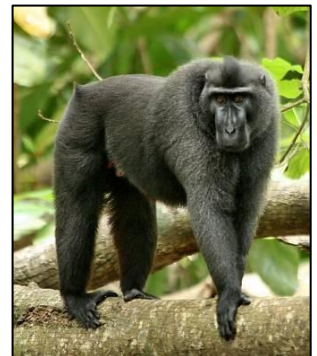




Tangkoko Conservation Education

Education programme
of the Macaca Nigra Project

Tangkoko Conservation Education: Conservation education programme for local communities in North Sulawesi, Indonesia



ACTIVITIES AND BUDGET REPORT August 2018 – July 2019

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INTRODUCTION

Sulawesi island is part of the Wallacea region, one of the 25 biodiversity hotspots of the world for conservation priorities (Myers et al., 2000). Due to his geographical situation, Sulawesi is of particular interest with respect to species' endemism, especially regarding primates, as it hosts seven macaque species found nowhere else in the world (Riley, 2010). Crested macaques (*Macaca nigra*) are one of these species.

Crested macaques' population has declined by more than 80% since the 1970s. Their primary threat is hunting and habitat destruction. They are now critically endangered and listed in the IUCN 25 Most Endangered Species List. Tangkoko hosts the biggest most viable population but the forest has seen a reduction in size over the last decades, mostly due to logging for timber, agriculture and illegal mining. If nothing is done, crested macaques will completely disappear from their natal range by 2030.

The Tangkoko Reserve, situated in North Sulawesi, Indonesia, spans about 8,867 ha and is a mix of lowland tropical rainforest, secondary regrowing forest and submontaneous forest. It is likely to be the last stronghold for crested macaques (*Macaca nigra*). In 2007, the forests of Minahasa, the entire region where Tangkoko belongs, were classified as being in poor conditions, i.e. highly fragmented, largely dominated by human activity but with scattered forest remnants present.

Tangkoko Conservation Education (TCE) is the education programme of the Macaca Nigra Project (macaca-nigra.org), a research-education-conservation project focused on crested macaques, founded in 2006 and based in the Tangkoko reserve. TCE was created in 2011, with the main goal of increasing positive behaviour of local people towards their local environment, using the emblematic crested macaque as a flagship species.

TCE aims at addressing the lack of local environmental awareness and capacity-building in order to improve the protection of the local flora and fauna and to enhance the sustainability of regional economic development. TCE aims at helping local communities of North Sulawesi, Indonesia (especially young people and school staff) to acknowledge the highly-endangered status of the local wildlife as well as its ecological and economic importance, and to take action to protect it. On a long-term perspective, we believe that increasing awareness and appreciation for the environment in the local population can substantially decrease illegal activities, such as hunting, land conversion, and illegal logging.

Through its local team, volunteers and young ambassadors, TCE implements activities around the Tangkoko reserve and other protected forests of North Sulawesi, in the administrative regions of Bitung, North Minahasa and Manado. Our main work is to design and deliver school interventions for local pupils. These activities are complemented with fieldtrips, conservation education trainings for school staff and awareness campaigns for local communities.

Implemented in one village initially, TCE has now successfully expanded and established its activities on a larger scale, including 22 schools in 13 villages from 3 different districts, for a total of 3600 students (aged 9 to 15 years old), 100 school staff and 4400 members of the local communities

The long-term aim of the TCE programme is to get our lessons integrated into the core curriculum in North Sulawesi Province schools. We have a long-established partnership with the Department of Education of Bitung (second biggest city of North Sulawesi after Manado). Six schools have already integrated our lessons into the curriculum in 2017-2018. In order to involve all the education establishments in the Bitung region, the Department of Education has requested that we provide proof of the impact of a year's programme by TCE compared with one-off interventions. For that reason, during this 2018-2019 period, we have implemented two kinds of interventions:

1. TCE school interventions:

Over the period between September 2018 and May 2019, TCE delivered 6 school interventions combined with a visit to Tangkoko for 6 secondary and high schools in Bitung region (Figure 1), for a total of 183 students aged 11 to 15 years old.

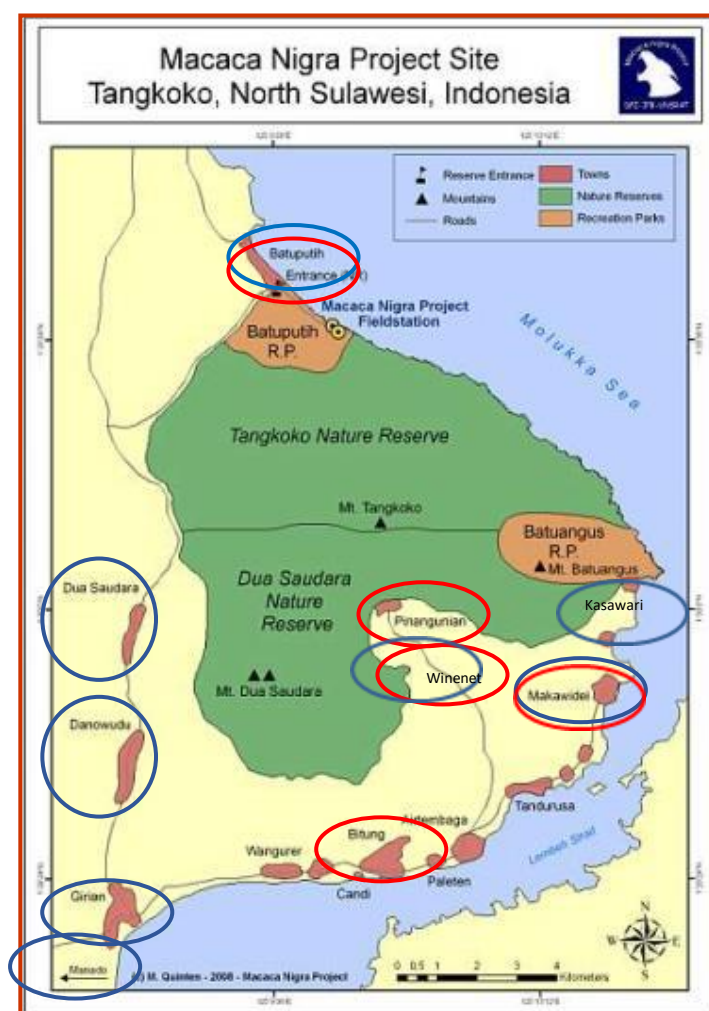
These interventions were:

- **Lesson 1:** Basics and human changes over the environment - delivered in September/October 2018.
- **Lesson 2:** Biodiversity of tropical rainforest - delivered in November 2018.
- **Lesson 3:** Indonesian, Sulawesi and North Sulawesi flora and fauna - delivered in December 2018)
- **Lesson 4:** Primates, the crested macaques (*Macaca nigra*) and the Macaca Nigra Project – delivered between January and April 2019;
- **Lesson 5:** Observation of the crested macaques (part of a field trip to the Tangkoko Nature Reserve) – delivered in March/April 2019;
- **Lesson 6:** Characteristics of a nature reserve, status of and threats on protected and endangered Indonesian wildlife, and conservation actions – delivered in May 2019.

Our environmental lessons were presented in a booklet, combined with illustrations by a professional scientific illustrator. We delivered our interventions together with the help of several volunteers, as well the Macaca Nigra Project (MNP) for lesson about the macaques. The trips to Tangkoko Nature Reserve were implemented together with the Macaca Nigra Project and local ecotourism guides.

2. Single interventions

In parallel, TCE and another local conservation programme, Selamatkan Yaki, delivered a single environmental intervention in 10 other educational establishments for 300 pupils aged 8 to 11 between February and May 2019 (Figure 1). This intervention lasted an hour, was presented through a Power Point (with facts, illustrations, pictures) and included some key information from each of our 6 TCE environmental lesson.



Batu Putih:

- SD GMIM primary school
- SD INPRES 12/79 primary school
- SD INPRES 4/82 primary school
- SMP 8 Bitung junior high school
- SMK Negeri 4 senior high school

Pinangunian:

- SD GMIM primary school
- SD INPRES 5/81 primary school
- SMP Negeri 14 SATAP Bitung junior high school

Winenet:

- SMP Negeri 7 Bitung junior high school

Kasawari:

- SD Nasional Kasawari primary school
- SD GMIM Kasawari primary school

Duasudara:

- SD GMIM 5 Duasudara primary school

Danowudu:

- SD GMIM 6 Danowudu primary school

Makawidey:

- SMP Kristen Eklesia Makawidey junior high school
- SD GMIM Makawidey primary school

Bitung:

- SMK Pelita Bahari senior high school

Sagerat:

- SDN Sagerat

Figure 1: Map of the Bitung area and schools (red: TCE programme – blue: single interventions) participating in our interventions in 2018-2019.

EVALUATION

Each school year, we provide pre-and post-programme evaluation questionnaires to TCE's pupils in order to measure their knowledge, behaviour, habits and attitudes towards their local environment. The aim of this evaluation is to determine whether our environmental education programme can have an influence on the local communities' behaviour.

For this 2018-2019 period, we delivered pre and post-intervention questionnaires to children taking part in TCE programme (N=108), single interventions (N=300), as well as a control group of pupils (N=23). The aim was to assess whether the TCE programme and its long-lasting interventions has a stronger measurable and positive impact on the pupils of Bitung, compared to a single intervention, in terms of habits, knowledge and attitudes towards their local environment.

The surveys consisted of different questions assessing the pupils' habits towards wildlife (e.g: "Do you eat wildlife?"), their knowledge about their local environment (e.g: "Write the name of three animals who live in Tangkoko"), and their attitudes towards conservation (e.g: "Do you think you have the capacity to protect your local environment?"). We wanted to know if their scores improved over time. Here are the preliminary results of the questionnaires' analysis:

Regarding the habits (3 questions for a maximum score of 3), the preliminary results show marginal changes in the pupils scores. Pupils' scores in the single intervention slightly increased compared to other groups, whose score has decreased slightly over time (Table 1, Figure 2).

Table 1. Mean scores in the questions regarding pupils' habits towards wildlife, before and after interventions, in the 3 evaluation groups.

Mean habits score	Before	After
Control	2.17	1.95
Single intervention	2.24	2.45
TCE programme	2.18	1.98

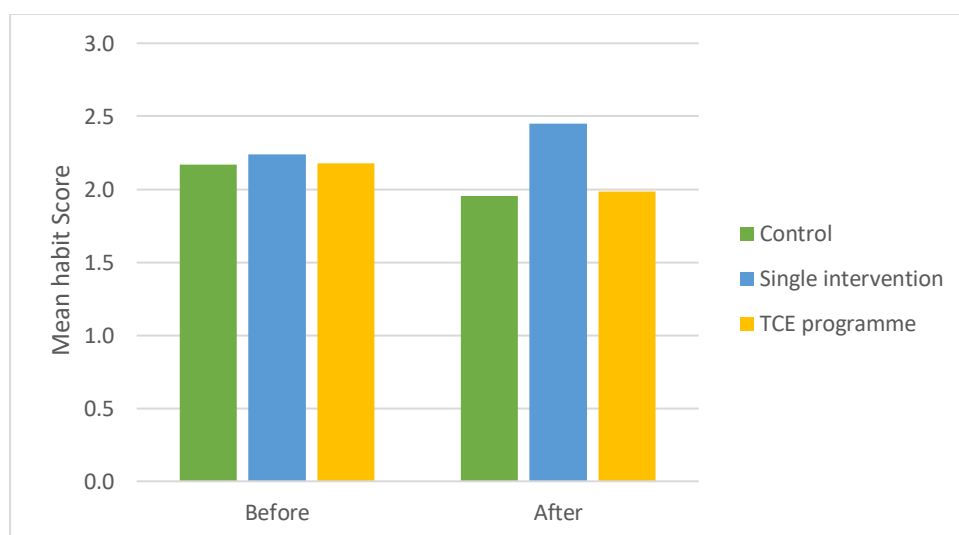


Figure 2: Pupils' pre and post questionnaires mean habits score

Regarding the knowledge (16 questions for a maximum score of 19), the preliminary results show that the score increased for single intervention and TCE programme pupils, compared to the control group, whose score has decreased over time. Single intervention pupils showed a greater improvement over time, but TCE pupils showed the highest scores overall before and after the interventions (Table 2, Figure 3):

Table 2. Mean scores in the questions regarding pupils' knowledge about wildlife, before and after interventions, in the 3 evaluation groups.

Mean knowledge score	Before	After
Control	8.67	7.71
Single intervention	6.30	9.26
TCE programme	9.69	10.83

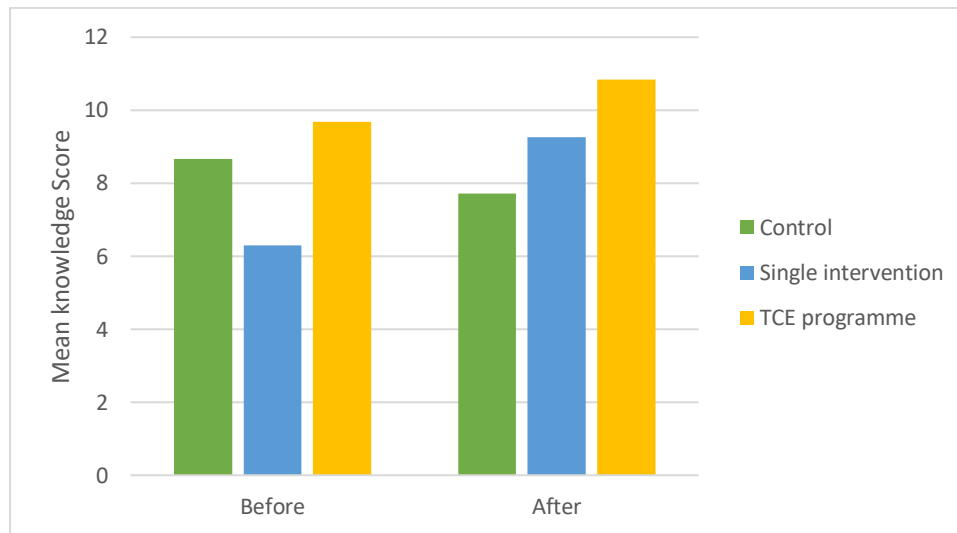


Figure 3: Pupils' pre and post questionnaires mean knowledge score

Regarding the attitudes (2 questions for a maximum score of 5), the preliminary results show that the score has decreased over time for all pupils (Table 3, Figure 4). However, after the programme, it remains high for TCE programme and single intervention pupils, compared to the control group.

Table 3. Mean scores in the questions regarding pupils' attitude towards wildlife, before and after interventions, in the 3 evaluation groups.

Mean attitudes score	Before	After
Control	3.79	3.00
Single intervention	3.64	3.49
TCE programme	3.52	3.45

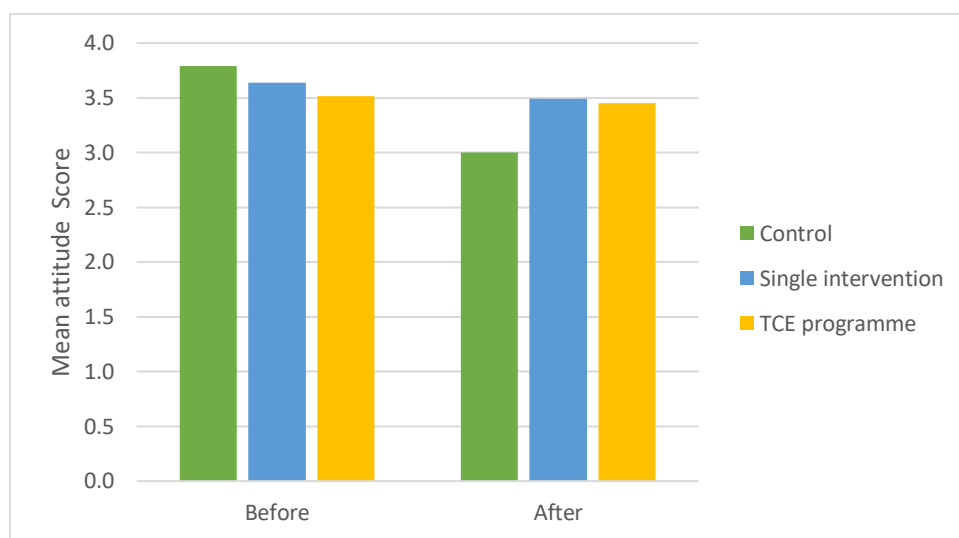


Figure 4: Pupils' pre and post questionnaires mean attitude score

This evaluation showed that overall, the TCE programme does have an impact on pupils' knowledge after their participation in our environmental lessons, whether they consist in a one-off intervention, or a long-lasting programme. The fact that single interventions pupils showed a greater improvement in their knowledge and habits may be explained by the fact that they completed their post interventions questionnaires right after the intervention, whereas the evaluation for TCE programme took part one month after the last intervention, and 8 months after the first one. Thus, it was probably easier for pupils in the one-off intervention to retain the information learnt, compared to TCE pupils who completed their questionnaires after a longer delay.

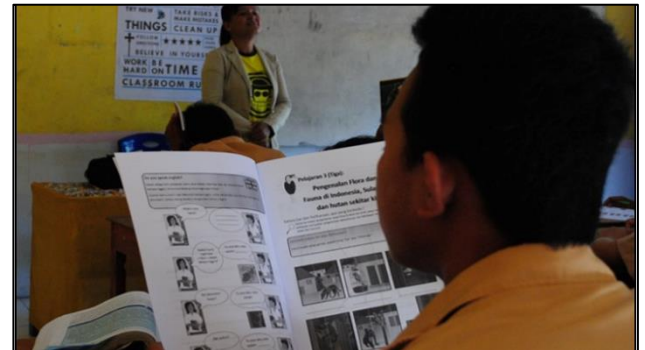
Nevertheless, the fact that TCE pupils scored higher in their post questionnaires show that delivering more interventions over a longer period of time does have a positive and deeper impact on their knowledge. Thus, we consider that TCE programme is a necessity for pupils to better learn about and protect their local environment.

The scores for habits and attitudes seem to reach a ceiling, suggesting that we did not have enough questions to test these constructs, or that the questions were not hard enough, resulting in the majority of pupils obtaining high score regardless of their intervention group. Thus, we will need to review our evaluation methods in order to better assess the habits and attitudes of pupils. Having more questions, and/or more difficult questions could help us avoid this situation in the future. In addition, we are exploring different evaluation methods, including qualitative ones for the next school period (e.g. interviews).

SCHOOL ACTIVITIES 2018-2019: PICTURES



Evaluation questionnaires provided to pupils (here SMP Bitung and SMK 1 Bitung with Nona, local coordinator)



School intervention with the TCE team (here in SMK 1 with LaOde and SMP Makawidey with Eny). The methods used are Power Point, games, lesson booklets. We delivered 6 classroom lessons around the thematic of environment, biodiversity, fauna and flora, etc.



Trips to Tangkoko forest with the TCE team and the researchers from the Macaca Nigra Project (Yandhi and Eppen Jr): Observation of macaques, games, listening to the sounds of nature, litter picking.

During their field trip to Tangkoko, Pinangunian students helped Stephan (MNP) and Kasa (TCE) to make an ecological summary list of plant-life in a designated area. During this study, one student, Rifa, discovered traps set by hunters. The local authorities were immediately informed.



OTHER ACTIVITIES

During this 2018-2019 school year, TCE organised or took part in several awareness campaigns and events related to wildlife conservation in North Sulawesi area:

- **February 2019: Tangkoko's 100th Birthday**

The Tangkoko nature reserve was set up in 1919. To celebrate 100 great years, numerous conservation organisations, such as TCE and MNP, together with local authorities came together with stands, concerts and awareness raising events. The event had a large public attendance.

- **April 2019: Earth Day**

The TCE team, together with students from Batu Putih high school, the Airmadidi Nature club and students from Manado got involved for this special day:

On the 22nd April, TCE volunteers were part of the festivities organised by Bitung local authorities and BKSDA (Nature Conservation Agency) in Tangkoko: releasing of animals native to the forest and a beach clean-up. During the same day, the TCE staff took part in events in the streets of Airmadidi with local nature clubs, aimed at raising awareness about protecting nature, particularly with motorists and pedestrians.

On the 23rd April, the IAIN University in Manado hosted a seminar organised by Mapala Bumi nature club. MNP and TCE staff presented the seminar on conservation of crested macaques.

- **May 2019: North Sulawesi Conservation Stories competition**

Diva (14) and Cia (11) are pupils in the Bitung region, near Tangkoko. Diva received environmental lessons thanks to the TCE programme at SMP Kristen Eklesia Makawidey (secondary school). In May 2019, they were joint winners of the first prize in the Conservation Stories competition organised in North Sulawesi. They both wanted to spotlight the crested macaques with their unique behaviour and the dangers that threaten them. They were rewarded with an invitation to join in the National Parks Festival in Bali in July 2019.

We also took part in several events and conferences in France and UK to promote TCE's work:

- **October 2018:**

Nona, TCE's local coordinator, was invited to take a place in a training course at Chester Zoo with 11 other educators from across the world. A range of workshops, presentations and visits were organised to help the participants to design, coordinate and evaluate their conservation action plan, together with the support of Chester Zoo. On the final day, Nona gave a presentation of the TCE project during a public Symposium.

- **October 2018-February 2019:**

The exhibition « In the far away jungle », created in 2013 to inform children about Tangkoko, macaques and nature in general, was presented at the Leisure Centre ALPEV of Viviers, France in October 2018. This project was coordinated by Caroline Richaud, a long-standing TCE volunteer and an activities leader at the centre, supported by ALPEV. With the help of the activity leaders, Mathilde Chanvin (founder of TCE) presented the exhibition for a week for children of each group. There were awareness raising activities about palm oil, videos and arts workshops.

Afterwards, the exhibition was presented at the school library of the Isle secondary school (Vienne, France) at the beginning of 2019 and was coordinated by French teacher, Julie Perez. The exhibition panels on Tangkoko were set out in the library with a range of notices and explanations, and remained in place for 8 weeks, viewed by whole classes with teacher-led workshops or individual pupils doing reading and personal research.

OTHER EVENTS: PICTURES



The TCE and MNP team and their stands at the Tangkoko 100th Birthday celebration



Earth Day in Tangkoko and Airmadidi



Diva and Cia, winners of the story telling contest, together with their teachers and Kasa (TCE volunteer) in the National Parks Festival in Bali

Mathilde, presenting the exhibition about Tangkoko to French children in Viviers



Nona during he training at Chester Zoo: Presentation, visits and workshops

Here are our perspectives for the next two years of TCE programme:

1) Establish the Tangkoko Conservation Education Foundation

In 2020, we are aiming to create an official Indonesian Foundation. This will allow TCE to be even more anchored in the local area (Bitung region). The Foundation will be formed of local Indonesian representatives and ran by the current TCE staff will. This will help us to be more recognised by local authorities, and to generate more income locally, to support our school activities and awareness campaigns. TCE will remain the official education programme of the Macaca Nigra Project.

The establishment of this Foundation is an essential step to help TCE receive more support locally and be more self-sustainable. Importantly, it will help TCE to diversify sources of income and not to depend solely on international grants and donations in the future.

1) Increase our activities towards young adults

We would like to create further opportunities and support for local young people to gain more experience and pursue studies/career in research, conservation, and education. Therefore, for this year 2020, we wish to expand our activities for a new target audience: students who are about to finish secondary school and enter further studies/professional life.

We aim to deliver a pilot project called **Science Camp** for ten high school students, who will learn research and conservation skills through theoretical, practical lessons and hands on experience, delivered by TCE staff, teachers and MNP researchers in school and in the Tangkoko forest.

For this pilot project of a 5-days Science Camp, we will choose ten participants (around 16 years old) according to the following criteria: they are part of the vocational senior high school-SMK of Batu Putih and SMA2 senior high school of Bitung. During two days, the participants will learn about TCE's 4th and 5th lesson (Primates, Crested macaques and Macaca Nigra Project) in class, with their teachers and TCE staff. They will also be given an introduction to research methods and tools, delivered by the research manager of the Macaca Nigra Project. The remaining three days will be dedicated to stay at the MNP research station to apply the lessons learned: observing the crested macaques together with MNP staff and local guides and following the researchers in the forest to learn how to collect data. They will learn about research tools such as ethograms, GPS mapping, phenology census. The participants will also learn conservation skills (how to recognise and collect data on illegal traps, how to conduct a primate population survey). Finally, following the camp,

participants will share their newly-acquired skills and knowledge during a half-day symposium delivered to their peers, teachers and parents.

Thanks to the Science Camp, we will identify and train new research/ conservation leaders by developing their knowledge, skills and competences in research and conservation methods (identification, communication, ecological and behavioural survey techniques). This will stimulate and support participants to join a university course or start a career dedicated to research and/or conservation (with possible volunteer or paid opportunities at MNP research station and within the TCE programme). If this pilot programme is successful, we will endeavour to replicate it every year with more participants.

2) Increase our collaboration with the local governments and partners to include our education syllabus in the regional curriculum.

Since 2016, six schools which are part of the TCE programme are now implementing our lessons independently, as part of their curriculum. Our long-term objective is that all schools in the area of Bitung (2nd biggest city in North Sulawesi, after Manado) integrate our lessons in their curriculum. This will allow us to have teachers, volunteers and ambassadors throughout the year, acquainted with our education lessons, and who can deliver our lessons on a long-term basis, while the TCE's team focuses on quality control, evaluations, and develop its activities in new areas in North Sulawesi.

As stated in this report, we have run a pilot project together with the Education Department of Bitung, in all primary schools of Bitung who took part in TCE's programme in the past few years by providing them with single interventions. This part of the project is a collaboration between different stakeholders (TCE, Selamatkan Yaki and the Education Department of Bitung) to include TCE lessons in the local curriculum for primary schools. In 2019, we presented our lessons programme to the Education Department of Bitung and carried out a preliminary intervention in 10 primary schools of Bitung about their local environment. We delivered our usual pre and post questionnaires to all pupils and are now analysing the results. This will allow us to make a fact-based presentation of the success of TCE to the Education Department of Bitung in early 2020, to motivate them to include our programme in every school's curriculum in the district.

For 2020, we plan to organise a three-days training workshop for teachers. It will be held in June 2020 before the beginning of the 2020-2021 school year. We will help the teachers to adopt pro-conservation behaviours and use our education materials in their own school. We will also review our lessons with the teachers. We aim to involve a total of 106 school staff (primary teachers) from the area of Bitung. Following this training, we wish to meet the teachers for follow-up evaluation meetings every two months, to monitor their actions in schools and revise/improve the educational methods according to their feedback, before the last step of this plan: the official inclusion of our lessons in the local curriculum.

3) Update our environmental lessons and design two new lessons

Finally, for the next school period, we plan to update the content of our current lessons and design two new lessons:

- **Palm oil:** Learn about the issue of land conversion to palm plantation and the loss of wildlife. We will provide advice about ways to reduce palm oil consumption and help them lobby their local government about such issues (e.g. models of letters).
- **Lesson about waste and single use plastic:** Learn about the issue of single use plastic and its impact on wildlife (especially in seas and beaches habitat). Help the children create a poster at school with alternatives to plastic (e.g. reusable water bottles); instructions to help children and staff to campaign for change (e.g. encouraging writing letters to government to ask for a recycling scheme, etc.).

These lessons will hopefully help to raise local communities' awareness about palm oil and waste issues and change local communities' behaviour to use more sustainable alternatives in their daily lives (e.g. avoiding using transformed products with unsustainable palm oil in it, using reusable water bottle, food containers).

4) TCE's 10th Birthday in 2021

In 2021, we will celebrate TCE's 10th Birthday! For this special occasion, we plan to organise several events across Bitung and Tangkoko:

- A "Youth for Nature" Festival in Bitung, where former and current pupils part of TCE programme will perform theatre plays, storytelling, poems, music based on what they have learned through their participations in TCE, to reach a wider audience. Several local NGOs and bands will be invited to perform on stage and have stands. This event will be open for all the Bitung local communities, as well as members of NGOs and local government. To add to the challenge, we will try to make this event the first plastic-free event in Bitung region.
- A tree planting event will take place in the recreational area near the Tangkoko reserve, often damaged by wildfire. TCE staff, volunteers, pupils as well as members of local NGOS and local government will be invited to plant 100 trees in this area.
- We would like to design and publish a book about Tangkoko wildlife and forest, the issues faced and conservation solutions. This book will be published in Indonesian, English and French, accessible for local communities (especially children) as well as tourists, and distributed to all Bitung schools for free.

BUDGET REPORT

Here is the financial report in Euros for the TCE activities regarding the August 2018 - July 2019 period.
The rate used is: 1 € = 15500 Indonesian Rupiahs.

FINANCIAL DETAILS	DESCRIPTION	COSTS (€)
Coordinators' salaries and insurance	Local coordinators' salaries (1 local coordinator, 3 assistants) and extra staff for evaluation activities	4251
	Coordinators' insurance fees	25
Guides' fees	Local guides' fees for school trips to Tangkoko	46
Transportation	Car rental, motorbike rental and gasoline for coordinators' and volunteers' transportation (meetings, education interventions in the villages, events and trainings)	1598
	Service (for the project's motorbikes)	204
	Bus rental for pupils' transportation to Tangkoko reserve	232
Food	Food for the local coordinators (when outside the headquarters)	1783
Pedagogical material	Stationeries: books, games, pens, paper, notebooks, ink, photocopies, etc	334
	Creation, edition and printing of the education booklet	3136
Communication	Post, Internet and phone expenses	241
Office	Office rental, electricity, furniture and small equipment	1079
Awareness campaigns	Promotion material: Panels, banners, posters, stickers, keyholders	202
	Earth Day event (food, promotion, transport, partners)	247
Administration	Advance and fees for land purchase	322
TOTAL		13700 €

The financial support received during this period came from:

- French Association of Zoos (AFdPZ): 3000 €
- Amiens Zoo: 1500 €
- Mulhouse Zoo: 1500 €
- UNIVET: 3000 €
- Darmstadt Zoo: 2000 €
- Private donations and crowdfunding: 2700 €

ACKNOWLEDGMENTS

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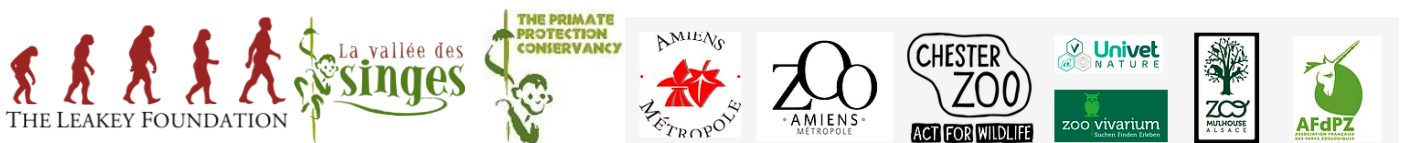
We also thank our donors: Danièle and Julie Duboscq, as well as the students, volunteers, friends and acquaintances for their precious help: Kasa, Fijay, LaOde, Achel, Shanty, Caroline Richaud, Julie Pérez, Marine Joly, Sophie Milward, Joanna Sedille, Camille Mouton, Jerome Micheletta, Claire D and G, Oriana Briand, Eric and their children, Molly Laycock. Many thanks also to our online volunteer translators: Brian Oentoro, Brian Hinchliffe, Sonia Maryan, Kristin Kelber and Eka Ramadhona Nasution.

In 2018-2019, MNP and TCE received the financial support from Leakey Foundation, the Vallée des Singes/Primate Protection Conservancy, Amiens Zoo, Mulhouse Zoo, the French Association of Zoos (AfdpZ), Chester Zoo, Darmstadt Zoo, UNIVET Nature, Selamatkan Yaki as well as private donations from associations (ALPEV) and individuals. We sincerely thank these organisations and donors for their invaluable support during this year.

Thank you for your support to help local children to Learn from Nature, and Act for Nature!



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