

Welfare concerns: an analysis of orangutan management at Bukit Merah Orang Utan Island

January 2020

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Friends of the Orangutans Berhad
(Company No. 1010604-M)
(Company Limited by Guarantee)
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*Front cover photograph: A visitor near an orangutan at Bukit Merah Orang Utan Island
Credit: Friends of the Orangutans*

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EXECUTIVE SUMMARY

This report analyses major aspects of the management of orangutans at the Bukit Merah Orang Utan Island (OUI), a captive orangutan facility in Malaysia managed by the Bukit Merah Orang Utan Island Foundation (BMOUIF). We have analysed the following issues:

- orangutan births and orangutan mortality at the facility,
- orangutans unaccounted for,
- interbirth intervals and infant separation,
- orangutan rehabilitation,
- disease management,
- husbandry and welfare concerns, and
- three scientific research articles authored by the BMOUIF's Chief Executive Officer and veterinary surgeon, Dr Sabapathy Dharmalingam.

The sources of the information in this report include the 2018 *International Studbook of the Orangutan*, published in 2019; a 2018 research article entitled 'Behavioral studies and veterinary management of orangutans at Bukit Merah Orang Utan Island, Perak, Malaysia'; the book entitled *The Orangutans of Bukit Merah*, published by the BMOUIF; and personal communications with the BMOUIF and orangutan conservationists.

We have studied reports in online and print publications. We cite research articles and direct quotations from news reports. In addition, two orangutan veterinarians have reviewed the three scientific research articles mentioned above.

Using available data, we estimate that 27 orangutans were born at the OUI between 2003 and 2016.

We are concerned about the mortality rate of orangutans at the OUI. The available data indicates that, between 2004 and 2018, 24 orangutans died at the facility. More than half of these orangutans died young; fourteen were under the age of ten. There were 13 recorded deaths between 2012 and 2016.

According to a 2016 TRAFFIC report entitled 'Apes in demand', two orangutans were sent from the OUI to Saleng Zoo in Johor. It is unclear whether these two orangutans were born at the facility, and we do not know where they are now.

Our understanding, based on the available data, is that there have been no orangutan births at the OUI since 2016.

Our investigations have raised concerns about the breeding of orangutans at the OUI. In *The Orangutans of Bukit Merah* it is stated that the rehabilitation programme at the OUI involves preparing healthy orangutans for "eventual release to their native natural habitat". It is therefore incomprehensible that the BMOUIF allowed its orangutans to breed. Allowing female orangutans to procreate in captivity is generally counterproductive to efforts to rehabilitate them for release into the wild. We recommend that orangutan breeding be stopped at the OUI.

Available data reveals that four orangutans at the OUI had interbirth intervals (the period between two successive births) of less than three years. (See Table 4.) When the data for these four orangutans is combined, we see a joint total of 21 births between 2003 and 2015. Orangutan conservationist Leif Cocks has recommended that, to ensure the health and wellbeing of captive orangutans, they should have an interbirth interval of more than four years. In 2015 the BMOUIF agreed to not use females for breeding within five years of them giving birth, even if their infant died during those five years.

Past reports about the OUI have indicated that infants at the facility who were born prematurely and were denied nursing were separated from their mothers, to be cared for by humans. In *The Orangutans of Bukit Merah* it is stated that infants born with medical complications such as premature birth, umbilical cord infection, chronic diarrhoea, and upper respiratory tract infection were put through the BMOUIF's seven-stage rehabilitation programme. It is unclear whether all infants born with these medical complications were permanently separated from their mothers. It is indicated in *The Orangutans of Bukit Merah* that attempts were made to reintroduce mothers to infants who had recovered.

Authors of the 2018 research article mentioned in our executive summary note that, from 2010, mother orangutans at the OUI were encouraged to care for their infants for as long as possible, with only those infants who had “lost” their mothers being hand reared. It is unclear whether this means that orangutans born before 2010 were separated from their mothers. The authors stated that, prior to 2010, the orangutan infants were first cared for by humans before they joined other orangutans at the OUI.

We have provided suggestions such as surrogate rearing by another female orangutan and avoiding hand rearing of infants.

We note that 14 orangutans, including 11 from Sarawak, were sent to the OUI between 1999 and 2002. According to the experts we have consulted, it would have been more appropriate to rehabilitate the 11 orangutans from Sarawak within their natural geographic range.

Four of the orangutans from Sarawak – namely Baboon, Jerangkong, Nafsiah and Penggal – produced a combined total of 16 offspring. According to records available to us, this constitutes more than half of the total orangutan births at the OUI.

We have found no documented evidence that any of the orangutans at the OUI were released or reintroduced into their natural habitat (in Sabah or Sarawak) since the BMOUIF's rehabilitation programme commenced in 2005. Our findings lead us to conclude that the orangutans who are currently at the OUI, including those from Sarawak, are destined for a life in captivity.

Unnecessary exposure to, and interaction with, humans hampers rehabilitation efforts and there is also serious concern about the risk of transmission of disease between humans and orangutans. We have obtained photographs that show visitors to the OUI, including children, being in direct contact with, or in close proximity to, orangutans.

The BMOUIF did not confirm with FOTO in an inquiry made in April 2020 if volunteers were required to conduct health tests and vaccinations before their placement at the OUI. A British company, Travellers Worldwide, which is now defunct, used to offer volunteering opportunities, including at the OUI. The company stated – in two emails seen by Friends of the Orangutans (FOTO) – that volunteers were not required to undergo health tests or be vaccinated as they would not be coming into direct contact with orangutans at the OUI. However, we can see from photographs, and statements by former OUI volunteers, that there has been direct contact between volunteers and orangutans at the facility.

We have included, in Appendix I, a report sent to FOTO by a former volunteer that includes allegations about various aspects of operations at the OUI, including orangutan welfare.

Several former volunteers reported that, during their placement at the OUI, they saw some orangutans caged the whole time. One former volunteer went public with her concerns and the TVNZ television network in New Zealand covered the story.

We challenge numerous points made in the three scientific research articles we cite and we have highlighted contradictory statements. References are lacking and there are concerns about possible plagiarism in all three articles. There are also numerous grammatical errors. This suggests that the articles were not peer reviewed prior to publication and raises questions about the legitimacy of the publishers of these articles.

Given our findings, we seriously question whether the OUI substantially contributes to the survival and protection of wild orangutans and their habitats. This report also highlights our concerns about the Department of Wildlife and National Parks Peninsular Malaysia (PERHILITAN) and the Malaysian Association of Zoological Parks and Aquaria (MAZPA). Do PERHILITAN and MAZPA require captive wildlife facilities to implement best practices in management and husbandry based on available expert recommendations that go beyond the Wildlife Conservation Act 2010 (Act 716), and do they monitor claims made by such facilities about wildlife conservation?

We have made several recommendations on page 25. It is imperative that they are implemented at the OUI.

INTRODUCTION

The OUI is located within the Bukit Merah Laketown Resort, a holiday and leisure resort located about 287 kilometres north of the Malaysian capital, Kuala Lumpur. The BMOUIF's Chief Executive Officer, Dr Sabapathy Dharmalingam, is also the veterinary surgeon at the facility. The OUI operates as a Permanent Exhibition under the 2013 amendment to the Wildlife Conservation Act 2010 (Act 716). Its licence to operate is provided by PERHILITAN. On its website, MAZPA lists the Bukit Merah Laketown Resort as a member (List of Members, n.d.).

According to Dharmalingam et al. (2012), a central BMOUIF objective is to support and assist the government in carrying out “orangutan research, education, development, conservation, breeding, and rehabilitation”.

The OUI received its first group of orangutans in 1999 and opened its doors to the public in 2000 (Dharmalingam et al., 2012). Elder (2019) stated that there were 16 orangutans at the OUI, all of whom were Bornean.

FOTO has discovered that conservationists and former volunteers have expressed numerous concerns about the welfare of orangutans at the OUI and the BMOUIF's rehabilitation of orangutans.

The facility has undergone scrutiny as far back as 2009 (Agence France-Presse, 2009). Concerns about the facility were raised in a 1 News programme in New Zealand in 2018 and were voiced in an article that accompanied the broadcast (Bray, 2018).

Orangutans are one of Malaysia's national treasures and it is vital that they are protected. For this reason, and because of the health risks that exist for both orangutans and humans if orangutans are not handled and cared for properly, we consider that the concerns that we raise in this report are a matter of urgent public interest.

BIRTHS

In January 2018, a research article about behavioural studies and veterinary management at the OUI was published by Hayashi et al. Its co-authors include the BMOUIF's Chief Executive Officer and veterinary surgeon, Dr Sabapathy Dharmalingam, and two members of staff of the foundation. The article was submitted for publication in July 2016.

According to Table 1 on page 2 of that article, 21 orangutans were born at the OUI, including BJ Island¹, between 2003 and 2015. However, FOTO has learned that, in addition to the 21 cited by Hayashi et al., five other orangutans were born at the OUI during this period – all of them have died. Hayashi et al. do not mention the names of these orangutans.

Table 1: Orangutans not included in the article by Hayashi et al. (2018)

Name of orangutan	Birth	Death
Elizabeth	2007 ^a	2007 ^b
Jericho	2006 ^a	2007 ^b
June	2008 ^a	2008 ^b
Nikita	2006 ^a	2008 ^b
Ramlee	2003 ^a	2005 ^b

^a BMOUIF, pers comm., 2020. ^bBMOUIF, pers. comm., 2018.

Based on the information we have received about the five orangutans listed in our Table 1, all of whom lived for less than three years, and data from Hayashi et al. (2018), it would appear that 26 orangutans were born at the OUI between 2003 and 2015. It is unclear why Hayashi et al. report only 21 births.

We have reason to believe that a 27th orangutan was born at the OUI in July 2016: an infant who died several weeks after birth. Basing our conclusion on data from the 2018 *International Studbook of the Orangutan* (Elder, 2019) and online news reports (Yeoh, 2014; Ying, 2015), we believe that the infant's mother was an orangutan named Marina, who was sent to the OUI from Kemaman Zoo for breeding, and died several days after her infant's demise.

¹A 5.6-hectare island, adjacent to the OUI, which acts as the 'Training for Wild Release' site during the sixth stage of the BMOUIF's orangutan rehabilitation process (Dharmalingam et al., 2012).

Dharmalingam et al. (2012, p. 16) stated that the rehabilitation programme at the OUI involves “treating sick and injured orangutans, and preparing the healthy ones for their eventual release to their native natural habitat”. In January 2020, speaking at an event at the Seoul Grand Park Zoo in South Korea, Dr Dharmalingam said that the BMOUIF has a programme to rehabilitate orangutans and “send them back to nature in Sabah and Sarawak” (BMOUIF, 2020). The event was also attended by the PERHILITAN Director-General, Abdul Kadir bin Abu Hashim.

Orangutan rehabilitation centres such as those run by International Animal Rescue (IAR) and the Sumatran Orangutan Conservation Programme (SOCP), which started operating in 2010 and 2002 respectively, do their best to prevent their orangutans from breeding (K. L. Sánchez, pers. comm., 2020; I. Singleton, pers. comm., 2020). This is important as allowing female orangutans to procreate in captivity is generally counterproductive to efforts to rehabilitate them for release into the wild (K. L. Sánchez, pers. comm., 2020; I. Singleton, pers. comm., 2020).

The Guidelines for Zoo Standards in Malaysia (Garis Panduan Standard Zoo Malaysia, n.d.), which PERHILITAN requires all zoos in peninsular Malaysia to follow, state that zoos need to have captive breeding programmes and programmes for reintroducing animals into the wild. The guidelines also encourage research to be carried out in zoos.

We have not found any documented evidence to prove that research about orangutans in Malaysian zoos, including at the OUI, significantly contributes to the protection of wild orangutans and their habitats.

It is also worth noting that the International Union for Conservation of Nature (IUCN) does not include any orangutan species in its list of wildlife species for which captive breeding has been recommended as a conservation action (CBSG, 2017).

We contend that the primary aim of orangutan conservation should be the protection of wild orangutans and their habitats. The captive breeding of orangutans should be avoided as there is little likelihood of captive-bred orangutans ever being released into their natural habitat.

Our understanding, based on the available data, is that there have been no orangutan births at the OUI since 2016. It is unclear whether the BMOUIF has stopped orangutan breeding at the OUI. If this is not the case, we urge the foundation to cease the practice immediately.

According to data in the 2018 International Studbook of the Orangutan (Elder, 2019), there are 16 orangutans at the OUI. If this is still the case, the number is larger than in any Malaysian zoo. Ten of the orangutans currently at the OUI are under the age of 15. According to data from Elder (2019), captive orangutans can live well into their 40s and are also known to live past 60 (Jong, 2018; Orr, 2020). Cessation of breeding at the OUI is essential as the aim should be providing the best possible care for the orangutans currently at the facility.

DEATHS

According to Table 1 (p. 2) in the article by Hayashi et al. (2018), ten orangutans, including four who were born at the OUI, died at the facility between 2006 and 2013. This figure doesn't include the five orangutans cited in Table 1 in our report. We also know that several orangutans identified as alive in the article by Hayashi et al. have died. All of them were born at the OUI.

Table 2: Orangutans listed as alive in Hayashi et al. (2018), but known to have died

Name of orangutan	Death
Charles Jr	2012 ^a
Eliyas	2013 ^b
June Jr	2015 ^{a/b}
Sarah	2015 ^b

^aBMOUIF, pers. comm., 2018. ^b2018 *International Studbook of the Orangutan* (Elder, 2019).

It is unclear why the four orangutans in our Table 2 were listed as alive, given that all of them had died before the submission date of the article by Hayashi et al. (July 2016). Hayashi et al. make no mention of two other orangutans, Madu and Zaggo, who are also known to have died. (See our Table 3, p. 5).

Based on our analysis, it appears that, between 2004 and 2018, 24 orangutans died at the OUI. More than half of these orangutans died young; fourteen were under the age of ten. There were 13 recorded deaths between 2012 and 2016.

Table 3: BMOUIF orangutans known to have died

No.	Name of orangutan	Sex	Mother	Birth	Death	Origin
1.	Madu	Female	Unknown	1978 ^a	2004 ^e	Unknown
2.	Ramlee	Male	Unknown	2003 ^a	2005 ^e	OUI
3.	Zaggo	Male	Unknown	1991 ^b	2006 ^{b/e}	Sarawak
4.	Penggal	Female	Unknown	1991 ^c /1992 ^b	2006 ^{b/c/e}	Sarawak
5.	Elizabeth	Female	Jerangkong ⁺	2007 ^a	2007 ^e	OUI
6.	Jericho	Male	Unknown	2006 ^a	2007 ^e	OUI
7.	Nikita	Female	Unknown	2006 ^a	2008 ^e	OUI
8.	Jun/June	Female	Unknown	2008 ^a	2008 ^e	OUI
9.	Jerangkong	Female	Unknown	1984 ^{b/c/d}	2010 ^{b/c/d}	Sarawak
10.	Deepa	Female	Nicky ⁺	2007 ^d	2011 ^d	OUI
11.	Nikol	Female	Baboon	2006 ^d	2012 ^d	OUI
12.	Mike	Male	Unknown	1982 ^{c/d}	2012 ^{c/d/e}	Sarawak
13.	Charles Jr	Male	Baboon	2005 ^d	2012 ^e	OUI
14.	Dingo	Male	Unknown	1988 ^{c/d}	2012 ^{c/d}	Sarawak
15.	Paulina/Pauline	Female	Unknown	2001 ^{b/c/d}	2012 ^{c/d}	Sarawak
16.	Eliyas	Male	Nafsiah ⁺	2004 ^{c/d}	2013 ^e	OUI
17.	Nafsiah	Female	Unknown	1994 ^{b/c/d}	2013 ^d /2015 ^e	Sarawak
18.	Malek	Male	Nicky ⁺	2004 ^d	2013 ^d	OUI
19.	William	Male	Nicky ⁺	2011 ^d	2013 ^d	OUI
20.	Sarah	Female	Jerangkong ⁺	2010 ^{c/d}	2015 ^e	OUI
21.	June Jr	Male	Nicky ⁺	2008 ^{c/d}	2015 ^{c/e}	OUI
22.	N/A	Male	Marina ⁺	2016 ^c	2016 ^e	OUI
23.	Marina	Female	Unknown	2000 ^c	2016 ^e	Sabah
24.	Nickey/Nicky	Female	Unknown	1991 ^d /1992 ^c	2018 ^e	Sarawak

^aBMOUIF, pers. comm., 2020. ^bDharmalingam et al. (2012). ^c2018 *International Studbook of the Orangutan* (Elder, 2019). ^dHayashi et al. (2018). ^eBMOUIF, pers. comm., 2018.

⁺ Denotes orangutans who have died.

ORANGUTANS UNACCOUNTED FOR

According to a 2016 TRAFFIC report, two orangutans were sent from the OUI to Saleng Zoo, Johor, Malaysia, to replace two smuggled orangutans who were seized (Beastall et al., 2016). It is unclear whether the two orangutans, transferred to Saleng Zoo in 2009 or 2010, were born at the OUI, and we do not know where they are now. It is also unclear why orangutans would be sent from the OUI to a zoo that is known to have been in possession of smuggled orangutans.

A media report in August 2005 (Singh, 2005) mentions two orangutans, Camilla and Ariff, who we believe were born at the OUI. These orangutans are not referred to by name in the article by Hayashi et al. (2018), or by Dharmalingam et al. (2012). We do not know who their mothers are or what their current status is.

INTERBIRTH INTERVALS AND INFANT SEPARATION

On average, a wild orangutan's interbirth interval (IBI) is between seven and nine years (Galdikas and Wood, 1990; Wich et al., 2004). Captive orangutans are known to have shorter IBIs than wild orangutans (Anderson et al., 2008; Wich et al., 2008). Cocks (2007) recommends that captive orangutans should have an IBI of more than four years. Four orangutans at the OUI are known to have had IBIs of less than three years.

Table 4: Birth years and the interbirth intervals for four BMOUIF orangutans.

Year of giving birth	Births for each orangutan			
	Baboon	Jerangkong	Nafsiah	Nicky
2003	•		•	
2004			•	•
2005	•			
2006	•		•	
2007		•		•
2008		•	•	•
2009		•		•
2010	•	•	•	
2011	•			•
2012				
2013				
2014				•
2015	•			
Total	6	4	5	6
Average IBI (in years)	2.2	1.0	1.6	1.8

Note. Data derived from Hayashi et al. (2018), except for the information about Jerangkong's 2007 birth, which comes from "Orang utans heading home" (2007). Each dot represents the birth of an infant.

The four orangutans listed in Table 4 produced a total of 21 offspring in just 13 years. Cocks (2007) found that a reduction in IBIs significantly affects the survival rate of captive female orangutans. Cocks suggests that this could be because of the long-term physiological stress experienced by the female rather than immediate problems associated with giving birth. In 2015, after a meeting with FOTO, the BMOUIF agreed not to use female orangutans for breeding within five years of them giving birth, even if their infant died during those five years.

Past reports about the OUI have indicated that young infants who were born prematurely and were denied nursing were separated from their mothers, and cared for by humans (Loh, 2016; Azhari, 2007). In a 2007 online news report ('Orang utans heading home', 2007), it was suggested that infants at the OUI who were born prematurely or were unable to nurse were separated from their mother and, once they were healthy, were put through seven stages of rehabilitation "before they can go back to the sanctuary."

Loh (2016) stated that three orangutans at the OUI were separated from their mothers because they were born prematurely, and were eventually released "into the wild". We believe that the three orangutans named in Loh's report are still at the OUI.

The report by Loh (2016) and one by Azhari (2007) do not indicate whether the BMOUIF attempted to reunite mothers with their infants after separation.

According to Dharmalingam et al. (2012, p. 16), every infant born with "medical complications" – including premature birth, umbilical cord infection, chronic diarrhoea, and upper respiratory tract infection – is put through all seven stages of the BMOUIF's rehabilitation programme. Dharmalingam et al. (p. 32) stated that stage seven of the rehabilitation programme at the OUI involves releasing orangutans "to suitable habitat within their distributional range ... upon consultation with the orangutan experts and the relevant government agencies" and "subject to availability of resources to provide adequate protection and monitoring."

It is unclear whether all infants born at the OUI with these medical complications were permanently separated from their mothers. Dharmalingam et al. (2012) indicated that attempts were made to reintroduce mothers to infants who recovered.

When, at captive facilities, attempts to reunite mother orangutans with their infants are unsuccessful, despite best efforts, short IBIs should still be avoided so that the mother orangutan's health is not negatively affected.

Hayashi et al. (2018) noted that, from 2010, mothers at the OUI were encouraged to care for their infants for as long as possible, with only those who had "lost" their mothers being hand reared. It is unclear whether this means that orangutans born before 2010 were separated from their mothers. Hayashi et al. (p. 4) stated that, prior to 2010, the orangutan infants were cared for by humans at the Infant Care Unit² (ICU) "for 24 h per day until they were approximately 1 year of age".

²The Infant Care Unit is where orangutans are kept during the first of the seven stages of BMOUIF's rehabilitation programme. Dharmalingam et al. (2012, p. 21) state that it provides "veterinary care for infant orangutans suffering from improper maternal care and medical complications", and the chance for visitors to view the care provided for the infants with the purpose of creating awareness and support for orangutan conservation.

Hayashi et al. (2018, p. 4) added that infants aged from about one to four years old “were then kept as a group in the Enrichment Development Unit³ cage”, and were later transferred to an outdoor enclosure “to develop tree climbing skills”. In the outdoor enclosure they were able to interact with other orangutans.

It is unclear whether Baboon the orangutan (see Table 4) raised all her infants herself as of 2010. (She produced three offspring between 2010 and 2015.) Elder (2019) stated that, at the time of writing, Baboon’s three offspring were alive.

Captive orangutan facilities should avoid hand rearing of infant orangutans as it can increase the incidence of stereotypical behaviour and possibly decrease the infant’s lifespan. Adult female orangutans that were hand reared have been shown to be more likely to reject their infants (Cocks, 2007). Kuze et al. (2008) suggest that the hand rearing of infants is one of the causes of the high infant mortality rate at the tourism-focused Sepilok Orangutan Rehabilitation Centre in Sabah.

Cocks (2007) recommends that hand rearing should be avoided, and suggests female orangutan surrogacy.

³The Enrichment Development Unit (EDU), which we believe was dismantled in 2014 or 2015, was used in the second of the seven stages of BMOUIF’s rehabilitation programme. At the EDU infant orangutans were kept in small sub-units “to provide the young orangutans guidance for independent survival on their subsequent release into the wild upon successful completion of the rehabilitation programme” Dharmalingam et al. (2012, p. 23).

ORANGUTAN REHABILITATION

In *The Orangutans of Bukit Merah* by Dharmalingam et al. (2012) it is stated that the rehabilitation programme at the OUI involves preparing healthy orangutans for “eventual release to their native natural habitat” (p. 16). The authors do not fully explain the initial reason for establishing the OUI in 2000, but do imply that the aim was to establish the facility as a sanctuary for orangutans.

Dharmalingam et al. (2012) stated that the BMOUIF’s orangutan rehabilitation programme was established in 2005. Dr Dharmalingam is described as having played a lead role in starting the programme.

If the initial intention was for the OUI to serve as a sanctuary for displaced orangutans, why did the BMOUIF import orangutans from other captive facilities and encourage breeding? The Global Federation of Animal Sanctuaries (2013) advises against both activities. Dharmalingam et al. (2012) indicated that 14 orangutans were sent to the OUI between 1999 and 2002. The Sarawak Forestry Department facilitated the transfer of 11 orangutans from Sarawak and three of them came from Melaka Zoo. Two of the orangutans who came from Melaka Zoo were reported by Dharmalingam et al. to have been returned after the breeding loan period was completed while the third orangutan, Nicky, remained at the OUI and produced six offspring in just 11 years before her death in 2018.

Seven of the 11 orangutans brought to the OUI from Sarawak have died. FOTO does not have detailed information pertaining to the life history of the 11 apes before they were sent to the OUI, but we do not see any justification for moving them to peninsular Malaysia from a state where they naturally exist and could, therefore, potentially be rehabilitated and then released, not least when the Sarawak Forestry Department could have facilitated that release.

According to the experts we have consulted, it would have been in the interest of the orangutans, and more appropriate, to rehabilitate them within their natural geographic range rather than in a resort setting where they would be exposed to humans and would be in an area where wild orangutans have not lived naturally for about 60,000 years (Ibrahim et al., 2013).

Hayashi et al. (2018, p.3) acknowledge that orangutans “are supposed to undergo a rehabilitation programme in a rehabilitation centre located in their natural habitat, allowing them to be gradually habituated to forest living from infancy”.

We challenge the validity of the rehabilitation methods employed at the OUI. Dharmalingam et al. (2012) stated that the BMOUIF’s seven-stage rehabilitation programme followed the International Primatological Society’s International Guidelines for Acquisition, Care and Breeding of Nonhuman Primates (2007). We have been unable to find any reference to the rehabilitation of orangutans in these guidelines. We remain unclear as to whether the BMOUIF’s rehabilitation programme has been approved by great ape experts from the IUCN.

We have studied the orangutan rehabilitation centres run by IAR and the SOCP, where best practices in rehabilitation are applied. When we compared their practices to the methods described in Dharmalingam et al. (2012), we found several key differences. The rehabilitation centres run by IAR and the SOCP strictly limit the number of visitors and do not allow tourism.

In 2011, three orangutans – Sonia, Ah Ling, and Nicky – were moved to BJ Island for the sixth stage in their rehabilitation; the “final stage of the behavioural rehabilitation program at OUI and the first step toward realising the final goal of wild release” (Hayashi et al., 2018, p. 3).

Hayashi et al. (2018) stated that, when Ah Ling and Nicky were released on BJ Island, Ah Ling was 14 years old and Nicky was 19. Elsewhere, however, their ages were reported to be 17 and 23 (Samah, 2011; Dharmalingam et al., 2012). Given the data discrepancies in Hayashi et al.’s article (see Births and Deaths sections), we have chosen to give the ages as 17 and 23.

Dharmalingam et al. (2012) described Sonia, Ah Ling, and Nicky as “the most suitable candidates for the trial release”, and stated that “all the three had successfully completed the first five stages of the rehabilitation programme” (p. 61). However, given that the first two stages (ICU and EDU) were designed for orangutans up to the age of four (Hayashi et al. 2018), and Nicky and Ah Ling arrived at the OUI when they were 11 and six respectively (Dharmalingam et al., 2012), we find the claim that both orangutans completed the first five stages of rehabilitation odd.

It is also unclear how these two orangutans underwent full rehabilitation given that both of them arrived at the OUI before 2005, the year that the rehabilitation programme is reported to have been established (Dharmalingam et al., 2012).

We also question the rationale for selecting for release a pregnant orangutan (Nicky) who, at the time, had already given birth four times and had spent almost her entire life in captivity. Hayashi et al. (2018, p. 8) stated that, after giving birth to William in 2011, Nicky had initial difficulties nursing her infant “as she had no previous experience in taking care of her offspring for an extended period of time”. It appears that no efforts were made to avoid Nicky becoming pregnant yet again. Nicky gave birth to her sixth infant (her second on BJ Island) 13 months after William’s death in 2013.

William’s death highlights another concerning feature of the rehabilitation methods employed at the OUI. Hayashi et al. (2018) noted that, because the three orangutans released onto BJ Island had spent so long in proximity to humans, “it was hard to maintain an appropriate distance between humans and the orangutans during behavioral monitoring”. This could explain the death of William, “who may have contracted a respiratory disease from a human observer”, Hayashi et al. (p. 9) stated.

Tourism, as practised at the OUI, creates the risk of orangutans at rehabilitation centres becoming too habituated to humans. Overhabituation to humans can cause various issues in rehabilitant orangutans. These include increased vulnerability to poachers after release, compromised survival skills, and risks of disease transmission and human-orangutan conflict (Russon et al., 2016). For this reason, it is recommended in the IUCN’s Best Practice Guidelines for Great Ape Tourism that tourism should not be carried out in orangutan rehabilitation centres (Macfie and Williamson, 2010).

When Sonia, Ah Ling, and Nicky were released onto BJ Island, Dr Dharmalingam stated that the “final conditioning stage” could take five to six years and a team of researchers would study the orangutans' adaptability to their new environment on the island. Dr Dharmalingam was also quoted as saying that, once the studies were completed, relevant authorities would be consulted and plans would be jointly developed “for the orang utans’ repatriation into their natural habitat” (Samah, 2011).

Latiff (2011) quotes Dr Dharmalingam as describing the sixth rehabilitation stage as “the wild release training stage”, when the orangutans learn to acclimatise themselves to conditions similar to the final stage, “when they are finally returned to their native habitat in Sarawak”.

Nicky died in 2018 and, to our knowledge, Sonia and Ah Ling are still at the OUI. In July 2018, several news outlets reported that Ah Ling and another orangutan, Carlos, would be sent to Sarawak (Bernama, 2018; NSTP Team, 2018). No specific reason was given and no details were provided at that time about where the two orangutans would be placed, or released, in Sarawak.

In October 2018, The Borneo Post reported that Carlos had arrived at the Matang Wildlife Centre in Sarawak (‘Meet Carlos’, 2018). It is unsurprising that Carlos was placed in captivity at the Matang Wildlife Centre and, based on the findings of this report, we conclude that the orangutans who are currently at the OUI, including those from Sarawak, are, despite years of rehabilitation claims by the BMOUIF, destined for a life in captivity.

In all likelihood, NGOs and orangutan conservationists may be alarmed if attempts are made to release these apes into a forest or even into the tourism-based Semenggoh Nature Reserve in Sarawak. Our research for this report leads us to conclude that orangutans at the OUI have been too habituated to humans to be released.

Our investigations have yielded no documentary evidence that any of the orangutans at the OUI have been released or reintroduced into their natural habitat (in Sabah or Sarawak) since the BMOUIF’s rehabilitation programme commenced in 2005.

We assert that it is misleading to portray the rehabilitation of a totally protected, critically endangered great ape species at a holiday resort, outside of its natural geographic range, as an acceptable conservation practice.

We urge the BMOUIF to immediately drop all claims that it is carrying out orangutan rehabilitation and to remove all such claims from the BMOUIF website and social media outlets.

DISEASE MANAGEMENT

According to the BMOUIF website, the foundation provides training for veterinary students, which includes training about the “special management of orangutans” (‘Veterinary Workshop Programmes’, n.d.).

We would question the BMOUIF’s understanding of the risk of disease transmission between humans and orangutans as numerous photographs exist that show visitors in close proximity to, or in direct contact with, orangutans at the OUI.

Gilardi et al. (2015), Muehlenbein et al. (2010), Muehlenbein and Wallis (2014), and Russon et al. (2016) have highlighted the risks of disease transmission from humans to orangutans, which close proximity and direct contact can facilitate. Setchell et al. (2016) stated that great apes are susceptible to human diseases. Russon and Susilo (2014) noted that orangutans are susceptible to human diseases such as tuberculosis, hepatitis, measles and typhoid as orangutans undergoing rehabilitation that are exposed to tourists have been diagnosed with these and other conditions. The IUCN stated that great apes are susceptible to human respiratory pathogens (IUCN, 2020).

We were informed by the BMOUIF that two orangutans at the OUI had died from hepatitis (BMOUIF, pers. comm., 2018), but we do not know how the apes contracted the disease. Hayashi et al. (2018) suggested that an infant orangutan at the BJ Island may have died from a respiratory disease, possibly contracted from a human. Russon and Susilo (2014) alleged that tourism at the OUI endangers the health and rehabilitation of the orangutans there.



Figure 3. OUI visitors viewing an orangutan up close (Hurst, 2019)



Figure 4. Two members of a media crew pose with an orangutan at the OUI (Panorama RTM, 2018)



Figure 5. The former Malaysian Prime Minister, Najib Razak, pets an orangutan at the OUI (Razak, 2014, 1:31)



Figure 6. The late Sultan of Kedah, Almarhum Sultan Abdul Halim Mu'adzam Shah, observing an orangutan at the OUI (Abdullah, 2013)

It is important to note that humans are also at risk of catching diseases from orangutans (Gilardi et al., 2015; Muehlenbein et al., 2010; Muehlenbein and Wallis, 2014). Russon et al. (2016) have underlined the risks of physical attacks on humans by human-habituated orangutans.

In the IUCN Best Practice Guidelines for Health Monitoring and Disease Control in Great Ape Populations it is emphasised that people coming within ten metres of great apes should wear a face mask, and a minimum distance of seven metres should be observed at all times (Gilardi et al., 2015). Although this recommendation refers to wild great apes, the minimum distance guideline is based on the risk of disease transmission via airborne pathogens.

Children have been seen near orangutans at the OUI. The IUCN guidelines recommend that children under the age of 15 should not be allowed to visit great apes as children are more vulnerable than adults to a wide range of communicable diseases and are therefore more likely to release pathogens (Gilardi et al., 2015).



Figure 7. A child and an adult close to orangutans at the OUI (D'Souza, 2020, 0:40)



Figure 8. Children near an orangutan at the OUI. December 17, 2018

As the staff of captive facilities can easily physically separate their animals and visitors, children under the age of 15 can be allowed to visit the OUI with precautions as per the recommendations section taken. (See the Recommendations section for requirements for other visitors.)

Our recommendations that pertain to orangutan health at the OUI are based on the IUCN Best Practice Guidelines for Health Monitoring and Disease Control in Great Ape Populations and our consultations with orangutan veterinarians.

The OUI was closed to the public in March 2020 following the Covid-19 outbreak. The facility reopened for tourism in early July 2020. During our observation at the OUI on 25 July 2020, the general public was not allowed to get up close with orangutans at the facility. Staff at the Bukit Merah Laketown Resort conducted body temperature screening at the entrance of the resort, and visitors were required to wear a face mask. Hand sanitisers were made available for visitors.

As apes are likely to be susceptible to Covid-19 (Gibbons, 2020), other measures may have been put in place at the OUI by the BMOUIF to reduce the risk of its orangutans possibly contracting Covid-19. We also urge that health precaution recommendations in the Recommendations section are permanently applied at the OUI, including after the Covid-19 period, if they are not yet in practice.

The BMOUIF did not confirm with FOTO in an inquiry made in April 2020 if volunteers were required to conduct health tests and vaccinations before their placement at the OUI. A British company that is now defunct, Travellers Worldwide, used to offer paid volunteering opportunities, including at the OUI. FOTO has been shown two emails sent out by Travellers Worldwide in which it is indicated that volunteers were not required to conduct health tests and vaccinations before starting to volunteer at the OUI. The following email was sent out by the company in May 2018. (The ‘Malaysia Peninsula project’ refers to the OUI).

For Sepilok, you’ll be required to show proof that you are up to date with your Tetanus [sic], Typhoid, Hep A, Hep B and that you do not have TB. This is because you will be working in close proximity to the orangutans and it is therefore extremely important to protect the orangutans from exposure to any illnesses, as they share 97% of our DNA and are therefore susceptible to picking up bugs from us. These are not required for the Malaysia Peninsula project, because you will not be in contact with the orangutans there. This is the reason that we are able to offer this programme for a shorter period.

The following email was sent in October 2019.

As you are working closely with the orang-utans- but not physically touching them- you do not need to go through the strict medical requirements like TB tests and various vaccination [sic], and as there are not [sic] newborns currently- you also do not need masks and gloves. So it is also a lot easier than Sepilok for your pre-departure requirements.

The claim by Travellers Worldwide that volunteers would not be in contact with orangutans at the OUI has been contradicted by several former volunteers. One former volunteer stated on the Travellers Worldwide website: “My Most Memorable Moment: We are able to hold hands with the orangutans as we support them to walk into the compounds each day” (Reviews, n.d.).

Another former OUI volunteer spoke out in a programme broadcast by the TVNZ television network in New Zealand in July 2018, saying that she was told at the OUI that the volunteers would be able to hold the orangutans’ hands “and walk down and put them in their big enclosures for the day”. This person volunteered through the company Global Work & Travel (1 News, 2018).

Another former volunteer stated that, whilst touching orangutans was discouraged, contact did occur, including “dangerous incidents” of being grabbed by orangutans (Volunteer Truth, 2019). Despite this volunteer’s comment that touching orangutans is discouraged, presumably by staff at the OUI, photos posted on social media in March 2020 clearly show contact between volunteers and an orangutan at the facility (see Figures 9 and 10). Earlier photos (see Figures 11 and 12) also show contact between volunteers and orangutans. In all of the following photos, none of the volunteers are wearing a face mask.



Figure 9. A volunteer with an orangutan at the OUI (To, 2020)



Figure 10. A volunteer with an orangutan at the OUI (To, 2020)



Figure 11. A volunteer with an orangutan at the OUI (dolman83, 2017)

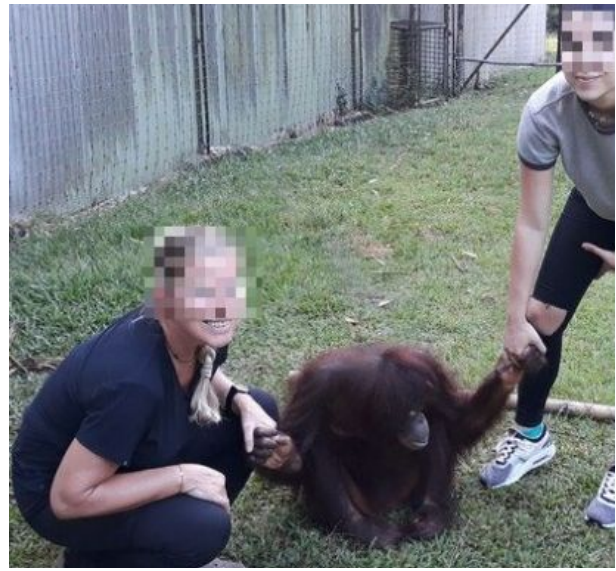


Figure 12. Volunteers with an orangutan at the OUI. 2017

The IUCN also cautions that visitors from other countries are exposed to a multitude of pathogens during the hours they spend travelling on planes and transiting through airports with thousands of other passengers. The visitors' susceptibility to illness may be heightened by the "fatigue and stress of travel, changes in diet or climate, and the novelty of pathogens to which they are exposed". (Gilardi et al., 2015, p. 11).

Given the exposure to pathogens during air travel, precautions should also be taken when people have travelled from east Malaysia. (See the Recommendations section).

HUSBANDRY AND WELFARE CONCERNS

Several former volunteers have expressed concerns about practices they witnessed during their placement at the OUI. A worrying review by one former volunteer was posted on TripAdvisor (Philippe, 2018). Below is an unedited extract from the review (translated into English from French). It includes allegations about the treatment of macaque monkeys.

- *You will then give food and drink to 3 other very large apes, hidden from the public, locked in small empty cages (we were told that there was an island project planned to release them. But they have apparently been there since a moment already, and no sign of life of the project...)*
- *The majority of boys working at the center have no respect for animals. Some slap the orangutans, pull their hairs to move them forward, sometimes squirting with pressurized water to force them to change cages quickly. Regarding the macaques (quoted above): when they transferred him to a cage (the monkey was asleep), one of them took him by the tail and threw him a few meters further and more than 1.5 meters high. Everyone watched the scene but no one reacted to it by us (volunteers).*
- *The food is simply placed on the ground, in the middle of the cage. We tried to ask to introduce enrichment techniques to teach animals to fend for themselves as they would in the wild. Nobody took us seriously and nothing happened.*
- *Selling a beautiful book presenting their project, we can see photos of the orangutan cages filled with leafy branches, which is not at all reality now since they are completely empty.*
- *The employees captured two wild macaques which they left at least 2 weeks in a small cage. We will have no precise explanation of the reason. However, we saw and learned that they had anaesthetized one of them, making an incision in 3 places, just to train two volunteers to sew a wound ... just for the fun of it! None of these volunteers needed it! (know that these exercises are supposed to be performed on artificial skin or dead animals!).*

A different former volunteer alleged on TripAdvisor that four orangutans were “hidden” and “permanently in cages” (Kgenge, 2018). Upon inquiring, the volunteer was told that some orangutans were kept in cages as they were displaying aggression, and one was kept in a bigger cage as he was impervious to the electric fence separating visitors and orangutans at the facility. When inquiring about the release process, volunteers were informed that the apes are sent to a different island when they are ready for release.

One former volunteer reported to FOTO that, during her time at the OUI in 2018, she observed two orangutans who, she says, were “permanently kept” in cages that were “barely bigger than a meter in width and were completely concrete and barren”.

The volunteer says that, when she and other volunteers questioned Dr Dharmalingam, he told them that the orangutans were placed in cages because OUI staff were in the process of removing rats on BJ Island, and added that he couldn’t recall exactly how long the orangutans had been kept in cages, but estimated that it was for more than a month.

The volunteer who reported her concerns to FOTO said OUI staff told her that the orangutans could not be given access to an enclosure at the facility as they were “too smart” and might escape. The volunteer also alleges that one particular orangutan was caged throughout her placement at the OUI. During the day, she said, the orangutan was kept in a larger cage that was “completely barren except [sic] for a single, old tire for him to play with”.

The volunteer was given three different explanations as to why this orangutan was caged. We have included this volunteer’s full report to FOTO in Appendix I.

Another ex-volunteer alleged that a few orangutans were “permanently in cages” because of “lack of funding and space” and that they “desperately needed enrichment” (Volunteer Truth, 2019).

Concerns about welfare and husbandry at the OUI were reported by a former volunteer in a TVNZ episode of ‘Fair Go’ (1 News, 2018, and see accompanying article: Bray, 2018). The broadcast also featured an orangutan conservationist, Leif Cocks, who alleged that the OUI was “in the category of exploitation for commercial purposes” and questioned whether research done at the OUI has any “welfare or conservation” value.

The company that arranged the volunteer’s placement at the facility, Global Work & Travel Co., eventually refunded the volunteer and, to our understanding, has ceased doing business with the OUI.

One of the allegations made in the ‘Fair Go’ report is that orangutans are not provided with drinking water in their night cages. Dr Dharmalingam is reported to have argued: “You put anything in their cages like water supply they’ll dismantle the thing within minutes.” (Bray, 2018.) However, it is possible, for example, to install self-filling water bowls, as illustrated in Figures 11 and 12, which show such a device in use at an international zoo. The ‘Five Freedoms’, which are a guide to ensuring the welfare of animals under human control, include the statement that “ready access to fresh water” is an essential requirement for good animal welfare (Farm Animal Welfare Council, 2012).



Figure 11. Self-filling water bowl outside an orangutan night cage at an international zoo



Figure 12. Self-filling water bowl outside an orangutan night cage at an international zoo

RESEARCH

The BMOUIF has stated that research is one of its central goals (Dharmalingam et al., 2012; Dharmalingam, 2011). FOTO asked two orangutan veterinarians to analyse three scientific research articles authored by Dr Dharmalingam. They raised various issues in all of the papers.

In each of the three articles, the sample size appears to be just one orangutan. One orangutan may not be representative of other cases or of the illnesses suffered by orangutans that are discussed in these articles. In the case of the ‘Respiratory Tract Infection in Infant Orangutan’ article (Dharmalingam, 2016) and the article about temperature management in an infant orangutan (Dharmalingam, 2015b), the author does not appear to have compared his findings with other studies conducted by non-OUI researchers. Such a comparison would have lent validity to these articles.

There are numerous grammatical errors in all three articles. This, along with the other issues raised, suggests that the articles were not adequately reviewed by professionals and also raises questions about the legitimacy of the publishers. In addition, drug doses are quoted in all the articles, but no reference is made to a primate formulary to authenticate them.

*Meningitis in Infant Orangutan (*Pongo pygmaeus*) at Orang Utan Island, Bukit Merah, Perak, Malaysia (Dharmalingam, 2015a).*

This article lacks discussion and detail in its methodology. Such discussion and detail would have enabled readers to assess the study’s validity. When writing about the results of blood samples, the author notes changes in some haematology values (Tables 1 & 3, pp. 4 & 5 respectively), but he does not fully explain their significance in the case in question.

Despite the second blood sample showing some worsening haematology values, and some abnormal biochemistry values, there is no report of further samples being taken. If further samples had been taken, this would have indicated that the case was being properly monitored.

The author also inconsistently quotes several different “normal range” values for haematology in Table 1 and Table 3, making it impossible to compare the results. The results in Table 2 (p. 4) are incorrectly reported as all being normal (the potassium result is recorded as being below the normal range). There are no references that state where the normal ranges in Tables 1–4 were obtained and whether they pertain specifically to orangutan or human normals.

In Tables 5 and 6 (p. 6) the presence of blood in two urine samples is described respectively as normal and negative, yet the red blood cells per high-power field (RBC/HPF) values, which would enable the reader to interpret the results, are not included.

The author provides a written repetition of the results reported in Tables 1–6, but does not interpret the results in detail, offer a differential diagnosis, or use these results to provide any evidence for a diagnosis.

The sample size for this article (one orangutan) is inadequate, only one treatment protocol is described, and the author does not confirm a diagnosis of meningitis in the patient within the text of the article.

In addition, no reference is made to any other studies about meningitis (or cerebral irritation) in orangutans. Despite this, the author implies in his conclusion that the treatment regime described is correct and should be followed in other cases. The treatment regime described in the article is already common practice in orangutan veterinary medicine so the author is not providing new clinical or scientific information as would be expected in a research article.

The source cited on page 4 refers to the disease in human infants and this should be clearly stated. The “sensitive antibiotic” referred to on page 9 is not named, and no list is provided of antibiotics that can cross the blood-brain barrier.

Furthermore, the author states that the “above normal” total neutrophil counts indicate bacterial infection (p. 5). Whilst this is often true, it is an inaccurate hypothesis as high neutrophil counts can also be caused by stress, anaemia, damage to tissues, or infection.

The author describes what such abbreviations as PCV, MCV, MCHC, and AST (p. 5) stand for, but he doesn’t explain their significance in this particular case, which would assist in arriving at a possible diagnosis.

We also have concerns about several claims made in the article that lack references. Examples of such unreferenced statements can be found on pages 1 and 2 (paras. 7 & 1 respectively), page 6 (para. 6), and page 9 (para. 1). In addition, the “normal range” values quoted in Tables 1–4 are not referenced.

We also have concerns about possible plagiarism in the article. For example, we discovered that the author included some unreferenced material that also appears elsewhere. Text on page 1 (para. 4, lines 1–5) and page 7 (para. 2, lines 1–11; para. 3, lines 1–6) is present on several websites (respectively A.D.A.M., n.d.; P&G Health, n.d.; McAuley, n.d.).

Respiratory Tract Infection in Infant Orangutan (*Pongo pygmaeus*) at Orang Utan Island, Bukit Merah, Perak, Malaysia (Dharmalingam, 2016).

We have concerns that this article lacks detail and focus in its methodology as it gives no case history and doesn’t specify clinical signs that relate to the patient in question. The clinical signs described in the article appear to be general symptoms for all respiratory cases rather than detailed and specific symptoms observed in the study subject.

Treatment of the infant in question is described only briefly (pp. 2 and 3, “treatment”) and, although supportive treatment in the form of nebulisation is described, the author doesn’t make it clear whether the infant received this treatment. Also, there is no recommendation as to how often nebulisation should be carried out.

In addition, although the author states that the vital signs of the orangutan should be monitored (p. 2), he provides only very limited information about the monitoring that was undertaken. He mentions monitoring in Figure 3 (p. 4), but refers only to temperature and does not interpret the results thoroughly. The graph in Figure 3 can also be found in the paper about temperature management (Dharmalingam, 2015b).

There are elements in both the Discussion and Conclusion sections that bear little relevance to the stated objective of the paper. Both these sections focus on leukopenia, anaemia, and the importance of colostrum, but the use of colostrum-based milk is not described prior to this in the treatment, supportive treatment, or management sections of the article.

Lack of colostrum is widely recognised as a factor that contributes to morbidity and mortality in newborn animals and certainly has relevance to infection (including respiratory infection), but the author's article switches from its core focus (respiratory infection) and its stated objective and ends with a discussion that is primarily about the benefits of colostrum-based milk. It would have been more fitting and logical to conclude with a discussion about the treatment and management of respiratory disease.

In the Discussion section, the author writes about a blood test carried out on an infant orangutan, but the test results referred to are unrelated to the orangutan who is supposed to be the subject of the paper, and has respiratory disease. They relate to another infant.

The blood tests cited by the author revealed leukopenia and hypochromic anaemia (p. 4), but no evidential results are provided. The infant's abnormally high white cell count of 20.3 at two years of age (Figure 4, p. 4) is not addressed by the author.

The article also contains contradictory statements about the age at which upper respiratory tract infections are most common (p. 1, para. 1; p. 2, para. 2). Figures in Table 1 (p. 2) lack relevant parameters and this makes the table unintelligible.

Meanwhile, the author refers to a pulse oximeter being used to measure the orangutan's vital signs (p. 2, para. 2), including body temperature (Figure 1, p. 2). However, a pulse oximeter cannot measure body temperature. In addition, the "normal" haemoglobin oxygen saturation level listed as 80%–90% on page 3 (para. 2) contradicts the normal level in Table 1, which is stated as being between 85% and 99%.

Figure 4 (p. 4) gives values of red and white blood cell counts for orangutans aged up to two years and the implication is that feeding colostrum from birth to two years of age increases an orangutan's haemoglobin level. However, an infant orangutan's haemoglobin level will have been affected by many other factors, not least its nutrition.

Colostrum must be given in the first few hours post-birth to allow maximum absorption of antibodies. Colostrum administered later than this cannot be guaranteed to produce maximum immunological benefit to the patient. These antibodies are species specific so, ideally, an infant orangutan should receive colostrum from an orangutan.

A proportion of antibodies from another source, such as human- or animal-derived colostrum-based milk powder, may contain some beneficial antibodies. However, there is no indication in this article of the source of the colostrum or its standard absorption rates once those first few hours have elapsed.

We also note that several factual claims made in this article are not referenced, for example on page 2 (para. 2), page 3 (para. 5), and page 5 (para. 1).

There is also concern about possible plagiarism in this article as unreferenced content on page 2 (para. 2, lines 25–33) can be found on a website that also contains prescription information (Sandoz, n.d.).

Temperature Management in Infant Orangutan (*Pongo pygmaeus*) at Orang Utan Island, Bukit Merah, Perak, Malaysia (Dharmalingam, 2015b).

In this article, no thorough attempt is made to interpret the results provided in Figure 6 (p. 4). It is also unclear whether the infant's temperature fluctuated normally and randomly or whether decreases were the result of drug intervention.

Furthermore, if the objective of this article is to investigate how to control fever (p. 2), the impact of each medication on temperature should be clearly outlined so that a conclusion can be drawn about whether the treatments were effective or not.

It is also unclear whether the author is referring to orangutans or other nonhuman animals when discussing general temperatures during fever (p. 1, para. 3).

Contradictory statements are made about the normal body temperature of orangutans (p. 1, para. 1; p. 5, para. 2), and no reference is provided for either claim. Both figures contradict the normal body temperature given in the paper about respiratory tract infection (Dharmalingam, 2016, p. 2, Table 1).

The author also states that an “oxypulsemeter” can be used to measure body temperature (p. 2, para. 3). The term oxypulsemeter is incorrect. The correct term is pulse oximeter and this equipment measures haemoglobin oxygen saturation and pulse rate, not temperature. In the description in Figure 4 (p. 3) it is stated that the orangutan's blood pressure is being monitored using an “oxypulsemeter”. However, the cuff of what is likely to be an automatic blood pressure machine (sphygmomanometer) is shown in the photo.

The Method section of this article (pp. 2–3) simply explains how to obtain the body temperature of an orangutan. It is questionable whether this information merits inclusion in a scientific article. Meanwhile, the ‘Function of fever’ section on page 2 is not referenced.

The Discussion section (p. 4) should contain a summary of results, explain the importance of the results and any shortcomings, and perhaps offer direction for future research. The final sentence of the Discussion section also mentions semithicone [sic] and Colimix and refers the reader to Table 1 (p. 5), but this table contains no information about these products.

In the Conclusion section (p. 5), the author states that the orangutan in question was displaying symptoms of respiratory tract infection, yet no infection (bacterial or viral) had been identified or discussed and no antibiotic therapy had been instituted. In this section, the author also states that “blood specimens should be collected and analysed for full blood picture and cultures”, but no results are reported or described.

A short explanation about the medicine diclofenac and its risks (p. 5, para. 1, lines 2–5) is unreferenced and can also be found on the Internet (PT. Pratapa Nirmala, n.d.; RCPHS, n.d.).

There is also concern about possible plagiarism in this article as unreferenced content on page 2 (para. 3, lines 7–8, para. 4, lines 1–6) and page 3 (para. 1, lines 1–3) can be found in a device manual (Omega, p.8).

RECOMMENDATIONS

- There should be an independent audit of operations at the OUI, carried out by qualified orangutan conservationists with experience in managing or caring for captive orangutans, who would also focus on husbandry and the orangutans' diet. To ensure impartiality, it is imperative that the audit is conducted by people who are not affiliated with PERHILITAN, the Sarawak Forestry Corporation, the Sabah Wildlife Department or MAZPA.
- The BMOUIF should make no more claims about conducting orangutan rehabilitation and all such claims should be removed from the BMOUIF's website and social media outlets.
- The BMOUIF should cease the breeding of orangutans at the OUI. Independent orangutan veterinarians will be able to advise the BMOUIF about avoiding further orangutan pregnancies at the facility.
- The transfer of orangutans to the OUI should be suspended until all recommendations in this report are met and it is proven that all orangutans currently at the facility are being provided with the best possible – and appropriate – diet, husbandry, and veterinary care. Given the already large number of orangutans at the facility, transfers to the OUI should then only be carried out if it can be proven that the orangutan's quality of life will be improved significantly by transfer to the facility.
- The BMOUIF should implement a regulation to ensure that there is a minimum distance of seven metres between orangutans and members of the public, including children. It should also ensure that anyone coming within ten metres of the orangutans wears a face mask.
- Visitors such as researchers, filmmakers, and volunteers who have travelled from outside peninsular Malaysia (from other countries and from Sabah and Sarawak), and will/may come within seven metres of the orangutans, should not be allowed to do this during the first seven days after their arrival in peninsular Malaysia.

Anyone who becomes ill during the first seven days after their arrival in peninsular Malaysia should immediately leave the OUI and begin a seven-day quarantine on the first day that they are no longer showing clinical symptoms. They should not be allowed back into the facility until this quarantine is completed.

These visitors should also be required to undergo health tests as per Appendix II and submit the results at least two weeks before arrival at the facility. They should be required to wear a face mask at all times when less than ten metres from the orangutans.

- Visitors such as researchers, filmmakers, and volunteers who have travelled from within peninsular Malaysia, and will/may come within seven metres of the orangutans, should be required to undergo health tests as per Appendix II and submit the results at least two weeks before arrival at the OUI. They should also be required to wear a face mask at all times when less than ten metres from the orangutans.
- There should be no unnecessary contact with orangutans at the OUI by any visitor.

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APPENDIX I

The following report was sent to FOTO by an individual who volunteered at the OUI in 2018 . It has been copied in its original form and has not been corrected for grammar or punctuation. The views and allegations expressed are those of the former volunteer. In copying and publishing this review, FOTO is by no means suggesting that the former volunteer's views and allegations are facts. We would welcome the BMOUIF's response to the review.

Upon my arrival at Bukit Merah I soon noticed that the conditions that the animals were in were unacceptable. The orangutans were kept in cages that were barren and presented no way to entertain the animals, nor did the animals have any access to water. As the day went on I only saw more problems with the treatment of these beautiful creatures- I have outlined these problems below. I would like to make it clear that none of the problems I have highlighted are speculation- I (along with other volunteers) requested a meeting with Dr Sabapathy [-], who is the Chief Executive Officer of Bukit Merah. I also decided to leave the programme early as staying for the full four weeks was not an option for me after witnessing how these animals were treated. In my honest opinion, the general staff who work at Bukit Merah do not feel that what they are doing is wrong- I believe that the staff are unfortunately undertrained and do not possess the skills and knowledge needed to care for these beautiful animals. I think that the staff take their cues from Dr Sabapathy who wrongly directs them and cares more about his 'research' than he does about orangutan conservation. It is my hope that this report will somehow contribute to the exposure of the poor conditions that these intelligent and beautiful animals are subject too.

The cages:

While I understand the need to place the orangutans in different enclosures at night, the enclosures that the animals at Bukit Merah were sleeping in can only be described as cages. They were concrete slabs with metal bars and a wooden plank to sleep on. Some of the cages had old brown sacks in them that were hung out to dry each morning as they were soaked in urine and faeces, however these sacks were never washed or changed.

The cages also did not have any water supply. When I asked Dr Sabapathy about this he stated that it was impossible to provide them with water because the orangutans would just destroy whatever they put in the cages. This did not make sense to me.

When I asked the staff at Bukit Merah how much time the orangutans spent in these cages I was told that they are normally put to bed at around 6pm every evening, depending on the weather, and are released when the volunteers arrive in the morning at approximately 8/8:30am. This is the orangutans' routine every day, which means that they are spending approximately fourteen hours a day in cages which equates to them spending more than half their lives in a concrete cell, with no water and nothing to do.

Their diets:

For breakfast, each orangutan was given warm milk mixed with milo. They were fed this through plastic bottles prior to their release into their daytime enclosures. When this was questioned in the meeting with Dr Sabapathy, he stated that the reason they give the animals milo with their milk is because they will not drink it plain. This raised many problems because wild animals should not be drinking milo, and on top of this, orangutans should not be drinking cow's milk every morning.

For lunch, the orangutans had another bottle, however this time it was blended watermelon, diluted with sugar water. Or, on days when they had run out of watermelon, it was black current cordial mixed with sugar water. This was fed to the orangutans in a plastic bottle, that the volunteers would hold between the wires in the electric fences that surround the animal's daytime enclosures. When this routine was questioned by me and the other volunteers, we were told that the centre cannot afford to buy fruit and other food items that would normally befit the diet of wild orangutans.

While we were never at the centre to witness the orangutans' night time feedings, we did prepare their meals earlier in the day. The food that was prepared everyday was cooked rice, mixed with sardines, sometimes eggs. This combination sometimes changed, for example sometimes carrot was added to the rice. The way the quantity of the rice was measured for each orangutan was that the rice was moulded into balls, approximately the size of a fist.

One orangutan, Baboon, was extremely obese and apparently had been for years. When I pushed on why she was so overweight I was given multiple justifications for this. I was told that she was not obese, but she merely looked it due to her species. I was also told that she has been obese ever since her arrival at the centre and there was no way to change her weight. These answers were given to me by members of staff at Bukit Merah and when I asked Dr Sabapathy about Baboon's weight he said that she is overweight because she will often drink Manu's (her infant son) breakfast and/or lunch if he did not finish it. When I asked why they do not feed them separately, or why they allow her to drink his lunch considering the staff member has to hold the plastic bottle through the fence for them and are then able to control who drinks from it, I was told that this was impossible as she will deprive Manu of breastfeeding if she cannot drink his excess lunch. When I then asked why they allow Baboon to continue to breed if she is not an adequate mother, I was told that they allow the orangutans to copulate freely and do not control their breeding in order to help keep their environments natural. This was confusing me for as the foundation claimed that they do not have the money to sustain the dietary needs of the orangutans that they already house, so I did not understand why they were not taking measures to ensure that they do not have more animals that they cannot feed or care for appropriately.

Sonia:

Only once were we shown a separate block of cages that two orangutans were permanently kept in. While I cannot name the second orangutan as I cannot remember it, I can say that it was awful to see that these beautiful animals were being kept in these conditions. When we questioned Dr Sabapathy, he said that the animals were being kept there while BJ Island was being cleared as it had a rat infestation. He could not give us an exact date of when these orangutans were put in these cages and also could not remember exactly how long they had been in there, but he estimated that it was more than a month. I can confidently say that the entire time I was volunteering at the centre, Sonia and the second orangutan were not released from the cages that were barely bigger than a meter in width and were completely concrete and barren. When I questioned as to why these two orangutans were not being held in daytime enclosures while BJ Island was being cleaned, I was told by the staff that it was because the orangutans were too smart. From what I witnessed, the keys to some of the gates that separate the enclosures from the public and staff members are kept on a piece of string next to the gate. According to the staff, these particular orangutans are too smart to be kept in larger daytime enclosures as they will grab the keys and escape.

While I was at Bukit Merah I did witness the release of Carlos into a daytime enclosure that another orangutan, Adam, would inhabit. Prior to this, Carlos was kept in a barren cage only 24/7 for over two weeks. Adam had this enclosure to himself as he could not be in the same enclosure as BJ because they are both dominant males and would fight each other to prove this dominance. Having my own knowledge in animal welfare and behaviour I completely understand why Adam had to remain separate from BJ to ensure they do not fight and both remain uninjured. What I do not understand however, is why it was then decided to place Carlos in the same enclosure as Adam as Carlos is also a dominant male. The logic behind this decision completely baffles me considering the foundation's previous history of what happens when two dominant orangutans fight, as shown through BJ and Mike. I also do not understand the reasoning behind keeping these animals in cages simply because staff do not keep keys on their persons, so it is easy for them to escape.

Their behaviour:

Some of the other volunteers and I were present when Carlos was first introduced into Adams enclosure as we had been completing forestry work outside of this area. Upon introduction to each other, Carlos and Adam both immediately took dominant positions and began making vocal noises and shaking nearby trees to show this dominance. This display of aggression soon escalated to Carlos breaking a tree branch and throwing it at Adam. It was around this time that a group of tourists started to walk past with a tour guide. When the two males began to show more aggression by hitting and biting each other, the tour guide said that this was harmless, natural behaviour and tried to quickly move the group along to the next exhibit. This was extremely concerning for me as although the displaying of dominance is natural behaviour for two male orangutans, it is definitely not harmless. The guide and other staff members however, seemed more concerned with the public's perception than they did of the safety and wellbeing of Carlos and Adam. Unfortunately, I left the programme a couple of days after this incident, so I do not know how this situation progressed.

In addition to this, when feeding Phat Phat, Tua and Hiroshi, they would often raise their arms above their heads and start clapping- almost as if they felt they had to do this in order to be fed. When the volunteers asked Dr Sabapathy about this odd behaviour he did not have a clear answer that explained why the animals behaved this way around feeding time.

Harry:

Harry is a beautiful, male orangutan who was kept in a large cage-like enclosure for the entire duration of my trip. He would be kept in a cage overnight like the other orangutans, however during the day he would not be moved to a large outdoor enclosure like the others, he would be moved to a larger cage that gave him room to move around. However, the larger cage was still made from concrete and was completely barren except for a single, old tire for him to play with. When I asked why he was being kept in this cage and was not being released into a big daytime enclosure like the others, I was given various answers- none of which made sense. I was initially told that he was there because he was aggressive towards the other orangutans, however this does not make sense considering the foundations lack of concern with Carlos and Adam being aggressive towards each other. Then I was told that he was being kept separate because he was sick and needed to be monitored. This also did not make sense as his cage to sleep in at night was in the same area as the other orangutans- he could have reached through the bars to touch Baboon and her infant son Manu so if Harry was sick then he should have been completely isolated from the other animals. These answers both came from staff members at the foundation, however when I asked Dr Sabapathy directly, he told me that Harry was being kept in this large cage because his normal enclosure was broken. While this may have been true, it concerns me that he was being kept in a barren cage for weeks on end. I was at the centre for three weeks before I cut my trip short and Harry alternated from being kept in the night-time cages to this larger, barren cage the entire time.

Photographs:

When I first arrived at the centre I was told that volunteers were not allowed to take any photos of the cages due to publicity reasons. When I tried to take photos of the lunchtime feeding process with the orangutans I was again told that we could not take photos of this. The reason I was given was that the agency I had booked my travel through had not given us permission to take photos of the centre. I then asked that if I received permission from my agency would I be able to take photographs and I was told that I would. That day I emailed the agency I had booked my trip through and they said that they had no reason to believe that I would not be able to take photos and encouraged me to take photos and send back to them, so they could see how my trip was going. After receiving this email, I began to take photos again, only to be told by another member of staff that if I continued to take photos then Dr Sabapathy would not be happy. When I explained my conversation with the previous staff member and showed the email I had received from my travel company, I was told that they did not know anything about the agreement my agency had with the foundation. They said that Dr Sabapathy does not like volunteers taking photos of the orangutans from behind-the-scenes and would kick me off the volunteering programme if he found out.

When I asked Dr Sabapathy about this in the group meeting his only response was that if tourists saw that our photos were better than theirs because the volunteers can get up close, they would get jealous.

The day after this meeting, before we started our daily routine at the foundation, the volunteers were asked by a member of staff to hand over their mobile phones. This was the first time this request had been made and when we asked why we needed to hand them over, we were told that a phone had been stolen a few months ago so this was to protect our property. This was odd since I had already been at the foundation for a week and other volunteers had been there longer than me, and we had never had to do this before. I did not feel comfortable handing over my personal property since I had not signed anything or agreed to do this before. When I stated that I was happy to sign an agreement that ensured that Bukit Merah would not be liable if my device was lost, stolen or damaged, I was still told that I had to hand it over for safe-keeping. I held my ground and insisted that I kept my device on me, since it would remain in my backpack that had a combination code lock on it and would remain with me at all times, I felt that it would be safe from theft. I was the only volunteer who was allowed to keep their mobile device, however, I was no longer allowed to be unsupervised when feeding the orangutans or when being in their sleeping area where the cages are. I was even monitored when I was simply walking from one area of Bukit Merah to another. Personally, I felt that this harsh monitoring was due to the fact that the centre felt that I was at risk of exposing what they were doing and how these animals were being treated. I also feel that this treatment only started after the volunteers meeting with Dr Sabapathy because he and the other staff did not realise that the volunteers would disagree so strongly with how the foundation was being managed.

The Research:

In the meeting with Dr Sabapathy I asked when the orangutans would be released into the wild, since their own information leaflets and their website states that they rehabilitate orangutans, and this was the reason I chose to volunteer at Bukit Merah. However, my question was not answered in a way I had respected- I was told that I was mistaken as the foundation does not rehabilitate orangutans, their focus was on research. Dr Sabapathy told the volunteers that the orangutans would only be released once his research was completed- which would potentially take years to complete. This research was based around the health of orangutans and how to treat different diseases- however none of his research contributes valuable information to the lives of orangutans or to orangutan conservation. When I questioned the rehabilitation aspect of Bukit Merah that is highlighted on their website, Dr Sabapathy went on to explain that BJ Island is used to rehabilitate the orangutans before their eventual release into the wild. However, he emphasized again that the orangutans will not be released until the end of his research. Some of the animals have been at the centre since it opened in 2000, so have spent eighteen years living in captivity, surrounded by humans and not receiving their appropriate diets. There is no way that these animals will ever be able to survive in the wild as they will not have the skills to survive and adapt.

APPENDIX II - VISITOR HEALTH REQUIREMENTS

These requirements are designed to protect the health of the orangutans at the OUI. They are based on recommendations by qualified orangutan veterinarians. The health test results should be sent to the BMOUIF at least two weeks before arrival at the OUI. Visitors should be required to wear a face mask at all times when less than ten metres from the orangutans.

Health tests required for visitors

Infection	Applicable to	Test results and records required
For all visitors, including researchers, journalists, media crews, filmmakers, and volunteers.		
Tuberculosis ¹ (TBC)	Visitors from countries where TB is not endemic who have received a BCG vaccination.	A copy of their vaccine record and the result of a chest X-ray taken within the previous 12 months.
Tuberculosis ¹ (TBC)	Visitors from countries where TB is not endemic who are unvaccinated, or if their vaccine record cannot be found.	Negative result of a Mantoux skin test or a QuantiFERON test or the result of a chest X-ray taken within the previous 12 months. If the result of the Mantoux or QuantiFERON test is positive or inconclusive, the result of a chest X-ray will also be required.
Tuberculosis ¹ (TBC)	Visitors from countries where TB is endemic.	Results of a PCR MTB sputum test and a chest X-ray.
Hepatitis B	All visitors	HBsAg and anti-HBs blood test results.
Hepatitis C ²	All visitors	Anti-HCV blood test results.
Herpes simplex virus (HSV)	All visitors	Blood tests results: anti-HSV1 IgG and IgM; anti-HSV 2 IgG and IgM.
Yellow fever ³	Visitors who are from, or who have visited, a country where yellow fever is endemic.	Proof of yellow fever vaccination.
Human immunodeficiency virus (HIV) ⁴	All visitors	Negative HIV ELISA or rapid antibody test result.

Note: ¹ A list of countries where TB is endemic is provided below. Source: World Health Organisation. ² Antibody tests should show a negative result and the date of testing should be within the previous two years. ³ A list of countries where there is a risk of yellow fever transmission is provided below. Source: World Health Organisation. ⁴ Tests should show a negative result and the test date should be within the previous two years.

Countries where tuberculosis is endemic

Country	Country	Country	Country
Afghanistan	Djibouti	Lithuania	Rwanda
Albania	Dominican Republic	Madagascar	Sao Tome and Principe
Algeria	Ecuador	Malawi	Senegal
Angola	El Salvador	Malaysia	Serbia
Anguilla	Equatorial Guinea	Maldives	Sierra Leone
Argentina	Eritrea	Mali	Singapore
Armenia	Eswatini (formerly Swaziland)	Marshall Islands	Solomon Islands
Azerbaijan	Ethiopia	Mauritania	Somalia
Bahamas	Fiji	Mexico	South Africa
Bangladesh	French Polynesia	Micronesia (Federated States of)	South Korea (Republic of Korea)
Belarus	Gabon	Moldova (Republic of)	South Sudan
Belize	Gambia	Mongolia	Sri Lanka
Benin	Georgia	Morocco	Sudan
Bhutan	Ghana	Mozambique	Suriname
Bolivia	Greenland	Myanmar (Burma)	Tanzania (United Republic)
Bosnia and Herzegovina	Guam	Namibia	Tajikistan
Botswana	Guatemala	Nauru	Thailand
Brazil	Guinea	Nepal	Timor-Leste
Brunei Darussalam	Guinea-Bissau	Nicaragua	Tokelau

Bulgaria	Guyana	Niger	Togo
Burkina Faso	Haiti	Nigeria	Tunisia
Burundi	Honduras	Niue	Turkmenistan
Cabo Verde	India	Northern Mariana Islands	Tuvalu
Cambodia	Indonesia	North Korea	Uganda
Cameroon	Iraq	Pakistan	Ukraine
Central African Republic	Kazakhstan	Palau	Uruguay

Countries with a risk of yellow fever transmission

Country	Country	Country
Angola	Equatorial Guinea	Panama
Argentina	Ethiopia	Paraguay
Benin	French Guiana	Peru
Bolivia	Gabon	Senegal
Brazil	Gambia, the	Sierra Leone
Burkina Faso	Ghana	Suriname
Burundi	Guinea	South Sudan
Cameroon	Guinea-Bissau	Sudan
Central African Republic	Guyana	Togo
Chad	Kenya	Trinidad and Tobago (Trinidad only)
Colombia	Liberia	Uganda
Congo	Mali	Venezuela
Cote d'Ivoire	Mauritania	
Democratic Republic of Congo	Niger	
Ecuador	Nigeria	



Female orangutan at Bukit Merah Orang Utan Island
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