nigritus*, Iguazú National Park, Argentina, December 2015 to February 2016.

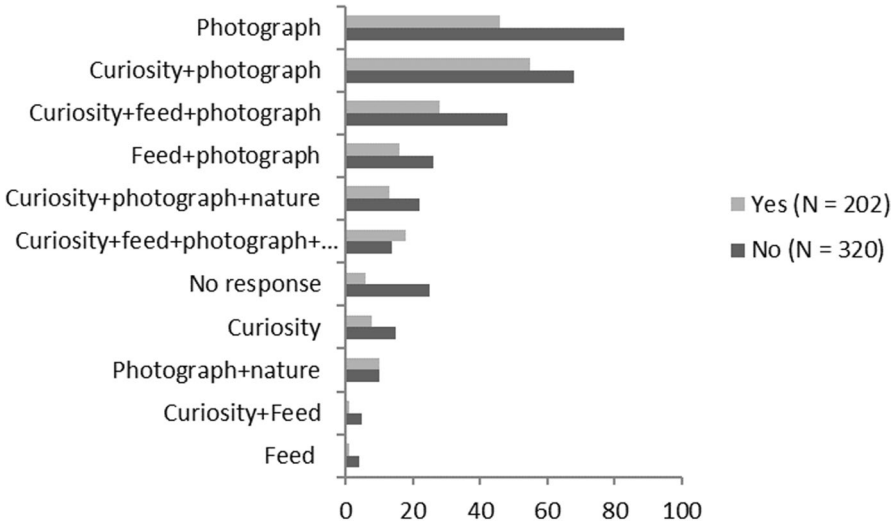

Fig. 7 Number of responses to the question "Mark with an X the reasons why you think people approach monkeys" divided by the fact that they have seen people approaching monkeys or not during the visit (question 5). *Sapajus nigritus*, Iguazú National Park, Argentina, December 2015 to February 2016.

a 2% better general knowledge than people without a guide and < 1% less knowledge about diet than those who were not accompanied by a guide during their visit. A more detailed study considering the type of information given by guides during the visit could help to understand these findings.

Unlike other studies indicating differences in the knowledge about wildlife between sexes with men having a more accurate knowledge related to environment (da Silva Costa *et al*., 2023; Ellwanger *et al*., 2015; Nyhus *et al*., 2003), and stressing a utilitarian or practical view of wildlife and women having less accurate knowledge but showing affective and protective behaviors toward wildlife (Kellert & Berry, 1987), sex did not explain the levels of knowledge for the complete data set nor for the Argentine subsample. It is possible that our sample size was not large enough to detect these differences. However, our sample was highly heterogeneous with respect to cultural and social features while studies that report sex differences refer to local people living in local communities (da Silva Costa *et al*., 2023; Ellwanger *et al*., 2015; Nyhus *et al*., 2003). Further studies that explore these sexual differences among tourists are needed.

Although tourists who saw monkeys during their visit had higher levels of knowledge about them, we found no effect of the origin of tourists on tourists' levels of knowledge of monkey's natural history in either the complete dataset or the Argentine subsample. It has been suggested that living close to natural reserves or even close to wild primate populations does not necessarily lead to knowledge of the natural history of wild animals (Starr *et al*., 2011). In our dataset, most people from places where monkeys are present live in cities and do not necessarily have frequent contact with natural habitats or wildlife. Furthermore, the improved knowledge obtained through observing monkeys directly during the visit to the park could be

the result of the recent information acquired but does not necessarily mean that this information will be retained.

Tourists' Beliefs About Capuchin Monkeys

One of the most important aspects in understanding people's attitudes toward wildlife is how humans perceive themselves in relation to the natural environment (Curtin, 2008). Feeding wildlife is an easy way to observe animals at close distances, based on perceptions of animals as hungry (Sengupta & Radhakrishna, 2020). The most frequent reasons tourists gave for why monkeys approach people were curiosity, hunger, and stealing objects, whereas taking photos, curiosity and feeding them were the more important reasons given by tourists for why people approach the monkeys. Photography was found to be one of the most important factors involved in breaking rules to approach primates closely (Setchell *et al*., 2017) and was the most important reason cited by tourists to interact with monkeys in our study.

Food was one of the reasons most cited by tourists to explain the interaction between people and monkeys (hungry and feed) but not the only one. Despite the large number of risks to both humans and animals (e.g., disease transmission: Jones-Engel *et al*., 2006; Muehlenbein *et al*., 2010; Orams, 2002; animals' dietary and behavioral changes: Dhawale *et al*., 2020; Sabbatini *et al*., 2008; Saj *et al*., 1999; Sengupta & Radhakrishna, 2018; increased intragroup aggression and injuries: Fuentes & Gamerl, 2005, Mansell & McKinney, 2021, Ruesto *et al*., 2010; etc.) and the ban on doing so in natural reserves, feeding wildlife gives tourists the opportunity to be in close contact with animals (Dubois & Fraser, 2013; Sengupta et al., 2021), which is associated with tourists' satisfaction (Newsome & Rodger, 2008). In our study, contact with nature was not a frequent reason why people approached monkeys. However, the fact that tourists mention feeding and searching for food as frequent reasons for the interactions could be understood as an indirect form of need of contact with nature.

Although previous authors found significant differences between men's and women's attitudes, knowledge, motivations, values, and behaviors toward wildlife (Czech *et al*., 2001; Ellwanger *et al*., 2015; Kellert & Berry, 1987; Sanborn & Schmidt, 1995), stressing the role of women as nurturers and caretakers (Gilligan, 1982) and a tendency among women to consider that animals are hungry, because the forest does not offer enough food for them (Sengupta & Radhakrishna, 2020), we found no sex differences in beliefs about the reasons why the interaction between monkeys and people take place. Women did not cite food as a reason for monkeys to approach people and vice versa more frequently than men.

We found that tourist beliefs about the reasons why monkeys approach people were significantly associated with whether they saw monkeys during the visit, but there was no association between the reasons why people approach monkeys and whether or not they had seen monkeys during the visit. Considering that monkeys are very similar to humans, having seen monkeys during the visit could have favored anthropomorphism (a psychological process that allows the generalization from human to nonhuman animals through a process of induction, treating them as agents

with human-like characteristics, Epley *et al*., 2007). It also is possible that tourists have seen people interacting with other animals (e.g., coatis) and used/transferred this information to the question about capuchins.

Conservation and the Role of Contact with Nature

People's motivations to visit tourist attractions may vary with the characteristics of the site to be visited (protected areas, ecotourism sites, etc.). People who had interacted with wildlife show a predisposition to do so again whenever there is a new opportunity (Sengupta *et al*., 2021). In the case of protected areas with incidental tourism, such as our study site, this situation is difficult to control, because people who have experienced the interaction in other sites (e.g., sites where feeding wildlife is possible) will probably replicate the behavior. Primates (including humans) tend to repeat behaviors when they are associated with a reward (Sengupta *et al*., 2021); in this case, monkeys receive human food and humans experience pleasure when close to or in contact with wildlife (Bird, 2007). Our results did not suggest that tourists at INP interact with monkeys as a way to be closer to nature but to feed them and/or get a picture. Because feeding in protected areas contributes to the process of animal habituation to humans (Dubois & Fraser, 2013), we believe that regulation of incidental feeding episodes at INP is necessary to keep wildlife healthy and safe.

Despite the great number of prohibitions with respect to feeding wildlife, and considering the problems it generates, many visitors believe they have the right to do so (Newsome & Rodger, 2008; Sengupta & Radhakrishna, 2020). INP has a large number of signs instructing visitors not to feed wild animals and warning about the dangers for both humans and animals but people still feed wildlife (Tujague, personal observation). Wildlife conservation strategies are strongly influenced by people's behavior, knowledge, and perceptions toward the environment and wildlife (Mansell & McKinney, 2021; Waters *et al*., 2019). To develop better primate conservation strategies in protected areas, we need to deeply understand the factors influencing human interactions with wildlife (Choudhury *et al*., 2019) and how they vary across sites, contexts, and cultures (Sengupta *et al*., 2021).

When dealing with complex conservation problems, such as the interaction between people and wild primates, we need to integrate multiple aspects of the problem to fully understand variation, with no single response that fits all situations (Hockings, 2016; Sengupta *et al*., 2021). Tourism at INP is multicultural, transforming the site into a complex scenario: understanding national differences in the way people think and what they believe about wildlife is critical to understanding conflicts (Jacobs *et al*., 2022). We found that the presence of a tour guide was linked with improved knowledge about the importance of capuchins at INP. Working with tour guides on the type and depth of information they share with tourists could be an effective way to reduce interactions involving food between monkeys and people at the park. Moreover, we suggest that a good strategy to decrease humans–wild primates' negative interaction is to incorporate free trained guides for all visitors. The sociodemographic profiles of our respondents showed that older tourists with a profession have more accurate knowledge of monkeys' diets than younger people with

no profession or are studying a career. INP receives thousands of tourists every year, and it would be important to monitor changes in sociodemographic profiles along the year to fully understand visiting dynamics and their influence on human–animal interactions.

Before designing management programs in protected areas with incidental tourism, it is crucial to understand the sociocultural and demographic profiles of visitors and accept that there are no perfect conservation solutions (Cardinal *et al*., 2022). We need to change our focus. As Leopold (1966), as a pioneer in wildlife conservation, pointed out, we need to understand and manage human behavior rather than making wildlife the center of the dilemma.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s10764-023-00408-0.

Acknowledgements We thank the Administración de Parques Nacionales and Centro de Investigaciones Ecológicas Subtropicales for granting permission to conduct this study. We are deeply grateful to Mario Di Bitetti and Clara Scarry for comments made on this manuscript. We are also grateful for the statistical assistance of Adriana Pérez and Juan Pablo Zurano. To Nilda Josefa Corral, a very special thanks for her helpful synthesis about human thinking processes. We thank Ariel Insaurralde for his help with maps. We also thank the Editor in Chief, Associate Editor and anonymous reviewers for all of their suggestions to improve the manuscript. This work would not have been possible without field assistance from Carlos Jesús López.

Funding This study was funded by a grant from Iguazú Jungle (Iguazú Argentina) to MPT (no Grant numbers available).

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