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ONLINE TRADE OF LIVE CROCODILIANS IN THE PHILIPPINES

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ABSTRACT – The ongoing utilization of online platforms to trade wildlife in the Philippines appears to be increasing in the last two decades. An online survey on 20 Facebook groups specializing in the trade of live reptiles was conducted from July 2016 to December 2018 to elucidate the dynamics of live crocodilian trade in the Philippines. A total of 71 unique posts representing three crocodilian species and a minimum of 164 individuals were posted by 50 traders in Facebook groups during the study period. The Spectacled Caiman *Caiman crocodilus* was the most traded species with 126 individuals or 77% of the total quantity. The Saltwater Crocodile *Crocodylus porosus* and the critically endangered Philippine Crocodile *Crocodylus mindorensis* were also documented. While all *C. crocodilus* individuals offered for sale were most likely imported legally or captive-bred in the Philippines, some *C. porosus* and *C. mindorensis* offered for sale may be sourced illegally from the wild.

Keywords: CITES, Crocodylus, illegal wildlife trade, Tomistoma

INTRODUCTION

The international wildlife trade is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES is a multilateral treaty to ensure the survival of the species in the wild is not threatened by the international trade. The international trade of more than 30,000 species worldwide are currently regulated by CITES, governed by the listing of species in one of the three Appendices (CITES, 2022). All species of crocodilians are listed in either CITES Appendix I or II, which require permits to export or import legally.

The Philippines became a party to the CITES in 1981 with the Department of Environment and Natural Resources-Biodiversity Management Bureau (DENR-BMB) as the country's CITES Management Authority for terrestrial species. The Wildlife Resources Conservation and Protection Act of 2001/Republic Act No. 9147 is the CITES-implementing legislation of the country. The law requires all threatened and non-native species in the possession of private or public entities to be registered with the DENR. The initial registration period was implemented from August 2004 to February 2005, which also became the amnesty period; wildlife of unknown or dubious sources were legalized through this process (Sy, 2018). Under the Republic Act No. 9147, hunting, possessing, transporting or trading is prohibited without a permit. Live crocodilians and derivatives can only be traded legally by individuals or enterprises with wildlife farm permits.

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Smuggling of reptiles to the Philippines has been documented on several occasions and more frequently in recent years (Ching, 2018; CNN Philippines, 2019; Mercene, 2018; Santos, 2018; Sy, 2021; Tristiawati, 2015; Zurbano, 2018). This includes two non-native crocodilian species, *Crocodylus novaeguineae* and *Tomistoma schlegelii*, previously documented in the trade with no legal importation records and were most likely brought into the country illegally (Sy, 2015). A smuggling attempt involving three live Siamese Crocodiles *C. siamensis* from Cambodia was foiled by the Philippine Bureau of Customs at the Ninoy Aquino International Airport in 2006 (Ronda, 2006). Smuggling by concealing live crocodilians in hand carry luggage or in legal live ornamental fish shipments (Sy, 2018) is a possible source of specimens in the black market.

The utilization of online platforms to trade wildlife in the Philippines has burgeoned in the last two decades. Facebook is the most popular social networking website worldwide with nearly three billion active monthly users (Statista, 2022a). Facebook users in the Philippines were estimated at 67.42 million in 2018 and projected to increase to 71.84 million in 2023 (Statista, 2022b). One of the features on Facebook allows users to create pages and groups at no cost and to interact with like-minded individuals. This unfortunately resulted in the creation of thousands of pages and groups wherein members participated in both legal and illegal wildlife trade. Over the years, Facebook was exploited and became as one of the main online wildlife trade platforms in many countries including the Philippines (Canlas et al., 2017; Krishnasamy and Stoner, 2016; Phassaraudomsak and Krishnasamy, 2018; Sy, 2018). Facebook has a long-standing commerce policy of not allowing the promotion of live animal trade, but registered users who engage in wildlife trade largely ignore the policy (Figure 1). A newer policy issued in April 2019 disallowed "content that attempts to sell live animals between private individuals" and "content that coordinates or supports the poaching or selling of endangered species and their parts (https://www.facebook.com/communitystandards/recentupdates/all_updates).

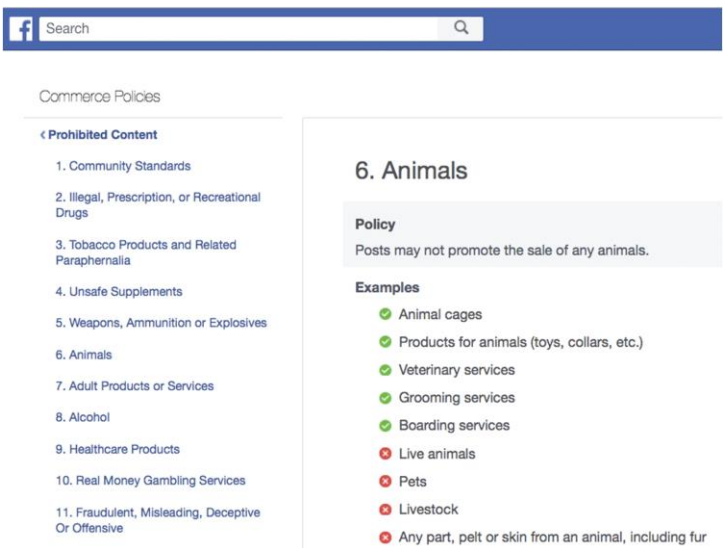

Figure 1. Facebook has a long-standing commerce policy of not allowing the promotion of live animal trade on its platform.

Facebook has been working with TRAFFIC, World Wildlife Fund (WWF), and International Fund for Animal Welfare (IFAW) as part of the Coalition to End Wildlife Trafficking Online by removing posts and groups on the platform that contravene this policy, but users continually find ways to pursue their wildlife trade activities.

This paper presents evidence of the online trade of live crocodilians in the Philippines, discusses possible sources of advertised specimens, and the potential conservation and legal implications of this trade.

METHODS

TRAFFIC researchers conducted an online survey from July 2016 to December 2018 by monitoring the activities of 20 Facebook groups specializing in the trade of live reptiles in the Philippines. All posts offering to sell live crocodilians were manually collated and information such as URL, species, quantity, and price were documented. Duplicate posts made by the same trader in several groups were removed from the analysis to avoid inflating the total available crocodilians in the trade. We calculated the total potential value based on advertised prices by traders. Posts that did not specify prices were assigned the lowest known price for the species within the study period. Valuation in this report was based on a conversion rate of United States Dollar (USD) 1 = Philippine Peso (PHP) 52.

We analyzed import records of live crocodilians to the Philippines from CITES Trade Database records from 1981 to 2018. We also reviewed unpublished seizure records of the DENR-BMB and Palawan Council for Sustainable Development Staff (PCSDS) from 2010 to 2018 to determine possible source location of suspected wild-caught crocodiles in the trade.

RESULTS

Online Crocodilian Trade

A total of 71 unique advertisements representing three crocodilian species and a minimum of 164 individuals were posted by 50 traders in the 20 Facebook groups during the study period.

The non-native Spectacled Caiman *Caiman crocodilus* was the most traded species with 126 individuals or 77% of the total quantity. The native Saltwater Crocodile *Crocodylus porosus* and the Critically Endangered and endemic Philippine Crocodile *Crocodylus mindorensis* were also documented with 31 and 7 individuals, respectively (Fig. 2a-c). A total of 52 out of 71 posts indicated the asking price. The estimated total minimum value of the 164 crocodilians offered for sale was PHP1,746,000 (USD33,577) based on advertised prices or minimum price for the species.

The online trade volume of crocodilians peaked during the third quarter of each year (July-September) mainly due to the availability of captive bred Spectacled Caiman hatchlings (Fig. 3; see Discussion). The only exception was the unusual increased availability of *C. porosus* in September 2018 (n=14) and October 2018 (n=9).

Figure 2a. A juvenile Spectacled Caiman *Caiman crocodilus* offered for sale.

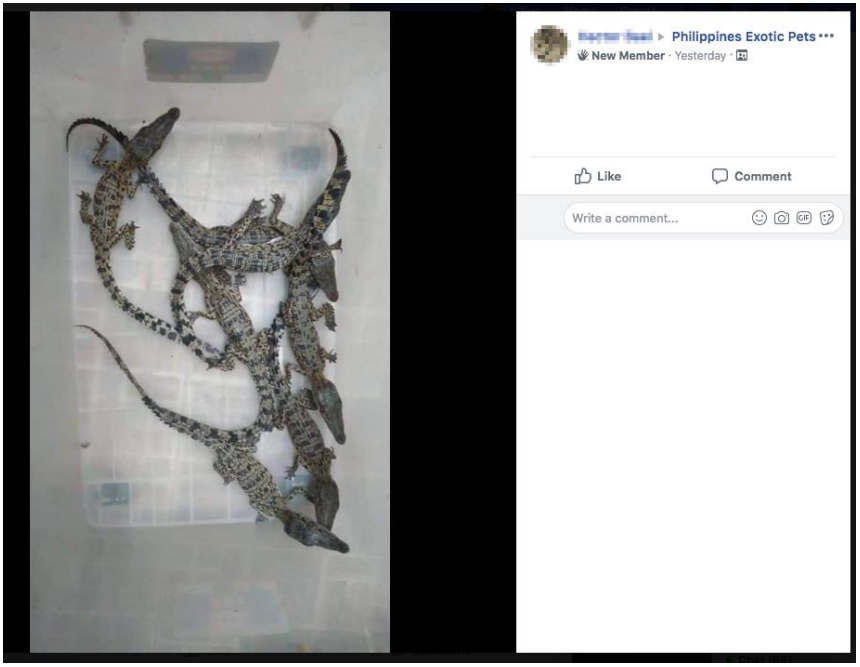

Figure 2b. Saltwater Crocodiles *Crocodylus porosus* offered for sale in a now deactivated Facebook group.

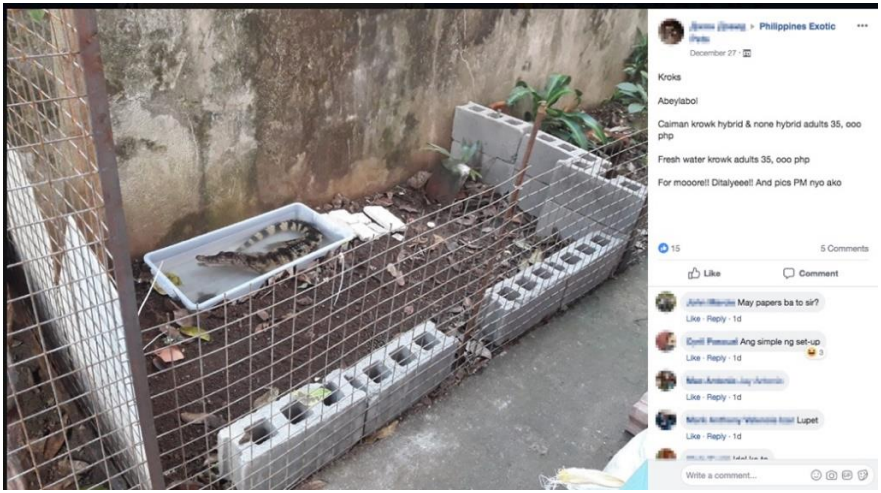

Figure 2c. A Philippine Crocodile *Crocodylus mindorensis* kept in a makeshift enclosure.

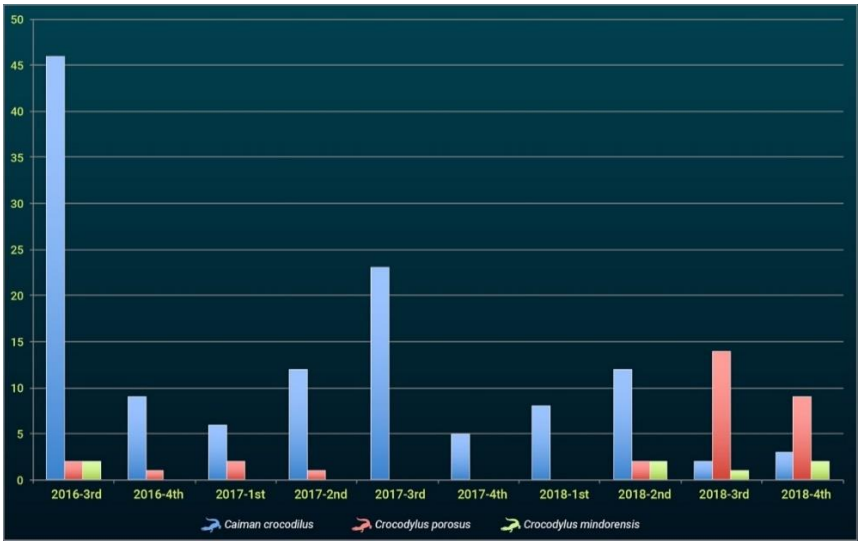

Figure 3. Quarterly online trade volume of crocodilians from July 2016 to December 2018.

CITES Trade Database

A review of the CITES Trade Database based on exporter-reported quantity from 1981 to 2018 showed importation of 524 live crocodilians representing four taxa to the Philippines between 1993 and 2015 (Table 1). No live crocodilian importations were reported in 2016-2018. The *Caiman crocodilus* was the only non-native species observed in the online trade with previous legal import records.

Table 1. Importation of live crocodilians to the Philippines based on CITES Trade Database records between 1993 and 2018.

Year	Taxon	Exporter	Importer-reported quantity	Exporter-reported quantity	Purpose
1993	*Crocodylus mindorensis*	US		5	-
1998	*Caiman crocodilus*	ID		2	Commercial Trade
1999	*Crocodylus siamensis*	TH		100	Zoo
1999	*Caiman crocodilus crocodilus*	GY		20	Commercial Trade
1999	*Paleosuchus palpebrosus*	GY		4	Commercial Trade
2001	*Caiman crocodilus crocodilus*	GY		350	Commercial Trade
2001	*Caiman crocodilus crocodilus*	US		4	Commercial Trade
2001	*Paleosuchus palpebrosus*	US		2	Commercial Trade
2005	*Crocodylus siamensis*	TH		30	Commercial Trade
2013	*Alligator mississippiensis*	XV	11		Commercial Trade
2013	*Alligator mississippiensis*	XV	126		Commercial Trade
2014	*Crocodylus mindorensis*	AU		7	Zoo
2014	*Caiman crocodilus crocodilus*	GY	50		Captive Breeding
2015	*Caiman crocodilus crocodilus*	GY	250		Captive Breeding
2015	*Paleosuchus palpebrosus*	US	10		Captive Breeding
	TOTAL		**447**	**524**	

Notes: *Alligator mississippiensis* (n=3) imported in 2000 for exhibition was excluded from the list; country code: AU (Australia), GY (Guyana), ID (Indonesia), TH (Thailand), US (United States of America), XV (various countries).

Government confiscation records

The review of DENR-BMB and PCSDS seizure records from 2010 to 2018 showed 10 seizure incidents involving crocodilians between 2010 and 2018 (Table 2). Confiscations were conducted in the National Capital Region (NCR) (n=6), Palawan Province (n=3), and Batangas Province (n=1). *Crocodylus porosus* figured in five cases with a total of 23 (52%) out of the total 44 seized crocodilians during this period. All animals were intended for sale and were seized by wildlife authorities based on traders' failure to show proof of legal acquisition or permit.

Table 2. Seizure incidents involving crocodilians based on DENR-BMB and PCSDS records between 2010 and 2018.

Year	Species	Quantity	Location
2010	*Crocodylus mindorensis*	3	Pasay City, NCR
2010	*Caiman crocodilus*	2	Pasay City, NCR
2011	*Crocodylus mindorensis*	1	Batangas City, Batangas
2012	*Crocodylus porosus*	13	Taytay Municipality, Palawan
2013	*Crocodylus porosus*	5	Manila City, NCR
2013	*Crocodylus porosus*	3	Pasay City, NCR
2014	*Caiman crocodilus*	13	Quezon City, NCR
2015	*Crocodylus porosus*	1	Bataraza Municipality, Palawan
2017	*Caiman crocodilus*	2	Las Piñas City, NCR
2018	*Crocodylus porosus*	1	Balabac Municipality, Palawan
	TOTAL	**44**	

DISCUSSION

Online trade trends and seasonality

Most crocodilians offered for sale were newly-hatched or few-week-old individuals, but a few traders that have outgrown their capacity or interest in keeping crocodilians offered juvenile individuals.

The online crocodilian trade recorded a peak seasonality on the third quarter of each year (July–September) mainly due to the availability of *C. crocodilus* hatchlings. The high availability of *C. crocodilus* hatchlings documented in this online trade study coincides with the hatching season of the species in its natural range, which also the onset or within the wet season in the Philippines. *Caiman crocodilus* has a widespread geographical distribution, ranging from south of Mexico, to Peru, Brazil, and Venezuela (Velasco and Ayarzagüena, 2010). In central and south America, this species is known to breed and nest prior to the start of wet season when nesting materials are abundant and the flooding of rivers and marshes has yet to start (Allstead, 1994; Da Silveira et al., 1997; Thorbjarnarson, 1994). The incubation period of eggs is approximately 70–75 days after nesting and hatching commences after the wet season and before the dry season starts (Staton and Dixon, 1977). Captive *C. crocodilus* in the Philippines usually produce one clutch of eggs a year, similar to their wild conspecifics (Allstead, 1994; B. Eleazar III, pers. comm. to EYS).

There were no available *C. porosus* and *C. mindorensis* hatchlings from the third quarter of 2017 to the first quarter of 2018. However, new posts on Facebook offering to sell both indigenous species were recorded again between April and December 2018. *Crocodylus porosus* breeds during the wet season from October to April and the hatching season is between February and June (Isberg et al., 2005; Richardson et al., 2002). This seasonality in the reproduction of this species is observed in both natural and farmed conditions (Isberg et al., 2005) and thus may have affected the availability of this species in the market during non-breeding periods. *Crocodylus mindorensis* have been observed to lay eggs in captivity from February to October and in the wild from April to June (van Weerd et al., 2006). The incubation time for this species is 77–89 days (Alcala et al., 1987; Sibal et al., 1992).

Legality and source of animals in the trade

Very few posts included information on the legality or source of the crocodilians offered for sale. Based on CITES Trade Data and seizure information, we conclude that the animals would have come from one of the following sources, and therefore vary in their legality.

Local captive breeding

The *Caiman crocodilus* is the most common pet crocodilian bred in captivity in the Philippines due to its relatively small size. We estimated that captive breeding produces 100-150 *C. crocodilus* in the Philippines annually. The majority of *C. crocodilus* individuals observed in the online trade were most likely captive bred although very few traders mentioned the legality of animals they offered for sale. Captive bred wildlife are not automatically legal to possess or trade in the Philippines. Hobbyists are required to acquire wildlife from legal sources (i.e. legal importation, purchase from DENR-registered wildlife farm) and register wildlife in their possession with the DENR to be compliant with the R.A. no. 9147.

Legalized specimens

A few *Crocodylus porosus* and the Critically Endangered *Crocodylus mindorensis* offered for sale may have permits (i.e. certificate of wildlife registration, wildlife farm permit) since several enthusiasts were able to legalize animals in their possession through registration with the DENR during the amnesty period between 2004 and 2005. Enthusiasts often resell animals when they are no longer able to take care or lose interest to keep certain species. However, only wildlife farm permit holders can sell threatened wildlife legally.

Legal importation

Caiman crocodilus has been listed in the CITES Appendix II since 1977. Legal importations of *C. crocodilus*, mainly from Guyana, occurred between 1993 and 2015. The 376 *C. crocodilus* individuals (exporter reported) represented 72% of the total non-native crocodilians imported to the country during the period. The Philippines reported importation of additional 300 *C. crocodilus* from Guyana between 2014 and 2015. However, this may represent permits issued rather than actual importation. The Philippines allows the importation of wildlife for captive propagation purposes (i.e. direct selling of imported wildlife is not allowed). However, it is a common practice of importers to directly sell newly-imported wildlife to buyers, which is a violation of the import permit restrictions. Imported individuals may have been documented in this study.

Poaching

The Critically Endangered and endemic *Crocodylus mindorensis* is the most threatened crocodilian in the world with fewer than 100 adult individuals in the wild (Manalo and Alcala, 2015; van de Ven et al., 2009). All *C. mindorensis* observed in the trade did not have notching on tail scutes. This may indicate that they were collected illegally in the wild, since commercial breeding farms and conservation centers notch tail scutes of captive bred or captive hatched Philippine crocodiles (M. Balbas, pers. comm. to EYS).

Crocodylus porosus is also known to be poached for trade. A total of 14 wild-caught *C. porosus* were seized from poachers in Palawan Province between 2012 and 2015 (Table 2). In 2013, the facility of a wildlife trafficker in Manila City was raided and authorities seized 14 Philippine Forest Turtles (*Siebenrockiella leytensis*), 12 Blue-naped Parrots (*Tanygnathus lucionensis*), 78 Palawan Hill Mynas (*Gracula religiosa palawanensis*), and 5 Saltwater Crocodiles (*C. porosus*) (Philippine Daily Inquirer, 2013), indicating poached animals were obtained from Palawan.

Palawan Province is the main wildlife poaching hotspot in the country. Thousands of Palawan Hill Myna, Blue-naped Parrot, Philippine Forest Turtle, and other Palawan-endemic species have been poached and trafficked in the last few years (Sy, 2021). Although the *C. porosus* has a wide geographic range, the wild population in the Philippines is severely depleted (Webb et al., 2010). The Palawan Province is one of the few localities with viable *C. porosus* populations in the Philippines, but is threatened with habitat loss, human persecution, and illegal wildlife trade (Manalo et al., 2016). These ongoing threats prompted the Philippine Red List Committee to categorize *C. porosus* population in the Philippines as Critically Endangered (Gonzalez et al., 2018).

Zoological Parks and commercial crocodile farms

Many zoological parks in the Philippines market themselves as conservation centers, but several private zoos are known to be heavily involved in the commercial wildlife trade. A few facilities continue to illegally buy wild caught animals from poachers to replace dead animals in their collections or to declare fraudulently wild caught animals as captive bred and sell to unsuspecting domestic and international buyers (Bennett, 2014; Sy et al., 2020). For instance, a private zoo offered to sell juveniles of the critically endangered *C. mindorensis* and other wildlife through a convicted illegal wildlife trader on Facebook in 2018 (TRAFFIC, unpubl. data).

DENR-registered commercial farms legally breed and rear *C. porosus* mainly to sell skin and meat (Mercado, 2008). However, farms are also a potential regular source of live crocodiles in the pet market as exemplified by the arrest of an illegal wildlife trader offering live crocodiles and eggs in Davao City, Davao del Sur Province (Magoncia, 2019; Revita, 2019), where it was uncertain if the live crocodiles and eggs were stolen from a farm or were authorized to be sold by a farm owner.

Most private crocodilian enthusiasts have inadequate facilities and experience in keeping crocodilians, which are often housed in enclosures that are too small, with little or no water, and without enrichment (Fig. 4). This malpractice often leads to unnecessary suffering and premature death of animals.

Figure 4. A juvenile *Crocodylus mindorensis* housed outdoors in a glass aquarium without water in Cagayan Province (Photo: Emerson Y. Sy).

CONCLUSION AND RECOMMENDATIONS

The trade in wildlife should at the very least be conducted in accordance with national and international laws and regulations. Some of the animals offered for sale may have been sourced illegally or were not accompanied with permits which violated these laws. More importantly it should not be a threat to the survival of the species in the wild or cause undue suffering and death of animals in captivity. Poaching of *C. porosus* and *C. mindorensis* to supply the demand for live animals could further endanger already at-risk local populations.

We recommend the following based on the findings of this study:

1. Wildlife authorities need to increase public awareness campaigns on illegal wildlife trade.
2. Wildlife law enforcement efforts should be timely and sustained to have an impact.
3. Animal welfare issues and public safety need to be considered when deciding to allow or disallow private enthusiasts to keep wildlife such as crocodilians.
4. The public is urged to play an active role by reporting suspected illegal wildlife trading activities to the DENR or PCSDS.
5. Closer collaboration between Facebook and the government to shut down groups and individual accounts involved in the illegal wildlife trade and to support local authorities in carrying out enforcement actions against illegal online traders.

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STATEMENT OF AUTHORSHIP

E.Y. Sy conceptualized the study, conducted online surveys, collated seizure records and news articles, analyzed CITES trade data, and drafted the manuscript. A.N. Lorenzo II conducted online surveys, analyzed the survey data, and drafted the manuscript.

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