

Chapter 7

Encountering Sulawesi's Endemic Primates: Considerations for Developing Primate Tourism in South Sulawesi, Indonesia



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Abstract The island of Sulawesi, Indonesia is renowned as a birder and diver's paradise, attracting tourists from around the globe who seek to encounter rare bird species or abundant and unusual marine life. In contrast to other areas of Indonesia (e.g., Bali and Kalimantan), Sulawesi is less known for its primate tourism opportunities, despite being home to at least 14 endemic primate species. In this chapter, we explore the possibilities and requisite considerations for developing primate tourism in South Sulawesi, a region of the island with minimal established tourism infrastructure. We argue that cautious, thoughtful, and collaborative development of primate tourism in South Sulawesi have the potential to raise awareness of local primate biodiversity and conservation issues, supplement and diversify local livelihoods, curb the acceleration of extractive industries, and provide a valuable contrast to other primate tourism sites across Indonesia. Though the aim of this chapter is to open a dialogue among local stakeholders and international practitioners regarding responsible development of primate tourism in South Sulawesi specifically, the considerations raised here are relevant in other regions where formal primate tourism remains underdeveloped. In particular, we encourage the consideration of existing

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dimensions of human-nonhuman primate coexistence (including conflict), tourism audiences, and the degree of local engagement from diverse stakeholders.

7.1 Introduction

Sulawesi, an island best known among tourists for its unparalleled birding opportunities, picturesque diving locales, and rich cultural heritage, is not typically recognized as a primate tourism destination. In contrast to other areas of Indonesia, such as Bali or Kalimantan, primate tourism on Sulawesi is not well-developed. This is surprising given that Sulawesi is home to a number of endemic primate species, including seven macaque species (*Macaca*) and at least seven tarsier species (*Tarsius*). Additionally, it is regarded as a global biodiversity “hotspot,” garnering international attention and conservation protections (Lowe 2006; IUCN 2008; Riley 2010; Shekelle et al. 2017). With notable exceptions by researchers working in North Sulawesi, very little has been written about primate tourism on Sulawesi (Kinnaird and O’Brien 1996; Melfi 2010). This chapter aims to address that gap, with a particular focus on primate tourism in South Sulawesi, Indonesia. We begin by “setting the stage” for understanding Sulawesi’s tourism potential by reviewing the ecological and cultural diversity of Sulawesi. We follow this section with a brief background on tourism in Sulawesi before describing the sites where tourists and primates interface in this region, examining primate tourism in South Sulawesi as a complement to already popular nature-based tourism on the island. We then review the major factors that need to be considered in the development and management of primate tourism in South Sulawesi. These include the potential conservation benefits, the relevant ethical dimensions (e.g., ecological, biological, and behavioral impacts as well as the effects on local communities), and emerging concerns, such as the role of social media in advancing primate tourism and the implications of primate tourism in the COVID-19 era and beyond. Our objective in this chapter is to open a dialogue among local community members, protected area managers and staff, conservation practitioners, primatologists, and other researchers regarding existing patterns of interaction between tourists and primates and responsible and sustainable development of primate tourism in South Sulawesi.

7.2 Setting the Stage: *Ecological and Cultural Diversity of Sulawesi*

Sulawesi, the fourth largest island in Indonesia and the eleventh largest in the world, is both culturally and ecologically diverse, thereby making it a prime location for tourism. While analyses of rock art in the limestone karst region in Maros, South

Sulawesi suggest that humans were living on the island at least as early as 40,000 ya (Aubert et al. 2014), more recent archeological evidence (e.g., stone artifacts associated with megafaunal fossil remains) indicate that hominins may have existed on the island prior to the expansion of modern humans into Southeast Asia approximately 118,000 ya (van den Bergh et al. 2016). The current human population of Sulawesi is estimated at 19,934,000 (2020 projected estimate, Badan Pusat Statistik 2014) and comprises multiple ethnic groups (e.g., Bugis, Makassar, Mandar, Toraja, Duri, Amma Towa, Butonese, Tolaki, Kaili, Pamona, Minahasa, Sangirese, Gorontalo, Bolaang-Mongondow (Babock 1982)). Given this ethnic complexity, religion and subsistence style are typically the predominant criteria used for ethnic self-identification, either aligning with or overriding region and language as markers (Davis 1976). In addition to these major ethnic groups, Sulawesi is home to immigrants from China and Saudi Arabia, as well as transmigrants from other areas of Indonesia, such as Java and Bali. Sulawesi's linguistic diversity is also comparatively high: it is estimated that 114 native languages are spoken, all of which belong to the Malayo-Polynesian branch of the Austronesian language family (Lewis 2009). While traditional forms of subsistence include swidden (or slash and burn) agriculture and fishing (Davis 1976), today, many communities practice wet-rice agriculture and plantation agriculture of cash crops, including coffee (*Coffea* spp.), cacao (*Theobroma cacao*), palm oil (*Elaeis guineensis*), candlenut (*Aleurites moluccana*), and cloves (*Syzygium aromaticum*).

Sulawesi's ecological diversity stems from its position within Wallacea—a unique biogeographical zone that is characterized by a mix of Asian and Australasian flora and fauna (e.g., primates and marsupials) and that exhibits a remarkably high level of endemism. Of the 332 extant bird species on Sulawesi, 27% are endemic (Whitten et al. 2002), including the Sulawesi dwarf hornbill (*Rhabdotorrhinus exarhatus*) and the maleo (*Macrocephalon maleo*) (Birdlife International 2020). The level of endemism is even greater among mammals: 62% of the mammals found in Sulawesi are endemic, and that percentage rises to 98% if bats are excluded (Whitten et al. 2002). Among these endemic mammals are the enigmatic yet elusive babirusa (*Babyrousa celebensis*) and the dwarf buffalo, or *anoa* (*Bubalus depressicornis* and *B. quarlesi*). The nonhuman primates of Sulawesi include members from two genera: *Macaca* and *Tarsius* (Figs. 7.1 and 7.2). Fooden (1969) classified the Sulawesi macaques as seven species (*Macaca nigra*, *M. maura*, *M. tonkeana*, *M. hecki*, *M. ochreata*, *M. brunnescens*, and *M. nigrescens*), which represent 30% of the genus in only 2% of its geographical range. The Eastern tarsier group, represented by *Tarsius*, is considered the most species-rich (≥ 16 taxa) of the three clades, with at least 12 species (*T. tarsier*, *T. fuscus*, *T. sangirensis*, *T. dentatus*, *T. pumilus*, *T. pelengensis*, *T. lariang*, *T. tumpara*, *T. wallacei*, *T. spectrumgurskyae*, *T. supriatnai*, and *T. niemitzi*), but possibly more, being endemic to mainland Sulawesi (Groves and Shekelle 2010; Shekelle et al. 2019).

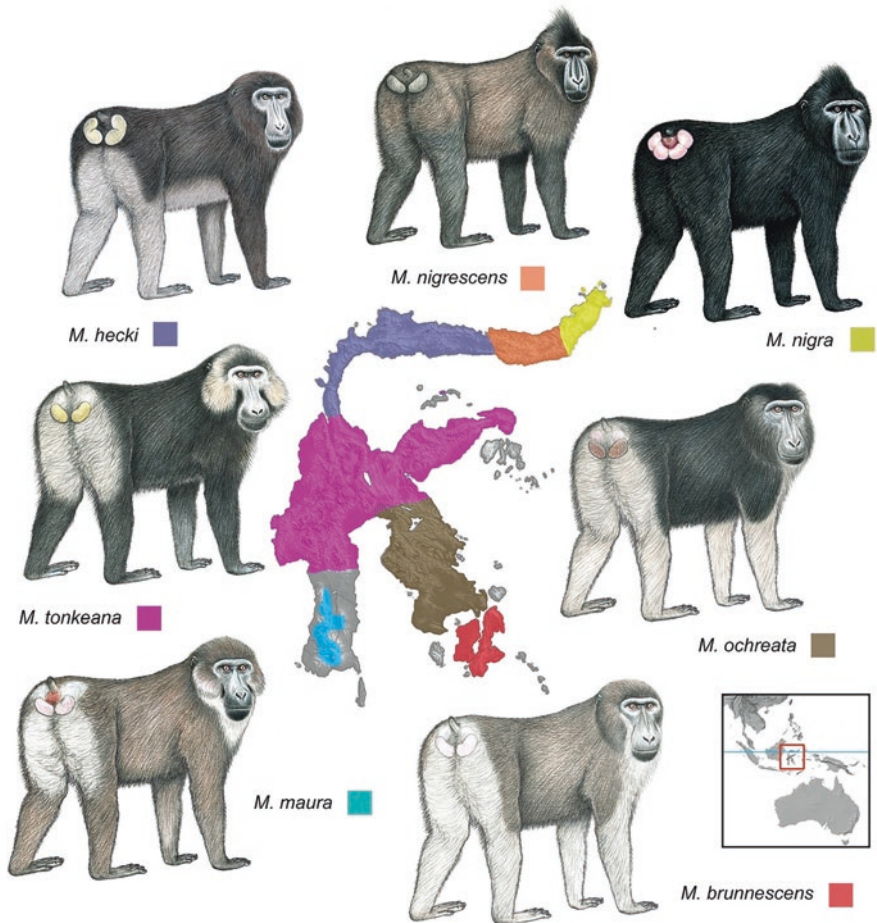


Fig. 7.1 Sulawesi's endemic macaque species (*Macaca*). (Illustration courtesy of Stephen Nash)

7.3 Tourism in Sulawesi

7.3.1 Foreign Tourism

Foreign tourism plays a significant role in Indonesia's economy. In 2018 alone, 15.81 million tourists visited the country, resulting in 16.4 billion USD in foreign exchange (Badan Pusat Statistik Indonesia 2018a; b). In response to this economic contribution, the federal government has long encouraged the expansion of tourism sites and the development of additional tourist facilities (e.g., Adams 1997; Prodjo 2017). Most foreign tourists travel to Bali, leading to an unequal

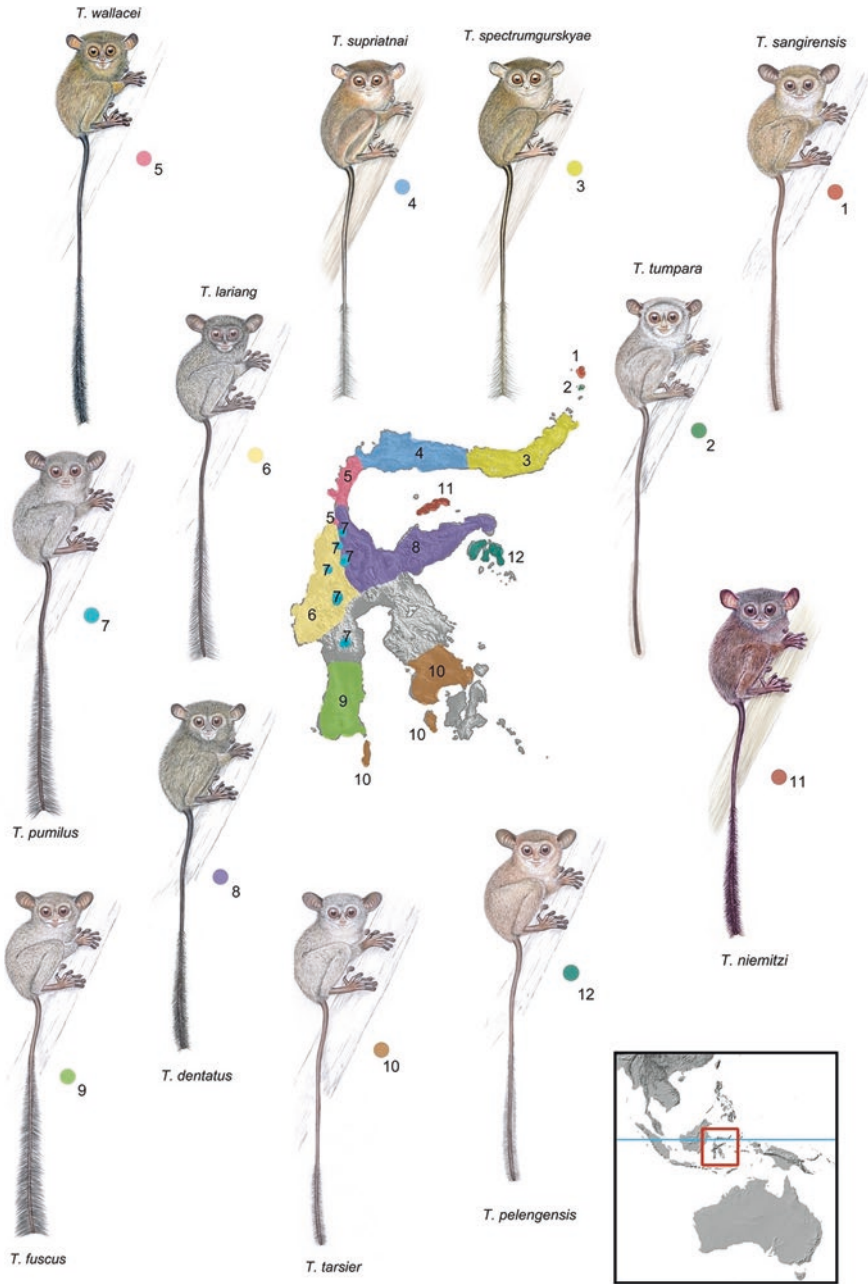


Fig. 7.2 Sulawesi's endemic tarsier species (*Tarsius*). (Illustration courtesy of Stephen Nash)

distribution of revenue and creating an unsustainable strain on Bali's resources and infrastructure (Badan Pusat Statistik 2020; Chong 2020). Sulawesi, in particular, receives a nominal number of foreign tourists who visit the country. Foreign tourism to Indonesia declined dramatically following the 1998 economic crisis and the 2002 Bali bombing, and in Sulawesi has recovered quite slowly (Junaid 2014; Pambudi et al. 2009). Although the number of tourists visiting Sulawesi increases each year, the proportion of foreign tourists remains less than 1% of the total who visit Indonesia (Table 7.1). Within Sulawesi, a far greater number of tourists arrive through North Sulawesi than South Sulawesi; in 2019 North Sulawesi received over 153,000 tourists compared to South Sulawesi's 17,771 tourists (Table 7.1; see Figure 7.3 for province designations).

7.3.2 Cultural Tourism

Despite its unique ecology and location within the Wallacea region, the most well-known tourist sites in Sulawesi focus on cultural tourism rather than nature or wildlife based tourism (Junaid 2014). The vast cultural diversity in Sulawesi offers potential resources to expand the tourism industry on this island, and regional government officials continue to actively promote tourism development (Junaid 2014; Suriamihardja 2010). The main site of cultural tourism in Sulawesi is in the Tana Toraja regency, home to the Toraja ethnic group (Junaid 2014). Tourism in Tana Toraja began in the 1970s when the Suharto administration identified it as an Outer Island destination which should be promoted to expand the tourism industry (Adams 1997). Marketing Tana Toraja to international tourists created a popular destination for witnessing novel funeral rites, visiting burial cliffs, observing traditional architecture, and viewing mountainous scenery; it was through this intentional marketing effort that Sulawesi became known as one of Indonesia's tourist destinations (Hasyim 2019; Scarduelli 2005; Yamashita 1994).

Beyond Tana Toraja, there are few other sites of cultural tourism in Sulawesi. The Bada and Besoa valleys in Lore Lindu National Park in Central Sulawesi enable

Table 7.1 Foreign arrivals through two ports of entry on the island of Sulawesi (Badan Pusat Statistik 2020)

Year	Port of entry				Total tourists arriving to Indonesia (Persons)
	North Sulawesi		South Sulawesi		
	Persons	% of total	Persons	% of total	
2015	27,059	0.27	13,091	0.13	10,230,000
2016	47,103	0.41	16,862	0.15	11,520,000
2017	87,976	0.63	18,355	0.13	14,040,000
2018	127,879	0.81	14,126	0.09	15,810,000
2019	153,658	0.95	17,771	0.11	16.110,000



Fig. 7.3 Sulawesi's provinces featuring capital cities and surrounding bodies of water. Map from Wikimedia Commons, distributed under a CC BY-SA 3.0 license

visitors to view impressive megalith statues and cylindrical stone vats (Rahmat et al. 2016). Two villages in the Bulukumba regency in South Sulawesi offer opportunities to experience Bugis culture: in Tana Beru, tourists can observe traditional boat making processes and in Tana Toa, tourists can observe traditional houses and indigenous practices (Junaid 2014). The Somba Opu Fort in Makassar, a relic of the Gowa Kingdom, includes replicas of traditional houses of the Bugis, Makassar, Toraja, and Mandar people (Junaid 2014). Additional museums that offer cultural tourism opportunities include the Balla Lompoa Museum in Sungguminasa and the La Galigo Museum, Makassar City Museum, and historic Fort Rotterdam in Makassar (Junaid 2014).

Both nationally and regionally, government officials encourage and support the expansion of the tourism industry in Sulawesi (Junaid 2014). In South Sulawesi, specifically, officials support the expansion of halal tourism, as the majority of tourists visiting the province are Muslim (Huda et al. 2020). However, challenges to the social sustainability and equitability of tourism exist already and should be considered as tourism continues to expand. For instance, communities in South Sulawesi conflict with park managers over appropriate forest use in Bantimurung-Bulusaraung National Park (Junaid 2014), fishing communities in Southeast Sulawesi are construed as both cultural commodities and environmental threats in Wakatobi National Park (Tam 2019), and Toraja indigenous practices are essentialized in South Sulawesi (Yamashita 1994).

7.3.3 *Protected Areas and Nature Tourism in Sulawesi*

Indonesia differentiates conservation areas into six categories based on the level of protection afforded to an area and the extent to which tourism is permitted in that area. For instance, while research is the only permissible activity in nature reserves, tourism is allowed in usage zones of national parks. Within national parks, no more than 10% of usage zones may be used to build tourist facilities (Law of the Republic of Indonesia No. 5 of 1990). In Sulawesi, there are 71 conservation areas, 36 of which permit tourism; the remaining 35 areas include nature reserves and wildlife reserves (Direktorat Jenderal KSDAE 2016). Although Southeast Sulawesi has the greatest extent of land designated as conservation areas, South Sulawesi has the greatest number of nature tourism parks (Table 7.2). There are a total of nine national parks in Sulawesi, including five terrestrial parks and four marine parks, and dozens of additional conservation areas managed by regional governments. Whereas national parks are managed by the National Park Agency, other conservation areas are managed by the Natural Resources Conservation Agency (Forclime 2017).

Nature tourism in Sulawesi focuses primarily on marine parks, beaches, and seascapes, and is mostly located in North Sulawesi (Hakim et al. 2012). Popular marine destinations include Wakatobi National Park in Southeast Sulawesi, Bunaken Islands in North Sulawesi, Togean Islands in Central Sulawesi, and Losari Beach, Spermonde Islands, Takabonerate Islands, and the Bira Cape in South Sulawesi (Junaid 2014; Ross and Wall 1999). The most visited marine park in Sulawesi is Bunaken National Park, likely due to its proximity to Manado, the capital city of North Sulawesi (DeVantier and Turak 2004; Tangian et al. 2015). Although marine tourism is more popular, expansion of tourism capacity on Sulawesi's coastal islands is constrained by the availability of freshwater (Sahabuddin 2019; Smith 2012). One site in particular, Wakatobi National Park, has been targeted by the federal government as part of the "Ten New Bali"

Table 7.2 The number and distribution of conservation areas designated by the central government of Indonesia on Sulawesi (Forclime 2017). See Figure 3 for province designations

Province	Number (unit)						Total area (ha)
	CA	SM	TN	TWA	THR	TB	
North Sulawesi	3	2	1	3	1	0	136,210.55
Gorontalo	4	1	1	0	0	0	375,123.68
Central Sulawesi	7	6	2	4	1	1	991,013.01
West Sulawesi	0	0	1	1	0	0	214,950.35
South Sulawesi	3	1	2	8	2	1	810,978.65
Southeast Sulawesi	3	5	2	4	1	0	1,725,023.10
Total	20	15	9	20	5	2	4,253,299.34

CA = Cagar Alam (Nature Reserve), SM = Suaka Margasatwa (Wildlife Conservation Area), TN = Taman Nasional (National Park), TWA = Taman Wisata Alam (Nature Tourism Park), THR = Taman Hutan Raya (Raya Forest Park), TB = Taman Buru (Hunting Park)

program (Prodjo 2017). Launched in 2016, this program seeks to develop new tourist destinations throughout Indonesia that replicate the economic effects of tourism in Bali. The main tourist attraction in Wakatobi is diving, but beaches, local cuisine, and annual cultural festivals are also popular tourist attractions. Foreign arrivals to Wakatobi consistently increased from 2015 to 2017, reaching a total of 2904 foreign tourists in 2017; meanwhile, foreign tourists visiting Indonesia in 2017 numbered 14,040,000 (Badan Pusat Statistik 2020). The growth of Wakatobi's tourism industry has been facilitated by tourist-oriented narratives of biodiversity conservation, ecological sustainability, and economic security for local communities (Tam 2019; von Heland and Clifton 2015).

In South Sulawesi, terrestrial sites with waterfalls and caves are popular among domestic tourists. Destinations such as Malino and the Maros karst areas attract tourists due to their unique karst geology and flora (Junaid 2014; Waluyo et al. 2005). These sites overlap with primate habitat but are fewer in number and less popular than marine-oriented tourism sites. The five terrestrial national parks on Sulawesi all support tourism, though the revenue generated from tourism at these sites remains limited (Table 7.3). Bantimurung-Bulusaraung National Park generates the most income, likely due to its proximity to the capital of the Maros Regency and to Makassar, the capital of South Sulawesi province (Table 7.3). Though research on nature tourism in South Sulawesi remains limited, some evidence suggests that tourism in this region can create conflict in communities and may pose threats to biodiversity (Kadir et al. 2013; Putri 2016; Putri et al. 2020; Wakka et al. 2015). Similar concerns have been noted as tourism expanded in North Sulawesi, placing constraints on local facilities and causing environmental degradation (Hakim et al. 2012).

Table 7.3 State revenue from the utilization of the tourism potential of conservation areas in Sulawesi (Direktur Jenderal KSDAE 2016)

Conservation area management agency	Province	Revenue 2016 (IDR)
BTN Bunaken	North Sulawesi	352.023.000
BKSDA Sulawesi Utara	North Sulawesi	720.247.500
BTN Bogani Nani Wartabone	Gorontalo	30.704.000
BBTN Lore Lindu	Central Sulawesi	210.505.000
BTN Kepulauan Togean	Central Sulawesi	4.875.000
BKSDA Sulawesi Tengah	Central Sulawesi	43.490.000
(BKSDA Sulawesi Selatan)	West Sulawesi	0
BTN Bantimurung-Bulusaraung	South Sulawesi	2.329.771.500
BTN taka Bonerate	South Sulawesi	187.694.000
BBKSDA Sulawesi Selatan	South Sulawesi	556.003.000
BTN Wakatobi	Southeast Sulawesi	71.445.000
BTN Rawa Aopa Watumohai	Southeast Sulawesi	9.045.500
BKSDA Sulawesi Tenggara	Southeast Sulawesi	7.870.000
Total revenue of all central government conservation agencies in Sulawesi		4.523.673.500

7.3.4 Primate Tourism in Sulawesi

Much like nature-based tourism more generally (Hakim et al. 2012), primate tourism predominates in Sulawesi's north province. Tangkoko Duasudara Nature Reserve (North Sulawesi) is the primary area for primate tourism in Sulawesi, largely due to the ease at which visitors are able to observe the resident primates, the Critically Endangered crested black macaque (*Macaca nigra*), and the Vulnerable spectral tarsier (*Tarsius spectrum* or *T. spectrumgurskyae*), which have high densities in the reserve (Arrijani 2020; Kinnaird and O'Brien 1996). Studies conducted at Tangkoko have found that primate tourism surpasses birdwatching as the primary reason for visits by foreign tourists (IUCN 2008; Kinnaird and O'Brien 1996; Sumarto and Tallei 2010). The island of Buton in Southeast Sulawesi is another site for primate tourism, specifically "research tourism" run by a UK-based conservation research organization, Operation Wallacea (Galley and Clifton 2004), whereby volunteers participate in seasonal research and conservation activities, including work on Buton macaques (*M. ochreata brunnescens*) and tarsiers (*T. spectrum*) (www.opwall.org). Aside from Tangkoko and Buton, there are few other sites where tourists can regularly encounter and easily observe Sulawesi's primates in the wild. This is largely due to a lack of tourism infrastructure (i.e., tourist facilities, tourist marketing, habituation of primates, etc.) in other protected areas that provide habitat for Sulawesi's primates. Those that do exist, such as the Karaenta area of Bantimurung-Bulusaraung National Park (see below), are not well-known as primate tourism sites, and hence, are best described as sites of "incidental tourism" (Grossberg et al. 2003; Sengupta and Radhakrishna 2020); that is, other features and

activities, such as birdwatching, hiking or cultural sites, serve as the primary attraction, but once tourists are there they may have an opportunity to observe primates as well.

7.4 Incidental Primate Tourism in South Sulawesi

7.4.1 *Bantimurung*

The Bantimurung waterfall site is among the most well-known tourist attractions in South Sulawesi. Located within the bounds of Bantimurung-Bulusaraung National Park (TNBABUL), tourists are drawn to this outdoor recreation area to see and swim at the site's large waterfall (Rahbiah et al. 2016). In recent years, site managers have expanded the swimming areas, added a zipline above the swimming pools, and built an aerial rope bridge that offers tourists a "bird's eye" view of the recreation area (K. Morrow, personal observation). The site also hosts a museum with butterfly specimens, an outdoor butterfly park, and a large cave with notable bat roosts that tourists frequently explore. Bantimurung receives far more tourist traffic than other areas of South Sulawesi. In 2010 alone, 600,000 tourists visited the popular waterfall destination (Rahbiah et al. 2016). In this same year, only ~53,000 tourists—around 400 of which were international tourists—visited the Bone regency (Junaid 2014). Between 2009 and 2013, 2.7 million domestic tourists and 15.5 thousand international tourists visited this popular waterfall destination (Rahbiah et al. 2016).

Although the large primate statue at the site's entrance (Fig. 7.4) suggests that primates can be viewed here, employees at the recreation area report only occasional macaque sightings (Morrow 2018), and there is no established primate tourism. While portions of TNBABUL are designated as tourism forests, facilities to support tourists in this area (e.g., lodging) are limited and nearby communities may conflict with park managers regarding collaborative park management and appropriate forest use (Kadir et al. 2013; Wakka et al. 2015). However, local communities do receive some economic benefits from the tourism at Bantimurung, including by selling souvenirs at the entrance to the waterfall recreation area (Putri et al. 2020; Rahbiah et al. 2016). Butterfly specimens are often sold as souvenirs, potentially posing a risk to their conservation (Putri 2016). This site is primarily visited by local and domestic tourists, and large crowds often gather on weekends and holidays (Authors, personal observation). There is some evidence to suggest that the presence of crowds at this site negatively impacts bird communities (Putri et al. 2020).



Fig. 7.4 Authors A. Zak, K. Hanson, and E. Riley posing with the primate statue at the entrance of the Bantimurung waterfall recreation area. Photograph by IskandarKamaruddin

7.4.2 *Karaenta*

Karaenta is located in TNBABUL, a 43,750 ha park that was gazetted to protect the area's limestone (karst) ecosystem, endemic flora and fauna, and watershed systems. Karaenta was formerly a 1000 ha nature reserve that became subsumed within the national park's boundaries when the latter was established in 2004. Situated at approximately 300 m.a.s.l, Karaenta consists of primary and secondary forest amidst and upon karst tower formations that rise up to 70 m from the ground (Albani et al. 2020). Beginning in the 1980s, this area has been the primary location for

ecological and behavioral research conducted on the Endangered moor macaque, *Macaca maura* (Albani et al. 2019, 2020; Germani 2016; Hanson and Riley 2017; Matsumura 1991, 1998; Morrow et al. 2019; Okamoto et al. 2000; Riley et al. 2014; Sagnotti 2013).

In the early years, researchers regularly provisioned the macaques in an effort to accelerate habituation, obtain group counts, and identify individuals (Okamoto et al. 2000; Watanabe and Matsumura 1996). Provisioning is the deliberate offering of food, typically human foods, to animals. Because macaques became well-habituated to humans at this site, particularly one group (Group B), it also became the primary location for tourists and the media to view this primate species. It is worth noting that a major road traverses through 11 km of TNBABUL, specifically through the Karaenta area, bisecting the habitat of resident fauna, including the moor macaque. Moor macaque groups have been observed crossing the road, but generally retreat back into the forest after crossing (Authors, personal observation). Accordingly, up until recently most observations of the macaques by tourists or the media were conducted inside the forest at a designated provisioning site. However, beginning in 2015, a shift occurred at this site, whereby the main habituated group (Group B) began spending more time close to the road, which in turn made them more visible to people passing in cars, at which point people began feeding them. By 2016, we estimated that group B was spending approximately 20% of the day along the road where they forage in trash pits and wait for motorists to toss them food (Morrow et al. 2019). By 2018, we observed additional groups waiting on the side of the road for provisions along the 11 km stretch through the park (E. Riley, personal observation). Therefore, opportunities for encounters with the macaques have expanded beyond the forest to include locations all along the roadside and these encounters frequently involve provisioning of anthropogenic foods (e.g., boiled corn ears, sometimes already consumed by people, chips and other snack foods, fruit such as bananas and oranges, and bread and cookies).

7.4.3 UNHAS' Hutan Pendidikan

The Hasanuddin University (UNHAS) Hutan Pendidikan (Education Forest, EF) is located in the village of Bengo and managed by the Faculty of Forestry at Hasanuddin University in Makassar. The EF serves as a teaching resource and research site for local and visiting university students and faculty. Multiple buildings provide indoor lodging for large groups and there is additional space for tent camping. Certain trees non-native to Sulawesi, such as species of pine (*Pinus merkusii*) and acacia (*Acacia* spp.), were planted in the EF during a restoration project that occurred several decades ago. Agricultural areas, including wet rice fields, mixed gardens, and cacao plantations, occur within the EF and along the eastern edge. Farmers constantly move between the village, agricultural spaces, and the forest where subsistence hunting and trapping of small game and collecting resources such as candlenuts (*Aleurites moluccana*), honey, firewood, timber, and other building materials occur

(Zak and Riley 2017). Previous research has documented at least seven groups of free-ranging moor macaques living in the EF (Agustinus. 2011). Many human-macaque interactions in Sulawesi occur predominantly at the forest-farm interface (Priston et al. 2012; Riley 2007a; b). Thus, the EF represents yet another example of a forest-farm mosaic within which local residents and researchers have confirmed the occurrence of macaque crop feeding at the forest boundary (Zak and Riley 2017; Morrow 2018). While perceptions of crop feeding behaviors are negative, farmer-macaque interactions mostly involve nonlethal deterrence methods such as the use of noisemakers and human and canine guards to chase macaques back into the forest. Retaliation killings of crop feeding macaques appear uncommon (Zak and Riley 2017; Zak 2016). There is no formally established primate tourism at this site, but it hosts occasional multiday events (e.g., the 2014 Musik Hutan, an annual music festival), UNHAS and other academic programs, and UNHAS forestry student training, including some student research on moor macaques in the EF (Agustinus. 2011). Macaque sightings are incidental and occur more rarely than in the nearby Karaenta because social groups remain relatively unhabituated and there are no paved roads that bisect the forest offering easy access for primate observation.

7.4.4 Pattanuang

Pattanuang is popular among local tourists for caving (Waluyo et al. 2005). Although Pattanuang is not a site of official primate tourism, there is a small collection of tarsiers (*Tarsius tarsier*) that are kept in outdoor enclosures in close proximity to villagers' homes and cared for by TNBABUL park rangers that park staff will occasionally show tourists (K. Morrow, personal observation; Putri 2020). These tarsiers were captured from TNBABUL forests by TNBABUL park staff and are maintained in enclosures with vegetation that allows for vertical clinging and leaping, but not cavity dwelling, during daytime hours (K. Morrow, personal observation). As of Summer 2017, TNBABUL staff had begun habituating one group of forest-dwelling tarsiers near Pattanuang by imitating tarsier vocalizations and provisioning the tarsiers with insects as they emerged from their sleeping tree in the evening (K. Morrow, personal observation). Recent research suggests that Pattanuang is of particularly high value for developing tarsier-focused tourism, but that community capacity, tourism facilities, and intentional marketing are needed to realize this potential and raise tourist interest in tarsiers (Putri 2020).

7.4.5 Bira Beach and Le'ja Hot Springs

Bira Beach in Bulukumba and Le'Ja Hot Springs in Soppeng are two additional sites where tourists may encounter macaques, though visitors are largely attracted to the destinations for marine tourism. Bira Beach is among the most popular tourist

attractions in Bulukumba; in 2015, 156,770 local tourists and 3680 foreign tourists visited (Maryono et al. 2019). Government authorities have recognized the area as valuable for further developing tourism industries, but issues of waste management, improper construction of facilities, and potential overcrowding pose barriers to the feasibility and sustainability of expanding tourism (Maryono et al. 2019; Nur et al. 2019). Although visitors report seeing macaques in these areas in close proximity to humans (L. Germani, personal communication), at the time of writing this chapter, there were no research publications discussing primate tourism or human-primate encounters at these sites.

7.5 Primate Tourism in South Sulawesi Compared to Other Areas in Indonesia

The opportunities for primate tourism in South Sulawesi described above differ substantially from popular primate tourism settings in Indonesia, such as in Bali, Borneo, and Sumatra (e.g., Fuentes et al. 2007; Russon and Susilo 2014). Several factors account for these differences. First, as noted above, the sites in South Sulawesi are best understood as examples of incidental tourism (Grossberg et al. 2003; Sengupta and Radhakrishna 2020). For instance, the site at Bantimurung primarily attracts tourists for its outdoor recreation and landscape features, such that some visitors have been surprised to learn that macaques inhabit the surrounding forest (K.Hanson, unpublished data). In contrast, primate tourism sites in Bali are advertised as primate tourism destinations, have established formal tourism management and revenue-generating structures, and attract a significant number of visitors who are primarily interested in viewing primates (Fuentes 2010). Given the apparently common occurrence of incidental primate tourism in South Sulawesi, it is interesting to consider whether these types of primate encounters are prevalent outside of a formal tourism context throughout Indonesia, as appears to be the case in primate habitat countries elsewhere (Sengupta and Radhakrishna 2020).

Second, primate tourism in Indonesia is generally characterized by one of two contexts: temple settings (e.g., Bali) and forest (e.g., Kalimantan). The Sulawesi sites we have described herein fall somewhere along this spectrum. In the Karaenta area of TNBABUL, opportunistic encounters with macaque groups currently occur along the road, and hence, tourists do not need to enter the forest to observe the macaques. Likewise, tourists at the Bantimurung site can observe macaques foraging in the canopy from the more developed, waterpark-like area below. However, even macaques encountered along the road still spend the majority of the day in the forest (Morrow et al. 2019), thus providing opportunities for forest-based encounters. Though the tower karst habitat in these areas is certainly deserving of tourist appeal, navigating this landscape is challenging (see Albani et al. 2020; Hanson and Riley 2017) and has perhaps hindered the development of a forest-based model of primate tourism. Nevertheless, there are opportunities to develop forest-based primate tourism in this region, which could cater to tourists seeking more

“adventurous” outdoor experiences. The small number of foreign tourist visits to Sulawesi—particularly South Sulawesi (Table 7.1)—have likely also hindered the development of primate tourism on the island. Bali receives the majority of foreign tourists, which potentially helps support established primate tourism sites. Similarly, more foreign tourists travel through North Sulawesi than other provinces, and primate tourism is more firmly established in this region.

We also suggest that the envisioned tourist experience in Sulawesi is fundamentally distinct from more popular tourist destinations in Indonesia. As discussed, Sulawesi’s tourism infrastructure is not well-developed, and from a foreign perspective is more likely to attract visitors seeking an “off the beaten path” experience. Among domestic tourists, a trend toward nature-based, adventure-seeking activities makes Sulawesi an ideal destination (Butarbutar and Soemarno 2013). Taken together, these qualities should enhance the appeal of Karaenta’s karst forest as a site for tourists seeking an “authentic” experience with “wild” macaques in “pristine” nature (Duffy 2002; West and Carrier 2004; Curtin 2010). In fact, developing primate tourism with this objective in mind has been expressed on several occasions by TNBABUL management, who hopes to attract domestic and foreign tourists to Karaenta to observe recently habituated moor macaques (K.Hanson, unpublished data; see Hanson and Riley 2017). What follows is a discussion of considerations as they relate to implementing a more deliberate primate tourism program in South Sulawesi.

7.6 Considerations for the Development and Management of Primate Tourism in South Sulawesi

7.6.1 Raising Awareness of Primate Biodiversity and Conservation

Conservationists often suggest that wildlife tourism expands visitors’ science-based knowledge of wildlife and generates greater concern for conservation (Ardoin et al. 2015; Ballantyne et al. 2007; Powell and Ham 2008). However, existing evidence does not always support this idea, and outcomes seem to vary based on the situation and visitors’ pre-existing knowledge (Hayward & Rothenberg, 2004; Hughes et al. 2011; Powell and Ham 2008). Given that domestic tourists around Karaenta and TNBABUL are often unaware that moor macaques live in the region (K.Hanson, unpublished data), it is possible that thoughtful development of primate tourism in South Sulawesi could raise awareness of local primate biodiversity and conservation. Encountering animals in contexts perceived as “natural” can lead to more positive tourist experiences and greater learning outcomes (Desmond 1999; Johnston 1998; Shettel-Neuber 1988). Thus, forest-based wildlife tourism has the potential to be a powerful means of conservation education because of encounters’ high levels of perceived “naturalness” (Higham and Shelton 2011; Knight 2009, 2011).

Macaque tourism sites are not typically known for their conservation education efforts. Instead, the primary attraction for tourists at macaque sites is entertainment, while conservation and education goals are secondary or nonexistent (Knight, 2011). Establishing conservation education as part of primate tourism in South Sulawesi would therefore offer a valuable contrast to other macaque tourism sites. However, there remains extensive debate on whether and how education initiatives lead to conservation outcomes (e.g., Freund et al. 2020; Jacobson 2010; Kling and Hopkins 2015; Sherrow 2010). Implementing an education research framework—i.e., evaluating the efficacy of tourism and education initiatives before, during, and after program implementation—offers one route to establishing effective conservation programming (Padua et al. 2002; Sherrow 2010; Yu et al. 2011). In addition, the success of programs may greatly depend on how information is communicated or messaged. Historically, interpretative signage has been used to convey information in science-related settings, but venturing beyond simply passing on information is critical (Orams 1994).

The relatively new opportunities to encounter macaques along the road in this region (Morrow et al. 2019) underscore the potential value of formally establishing primate tourism and conservation education. Motorists passing through Karaenta have often encountered moor macaques (*Macaca maura*) in crop-foraging contexts and, as a result, view cultivated foods as typical macaque dietary resources. Furthermore, the macaques' physiological and behavioral similarity to humans and their dietary flexibility leads people to perceive anthropogenic processed foods as suitable items to provision the monkeys (Morrow 2018). Formal primate tourism with established educational components may help encourage more responsible human-macaque interactions at this site and reduce the instances of provisioning the macaques with processed foods. Education components could address conservation concerns related to provisioning and the role that macaques play in local ecosystems (Tsuji and Su 2018).

Establishing primate tourism in South Sulawesi would also introduce employment opportunities and formal management of the human-primate interface, which may enhance local community members' awareness and support of conservation efforts. Research at several wildlife tourism sites suggests that involving community members—for instance, as guides—can positively impact community conservation knowledge and attitudes (Keane et al. 2011; Waylen et al. 2009), increase success of conservation initiatives (Waylen 2010), provide opportunities for local communities to share their own culture and knowledge systems (Zeppel and Muloin 2008), and benefit the health and wellbeing of participants (Moore et al. 2006). Importantly, focusing only on the economic benefits of primate tourism may not lead people to change their conservation attitudes and behaviors (Nilsson et al. 2016; Stem et al. 2005). Rather than relying solely on these extrinsic motivators, designing tourism and conservation programs that focus on intrinsic motivators (e.g., caring for the environment) is more likely to result in sustainable conservation outcomes that benefit primate habitats (Nilsson et al. 2016). Knowledge, support, and success of conservation are especially likely to result when local community members are involved as significant stakeholders with autonomous management

and decision-making authority (Stronza and Pêgas 2008; Waylen 2010). In South Sulawesi, it may therefore be beneficial for protected area staff, community members, and researchers to co-develop tourism programs that provide economic benefits, emphasize the intrinsic values of conservation, and are managed and maintained by community stakeholders.

7.6.2 Ethical Dimensions of Primate Tourism

In considering developing primate tourism in South Sulawesi, several ethical dimensions arise. In what follows, we briefly discuss the four most prominent ethical considerations: the biological, ecological, and behavioral impacts of tourism on primates, the ethics of habituating wild primates, the potential for exacerbating macaque crop foraging, and the impacts on local livelihoods.

7.6.2.1 Biological, Ecological, and Behavioral Impacts of Tourism

Despite wildlife tourism's potential contribution to the conservation of biodiversity, including primate conservation, there is a growing concern regarding the impact of tourism on primate ecology, behavior, and health (Fuentes and Gamerl 2005; Ilham et al. 2018; Maréchal et al. 2016; Russon and Wallis 2014) as well as on the ecosystem as a whole (Larson et al. 2016; Shannon et al. 2017). Although nature-focused tourism initiatives are almost certainly less damaging than more invasive land-use practices (e.g., extractive industries), some of the main concerns regarding the ecological effects of tourism include habitat modification and human habitat use, which can result in animal behavioral shifts and physiological disturbances (Buckley 2004). Habitat modification can be defined as any alteration to the environment by humans (i.e., trails, barriers, sounds, smells, ground cover or water source removal). Effects from habitat disturbances may ecosystem dynamics and interspecies interactions in complex ways, particularly for species whose resource dependence varies with age or seasonal availability (e.g., Morgan et al. 2018). Further research is needed to better understand how the ecological impacts of tourism affect primates, particularly as many primate species perform vital ecosystem services (Trolliet et al. 2016). In South Sulawesi, it may be especially important to assess the effects of tourism on macaque feeding ecology; as one of the largest mammals and frugivores in the region, they likely play an important role in the ecosystem as a whole (Tsuji and Su 2018; Whitten et al. 2002). Monitoring the effects of tourism on the more ecologically and behaviorally specialized tarsiers will also be important, although research from other tourism sites suggests that they may be resilient to tourism activities (Paulus 2009). Any development of primate tourism in South Sulawesi should also consider the potential ecological impacts on other organisms. Of particular concern are Bantimurung-Bulusaraung National Park's notable butterfly species, which may already be negatively impacted by tourism (Putri 2016)

and the endemic cuscus (*Ailurops ursinus*), which may be hunted for consumption by local communities (Salas et al., 2019).

In contrast to indirect ecological impacts, direct behavioral consequences of primate tourism are more widely studied. For example, the presence of tourists and the behaviors they exhibit when around wild primates have been shown to increase stress among primates, as measured by rates of anxiety-related behavior, such as self-scratching, and physiological measures of stress, such as fecal glucocorticoid concentrations (e.g., Barbary macaques; Maréchal et al. 2011; Black howler monkeys; Behie et al. 2010). One of the most common ways humans and primates interact at tourist sites is through provisioning (Sengupta and Radhakrishna 2020). Provisioning affects primate feeding ecology, such as reducing dietary diversity (Sengupta and Radhakrishna 2018), as well as ranging behavior. For example, a number of studies have shown that provisioned primates show smaller home ranges and shorter daily travel distances, a pattern which likely reflects how the high abundance and clumped distribution of provisioned foods at these sites reduce travel costs for the primates (Hansen et al. 2020; Sengupta et al. 2015). Provisioning has also been shown to influence primate social behavior. For example, provisioning can result in increased intragroup aggression (Hsu et al. 2009; Ram et al. 2003), reduced time spent grooming (Kaburu et al. 2019), reduced social cohesion (Morrow et al. 2019), and changes in group size (Riley et al. 2016) and social structure (Sinha et al. 2005).

Provisioning primates at tourism sites also poses a serious risk of pathogen transmission (Carne et al. 2017; Sapolsky 2014). Bidirectional pathogen transmission between humans and other primates is a significant conservation concern and an important ethical consideration for developing and managing primate tourism (Fuentes 2006; Jones-Engel et al. 2005; Muehlenbein 2017). While all wildlife tourism sites must grapple with the potential for pathogen transmission, the risk of pathogen transfer in the context of primate tourism is heightened due to our close phylogenetic relationships and similar biology (Olival et al. 2017; Wallis and Lee 1999). Furthermore, primate populations are especially susceptible to disease due to their long, slow life histories, which hinder rapid recovery from population declines (Dunbar 1987; MacArthur and Wilson 1967; Purvis et al. 2000; Ross 1992). Suggested steps to mitigate pathogen transmission at primate tourism sites include limiting tourist attendance, complying with rules and regulations for maintaining safe proximity to primates, implementing health education programs, vaccinating both humans and nonhuman primates, and following appropriate behavioral hygiene guidelines, including wearing face masks, maintaining adequate distances from primates, and prohibiting symptomatic visitors and staff from participating (Homsy 1999; Russon and Wallis 2014; Ryan and Walsh 2011).

Mitigating the risk of human-macaque pathogen transfer in South Sulawesi may be particularly challenging. As with other macaque tourism sites (e.g., Brotcorne et al. 2017; Carne et al. 2017; Fuentes and Gamerl 2005; Hsu et al. 2009; McCarthy et al. 2009), sites of incidental macaque tourism in South Sulawesi involve provisioning and close proximity to humans (Morrow et al. 2019). However, these interactions are generally unmanaged in South Sulawesi. Along the Bira cape and in the

Karaenta area of TNBABUL in South Sulawesi, passing motorists often provision moor macaques (L. Germani, personal communication; Morrow et al. 2019). Such practices are especially risky for tourists if they involve scratching and biting by the macaques, as macaques are known to carry the Herpes B virus, which can be fatal in humans (Engel et al. 2002). Interview data suggest that people feel it is acceptable to feed moor macaques in South Sulawesi for a number of reasons: it is a common occurrence at well-known long-tailed macaque tourism sites in Bali; the national park and researchers have historically provisioned the monkeys; and, the macaques appear to be “hungry” and actively looking for human food (Morrow 2018). These existing perspectives may make managing the risks of provisioning in this region difficult. Indeed, evidence from other tourism sites suggests that people often do not follow established regulations and will still seek direct contact with primates even when they understand the potential for pathogen transmission (Nakamura & Nishida, 2009; Muehlenbein et al. 2010).

In addition to pathogen transfer risks, other negative health outcomes associated with provisioning include food poisoning (Maréchal et al. 2016), fatal ingestion of inappropriate foods or objects (Rodriguez-Lopez and Mignucci-Giannoni 1999), and increased rates of obesity, which can lead to reduced fertility and other nutrition-related health concerns (Sapolsky 2014). Given the suite of negative impacts outlined above, any efforts to develop new sites of primate tourism in South Sulawesi should avoid, or more preferably, prohibit provisioning. While it may be difficult or impractical to eliminate primate provisioning in South Sulawesi at sites where it is already occurring, we recommend continued outreach focused on augmenting people’s knowledge and understanding of the negative consequences of provisioning and how just because it occurs elsewhere in Indonesia does not mean it is a good model for Sulawesi. Potential primate tourism sites should also prioritize reducing negative ecological impacts and work with collaborators to conduct continuous research on ecosystem health.

7.6.2.2 The Ethics of Habituating Wild Primates

The ethical imperative to “do no harm” (Riley and Bezanson 2018) is complicated with respect to habituation, because “harm” can also occur in less conspicuous ways. Knight (2009) identifies two methods of rendering wildlife “viewable” to tourists: habituation and attraction (i.e., via provisioning, as discussed above). Indeed, habituation is distinct from tolerance attained through provisioning; the latter, some have argued, is best understood as associative learning (Bejder et al. 2009; Higham and Shelton 2011). While both habituation and attraction represent a heightened tolerance of human observers, it is a long-held assumption that habituated primates perceive humans as a neutral presence and no longer respond to them, or that human presence is not disruptive (Allan et al. 2020; Fedigan 2010; Higham and Shelton 2011; Tutin and Fernandez 1991; Williamson and Feistner 2011). Recent work in this area, however, has challenged this accepted premise (Alcayna-Stevens 2016; Allan et al. 2020; Ampumuza & Driesson, 2020; Hanson and Riley

2017). Not only do habituated primates continue to respond past the point of what observers might consider “habituated,” but they do so in ways that may go undetected or are only revealed through long-term monitoring and analysis (Bejder et al. 2009; Hanson and Riley 2017; Higham and Shelton 2011; McDougall 2012). Here, we adopt the view of habituation as a dynamic and context-dependent spectrum of heightened observer tolerance (see Hanson and Riley 2017).

Deploying this nuanced understanding of habituation has important implications for primate tourism. Though it is convenient to presume that a habituated primate group is “immune” to day-to-day observer influence, multiple daily follows with tourist groups over time have the potential to induce a chronic stress response that can ultimately impact the groups’ wellbeing (Chen et al., 2020; Hanson 2017; Shutt et al. 2014). Other research demonstrates that persistent following of presumed habituated groups is associated with increased locomotion and decreased resting periods (Rassmusen 1998; Hanson 2017). Moreover, evidence suggesting that the habituation process results in differing tolerance levels across individuals (Allan et al. 2020; Ampumuza & Driesson, 2020; Bertolani and Boesch 2008; Narat et al. 2015) points to the possibility that tourist impact is not uniformly distributed across individuals and across social groups (Allan et al. 2020; Morrow et al. 2019; Westin 2017). For example, individuals with higher observer tolerance could potentially use humans as social tools for accessing and retaining food resources or avoiding aggression (Allan et al. 2020, p. 10; Hanson and Riley 2017). Precautions to mitigate these impacts, such as “no research” policies on groups habituated for tourism and limiting tourist group size and visits to one hour per day, are already incorporated into best practice guidelines for great ape tourism (Williamson and Macfie 2014). Other management strategies that approach habituation (and hence, its consequences) as a flexible spectrum may seek to structure the nature of tourist-primate interactions at the level of the individual animal (Higham and Shelton 2011, p. 1296; Ampumuza & Driesson, 2020).

For the ethically driven primatologist, upholding the principle of “do no harm” is a given. A recent survey conducted by Green and Gabriel (2020) confirms that primatologists feel a strong duty to mitigate research and other human-caused harms to their habituated study subjects, but we must also be careful that observer tolerance and the assumptions it entails do not obscure harm—subtle or otherwise. An important question that emerges from Green and Gabriel’s (2020) analysis is whether habituation is necessary for primate tourism. For those tourists who seek nature-based excursions in South Sulawesi, perhaps hiking through an appealing forest for a glimpse of unhabituated macaques is enough to satisfy their appetite for adventure.

7.6.2.3 Macaque Crop Foraging

Crop feeding is a widespread problem across primate ranges and Sulawesi is no different. All seven macaque species are believed to engage in the behavior (Riley 2010). Farmers working within and around the UNHAS Education Forest (EF, see

above) in South Sulawesi report that crop feeding leads to reduced harvests which result in smaller incomes (Zak 2016). Additionally, the most effective deterrence method for protecting a garden, human guarding (Cai et al. 2008; Hill 2000; Nijman and Nekaris 2010; Zak 2016), is a time-consuming job that prevents farmers and their families from engaging in other tasks beneficial to their livelihood (e.g., finding honey to sell), and may result in health risks such as lack of sleep if guarding at night, exposure to dangerous animals and diseases (e.g., dengue fever, malaria), and children missing school (Osborn and Hill 2005). Deterrence method efficacy is also affected by factors outside of farmers' control. For example, the practice of provisioning primates may exacerbate the issue of crop feeding by increasing the likelihood of crop damage and influencing primate reactions to various deterrence methods (Madden 2006).

The decision to habituate macaques that live in forest-farm matrix habitat comes with practical and ethical concerns. First, it may be more difficult to habituate a group of primates that have had repeated negative encounters with farmers. Additionally, habituating a group that will potentially crop feed may lead to decreased fear of human guards (Fuentes and Hockings 2010) and increased conflict with humans (McLennan and Hill 2010) in agricultural spaces. From a conservation perspective, habituating Sulawesi macaques for tourism may also lead to increased retaliatory killings or harm to an endangered species, as individuals that are more accustomed to being in proximity to humans are easier to capture and punish (Zak 2016). While these concerns entail a view of habituation characterized by the loss of fear of humans, we have argued above that habituation is deeply situational, and hence, it may be unrealistic to presume that macaques will extend this loss of fear to all humans and in all contexts. Nevertheless, we recommend seriously considering the risks in habituating social groups that range in close proximity to agricultural spaces, because the factors influencing crop feeding are interrelated in complex ways (Hill 2018). This recommendation is not to undermine macaque capabilities to read various contexts and respond accordingly, but rather is suggested out of caution and respect for both human and nonhuman primate communities. Reducing future conflict can be achieved in part by preventing noncrop feeding groups from learning to do so. Furthermore, although we fully support collaborations between Western and Indonesian researchers, working with universities in the region should not be conflated with working with local people (Lowe 2004). In fact, local communities and forest managers may have drastically different ideas about how the forest has been and should be used and the status of wildlife within. For example, although UNHAS manages the Education Forest in a rural village, their faculty and staff do not necessarily represent the perspectives of Bengo farmers and residents. While buffer crops and other examples of intentional provisioning have been suggested to mitigate crop loss (Hockings and McLennan 2012; Parker and Osborn 2006; Riley 2007b; Zak, personal communication), provisioning macaques within the EF for research or tourism could potentially complicate relationships between university staff, researchers, and the local community, particularly if farmers are not involved in the decision making and have concern that activities might increase crop feeding behavior as habituated primates lose their fear of humans. A

positive relationship and effective communication between forest managers and local communities is critical to ensure the protection of existing macaque populations while allowing people to continue to farm, engage in responsible tourism, and use forest resources in ethical ways.

7.6.2.4 Local Livelihoods

Economic impacts associated with primate tourism are well-documented (see Hvenegaard 2014 for overview), with outcomes varying considerably from site to site (Eshun and Tonto 2014; Wright et al. 2014). Primate tourism's economic contribution largely depends on the degree to which initial tourist spending remains in the region (Hvenegaard 2014). Thus, if revenue outflow is high, it is unlikely local communities and protected areas will benefit from primate tourism. This was the case in Tangkoko Duasudara Nature Reserve, Northeast Sulawesi where Kinnaird and O'Brien (1996) reported that the local community did not profit from tourist visits and only 2% of tourist revenues remained in the reserve. In South Sulawesi, a more recent study examining the role of Bantimurung tourism in local livelihoods indicates potential economic and social benefits, including income diversification, increased monthly income, and enhanced opportunities for female employment (Rahbiah et al. 2016). The majority of these benefits are derived from centralized activities at the entrance of the park, such as selling souvenirs or snacks (Ibid.). However, it is debatable whether primate tourism in Bantimurung would draw more tourists than usual and thus augment local economies and livelihoods in a significant way.

Though many have argued that economic benefits from primate tourism promote local support for conservation objectives (Russon and Wallis 2014), others have challenged the assumed connection between economic incentive and conservation success (Stronza 2007; Fletcher 2009). Articulating with this critique is the idea that environmentally and socially responsible tourism (i.e., ecotourism, see Stronza et al. 2019) paradoxically functions as a "capitalist fix" to redress environmental and social ills caused by capitalist development (Fletcher and Neves 2012; Büscher et al. 2012). Thus, the development of primate tourism as a market-based conservation strategy has the potential to exacerbate existing social inequities and actually hinder long-term conservation efforts (West 2006; Duffy 2013). Further, without empirical or situated evidence, we cannot assume increased local income from primate tourism will lead to increased conservation (Fletcher 2009). For instance, Stronza (2007) describes a dynamic in which increased income from ecotourism enables and accelerates resource extraction due to local residents' newfound ability to purchase labor and technology. Primate tourism's impact on local livelihoods and conservation must therefore be assessed in light of other extractive and arguably more harmful industries in South Sulawesi (e.g., large-scale agriculture, nickel mining; Supriatna et al. 2020). Finally, conflict over which entities profit from tourist activity and revenue instability related to tourist seasonality, economic trends, and recently, global health crises (Dinarto et al. 2020) can complicate and undermine

positive contributions of primate tourism to local livelihoods. Ensuring that economic benefits from tourism activities are sustainable, equitable, and transparent is not straightforward and would necessitate open communication between local community members, park rangers and managers, and researchers.

7.6.3 Who Are the Tourists?

Tourist demographics can also play a key role in the development of primate tourism. In South Sulawesi, there is limited tourist-focused infrastructure surrounding protected areas where primate viewing occurs (see above). Evidence from popular primate tourism sites in North Sulawesi demonstrates that primate tourism is especially popular with international tourists (Kinnaird and O'Brien 1996), pointing to South Sulawesi's attractive potential. Furthermore, at a macaque tourism site in Padangtegal, Bali, non-Asian tourists comprised 50% of total visitors (Fuentes et al. 2007). Even though Bali is known as the international tourist hot spot of Indonesia, the presence of Western tourists at primate-focused localities throughout Indonesia indicate that international interest in primate tourism may translate, to a degree, to South Sulawesi.

Because the majority of tourists who arrive in Sulawesi are not international, it is likely that local and domestic tourists will play an important role in shaping primate tourism in the region. As such, it is important to understand domestic tourists' motivations for participating in nature-focused tourism. Whereas Western tourists tend to view nature-based tourism as a way to quietly appreciate and reflect on nature, Indonesian "nature-loving" dates to Suharto-era periods of political suppression and is steeped in ideals of nationalism (Collins 2007; Tsing 2005). Accordingly, Indonesian nature-loving prioritizes "conquering" nature by taking group adventures to isolated, dramatic vistas, rather than traveling alone or in small groups to experience and learn about nature (Tsing 2005). At less isolated tourism sites, domestic tourists primarily visit for recreation and social engagement, rather than to learn about the conservation status of an ecosystem (Cochrane 2006). Therefore, potential primate tourism sites in South Sulawesi may be expected to cater to large groups of tourists who are more interested in brief encounters with primates rather than prolonged encounters that emphasize educational programming. Finding ways to balance conservation education goals while meeting domestic tourists' desired experiences will thus require creative planning.

7.6.4 What Is the Role of the Researchers?

As anthropologically trained and ethically engaged practitioners, the degree to which the academic researcher is involved in knowledge sharing and co-development of nature-based tourism is of particular importance to us. Several examples of

successful primate tourism initiatives highlight collaboration between primate researchers and local entities in designing, managing, and monitoring these programs (see Wright et al. 2014; Williamson and Fawcett 2008), yet the researcher's role in guiding and informing wildlife and nature-based tourism remains an overlooked and contentious issue (Higuchi and Yamanaka 2017; Rodger et al. 2010). Given that nature-based tourism involves the interface between society and natural resources, it is not a revelation that the development of sustainable, equitable, and responsible programs necessitates knowledge of biological, ecological, and social realms, and ideally, the synergistic relations between all three. As we have argued throughout this chapter, effective primate tourism demands productive partnership and trust among local community members, protected area managers and staff, conservation practitioners, primatologists, and other researchers. Here, we seek to encourage engagement by highlighting the valuable insights researchers contribute to thoughtful design and implementation of primate tourism. We also propose that the research informing and sustaining such programs will undoubtedly benefit from more inclusive, integrative, and transdisciplinary approaches.

A key aim for responsible primate tourism is to ensure primate wellbeing by minimizing tourism disturbance on primates and their habitats (Russon and Wallis 2014). In order to achieve this, however, there must be a foundational understanding of site-specific patterns from which to identify potential impacts, monitor and address emergent ramifications, and develop appropriate management strategies (Rodger and Calver 2005). Researchers can play an instrumental role in this regard—especially those who seek to make their research goals and questions relevant to the local communities that sustain their fieldwork. Experiential knowledge gained through fieldwork, such as daily activity rhythms and ranging patterns, can also benefit tourism design by facilitating observation conditions (Williamson and Fawcett 2008), and thereby reducing potential sources of stress for the primates while increasing tourist satisfaction (Setchell et al. 2017). In some instances, research findings and subsequent media coverage have been used as tools to promote public awareness and attract tourists (Kurita 2014; Wright et al. 2014). In Karaenta, for example, researchers have used local media interest as an opportunity to encourage conscientious encounters with the macaques and responsible human behavior (e.g., E. Riley consulted on a Mongabay Indonesia article about the risks of pathogen transmission for moor macaques; Rusdianto 2020).

Reasons for researchers' reluctance to engage in knowledge sharing and co-creation of wildlife tourism initiatives are multifaceted and never straightforward, but scholarship in recent years increasingly underscores the widespread inability to reach cooperatively and productively across disciplinary divides (Chua et al. 2020; Setchell et al. 2017; Rodger et al. 2010). At the same time, the value of integrative methods and transdisciplinary approaches for illuminating the spaces obscured by the perennial epistemological abyss cannot be overstated (Setchell et al. 2017; Riley 2013, 2019, Riley and Bezanson 2018; Fuentes et al. 2017; Remis and Jost Robinson 2020). Primate tourism as a long-term conservation strategy, an avenue for social justice and economic empowerment, and an effective education tool cannot be fully realized without inclusive, collaborative, and progressive work. Since many primate

researchers are (1) not local to the habitat country and (2) not trained in social sciences, it is especially critical to reach, speak, and learn across the divide while also seeking local collaboration, so that we are all better equipped to apprehend primate tourism's benefits and risks as well as address the unique challenges it poses.

7.7 Emerging Concerns

7.7.1 *Social Media Usage and Wildlife Tourism*

Social media can play an important role in motivating tourists to visit nature-based tourism sites (Divinagracia et al. 2012). Although tourists frequently share their encounters with nonhuman primates on social media (e.g., Otsuka and Yamakoshi 2020), the impact of social media on wildlife tourism and human-wildlife encounters is poorly understood. Evidence indicates that emotion plays a key role in wildlife encounters (Ballantyne et al. 2007; Kellert et al. 1996; McIntosh and Wright 2017) and that many people actively seek out experiences with “wild” animals (Fuentes et al. 2007; Griggio 2015; Jones 2011), especially if it involves viewing species that are considered “charismatic megafauna” (Reynolds and Braithwaite 2001). Images and “selfies” documenting and commemorating these encounters are a socially significant component of human-wildlife interactions (Desmond 1999; Griggio 2015; Kurniawan et al. 2017) and form complex connections between tourists and places or experiences (Pearce and Moscardo 2015). As social media platforms serve as venues for sharing personal photographs and videos, they are likely relevant to understanding how people interact and seek encounters with primates in Indonesia (cf. Hausmann et al. 2018; Otsuka and Yamakoshi 2020; Tenkanen et al. 2017). The influence of social media is particularly relevant in Indonesia, which has one of the largest user bases of social media platforms worldwide (Kemp 2020) and where it is common for people to take selfies in problematic, dangerous contexts (e.g., vehicle collision incidents) (Kurniawan et al. 2017).

Although there are limited data on the role of social media in shaping wildlife tourism, there is ample evidence that media plays an important role in public perception of wildlife and of conservation. For instance, videos and images of individual animals can encourage people to want primates as pets or to want to touch animals perceived as “cute” (Chua 2018; Nekaris et al. 2013). Similarly, videos showing people in proximity to primates receive more views and responses online (Otsuka and Yamakoshi 2020), and images of primates in anthropogenic contexts can lead people to think the species represented are not endangered (Ross et al. 2008; Ross et al. 2011). There may, however, be benefits to documenting wildlife on social media. Articles or posts with images of animals may be more likely to be shared across social media platforms (Papworth et al. 2015), which could help spread information on a given species or facilitate dissemination of conservation information. Given that motorists who encounter macaques along roads in South Sulawesi report being motivated to share images of the monkeys on social media

platforms (Morrow 2018), it is possible that responsible photography at South Sulawesi primate tourism sites could help raise awareness of local wildlife and conservation issues. Protected areas in South Sulawesi could play an important role in demonstrating responsible wildlife tourism photography; social media platforms maintained by protected area staff (e.g., TNBABUL Instagram account) offer an existing foundation on which to promote these ideas. However, precautions should be taken to minimize the negative conservation and perception-related consequences of social media use and to encourage responsible photography of wildlife. This can be achieved in part by modeling and disseminating recent best practice guidelines for responsible images of nonhuman primates (Waters et al. 2021), which has been translated into several languages, including Bahasa Indonesia.

7.7.2 Impacts of COVID-19

The COVID-19 pandemic has disrupted many industries, including primate tourism (Lappan et al. 2020). Stay-at-home orders, travel restrictions, and the closures of protected areas and other tourist sites have meant fewer tourists, and hence, fewer human-macaque encounters. Accordingly, rates of provisioning (Lappan et al. 2020), the likelihood of human-directed aggression (e.g., Beisner et al. 2015; Hsu et al. 2009), and the risk of zoonotic exchange (Balasubramaniam et al. 2020) potentially resulting from these encounters have also been reduced. Although these changes can be considered more positive outcomes of the COVID-19 pandemic, it is likely that they will only be temporary, and that the intensity of human-primate interactions will once again increase as travel restrictions loosen and if concerns about the risk of zoonosis decrease. On the other hand, it is also possible that heightened awareness of the risk of zoonosis due to the COVID-19 pandemic has made communities more receptive to messaging about the risk provisioning and other encounters with primates pose for human-primate pathogen transmission (Lappan et al. 2020). Finally, the COVID-19 pandemic highlights the unpredictable nature of the tourism industry and thus also the instability of economic benefits it confers (Dinarto et al. 2020). Though macaques in South Sulawesi potentially stand to benefit from the consequences of reduced tourism, the same cannot be said of the local human communities who may rely on tourist revenue as a source of income.

7.8 Conclusion: Expanding Tourism in Sulawesi

Indonesia is increasingly looking to tourism for economic development opportunities that benefit communities while protecting local culture and ecology (Junaid 2014; Kodir et al. 2020; Prodjo 2017). Tourism-based economic development may also play an important role in reducing Indonesia's reliance on other foreign exchange industries, including the top three industries of coal, gas, and oil palm

(Kodir et al. 2020). In Sulawesi specifically, promoting tourism that engenders support for protecting forested habitats may provide incentives to stem growing deforestation driven by corn, coffee, cocoa, and oil palm agriculture (Supriatna et al. 2020). Such extraction-based industries cause significant environmental damage and often benefit governments and large corporations rather than local communities (Santika et al. 2019; Welker 2014). Tourism ventures can also provide people with additional income sources and livelihood strategies when implemented equitably and sustainably (e.g., individuals who sell souvenirs at the entrance of the Bantimurung waterfall site, Rahbiah et al. 2016). Given that tourism in Sulawesi is underdeveloped compared to other areas of Indonesia (Badan Pusat Statistik 2020; Junaid 2014), there remain numerous opportunities to sustainably showcase Indonesia's biological and cultural diversity. Moreover, Sulawesi's unique ecology offers valuable nature-based tourism opportunities that differ from those found in other areas of Indonesia, including encountering endemic macaque and tarsier species in forested environments.

In this chapter, we explored the potential for primate tourism in South Sulawesi and the considerations that would be needed in developing and managing tourism initiatives focused on the islands' macaque and tarsier species. The lack of established primate tourism in this region--and in Sulawesi more generally--can likely be attributed to the historical emphasis on cultural tourism on the island (e.g., Adams 1997) and to the greater popularity of other islands (e.g., Bali) among foreign tourists (Badan Pusat Statistik 2020). However, a significant extent of land in South Sulawesi is designated as nature tourism parks (Forclime 2017), and there are a number of tourist sites throughout the province with existing incidental primate tourism where people encounter primates but there is no formal management of these encounters.

Potential tourism and conservation management programs may want to consider selecting the Sulawesi primates as flagship, umbrella, or focal species, which could help to promote the protection of the surrounding ecosystem without targeting specific species (McGowan et al. 2020; Roberge and Angelstam 2004; Wilcove 1993). South Sulawesi, in particular, is notable for its limestone karst habitats and caves (Junaid 2014; Rahbiah et al. 2016; Waluyo et al. 2005); outside of protected areas these habitats are often threatened by cement mining industries (Clements et al. 2006). Further tourism development in karst habitats may diminish this conservation threat while providing alternative income sources for local communities. The demonstrated popularity of nature-focused tourism in the Maros karst area (Junaid 2014; Rahbiah et al. 2016) suggests that such an approach may be a viable long-term conservation strategy. Similarly, there are numerous dramatic waterfall sites throughout South Sulawesi that could serve as destinations for domestic and foreign tourists alike. The popularity of better-known waterfall sites, such as the Bantimurung waterfall recreation area (Junaid 2014; Rahbiah et al. 2016), indicates that such destinations may be popular among tourists given appropriate management and facilities development. South Sulawesi's karst and waterfall sites often overlap with primate habitat. The development of nature tourism more generally in South Sulawesi could thus create additional opportunities for primate tourism in the

region, which would highlight the endemic macaque and tarsier species found on the island. Likewise, expansion of tourism industries throughout Sulawesi creates opportunities for cultural tourism to showcase the island's diverse ethnic groups and cultural practices.

Expanding tourism in South Sulawesi may serve to reduce the pressure on other popular tourist destinations in Indonesia, including Bali, Jakarta, Batam, West Java, and Medan (Junaid 2014) while promoting a more equitable distribution of the economic benefits of Indonesia's tourism industry. However, tourism facilities and associated logistical resources (e.g., hotels and homestays, established tourism transportation) are currently lacking even at existing tourist sites in South Sulawesi and would need to be developed before tourism—particularly international tourism—could feasibly expand (Kadir et al. 2013; Putri 2020). Given that conflict between managers and local communities already exists at some established tourism sites in South Sulawesi (e.g., Bantimurung, Wakka et al. 2015), careful collaboration among national parks, forestry officials, communities, and researchers would be necessary to ensure transparency, sustainability, and equitable benefits sharing. Issues of sustainability are particularly relevant to potential primate tourism in the region as many of Sulawesi's macaque and tarsier species are endemic and threatened with extinction (Groves and Shekelle 2010; Merker et al. 2010; Shekelle et al. 2017; Riley 2010). Existing opportunistic primate encounters in the region already face sustainability challenges, primarily due to the issue of unmanaged provisioning of moor macaques encountered along roads in the Karaenta area of Bantimurung-Bulusaurang National Park (Morrow et al. 2019).

We suggest that with cautious, intentional development, both the people and the nonhuman primates of South Sulawesi could benefit from primate tourism. Capitalizing on the opportunities to encounter macaques and tarsiers in forested environments would offer alternatives to popular urban-based primate tourism in Bali (e.g., Fuentes et al. 2007) and could support branding Sulawesi as a tourism destination focused on distanced viewing of primates in forested habitats. Focusing specifically on tourism approaches that support primate well-being—such as avoiding provisioning primates and not habituating primates that already forage in agricultural areas—can further encourage ethical wildlife and nature-based tourism practices throughout Indonesia. Close collaboration with communities will be necessary to ensure that local livelihoods are not negatively impacted and that local people have sufficient opportunities to benefit economically from tourism, even if it occurs within the bounds of government-run protected areas. To ensure effective and culturally relevant design, implementation, and marketing of primate tourism, it will also be important to collaborate with local stakeholders or researchers who understand the perspectives and goals of Indonesian tourists, who often engage with nature differently than tourists from the global North (Cochrane 2006; Tsing 2005).

Along with these recommendations, more research is necessary to fully understand the balance of benefits and risks posed by developing primate tourism in South Sulawesi. Herein, we review a number of important facets that should be considered, including assessing the biological, ecological, and behavioral effects of

tourism on primates, the ethics of habituating primates, the potential to exacerbate crop feeding by macaques, the implications for local livelihoods, and equitable management of tourism practices. Collaboration among managers, researchers, and community members will be important to develop sustainable primate tourism in this region. Emerging efforts to implement these programs should focus on meeting the desires of domestic tourists—the main visitors to Sulawesi—while promoting practices that prioritize primate wellbeing.

While the analysis we present here focuses specifically on the current state of human-nonhuman primate coexistence in South Sulawesi, Indonesia, incidental primate tourism is common throughout primate ranges (e.g., Belize; Grossberg et al. 2003 and India; Sengupta and Radhakrishna 2020). The considerations we raise in this chapter are, therefore, applicable to other regions where formal primate tourism remains underdeveloped. In particular, we suggest that researchers and practitioners working to develop primate tourism in other regions carefully consider existing dimensions of human-nonhuman primate conflict, tourism audiences, and local engagement from diverse stakeholders. Primate tourism has the potential to support the conservation of threatened primate species while also advancing economic development in primate habitat countries; however, to be effective and sustainable, the wellbeing of nonhuman primates and local communities must be prioritized across all stages, from design to implementation.

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