



“Tangkoko Conservation Education” - Conservation Education project around the Tangkoko-Duasudara nature reserve, Sulawesi, Indonesia

FINAL REPORT

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Tangkoko Conservation Education

Awarded a PSGB Conservation Grant in February 2012

INTRODUCTION:

Sulawesi is the fourth biggest island of Indonesia and part of the Wallacea region, one of the 25 biodiversity hotspots of the world for conservation priorities (1). Due to his geographical situation, Sulawesi is of particular interest with respect to primate endemism, as it hosts seven macaques species found nowhere else in the world (2). The Tangkoko-Duasudara Nature Reserve, situated in North Sulawesi, Indonesia, is a unique protected area of around 88000 hectares, home of many endemic primate species, noteworthy the spectral tarsier (*Tarsius tarsier*) and the crested macaque (*Macaca nigra*). However, despite being a protected area, wildlife is often the target of poachers. Furthermore, illegal logging, agri-business, and non-sustainable farming practises occur around the area and increase habitat loss (3). Due to these threats, crested macaques are listed as critically endangered by the IUCN red list since 2008. Population surveys conducted over the last four decades have documented an 80% decline in this taxon’s population size (4). It is estimated that there are perhaps as few as 5,000 individuals left in North Sulawesi (ditto). This is why an urgent and sustainable action is needed locally to avoid the extinction of this species.

Tangkoko Conservation Education, a conservation education programme, taking place around the Tangkoko-Duasudara nature reserve, aims at giving the survival of this species in this reserve a long-term perspective. To achieve this goal, we develop education and conservation activities for local population (especially school interventions for young people), in order to increase their knowledge and awareness towards the crested macaques and the local biodiversity.

METHODS:

This project has started in 2011 in one village surrounding the reserve (Batu Putih), following by another project in 2011-2012 including two more villages (Pinangunian, Winenet). The Conservation Grant Award provided by PSGB has helped us to complete a third school year in two other surrounding villages, Sagerat and Kasawari, starting August 2012 until April 2013. This project has involved 7 primary schools and 4 junior schools, for a total of 330 pupils between 8 and 15 years old.

Our methods consisted in bimonthly educational interventions. The theoretical interventions were implemented every two weeks during 9 months in each school (one class at a time). Field trips were organised in the Tangkoko forest to learn about crested macaques, and Tasikoki Wildlife and Education Centre (in order to understand the work done against the illegal wildlife pet trade which is particularly present in North Sulawesi), and encounter species that have disappeared in Tangkoko nature reserve (e.g. Babirussa and Anoa).

Each theoretical lesson delivered to the pupils focuses on a specific thematic, which help to develop their knowledge and increase positive attitude towards their local environment.

The themes are:

- Environmental basics and human changes over the environment;
- Biodiversity of tropical rainforest;
- Indonesian, Sulawesi and Tangkoko flora and fauna;
- Crested macaque's biology, social life, threats and conservation;
- Characteristics of a nature reserve, status of and threats on Indonesian wildlife and conservation actions.

These interventions were implemented at school, with the help of local stakeholders:

- The local eco-guides provide interventions about local flora and fauna in classrooms, and accompany pupils on field trips into the Tangkoko reserve.
- Members of the research station of the Macaca Nigra Project (<http://macaca-nigra.org/>) provide interventions about the crested macaque and accompany pupils on field trips into the reserve.
- The nature conservation agency of the Department of Forestry (BKSDA), the local authority whose aim is to protect and monitor the reserve, provide resources about the specificities of a nature reserve, its conservation and jurisdiction and law enforcement.
- The Tasikoki Wildlife Rescue and Education Centre near Bitung supported by the Masarang Foundation (<http://www.tasikoki.org/>), is a sanctuary for wild animals victims of human activities. The centre regularly hosts local school groups for environmental education activities about the threatened species of Indonesia and their protection.
- The Selamatkan Yaki conservation programme supported by the Whitley Wildlife Conservation Trust (<http://selamatkanyaki.com/>), aims to protect the crested macaques around the Minahasan area in North Sulawesi. It supports the education interventions by providing information and resources.
- The local nature lovers clubs from Batu Putih and Airmadidi assist on the interventions on a voluntary basis.

These organisations take part in our interventions, field trips and/or provide us with valuable material to engage with the pupils.

OUTCOMES OF THE PROGRAMME:

The first outcome of this 2012-2013 school year was a public event held on the 27th March 2013 and hosted by the Tasikoki Wildlife and Education Centre. This celebration marked the end of one year of education programme for 330 pupils of 12 schools and 5 villages. During this event, they were all gathered for the first time (the previous final events were organised in each village). During this event, the school pupils have passed on the conservation messages learnt during our activities to a wider audience by using original theatre plays, songs and drawings made of recycling materials, to sensitize their parents and the local community. Most of our partners took part in this successful event (local guides, Macaca Nigra Project, Selamatkan Yaki, Tasikoki Wildlife and Education Centre, the North Sulawesi Nature Conservation Agency of the Ministry of Forestry (BKSDA), local government and head teachers).

For this 2012-2013 school year, we have created an education booklet, providing a concrete material for teachers and pupils who wish to implement the lessons and activities that we have designed. In September 2012, we have successfully developed and delivered the first lesson made of exercises and illustrations by Elodie Philippe, a scientific illustrator with whom we collaborate on this project (<http://www.elodiephilippe.fr/index.php?/nature/manuel-scolaire-environnement/>). The support provided by PSGB helped us to create this education booklet by covering part of the fees of the illustrator. After some delays, the booklet was finished by June 2013 and the whole content is now implemented by our team and will hopefully be part of the curriculum for the 2014-2015 school year. Furthermore, we are currently part of the Primate Education Network (PEN: <http://www.primateeducationnetwork.org/>). Through this network and website, we plan to share our education booklet with other organisations working in the field of primate education for them to benefit from our work.

A film crew from the BBC Natural World TV Series came in Tangkoko between December 2012 and April 2013 to elaborate a documentary about the crested macaques. This documentary, called "Meet the Monkeys" and shown in UK in autumn 2013 (and in the USA in 2014) features the crested macaque, the threats he faces, the conservation actions implemented to preserve it, as well as our work in the area of Tangkoko. Furthermore, the BBC team has produced a ten minutes documentary in local language (Bahasa Manado) about the crested macaque and its conservation. This short documentary was designed for the local population and was kindly offered to us. The first screenings have been realised in Pinangunian and Batu Putih villages in April 2013, where they have received a warm welcome from many villagers. Through this powerful, accessible and engaging tool, we will be able to pass on our conservation message to local communities living next to the Tangkoko forest and in all North Sulawesi area more efficiently.

EVALUATION OF THE PROGRAMME:

For this 2012-2013 school year, we gave evaluation questionnaires to the pupils before and after the programme, in order to measure the effectiveness of our action on their knowledge, attitudes and behaviours regarding the reserve and its wildlife.

First results of the evaluation and comments (work in progress):

About the pupils' **habits** regarding the forest and wildlife (Figure 1), we don't perceive an improvement about the activities such as taking wood from the forest, but rather a small increase: 73% of the pupils declared that their families took wood before the programme and 86% after. This result might be explained by the difficult socio-economic situation in Indonesia at that time. Indeed, during this 2012-2013 year, the price of cooking fuel has drastically increased in North Sulawesi, and during some weeks the towns were running out of gas, both essential for the villagers to cook. Therefore, local communities relied on wood, and we have witnessed ourselves that many Batu Putih villagers were collecting wood from the Tangkoko forest or their gardens to replace the gas during these difficult periods.

However, we can see an improvement regarding pupils' habits towards wildlife (Figure 1), as they seemed to realise, thanks to our lessons, that wildlife should remain in the wild: 18% of the pupils declared having wildlife as pets before the programme, and 10% after. Before the programme, 24% wished to have one, whereas 10% still wish after the programme.

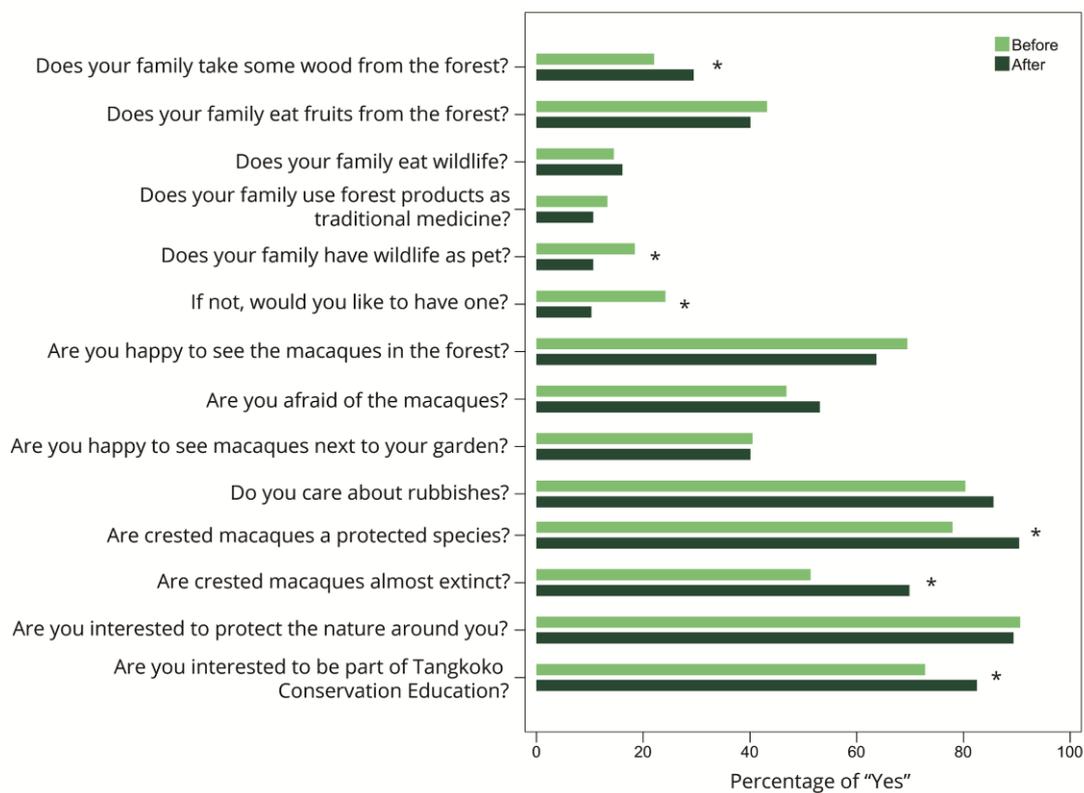


Figure 1: Comparison of the percentage of pupils answering "YES", before and after the programme to questions regarding knowledge and habits about wildlife and the forest (* $P < 0.05$, Chi-Square test, $df = 1$).

Regarding their **knowledge** about Sulawesi and Tangkoko fauna, we can mention a significant improvement: For example, pupils are more familiar with recognising all the Sulawesi animals based on pictures. The best improvement is about the Babirusa (*Babyrousa babyrussa*), as 34% of the pupils wrote the correct name of this animal before the programme (it was more considered as a wild pig), and 75% after.

They also have a better understanding of the protected and endangered status of the crested macaque (Figure 1): 77% of the pupils acknowledged the fact that crested macaques were a protected species and 90% after the programme. Before the programme, 51% acknowledged its endangered status and 69% after the programme;

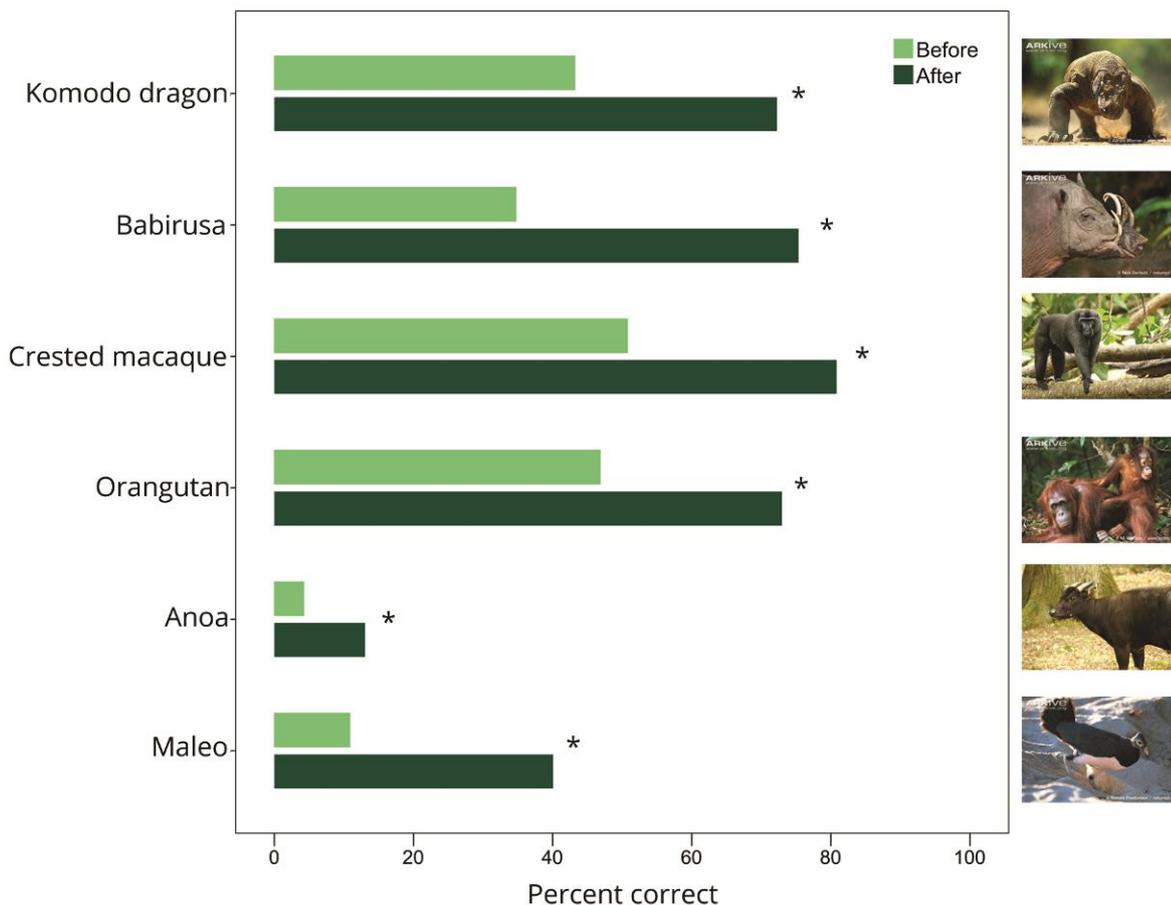


Figure 2: Comparison of the percentage of pupils writing the correct answer before and after the programme to questions about recognising Indonesian and Sulawesi animals (* $P < 0.05$, Chi-Square test, $df = 1$).

The number of appropriate answers given by pupils increased when asked to write the names of animals present in Tangkoko (Figure 3), though they seem to focus more on crested macaques rather than other animals (33% wrote “crested macaque” before the programme, and 70% after).

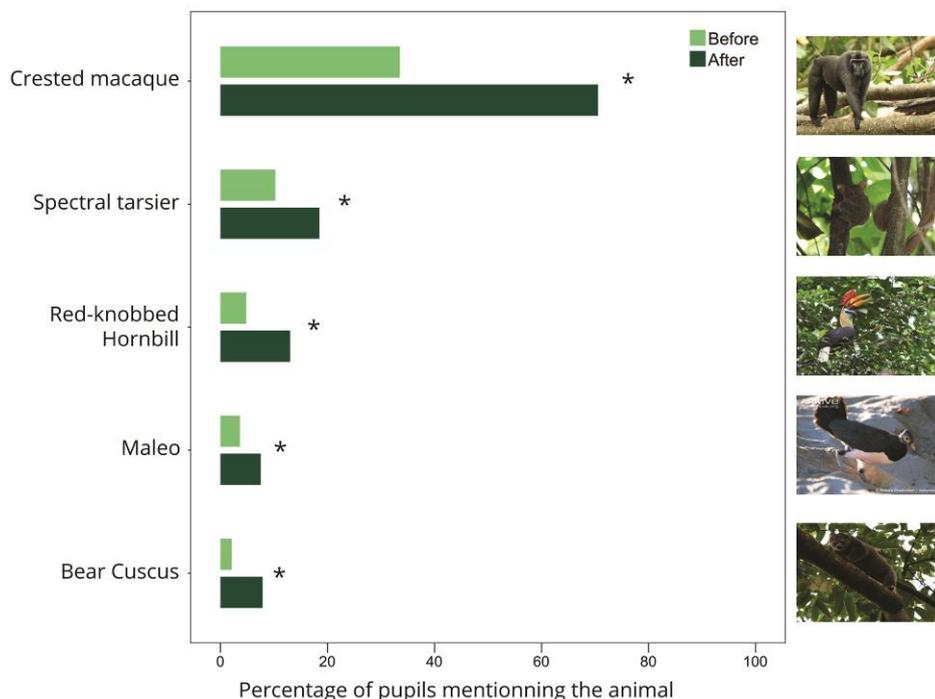


Figure 3: Comparison of the percentage of pupils listing 3 endemic animals living in Tangkoko Nature Reserve before and after the programme. (* $P < 0.05$, Chi-Square test, $df = 1$).

Regarding their **attitudes** towards crested macaques in the forest or in the garden (Figure 4), the results have demonstrated that there is an improvement regarding how they declare to react when encountering crested macaques in their local environment (the forest) or in their gardens. They perform less disturbing activities such as approaching or feeding the macaques: 19% of the pupils approach the macaques in the garden before, 9% after; 29% of the pupils approach the macaques in the forest before, 18% after. 15% of the pupils feed the macaques in the garden before, 7% after; 27% of the pupils feed the macaques in the forest before, 7% after. This good result can be explained by our trips to Tangkoko forest where the pupils observe the macaques in their natural environment, and where the local guides and researchers explain them the appropriate behaviour to adopt next to the animals.

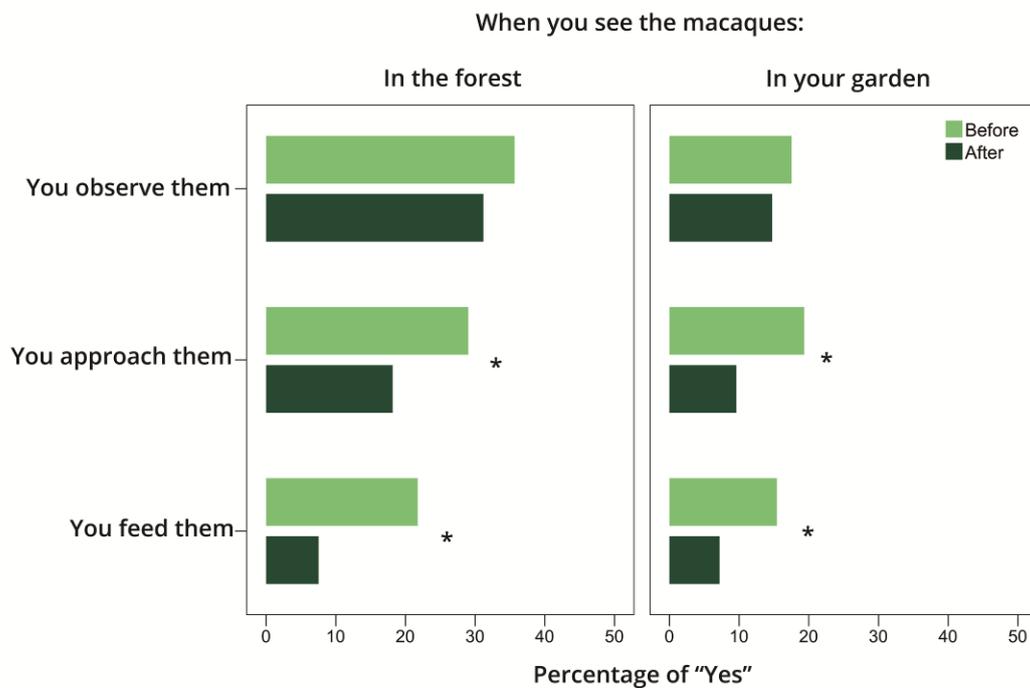


Figure 4: Comparison of the percentage of pupils answering “YES” to question regarding their behaviour before and after the programme when facing the macaques in their garden and in the forest. (* $P < 0.05$, Chi-Square test, $df = 1$).

Finally, they overall are interested to be part of our education programme (Figure 1): 72% wrote that they were interested before, and 82% after.

Through these first results, we consider that we still need to pay attention to help the pupils and their family improve their habits (especially regarding eating wildlife and taking wood from the forest). We consider that our project has a positive impact on the pupils’ knowledge and attitudes, and they seem to show interest about the topics we teach them. Therefore, we consider that we need to carry on our actions on a regular and long term basis in order to confirm that this project can have a positive effect on the protection of crested macaque and Tangkoko forest through education. More detailed data will be added at a later stage, and published in an assessment article about the education programme in Tangkoko.

ACKNOWLEDGMENTS:

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FINAL BUDGET (July 2012-April 2013)

FINANCIAL DETAILS	COST	PERCENTAGE OF TOTAL PROVIDED BY PSGB
Travel (including fuel): NB Fuel will be granted at 35p per mile in the UK	£ 4100 - Meetings, recognitions and education interventions in the villages - Teachers trip to Tangkoko reserve - Pupils trip to Tangkoko reserve and Tasikoki centre	
Salaries and interventions	£1750 - Project's coordinator salary - School and trip interventions of local guides	
Theoretical material	£ 1000 - Pedagogical material: books, games, pens, paper, notebooks etc - Creation, edition and printing of the education booklet	50% Creation of the education booklet (£500)
Field material	£ 200 - Binoculars, field notebooks, audio recorder	
Administration	£ 300 Communication, photocopies, translation, meeting and workshops preparation	
Promotion tools (panels, posters, stickers, t shirts)	£ 200 -Edition, printing	
TOTAL	£ 9550	

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