



Student's knowledge on primates: Long-tailed macaque educonservation efforts through primatology course

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ABSTRACT

Within 15 years, the population of *Macaca fascicularis* has declined rapidly. In early 2022, the IUCN Red List classified them as “Endangered”, though they were considered a species of “Least Concern” in 2008. Land alteration, illegal hunting, and human-macaque conflict often halt long-tailed macaque conservation efforts. Through the Primatology course, anthropology students are taught the importance of macaque conservation and its complications. This preliminary study aims to reveal anthropology students’ knowledge regarding the long-tailed macaque’s status quo and its conservation efforts, pre- and post- their enrolment in the course. Employing a descriptive qualitative approach, this study conducted in-depth interviews with 10 consenting informants—active undergraduate anthropology students. After the transcription process, the data was analyzed by dividing it into multiple subchapters and reviewed with existing literature. More than half of the informants’ knowledge about *Macaca fascicularis* and primates, in general, is quite satisfactory, though they are still unaware of their current conservation status. According to the informants, cultural and religious factors are closely related to long-tailed macaque conservation, shown in Balinese Hindu temples, Javanese *wayang*, and *topeng monyet*. The study concluded that primatology is important because it raises awareness about human’s closest relatives, their ecological significance, and their conservation measures. Adoption or adaptation of the ethnoprimateological framework in biology education as a means of sociocultural exploration and primate conservation is highly recommended. Further research on ethnoprimateology in Indonesia is much needed since Indonesia has many cultural values that might assure the people about contemporary conservation efforts.

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INTRODUCTION

Macaca fascicularis or long-tailed macaque is a Cercopithecine primate that inhabits tropical forests with relatively high precipitation intensity (see [Figure 1](#)). These crab-eating macaques can be found in Southeast Asia's forests, widely spread across Indonesia (see [Figure 2](#)). In their indigenous habitat, long-tailed macaques bear an ecological role in seeding fruit plants, further aiding plant conservation. Since they are omnivores, they also have the role of controlling the insect population (Artaria, 2012; Fitria et al., 2020; Fooden, 1995; Gumert, 2011; Kurland, 1973; Riley, 2007a; Sha et al., 2009).



Figure 1. Long-tailed Macaque (*Macaca fascicularis*) (Source: Pusat Studi Satwa Primata, IPB University)

In March 2022, the long-tailed macaque's conservation status was changed, now considered an "Endangered" species. It is quite concerning since the status was changed from "Least Concern" to "Endangered" happened in a relatively short period of time—15 years (Eudey, 2008; Hansen et al., 2022; Kuswanda et al., 2023). The drastic change in *Macaca fascicularis* population is no other due to human actions, such as illegal logging, irresponsible land use, illegal animal trade, forest wildfire, and other agricultural activities. Since their habitat has been greatly altered, their population has also been reduced (Hadi et al., 2012; Malaivijitnond & Hamada, 2008; Naughton-Treves et al., 2003; Riley, 2007a).

Other than agriculture, sociocultural factors can also cause the decline of the *Macaca fascicularis* population. The conflict between humans and long-tailed macaques has been a popular research topic worldwide—since many people considered the macaque's behavior as unexpected, erratic, and a threat to the current agricultural system. Not to mention, long-tailed macaques are notorious for their food-stealing and crop-raiding activities. Previous studies repeatedly proved that the interspecies relationship between long-tailed macaques and humans is not the most harmonious. Some people even said that they consider monkeys a nuisance and pests to their crops. Since humans hold a very significant role in macaque conservation, it is unfortunate that the previously stated narrative often causes the primate's conservation efforts to halt (Fitria et al., 2020; Hill, 1997; Lane et al., 2010; Lappan et al., 2020; Malaivijitnond & Hamada, 2008; Peterson & Riley, 2013; Riley & Priston, 2010; Saraswat et al., 2015; Yeo & Neo, 2010).



Figure 2. Population Distribution of Long-tailed Macaques (Source: Wikipedia)

Due to their habitat's proximity to humans, the interpretation of long-tailed macaques can be found in many Southeast Asian cultures in the form of arts, local wisdom, and folklore. In Indonesia, for example, *topeng monyet* originated as people's folk entertainment. The captured long-tailed macaques are trained to imitate human behaviors. The monkeys are usually forced to wear human-like clothes, ride a bike, act like they are shopping, and many more. Then, the people who watched *topeng monyet* gave money to the monkey trainer. In recent years, however, the practice of *topeng monyet* has been forbidden in many areas of Indonesia due to its harmful effects on the monkeys (Irawan & Dwiprigitaningtias, 2019; Triani et al., 2014).

The detrimental effects of cultural exploitation on primates, such as *topeng monyet* as mentioned earlier, are mostly exposed by primatologists. Primatology is the study of primates from both sociocultural and biological aspects, such as their anatomy and behavior. An individual who specializes and expertizes in primatology is called a primatologist. This study is closely related to anthropology since the study of nonhuman primates might enrich the knowledge of humans itself based on anatomical and behavioral interspecies comparisons (Artaria, 2012; Fleagle, 2013; Haryono, 2012). In Indonesia, primatology is often a forgotten topic. The only degree program in Primatology is a Master's program at Bogor Agricultural Institute (IPB University)'s Postgraduate School, where they also host the *Pusat Studi Satwa Primata* (Center of Primate Studies) (*Mengenal Program Studi Primatologi*, 2021; *Tentang Kami*, 2021). In Universitas Airlangga, primatology is an elective course provided by the Department of Anthropology, Faculty of Social and Political Sciences, and is available to all undergraduate anthropology students from the fifth semester and up (Santoso et al., 2021).

Primatology courses offered at the undergraduate and postgraduate levels are an example of a formal education institution's effort to raise awareness regarding primate conservation, exposing the youth to such a topic (Fuentes & Hockings, 2010; Malone et al., 2014; Yugiarto et al., 2022). This became important since Indonesian students' knowledge and attitude toward primates are less than Korean and Kenyan students (Hagelin, 2004). Not just students, but the general public tends to ignore this issue due to the recurring conflict with non-human primates (Fitria et al., 2020; Md-Zain et al., 2014; Sha et al., 2009). Previous studies on orangutan conservation already proved that an increase in conservationist attitudes was observed after a form of education was introduced to the students (Freund et al., 2020). A similar conclusion was also found in the Greater Tangkoko Area, North Sulawesi, where students showed a more positive attitude toward the conservation efforts of *Macaca nigra* after being exposed to educonservation programs (Chanvin et al., 2023).

Therefore, this study aims to explore the student's knowledge and attitude toward primates, primatology, and nonhuman primate conservation, especially topics related to long-tailed macaques. Moreover, the authors also explored the reason behind such a perspective and attitude, noting several cultural and religious factors that might contribute. The authors hope that this research will become an evaluation and or suggestion for the development of the primatology and biology curriculum in the Department of Anthropology, Universitas Airlangga, or any other institution that offers primatology or biology courses, whether it's in higher education, primary education, or secondary education.

METHODS

Research Design

This ethnoprimateological research employed a qualitative descriptive approach. Data collection was done by conducting in-depth interviews, observation, and group discussions with consenting and qualified research subjects. Such a design was planned because the qualitative method will uncover new insights about culture and religious beliefs on primate conservation and primatology as a whole. Interestingly, the group discussions were improvised. However, since it was proven to be effective, we continued to keep using this method.

The data collection step was done within the course of approximately two to three months, from mid-August to late October in Surabaya, East Java, Indonesia. Each interview was held for a minimum of 30 minutes. The group discussions, however, lasted longer (approximately 70-90 minutes on average). In every session, there should be at least two authors on standby, one is the interviewer and one takes notes during the interview.

Population and Samples

Since this research employed a qualitative method, neither the population nor the sample was set. Instead, the research subjects (continuously referred to as “informants”) are selected through qualifications. The qualification is quite simple, which is for the informants to be in Surabaya for the interview and active undergraduate anthropology students of Universitas Airlangga, whether they have or have not enrolled themselves in the primatology course. The authors did not set any sex, gender, religion, or age limitations since it will stray from this paper’s purpose.

All informants are active anthropology students from batch 2019 until 2022. Ten informants were selected and interviewed about their knowledge of primates, primate conservation, long-tailed macaque, and primatology. Data on the informants’ religious, geographic, and cultural backgrounds were also obtained to acquire holistic information regarding the influence of sociocultural factors in comprehending primates, especially long-tailed macaques. The authors also take into account the informants’ area of study (major) since it might be a factor of a certain point of view. The informants are listed below (Table 1).

Table 1.
List of Informants

Informant	Initials	Batch	Cultural Background	Area of Interest (Major)
1	Vd	2022	East Java (Surabaya)	-
2	Rm	2021	East Java (Surabaya), Bali	Sociocultural Anthropology
3	Yl	2020	East Java (Malang)	Sociocultural Anthropology
4	Af	2021	East Java (Surabaya)	Sociocultural Anthropology
5	Um	2021	East Java (Malang)	Sociocultural Anthropology
6	Rs	2021	East Java (Madiun)	Biological Anthropology
7	Dv	2021	East Java (Jombang)	Sociocultural Anthropology
8	Ak	2021	East Java (Gresik, Surabaya)	Sociocultural Anthropology
9	An	2021	East Java (Surabaya), Madura (Bangkalan)	Sociocultural Anthropology
10	Kf	2019	East Java (Surabaya), Borneo (Pontianak)	Biological Anthropology

Before they were interviewed, all qualified informants had to state their formal consent. After they informally said that they agreed to be an informant, the consent form was shown and or read to them. Then, after reading or listening to it, the authors asked a final confirmation, stating that “if there is any question or doubt, the authors are obligated to answer”. The informants were then invited to formalize their agreement by speaking the sentence “I consent to participate in this research as an informant” on record or by filling out and signing the consent form.

Instrument

The interviews done in this research are semi-structured. This means that the interviews were guided by a list of questions (Table 2). However, unlike the structured interview, the authors might ask follow-up questions if necessary and relevant to the question. Thus, the results of the interview will be “in-depth”. The interview guide was made to cover the informants’ perspective on at least seven topics: (1) knowledge of nonhuman primates; (2) sociocultural and religious factors affecting their primate knowledge; (3) long-tailed macaque conservation status; (4) activities related to long-tailed macaque’s population decrease; (5) macaque conservation efforts; (6) primatology as a course; and (7) the importance of basic primate knowledge.

Table 2. Interview Guide

No.	Question	Follow-Up Question
1	Can you explain your knowledge of nonhuman primates?	Can you elaborate on the differentiation between apes and monkeys? What do you know about macaques, especially long-tailed macaques?
2	Does your sociocultural background affect how you perceive nonhuman primates?	Are you familiar with <i>topeng monyet</i> ? Do you have any myths, beliefs, stories, or other cultural aspects about primates and long-tailed macaques?

No.	Question	Follow-Up Question
		How does your cultural background relate to your knowledge of primates?
3	Are you aware that the long-tailed macaque's status is now "Endangered"?	Why are you aware/unaware of it? Why do you think the status change occurred? Why do you think it happened so fast (just within 15 years)?
4	Does the decrease in the macaque population correlate to human activities?	If so, what activities? What do you think about cultural or traditional activities involving animal exploitation? Should it be preserved or erased? Does society's relatively negative perception of long-tailed macaques affect their decreasing numbers?
5	What do you know about macaque conservation efforts?	Have you ever been involved in macaque conservation efforts? If so, are you interested in doing so, and why? If not, why? Do you know any cultural philosophy, beliefs, or rituals that might aid in macaque conservation?
6	Are you interested in taking a primatology course?	If yes/no, why? Do you think this course will change your perspective on nonhuman primates, especially macaques? Changes in what way?
7	Do you think primate knowledge is important?	If yes/no, why? How would you raise awareness of primate knowledge? Do you think basic primatology should be taught in schools and campuses, especially for anthropology students? How important is primate knowledge for anthropology students?

Procedure

Since this is an academic paper, of course, the authors are required to ensure that this research meets legal and ethical standards. In doing so, research procedures were done respectively according to the rules and standards set. At least, there are four stages of procedure that the authors went through until the research is considered "complete" (Figure 3).

First, during the preparation stage, all authors engaged in several intense discussions in order to set the research design, methods used, background, purpose, and significance of the research. At this stage, the authors also made sure that all administrative prerequisites were met. The documents prepared include a research proposal, consent form, and interview guide.

After the groundwork was set for this research, the authors efficiently entered the data collection stage. The authors set some qualifications for the potential informants so that only informants with the desired characteristics and information are selected. As mentioned previously, the data was obtained using in-depth interviews, observation, and group discussions. The interviews and discussions were documented using a voice recorder, and the authors also took notes during the session. Then, data analysis was performed. The authors reviewed the recorded data and made them into transcripts, before classifying the data into relevant topics. To conclude the data analysis stage, the data was discussed with the help of secondary data, which are several pieces of literature.

Based on the results of the research, every author reviewed the paper again to make sure that all things were satisfactory. Then, all authors discussed again to subtract some conclusions and recommendations. With the conclusions made, the paper is considered finished and ready to be reported or published.

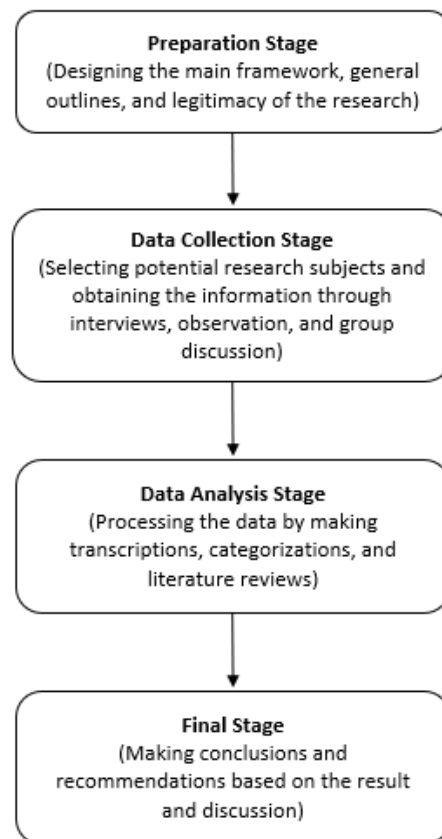


Figure 3. Research Procedures

Data Analysis Techniques

The recorded interviews were then made into transcriptions. The authors' interview notes were also taken into account. Then, the data were categorized and sorted into three subchapters: (1) the informants' primate knowledge; (2) the effects of culture and religion on primate conservation; and (3) thoughts and evaluations on primatology courses and the need for primate knowledge. After that, the data were reviewed with existing theories and works of literature. Such literature reviews were made to further deepen and validate the result of this research, whether it provides comparisons, differences, similarities, and even oppositions.

Additional pieces of literature were acquired from Google Scholar, Academia, and Google search engines. The Publish or Perish software was also used to aid in the selection of secondary data. Using these applications and websites, the keywords used include: "*Macaca fascicularis*", "long-tailed macaque" (or "*monyet ekor panjang*" in Indonesian), "primate conservation", and "primatology in Indonesia". After combining the results of this paper and discussing it using secondary data (literature review), conclusions and recommendations were carefully made to answer this specific research's questions.

RESULTS AND DISCUSSION

Students' Primate Knowledge

Based on the interviews, all students were able to describe the fundamentals of primate, in general, and *Macaca fascicularis*, specifically. The informants' knowledge was deemed "adequate" since they managed to explain the essence of primate, monkey, ape, and primate conservation according to Artaria's (2012) and Fleagle's (2013) definitions. Although they prove themselves to be quite informed on the subject, all informants admitted that they never had close contact or resource overlaps with the species. They further clarified that they have interacted with long-tailed macaques in the past. However, they have never been involved in any conservation efforts, researched the macaques, and have them as pets. Instead, most of our informants familiarized themselves with the macaque via news programs they watched on television.

Regarding the *Macaca fascicularis*' status according to the IUCN Red List, nearly all informants (nine out of ten) expressed their shock and are unaware of the subject. Although they were unaware, all

informants then further expressed their concern for this unfortunate phenomenon. The informants' lack of knowledge on the status change of *Macaca fascicularis* is somewhat understandable since the long-tailed macaque has been a huge part of Indonesian culture (Malia et al., 2021; Setyawati & Oriza, 2019). Several informants further elaborated on their familiarity with the primate, describing how they have always been a concern due to their massive population and high potential for exploitation (Irawan & Dwiprigitaningtias, 2019; Yugiarto et al., 2022).

Three out of ten informants, however, realized that the population was declining, but they had no idea that the decline was so rapid that it caused a shift in their conservation status. They reached that conclusion due to the fact that they don't usually see them both in their natural habitat or the city, in comparison to several years ago. An informant mentioned that the decrease in population might not be the cause of the long-tailed macaque's decline. Instead, they pointed out how the Covid-19 pandemic might contribute to the rare sight of long-tailed macaques. Under the government-imposed "stay-at-home" policy, the general public is unable to leave their house and watch folk shows, participate in rituals, or go to places where the macaques are usually present (Almuttaqi, 2020; Roziqin et al., 2021). Hence, our informants felt that the population is declining.

In regards to the informants' attitude on long-tailed macaque conservation, none have participated in a primate conservation program prior to the interview. One informant, however, mentioned their particular interest in participating in a long-tailed macaque conservation program, if there is any. It is important to note that after the interview, several informants further expressed their concern on the issue and are now eager to learn more about the long-tailed macaque conservation efforts.

Culture, Religion, and Primate Conservation

As mentioned in the previous subchapter, every informant was at some point familiar with long-tailed macaques, even though they did not interact with them frequently. This sense of familiarity might be caused by the role that these macaques play in Indonesian culture. The long-tailed macaques are endemic to Southeast Asia (including Indonesia), and hence, due to their close contact with humans, the Indonesian people have their own unique understanding of the species. This reality resulted in many forms of devotion, deference, condemnation, and exploitation within various cultures in Indonesia (Brotcorne, 2014; Fuentes, 2010; Ilham et al., 2017; Kuswanda et al., 2023; Peterson & Riley, 2013).

All informants are highly familiar with *topeng monyet* ("monkey mask" in English). It is a well-known traditional form of folk entertainment in Indonesia, where the monkey exhibits various human-like behaviors, like riding a bike and shopping at the market. To train them, the monkeys were often kept in small, unhygienic cages with minimum feedings. The monkeys were also chained to their neck, which might puncture them if they tried to escape. The most commonly used monkey is the long-tailed macaque due to their size, intelligence, and large population. Another reason behind their massive exploitation is due to their previous conservation status (Lower Risk) and lack of regulation, thus it is considered "normal" to exploit them for human entertainment. Fortunately, as of now, this specific folk entertainment has been prohibited by various regulations on both national and regional (province and city) levels (Irawan & Dwiprigitaningtias, 2019; Triani et al., 2014; Yugiarto et al., 2022).

Three out of ten informants informed that the show was still around in their area. However, they rarely see them anymore compared to when they were children (about 5-10 years ago). Informants 2 and 4 acknowledged that this form of animal exploitation is unfortunately a part of Indonesian culture, and they were not proud of it. Informant 5 stated that the *topeng monyet* show can still be found in Batu City Hall. They further explained that the monkeys used were juvenile. Currently, Informant 5 noticed that the show did not attract as many visitors as it used to. Informant 6 shared that they knew some people who own long-tailed macaques as pets. Informant 7 also shared their experience in watching *topeng monyet* as a kid back in their village in Jombang, East Java. In Pontianak, as mentioned by Informant 10, *topeng monyet* is still prominent.

As a Balinese Hindu, Informant 2 mentioned that the long-tailed macaque is significant in his culture. They said that it holds a special place for the Balinese and Hindus. Hanoman the Monkey God, for example, is a prominent and highly-respected figure in Hinduism. Hanoman is a prominent figure in Ramayana, which is one of the two important epics of Hinduism. Many people in Bali worshipped the anthropomorphic yet monkey-like God. They even consider themselves lucky if their sight landed on a white monkey, especially if they saw them in the temple (Agung et al., 2023; Resink, 1975; Subagja &

Turyati, 2018; Wiwana & Yudarta, 2020). This results in a lot of *pura* or temples acting as a habitat or conservatory for the said species (Fuentes & Gamerl, 2005; Subiarsyah et al., 2014).

In one of the temples (*pura*) in Badung, Bali, 189 macaques live peacefully alongside the locals. Balinese Hindus believe that interspecies coexistence is well-reflected in their philosophy: “*Tri Hita Karana*”, meaning that they highly value the harmonious relationship between humankind, God, and their surrounding environment. The macaques are benefited from foods left in religious offerings in the temple. Since their population is well-controlled and is supplied with enough food, they will feel comfortable living in the said area and will not cause any harm to the locals’ houses. A situation reflecting mutualistic symbiosis, therefore, is the key to the harmonious coexistence of humans and primates (Anggana et al., 2022; Peters & Wardana, 2013; Tim Mimbar Hindu, 2022; Wardhani et al., 2020).

Similar to the previous narration, Informants 3 and 5, who originated from Malang, East Java, recalled that there is a famous and sacred temple where people will go to seek fortune (also known as “*pesugihan*” in Javanese). The temple is located near a forest inhabited by *Macaca fascicularis*. Offerings were made and left at the temple as a fortune-seeking method. These offerings were then eaten by the macaques that inhabited the temple. Hence, there is an unspoken rule for temple visitors to not harm the macaques since they are also considered sacral—the macaques act as the “guardians” of the temple. This folkway results in the indirect conservation of the species (Sakdiyah, 2017).

Informant 7 is a Javanese culture enthusiast. They mentioned that in *wayang*, traditional Javanese-Balinese-Sundanese shadow puppetry, there is a character whose appearance is macaque-like—Hanoman. They added that the white monkey character bears high importance in the play. Similar to what Informant 2 mentioned, the character is related to divinity. The fact that similar characters appear in two unique forms of folklore might be related to Hinduism’s influence in ancient Java, causing some level of syncretism that can be felt to this day (Agung et al., 2023; Bordoloi, 2021; Putra, 2019; Subagyo & Agustin, 2020).

In the city of Bangkalan, Madura, Informant 9 mentioned another unique religious belief. The locals believe that long-tailed macaques can establish a connection to “the other world” or “the unseen”. Due to their status as supernatural beings, it is advised for married couples that long-tailed macaques were to be kept as pets. By doing so, they believe that the macaques will guard their child or children against evil disturbances and supernatural beings. Interestingly, nearly 2,700 kilometers away, such a myth is relevant in Toba, North Sumatra. The Purba-Simalungun myth believes that macaques and nonhuman primates, in general, is a supernatural being that guards the Purba King and His Majesty’s palace (locally referred to as *Rumah Bolon*) (Mendrofa, 2022).

Riley’s research (2007a, 2007b, 2010) also revealed similar results regarding the role of culture and religion on the human-primate interface and primate conservation. Her research has repeatedly proven that local folklore contributes to the longevity and survival of the *Macaca tonkeana* species in Lore Lindu National Park, Central Sulawesi, Indonesia. The locals believe that the Tonkean monkeys are the guardian of the forest and the tribe itself, hence their utmost respect and deference toward the species. Similar to the Javanese and Balinese culture discussed in this paper, the Lindu people believe that such specific species bear divine, supernatural power that will keep the tribe safe if they keep their sacred bond of mutual respect and honor.

This subchapter discusses how folklores, folkways, beliefs, religion, and other sociocultural factors explain the human-macaque interface and its role in primate conservation. This insight proved from time to time that sociocultural and biological factors are constantly linked, even in terms of primate conservation. Realizing and utilizing the role of cultural factors in shaping human society might act as a new form of conservation education, both formally and informally. Understanding these lores means that humans and macaques have lived closely for thousands of years, and the sudden endangerment of our ecological “companion” might have serious altercations for our ecological and cultural future. Growing this sense of closeness and empathy might hopefully lead to conservation efforts, concern, and innovation by brilliant young students (Fuentes, 2010, 2012; Fuentes & Hockings, 2010; Riley & Priston, 2010).

The Need for Primatology and Basic Primate Knowledge

Primatology is an elective course offered by the Department of Anthropology, Universitas Airlangga. It is offered in every Odd Semester to students who have completed at least 49 credit hours—

fifth semester and up. The course is taught by Prof. Myrtati Dyah Artaria, Dra., M.A., Ph.D., and Delta Bayu Murti, S.Sos., M.A. This course studies an abundance of primate species from various perspectives, starting from their biology, anatomy, evolution, sexuality, mythology, and social behavior. The lecturers also routinely checked in with the Surabaya Zoo (Kebun Binatang Surabaya) as the host of several course sessions, with the purpose of training the students in field observations (*Peminatan Ragawi*, 2022; *Peminatan Sosial - Budaya*, 2022; Santoso et al., 2021).

All informants were aware that “Primatology” as a course is offered by the Department of Anthropology, though half of them do not know which semester the course is offered. Out of the ten informants interviewed, three were not interested in taking the course, two were not entirely sure, four were interested, and one had already taken the course in the previous semester. During the interview, two informants mentioned that the reason behind their uncertainty or unwillingness to take the course is due to a lack of knowledge about what the course offers. However, they also mentioned that they might change their mind about taking the course if they feel like they are informed enough about what is explored in the course. Similar concerns were also stated by students who are not interested in taking the course, aside from their lack of interest in primates in general.

In the Department of Anthropology, Universitas Airlangga, students are given the liberty to choose whether they want to concentrate on sociocultural anthropology or biological anthropology. Two out of three students who are not interested in the course are sociocultural anthropology students, and they believe that the course is only available for biological anthropology students. The misunderstanding leads to poor interest in Primatology. Informants 3 and 7 also stated that they consider the course to be “not that relevant” to their prospected area of study—which is sociocultural anthropology.

Regardless of their personal choices on whether they will take or not take the Primatology course, it is important to note that all ten informants still agreed that primatology is highly important for anthropology students. Informant 4 added that “as an anthropology student, I think primatology is a required basic knowledge because we [anthropology students] have to learn anthropology holistically”. The holistic perspective serves as a distinction of anthropology as a science, where they study humans and humanity from integrated, highly diverse, and often interdisciplinary lenses (Haryono, 2012). Therefore, to fully comprehend humans, it is considered essential that anthropologists study humans’ closest relatives—primates. Then, anthropologists can understand how those species differ or are highly similar in several ways (Artaria, 2012; Riley, 2006).

Informant 10, who had taken the course, noted that primatology is urgently needed as a means of animal and wildlife conservation. They highlighted that “it is our [the anthropologists’] job to socialize the importance [of primate conservation]”. Informant 10 elaborated on how the study of folklore and ethnography is an anthropologist’s focus. Thus, in discovering the previously-discovered myths and lore on long-tailed macaques, for example, “we have the responsibility to communicate its role on their conservation”.

What Informant 10 described is what ethnoprimateologists have done. Ethnoprimateology is a study that utilizes interdisciplinary and biocultural perspectives to explore and solve primatological and anthropological issues by examining human-nonhuman primate interactions. Ethnoprimateologists explore folklores, mythologies, and philosophies of a certain society and help them “re-learn” it to conserve not only the immaterial cultural things, but also its environment and natural surroundings, especially endemic and indigenous nonhuman primates (Fuentes, 2012; Riley, 2007b, 2010; Riley & Priston, 2010).

Using the ethnoprimateological framework, it is highly possible that many innovations can be made regarding primate conservation in Indonesia. With Indonesia’s rich cultural values and philosophies—the “*Tri Hita Karana*” philosophy, for example—it is more than possible to nurture these philosophies while simultaneously conserving the primates. Previous research even proved that it is doable to formally educate and socialize “*Tri Hita Karana*” as a sociocultural basis for environmental conservation in a high school in Bali (Wardhani et al., 2020). This means, the exploration of folklore will be more than just understanding how a culture preserves its ecosystem, but also how its widespread contextual implementation might increase concerns in conservation efforts (Dharma & Meitiyani, 2021; Riley, 2010; Riley & Priston, 2010).

They also stated that basic knowledge of primate and primate conservation is needed by the general public. Informant 2 further elaborated on the role of basic primate conservation knowledge to

increase public awareness and raise empathy toward the livelihood of these primates (long-tailed macaque, in this context). Then, they further explained the importance of restoring ecological balance through conservation efforts.

CONCLUSION

Long-tailed macaque conservation awareness is urgently needed, especially considering their loss in numbers and their “Endangered” status in recent years. In doing so, basic primate knowledge needs to be grounded in the general public, especially anthropology students, to further increase the positive attitude toward macaque conservation. In this study, the students are generally knowledgeable about primates and primate conservation whether they taking the course or not, indicating that at least, environmental awareness is present among undergraduate students. Even though most of them have not had a resource overlap and were unfamiliar with the current status of long-tailed macaques, the informants displayed positive attitudes regarding the need for primatology in raising awareness on primate conservation. Primatology and its subfield, ethnoprimateology, can be considered an effective measure to educate and raise awareness among the public. Inspired by the ethnoprimateological perspective and acknowledging the richness of Indonesian cultures, sociocultural (including religious and philosophical) exploration and socialization is recommended, as it is proven to increase conservation concerns among students and the general public.

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