BORNEO POST 27/9/13

Study shows high prevalence of parasite in Bornean elephants

KINABATANGAN: Danau Girang Field Centre (DGFC), Sabah Wildlife Department (SWD) and Imperial College London (ICL) recently published a paper on endangered species research on the first parasitological study on wild Bornean elephants.

This study was supported by grants from the Rufford Small Grants Foundation, ZSL Erasmus Barlowe Darwin Expeditions Grant, Chester Zoo and Imperial College and is part of a larger Bornean elephant research and conservation programme led by SWD and DGFC, funded by Elephant Family, Houston Zoo, Columbus Zoo, Mohamed bin Zayed Species Conservation Fund and the US Fish and Wildlife Service Asian Elephant Conservation Fund.

"Endoparasites (parasites found in the body of an animal) can have an important influence on fitness and survival, particularly in small populations of endangered species such as the Bornean elephant," project leader Dr Benoit Goossens, who is the director of DGFC, said in a joint-statement yesterday.

"They can serve as a non-invasive warning system for wildlife and habitat health because environmental changes impact upon hosts, parasites and their shared environment.

"We carried out the first parasitological study on wild Bornean elephants in two sites, the Lower Kinabatangan Wildlife Sanctuary (LKWS) and Tabin Wildlife Reserve (TWR)," he said.

Dr Goossens, who also is a Senior Research Associate at Cardiff University, said the frequency of mixed infections suggested that Bornean elephants were susceptible to a myriad of parasites and that environmental conditions in Sabah are conductive to parasite survival and transmission.

"These conditions make parasitological research all the more relevant for the conservation of wildlife and their symbiotic fauna in Borneo, a global biodiversity hotspot, something DGFC and SWD are keen to develop in the near future," he added.

Stephanie Hing (left), first author of the paper, and Nurzhafarina Othman (right), a co-author and PhD student at Danau Girang Field Centre during the collection of an elephant dung sample in the Kinabatangan.

A female fitted with a satellite collar with her young baby in Kinabatangan.

Stephanie Hing, from Imperial College, and the first author of the paper, meanwhile, explained that more than 1,000 fecal samples were collected from free-ranging wild Bornean elephants in Kinabatangan and Tabin with the help of DGFC PhD student Nurzhafarina Othman.

She said individual elephants were located using data from satellite collars, allowing them to get fresh dung samples.

"The dung samples were then analysed at DGFC laboratory and parasites were identified and prevalence (number of dung with parasites as a percentage of the total number sampled) was calculated as an indication of how common parasite infection was in each population.

"Our results showed a high prevalence of a trematode, Fasciola. The high prevalence of that parasite found in Bornean elephants may be associated with the wet tropical conditions in Sabah. What is interesting is that we found a higher prevalence and load of Fasciola in the TWR compared with the LKWS," she said.

Hing opined that intermediate hosts for Fasciola, aquatic lymnaeid snails, might be more abundant in the TWR compared with the LKWS, increasing the probability that infectious agents are present in the TWR.

"Water bodies in some parts of the TWR are further away from palm oil plantations than water bodies in the LKWS.

"Therefore, water bodies in the LKWS may contain greater levels of agricultural pollutants such as palm oil mill effluent than those in the TWR. Palm oil mill effluent is generally pH 4 to 5 due to organic acids produced in the fermentation process, but lymnaeid snails prefer near-neutral pH," Hing added.

婆羅洲小矮象體內寄生蟲

影響健康及存活率

沈健雲 報導

（本报亚庇廿六日讯）达瑙基朗、沙巴野生物局及伦敦帝皇学院，近期针对沙巴州濒危动物婆罗洲小矮象寄生虫研究发表研究报告。

这项研究的资金，是由Rufford小型基金，ZSL Erasmus Barlowe Darwin探勘基金、Chester动物园及伦敦帝皇学院所赞助，也是婆罗洲小矮象研究和保育计划的一环。

有关计划则是由大象家族、休斯顿动物园、哥伦布动物园、穆罕默德·本·扎耶德物种保护基金及美国鱼类和野生动物亚洲大象保护基金会所赞助。

■小矮象被发现体内易于生长寄生虫。

领导是项研究的达瑙基朗总监贝纳哥申表示，动物体内的寄生虫，可以影响动物的健康和活命机率，特别是在小种群濒危物种，如婆罗洲的大象。

他说：「寄生虫可以成为一种非侵入性的预警系统，以探讨野生动物和其栖息地是否健康，因主体、寄生虫和他们的共享环境，都会造成环境影响。」

他补充，今次该部门在京那巴登岸下游和达缤野生物保育中心进行研究工作。

该研究报告首席作者史迪芬妮兴说，研究团队内的博士生奴查花丽娜奥曼，协助他们在上述两个地方，收集了一千堆大象的粪便标本。

他们透过使用卫星追纵器，收集到新鲜的粪便，之后送进实验室进行分析，以鉴定粪便内含有寄生虫及其数量等。

「小矮象中流行的寄生虫，可能与沙巴热带潮湿的气候有关，我们发现在达缤，Fasciola的数量比在京那巴登岸下游来得高，这可能与当地的一种蜗牛（aquatic lymnaeid snails）有关，增加了感染机会。」

■研究员收集小矮象的粪便，以研究寄生虫。

混合感染的频率也表明，婆罗洲的大象易于受到多种寄生虫影响，而沙巴的环境却有利于寄生虫生存和传染。当局日后将会在这方面进行更深入研究，以达至保育动植物的目标。

DAILY EXPRESS 27/9/13

First parasitological study on wild Borneon elephants

KINABATANGAN: The first parasitological study on wild Bornean elephants found that Endoparasites (parasites found in the body of an animal) can have an important influence on fitness and survival, particularly in small populations of endangered species such as the Bornean elephant.

Dr Benoit Goossens, Director of the Danau Girang Field Centre (DGFC) and a Senior Research Associate at Cardiff University, who is leading the project, said they serve as a non-invasive warning system for wildlife and habitat health because environmental changes impact upon hosts, parasites and their shared environment.

" We carried out the first parasitological study on wild Bornean elephants in two sites, the Lower Kinabatangan Wildlife Sanctuary (LKWS) and Tabin Wildlife Reserve (TWR)," said Goossens.

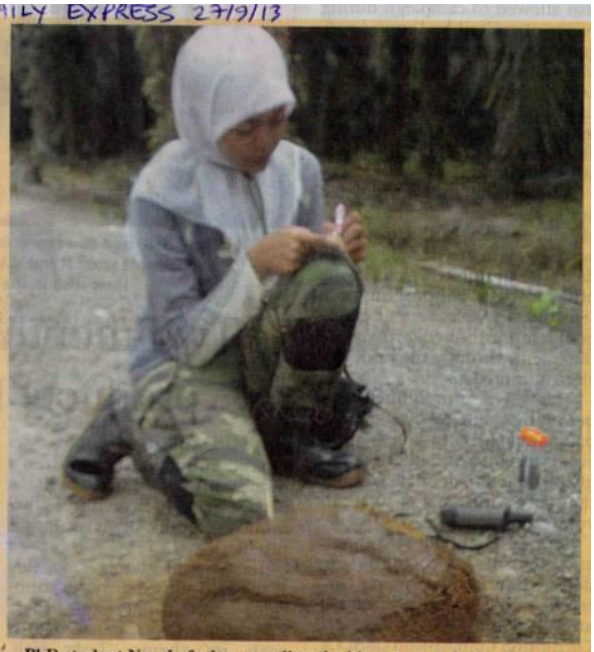
"More than 1,000 faecal samples were collected from free-ranging wild Bornean elephants in the Kinabatangan and Tabin with the help of DGFC PhD student Nurzhafarina Othman," explained Stephanie Hing, from Imperial College, and the first author of the paper.

"In LKWS, individuals were located using data from satellite collars, allowing us to get fresh dung samples. Dung were then analysed at DGFC laboratory and parasites were identified and prevalence (number of dung with parasites as a percentage of the total number sampled) was calculated as an indication of how common parasite infection was in each population," added Hing.

"Our results showed a high prevalence of a trematode, Fasciola. The high prevalence of that parasite found in Bornean elephants may be associated with the wet tropical conditions in Sabah. What was interesting is that we found a higher prevalence and load of Fasciola in the TWR compared with the LKWS.

"Intermediate hosts for Fasciola, aquatic lymnaeid snails, may be more abundant in the TWR compared with the LKWS, increasing the probability that infectious agents are present in the TWR. Water bodies in some parts of the TWR are further away from palm oil plantations than water bodies in the LKWS.

"Therefore, water bodies in the LKWS may contain greater levels of agricultural pollutants such as palm oil mill effluent than those in the TWR. Palm oil mill effluent is generally pH 4 to 5 due to organic acids produced in the fermentation process, but lymnaeid snails prefer near-neutral pH," explained Hing.



PhD student Nurzhafarina sampling the biggest ever elephant dung.

"The frequency of mixed infections suggests that Bornean elephants are susceptible to a myriad of parasites and that environmental conditions in Sabah are conductive to parasite survival and transmission.

"These conditions make parasitological research all the more relevant for the conservation of wildlife and their symbiotic fauna in Borneo, a global biodiversity hotspot, something DGFC and Sabah Wildlife Department are keen to develop in the near future," said Goossens.

"Endangered Species Research" first parasitological study on wild Bornean elephants

KINABATANGAN: The Danau Girang Field Centre (DGFC), Sabah Wildlife Department (SWD) and Imperial College London (ICL) recently published a paper on "Endangered Species Research" on the first parasitological study on wild Bornean elephants.

This study was supported by grants from the Rufford Small Grants Foundation, ZSL Erasmus Barlowe Darwin Expeditions Grant, Chester Zoo and Imperial College. It is part of a larger Bornean elephant research and conservation programme led by SWD and DGFC and funded by Elephant Family, Houston Zoo, Columbus Zoo, Mohamed bin Zayed Species Conservation Fund and the US Fish and Wildlife Service Asian Elephant Conservation Fund.

"Endoparasites (parasites found in the body of an animal) can have an important influence on fitness and survival, particularly in small populations of endangered species such as the Bornean elephant," explained Dr Benoit Goossens, director of DGFC and a senior research associate at Cardiff University, who is leading the project.

"They can serve as a non-invasive warning system for wildlife and habitat health because environmental changes impact upon hosts, parasites and their shared environment.

"We carried out the first parasitological study on wild Bornean elephants in two sites, the Lower Kinabatangan Wildlife Sanctuary (LKWS) and Tabin Wildlife Reserve (TWR)," said Goossens.

"More than 1,000 fecal samples were collected from free-ranging wild Bornean elephants in the Kinabatangan and Tabin areas with the help of DGFC PhD student Nurzhafarina Othman," explained Stephanie Hing, from Imperial College, and the first author of the paper.

"In LKWS, individuals were located using data from satellite collars, allowing us to get fresh dung samples. Dung was then analysed at DGFC laboratory and parasites were identified and prevalence (number of dung with parasites as a percentage of the total number sampled) was calculated as an indication of how common parasite infection was in each population," said Stephanie adding that "Our results showed a high prevalence of trematode, Fasciola".

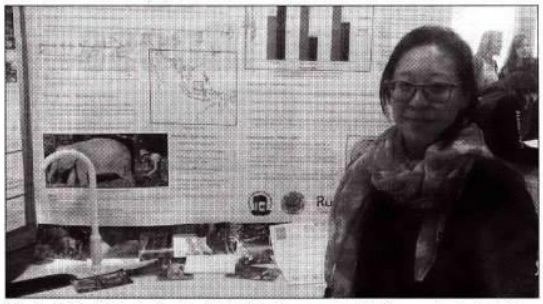
She said the high prevalence of that parasite found in Bornean elephants may be associated with the wet tropical conditions in Sabah.

"What was interesting is that we found a higher prevalence and load of Fasciola in the TWR compared with the LKWS," Stephanie said.

"Intermediate hosts for Fasciola, aquatic lymnaeid snails, may be more abundant in the TWR compared with the LKWS, increasing the probability that infectious agents are present in the TWR. Water bodies in some parts of the TWR are further away from palm oil plantations than water bodies in the LKWS.

"Therefore, water bodies in the LKWS may contain greater levels of agricultural pollutants such as palm oil mill effluent than those in the TWR. Palm oil mill effluent is generally pH 4 to 5 due to organic acids produced in the fermentation process, but lymnaeid snails prefer near-neutral pH," explained Hing.

"The frequency of mixed infections suggests that Bornean elephants are susceptible to a myriad of parasites and that environmental conditions in Sabah are conductive to parasite survival and transmission. These conditions make parasitological research all the more relevant for the conservation of wildlife and their symbiotic fauna in Borneo, a global biodiversity hotspot, something DGFC and SWD are keen to develop in the near future," concluded Goossens.



Stephanie Hing (in front of a poster) describing her research on the Bornean elephant parasites.

Stephanie (left) and Nurzhafarina Othman co-author and PhD student at DGFC during the collection of an elephant dung sample in Kinabatangan.