

Project Update: August 2016

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

We collected approximately 546 fecal samples, 405 saliva samples, and ~750 hours of data. We also completed some preliminary analysis on all behavioral observational data collected. One-way ANOVAs indicated no significant differences between groups in affiliative, vocal, alarm calling, or self-directed behavior when no tourists were present, regardless of monthly tourist count. However, R1 displayed significantly higher levels of aggression in months with higher tourist numbers, but not in the presence of tourists, than PB1 ($F(2, 30) = 7.59, p = 0.004$). Additionally, PB has the lowest mean rates of aggression (.071) of the three groups (R1=1020, R2=0948). Repeated measures ANOVAs indicated that both groups vocalised less ($F(1,20) = 4.35, p = 0.05$) in months with lower tourist numbers, and, regardless of monthly tourist numbers, both groups displayed higher rates of aggression ($F(1,21) = 9.81, p = 0.005$) and had lower percentages of focal sessions with affiliative behavior ($F(1,21) = 13.49, p = 0.005$) when tourists were present than when absent. We also found that both groups display higher rates of SDBs when tourists are absent and in months with lower tourist numbers ($F(1, 21) = 8.54, p = 0.008$). This final result is surprising, however we expect to elucidate the cause when data are analysed using GLMMs later this year. This analysis can control for more, possibly confounding variables such as but not limited to, fruit availability, number of researchers, size of tourist groups, and total tourist viewing time.

Also, we will present an oral talk IPS/ASP in Chicago, 2016. This presentation will focus on only a portion of our project, tourism presence/number and macaque behavior. We have also partnered with Dr Celine Bret who conducted research with Macaca Nigra Project in Tangkoko on *M. nigra* social systems and health. This collaboration added ~300 saliva samples and also increased the number of fecal samples. Not only is Dr Bret collecting cortisol, but she is also collecting c-peptides from urine. She focused on the social group Rambo 2 (tourism, crop guarding, and research exposure) and Pantai Batu (research only). Her results will compliment and add to our research goals significantly.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

We are currently experiencing problems with our physiological sample permit. I had attained a permit in February 2015 and was told the permit was good for one year. Unfortunately, this was not the case, it expired August 2015. Since January 2016, we have been working with our host affiliate, Dr. Muhamad Agil at the Bogor Agricultural University, Bogor, Java to renew this permit. The most recent update informed us to expect things to be completed in October 2016. This completion date made it impossible to send Uni to Germany as she will be taking classes. However, we have a backup student, currently an Indonesian PhD student, who may be able to train in Germany and subsequently, assay our samples.

3. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Our Indonesian counterpart student, Uni Sutiah, has applied for and been accepted into a graduate programme of study (Masters of Biology) at the University of Gadjara in Yogyakarta, Java. Her tuition has been paid and she will begin her coursework in September 2016. We hope we can send her to the German Primate Center, Göttingen, Germany to both train her in cortisol assay techniques and have her assay our physiological samples; however there has been a delay in the sample permit process (see #2) and it may no longer be possible to send Uni. Regardless, we intend to find an Indonesian student who can benefit from this experience.