

# Tangkoko Conservation Education

## Education programme of the Macaca Nigra Project



Progress report  
January 2015 – January 2016  
Rufford Small Grants Foundation

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## Tangkoko Conservation Education: Project's summary

Sulawesi in Indonesia is one of the 25 Biodiversity hotspots in the World, and home to endemic wildlife species, including the Critically Endangered Sulawesi crested black macaque (*Macaca nigra*).

Since 2011, Tangkoko Conservation Education (TCE), the education programme of the Macaca Nigra Project ([macaca-nigra.org](http://macaca-nigra.org)) takes place in the villages surrounding several protected forests of North Sulawesi. The aim of this programme is to increase the chances of survival of this habitat and its wildlife (especially the crested macaques) in the long-term perspective. To achieve this goal, we develop school interventions, school staff trainings and awareness campaigns for local population to improve their knowledge, attitudes and behaviours towards their local biodiversity.

### Project's original objectives

The main goal of TCE is to help the local communities of North Sulawesi to acknowledge the highly endangered status of the local wildlife and their ecological as well as economic importance to facilitate behavioural changes. The long-term objective is to reduce the human negative impact on the local environment.

To achieve this goal, our aims for the 2015 and 2015-2016 school years are the following:

- 1) **Developing conservation and environmental awareness for local children through school interventions** in the villages of North Sulawesi, surrounding the Tangkoko reserve and the protected forests of Mount Klabat and Mount Tumpa.
- 2) **Enhancing our collaboration with the local school staff**, providing training for them before the school year to introduce our programme, our education material, and helping them to integrate it into their daily curriculum.
- 3) **Involving the pupils' families into our programme** by developing conservation awareness campaigns and events for local communities.

### Level of achievement of the project's original objectives

#### First objective – Updates:

##### January-June 2015:

From January to June 2015, we have successfully completed the second half of our 5th TCE school year. We have delivered environmental lessons for 18 schools, involving 417 children from 9 to 15 years old around Bitung (situated next to the Tangkoko Reserve), North Minahasa, (next to Mount Klabat) and Manado (next to Mont Tumpa).

We have implemented lessons 1 to 3 between September and December 2014. Starting in January 2015, we have implemented the following lessons:

- **Lesson 4:** Primates, Crested macaque (*Macaca nigra*) and the Macaca Nigra Project (*In classrooms, January-February 2015*) – with the help of the Macaca Nigra Project
- **Lesson 5:** Field trip to Tangkoko to observe the macaques and other wildlife. (*In Batu Putih recreational park, March-April 2015*) – with the help of the Macaca Nigra Project, the North Sulawesi Nature Conservation Agency of the Ministry of Forestry (BKSDA) and the local guides.
- **Lesson 6:** Threats towards endangered and protected wildlife of Indonesia and conservation solutions. (*In classrooms, April 2015*) - with the help of BKSDA and Tasikoki Wildlife Rescue Centre.

We delivered our interventions with the help of several volunteers from local nature clubs as well as our partners:

- *Nature Clubs:* Tunas Hijau (Airmadidi), Mata Angin (Manado), Mapala Bumi (Manado), Nature & Education (Airmadidi), Tikus Hutan (Duasudara) (all lessons)
- *The Macaca Nigra Project* (for the lesson 4 about macaques and the field trip to the forest)
- *The local guides of Batu Putih* (trip to the forest)
- *The North Sulawesi Nature Conservation Agency of the Ministry of Forestry (BKSDA)* (lesson 6)
- *Tasikoki Wildlife Rescue Centre* (lesson 6)

Each year, we evaluate the impact of TCE programme on the participants and we compare it to a control group. We use evaluation questionnaires provided before and after the education programme. The aim of these questionnaires is to assess the impact of TCE on participants' knowledge, attitudes and behaviours towards their local environment. Since 2015, TCE's evaluation process is part of a Research Master's degree (MRes) being completed by Mathilde Chanvin at the University of Portsmouth, United Kingdom.

In May 2015, we delivered post-programme evaluation questionnaires to pupils (N=417), teachers (N=30) and parents (N= 95) who are part of the 2014-2015 TCE programme as well as control groups of pupils (N=70). These questionnaires are currently under analysis and we will provide the results in the final report.

In May 2015, we have also delivered questionnaires to pupils who were part of the TCE programme in 2013-2014 and who left the programme afterwards. The aim of this study is to assess TCE's effective short term (30 days after participating in the programme), medium term (6 months after participating in the programme) and longer term (1 year after participating in the programme) impact on children's knowledge, habits and attitudes.

The data of this study compared 5 classes of the same pupils of Batu Putih, Duasudara and Pinangunian villages, which are situated at the edge of the Tangkoko forest. Eighty-seven pupils (M=10.93 years old, SD=1.35) completed the questionnaire in September 2013 before the programme (or Time 0 – T0); 80 pupils (M=11.39 years old, SD= 1.46) completed the questionnaires in May 2014, 30 days after the programme (Time 1 – T1); 66 pupils (M =11.92 years old, SD= 1.35) completed the questionnaires in November 2014, 6 months after the programme (Time 2 – T2); 54

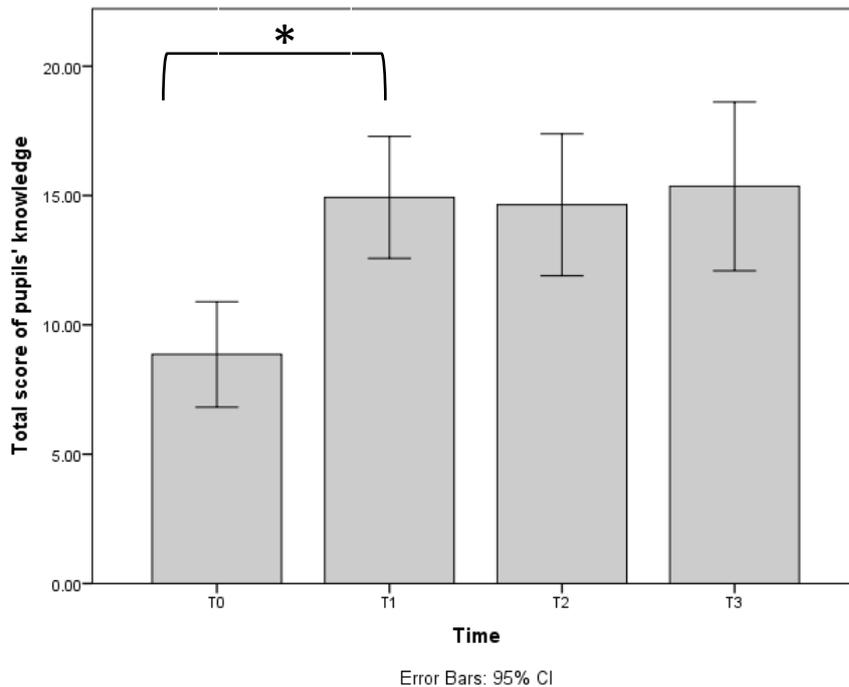
pupils (M=12.09 years old , SD= 1.15) completed the questionnaires in May 2015, one year after participating in the programme (Time 3 – T3). In order to be as accurate as possible concerning the longitudinal short, medium and long term impact of TCE, we selected the 16 pupils who answered the questionnaires at each time point. Thus we are able to fully assess their possible progress regarding their knowledge, attitude, habits and interest without any gap in time.

Although the content of the evaluation questionnaires slightly differed over time (where some questions were changed, added or removed), we selected the exact same questions of each questionnaire for this study. The questions included the following components: Knowledge about local biodiversity (14 questions), habits about local biodiversity (6 questions), attitude when encountering crested macaques in the forest (8 questions), and interest towards TCE programme and nature conservation (2 questions) (Table 1).

Category	Questions
<i>Knowledge</i>	<ul style="list-style-type: none"> <li>- Water is one element important for living elements to be able to develop on Earth. Write two other elements that are as important as water.</li> <li>- Write the name of the animal under the picture:</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>- According to you, are the crested macaques of North Sulawesi a protected species?</li> <li>- According to you, are the crested macaques of North Sulawesi almost extinct?</li> <li>- Which animal group contains the largest amount of species?</li> <li>- Write the name of 3 animals who live in the Tangkoko forest.</li> </ul>
<i>Attitudes</i>	<ul style="list-style-type: none"> <li>- In the forest, where do you throw your rubbish?</li> <li>- Are you happy to see macaques in the forest?</li> <li>- Do you approach the macaques in the forest?</li> <li>- Do you observe the macaques in the forest?</li> <li>- Do you feed the macaques in the forest?</li> <li>- Do you approach the macaques in the garden?</li> <li>- Do you observe the macaques in the garden?</li> <li>- Do you feed the macaques in the garden?</li> </ul>
<i>Habits</i>	<ul style="list-style-type: none"> <li>- Does your family take wood from the forest?</li> <li>- Does your family eat wildlife?</li> <li>- Does your family use forest's products for traditional medicine?</li> <li>- Does your family have wildlife as pet?</li> <li>- If you don't have any wildlife as pet, would you and your family wish to have one?</li> <li>- Do you care about the rubbish?</li> </ul>
<i>Interest towards TCE and nature conservation</i>	<ul style="list-style-type: none"> <li>- Are you happy to protect the nature around you? (such as wildlife, plants, trees..)</li> <li>- Are you happy to be part of Tangkoko Conservation Education programme?</li> </ul>

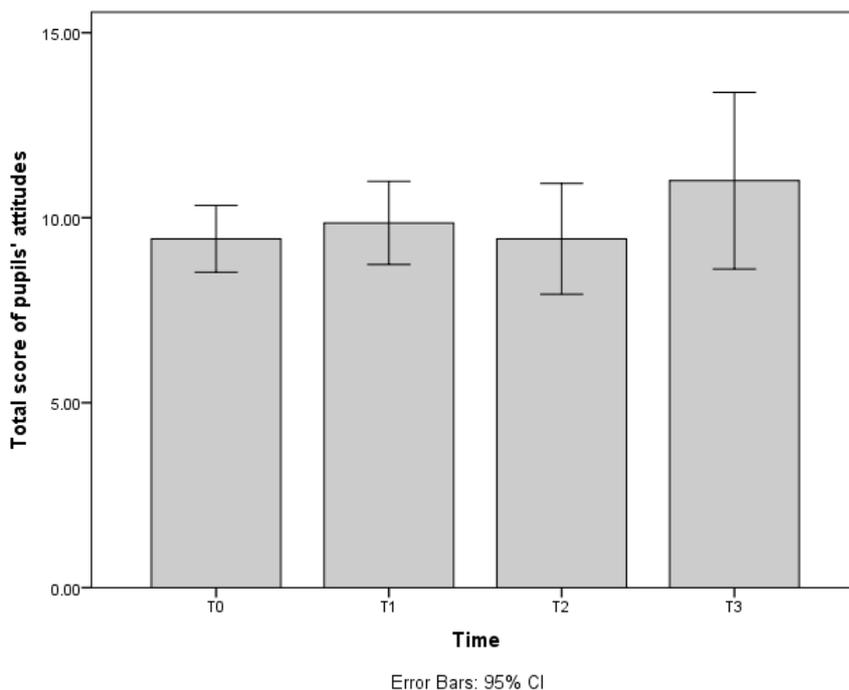
**Table 1:** Questions from the T0, T1, T2 and T3 evaluation questionnaires selected for the data analysis

The preliminary results of this study showed that the participants who answered all the questions at each time point of this study significantly increased their knowledge score over time ( $F(3, 12)=10.197, p=0.002$ ) between T0 (M=8.85, SD=3.52) and T1 (M=14.92, SD=4.08). Afterwards, their knowledge remained stable with no significant increase or decrease between T1 and T2 (M=14.64, SD=4.74), or between T2 and T3 (M=15.35, SD= 5.65) (Figure 1).



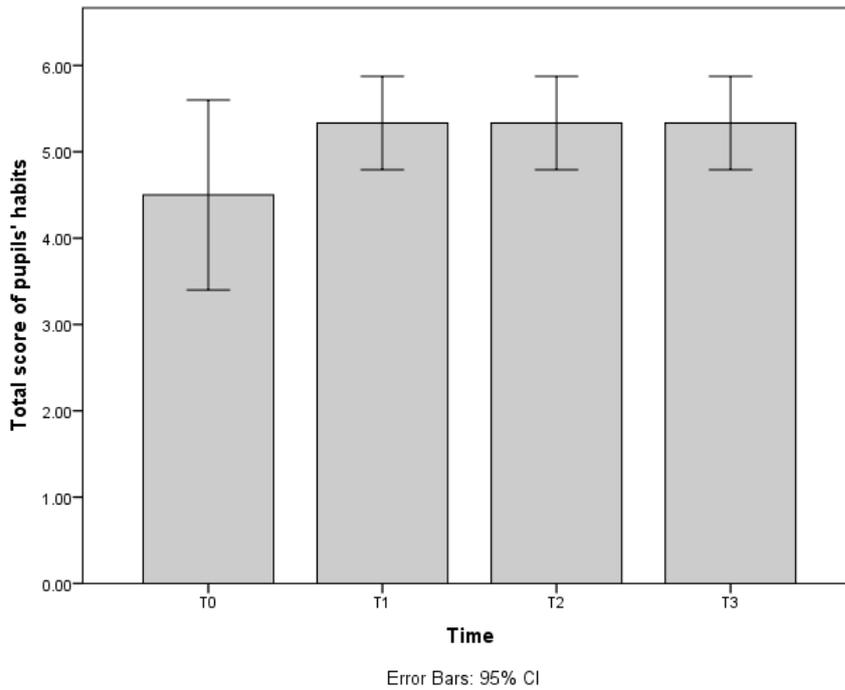
**Figure 1:** Pupils' knowledge score over time.

Concerning their attitudes towards macaques in the forest, the score of participants who answered all questionnaires remained quite stable between T0 (M=9.42, SD=0.97), T1 (M=9.85, SD=1.21), and T2 (M=9.42, 1.61). Even though their score was more positive at T3, this increase was not found significant enough (M=14.92, SD=4.08) ( $F(3, 5)=.896, p=0.517$ ) (Figure 2).



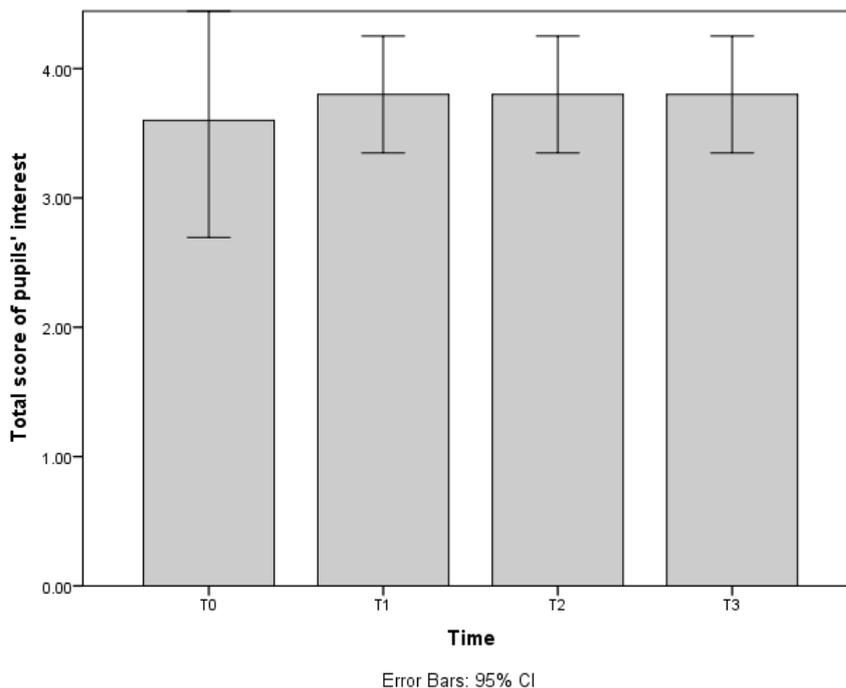
**Figure 2:** Pupils' attitudes score over time.

When looking at participants' habits regarding wildlife and environmental practices, their score increased between T0 (M=4.5, SD=1.05) and T1 (M=5.33, SD=.516) then remained stable with the exact same score between T1, T2 and T3 (M=5.33, SD=.516). This positive increase in habits score was however not found significant ( $F(3, 3)=.656, p=0.630$ ) (Figure 3).



**Figure 3:** Pupils' habits score over time

Finally, participants' interest toward TCE programme and their local environment increased slightly between T0 (M=3.6, SD=1.26) and T1 (M=3.80, SD=.632). Afterwards, the T1 score remained stable with the exact same score over time. The positive increase in interest score was not found significant ( $F(1, 8)=.1.000, p=0.343$ ) (Figure 4).



**Figure 4:** Pupils' interest score over time

Even though few participants were taken in account in this study due to missing data, the results are promising as they show an improvement in pupils' scores over time regarding their knowledge. This result confirms the evidence mentioned in other studies implementing similar longitudinal studies: pupils participating in such programmes show an improvement about their knowledge first (Borchers et al., 2014; Kuhar, Bettinger, Lehnhardt, Tracy, & Cox, 2010), whereas attitudes and habits improvement need more time to be effective (Kling & Hopkins, 2015).

Furthermore, even though the other results are not statistically significant, positive change in knowledge is thought to help inducing a change in attitude and habits over time (Aipanjiguly, Jacobson, & Flamm, 2003). Therefore, we can consider that this positive result of knowledge scores' about their local environment will help those pupils to improve their attitudes and habits on a long term perspective.

The stability of their high scores concerning all categories up to one year after the programme can also be seen as a positive outcome. These results mean that there is a probability that the pupils take in consideration and apply the information learnt during the TCE programme. However, one has to be cautious about the veracity of these results, as TCE staff still implements conservation education intervention for new pupils in their schools. Therefore, there is a probability that the pupils who left the programme are still in contact with TCE staff or the "new" pupils, meaning that they can still learn something about wildlife conservation, even on a smaller scale.

Finally, this study involves a few numbers of intervention pupils and does not involve a control group of pupils which does not participate at all in the TCE programme. To corroborate these results, the solution would be to involve more intervention pupils in addition with a control group of pupils who are not part of the TCE programme and who cannot be "contaminated" by peers. Thus we could be completely assured of the evidence of TCE's positive impact, supported by a clear difference in terms of results between two different groups of pupils.

### June – December 2015:

In June-July 2015, Mathilde Chanvin came in Tangkoko to evaluate the 2014-2015 school year with the local team, prepare the next school year and collect the evaluation questionnaires for pupils, parents and teachers, as part of her MRes programme.

In July 2015 and for the first time, TCE signed a Memorandum of Understanding (MoU) with the Education Department of Bitung in order to enhance our collaboration with the local government to establish a local conservation education curriculum (for more details, refer to "**Second objectives- Updates**"). After a training workshop for teachers and head teachers held in July 2015 (for more details, refer to "**Second objectives- Updates**" below), we have started our 6<sup>th</sup> school year for 578 pupils from 23 in 12 villages in August 2015.

Six new schools joined TCE programme: SDN Inpres Girian, SMK Bahari, SD GMIM and SMP Christian Eklesia Makawidey (Bitung Region), SMK 1 and SDN 2 Airmadidi (North Minahasa Region) (Table 2).



Manado area :

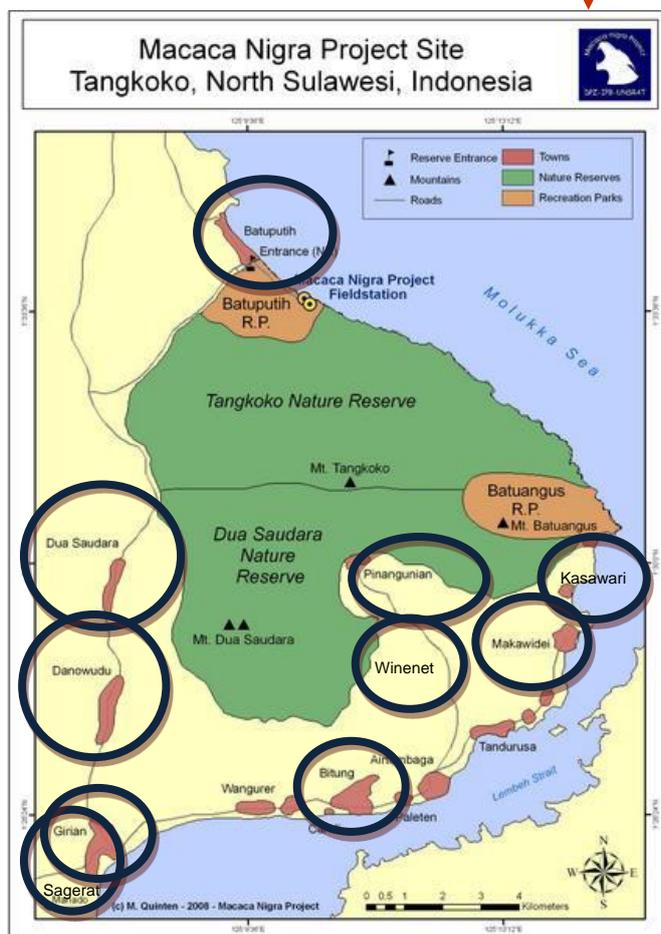
**Tuminting:**

- SD INPRES 48 primary school

Airmadidi area:

**Airmadidi:**

- SMK Negeri 1 Airmadidi
- SD INPRES 2 primary school
- SD Madrasah primary school



Villages around the city of Bitung:

**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 high school

**Winenet:**

- SMP Negeri 7 Bitung high school

**Kasawari:**

- SD Nasional Kasawari primary school
- SD GMIM Kasawari

**Sagerat:**

- SD Negeri Sagerat primary school

**Duasudara:**

- SD GMIM 5 Duasudara primary school

**Danowudu**

- SD GMIM 8 Danowudu primary school

**Makawidey :**

- SMP Kristen Eklesia Makawidey
- SD Gmim Makawidey

**Bitung:**

- SMK Pelita Bahari Bitung

**Girian:**

- SDN Inpres 7/83 Girian

**Table 2:** Map of the villages and schools included in our education programme  
(Maps: <http://dive-manado.com/> and Macaca Nigra Project)

In September 2015, TCE team delivered the pre-programme evaluation questionnaires to participating pupils, teachers, and parents as well as control groups.

Between October and December 2015, we delivered the following lessons with the help of volunteers from nature clubs:

- **Lesson 1:** Basic knowledge about the environment  
(*In classrooms, October 2015*)
- **Lesson 2:** Ecosystem and Biodiversity of tropical rainforests  
(*In classrooms, November 2015*)
- **Lesson 3:** Introduction to the flora and fauna of Indonesia, Sulawesi and our local forests  
(*In classrooms, December 2015*)

Since the 2014-2015 school year, we deliver these interventions with a compendium syllabus of illustrated lesson plans for project coordinators, teachers and pupils. In 2015-2016, it has been updated and improved thanks to teachers and partners feedbacks. It constitutes a tool that can be used by schools and other conservation organisations (available as a resource in the Primate Education Network website (<http://www.primateeducationnetwork.org/>)). This booklet, appreciated by pupils and teachers, can help the local communities to keep useful information and advices concerning the North Sulawesi wildlife and its conservation.

More details about the rest of the programme (January-June 2016) will be described in the final report.

## **Second objectives – Updates:**

In July 2015, we fully completed the second objective of our programme, and more opportunities related to our collaboration with the Education Department of the Bitung region arose during this period:

At the end of June 2015, we presented the TCE's latest updates to Pak Tangkudung, Head of the Education Department of the Bitung region. On the 1<sup>st</sup> July 2015, we organised a visit to the Tangkoko forest with him, which was the opportunity for him to observe crested macaques for the very first time. These meetings helped him to realise the importance of conservation education to help preserve the Bitung region's habitat and wildlife.



Picture: Signature of the MoU between TCE and the Education Department of Bitung.

Thus, for the first time in TCE's history and in North Sulawesi, we have signed a Memorandum of Understanding (MoU) with Pak Tangkudung in Lembeh Island, during a meeting with all the head teachers of Bitung where we had the opportunity to present our education programme. This great achievement, the first of its first kind in the Bitung region, means that the local government is officially supporting environmental education activities in the schools participating in TCE's

programme. It also means that the local government encourages teachers to include our environmental lessons in the curriculum of the Bitung area.

Thanks to this MoU, a TCE's office has been created in the Education department in order to strengthen our collaboration with the local government and better communicate with the school staff and local community about our activities. For 2015-2016, monthly reports are provided to the Department, and regular follow up are being implemented for the Department staff to make sure that the teachers use our education booklet in their daily classes.



Picture: TCE's office in the Education Department of Bitung, and an original artwork realised by Cindy Samiadji, a volunteer from Tunas Hijau Nature Club.

In July 2015, we organised a training course for 30 teachers and head teachers participating in TCE's programme. Through this course, we aimed to present our updated syllabus to the teachers for them to implement it with their pupils as part of the curriculum. The aim was also to improve our teaching methodology and benefit from new ideas from experienced teachers. The training took place in two different venues in the Bitung region on the 29th July (in Tasikoki Wildlife Rescue Centre) and 30th July (in Batu Putih recreational park). Apart from providing explanations about our education booklet, we implemented field trips to Tangkoko forest (to observe the local flora and fauna, especially macaques) and Tasikoki Centre (to get introduced in the issues of wildlife trade in North Sulawesi). Some teachers of other regions of Sulawesi took part in this training (Gorontalo and Minahasa Induk region), as a future possibility to expand the TCE programme in these regions.

For these training days, we were supported by the Department of Education of Bitung City and the Ministry of Forestry's conservation agency (BKSDA). We were also supported by our partners Selamatkan Yaki, Tasikoki, Macaca Nigra Project, as well as the nature clubs who provided with volunteers and logistical support.

Training for teachers plays now an important part in our programme. We hope, thanks to these activities, that the teachers are able to integrate our lessons into their classes on a daily basis and also bring their own contributions to our materials and adapt them to the local curriculum.

More details about the completion of this collaboration will be described in the final report. For 2016-2017, we aim to elaborate the same kind of collaboration (MoU) with the other Education Departments we work with in North Minahasa and Manado.

### **Third objective – Updates:**

Between January and December 2015, we completed the third objective, as we organised and participated in several awareness campaigns for local communities. These included:

- **International Primate Day** (31st January 2015): We delivered our lesson 4 (about primates and macaques) in two schools (Airmadidi and Danowudu) with the help of the Macaca Nigra Project and participated in a Parade about primate conservation together with our partners in Bitung.
- **Earth Day** (22th April 2015): We deliver a craft workshop with recycling material in one school (SD Sagerat) and we helped the pupils to clean the area around their school.
- **Coral Day** (8th May 2015): The pupils in Manado, accompanied by the TCE programme, took part in the Coral Day on the Bangka Island in North Sulawesi. This was organised locally by Suara Pulau (<http://www.suarapulau.org/>), a NGO dedicated to Bangka's conservation, in collaboration with several organisations. The pupils took part in games to get to know the mangrove. It was interesting for them to concretely discover this ecosystem, as it is part of lesson 2 of the TCE's programme: Ecosystems and biodiversity. In addition, volunteers from nature clubs delivered a puppet show about marine life to the local community.
- **TCE celebration event** (22nd May 2015): Together with our partners, we organised a conservation awareness campaign in Tasikoki Rescue Centre. We hosted 200 pupils from TCE schools, their parents, as well as our partners. Pupils passed on the conservation messages learnt during our activities to a wider audience by using theatre, songs and drawing exhibition to sensitize their parents and the local community. Furthermore, many parallel activities were organised, such as a treasure hunt themed around the environment, an exhibition about animals of Sulawesi and a concert.

## Unforeseen difficulties



Picture: Fadila Maratade

In June 2015, our local assistant, Deity Mekel, left the TCE programme, and was replaced by Fadila Maratade in July 2015. She is supervised by the local coordinator, Nona Diko, who is in charge of the programme on a local basis since May 2014.

In September 2015, we realised that due to inflation, the estimated costs of the syllabus' impression would be much lower than the actual costs. Thus it was not possible to print them in a professional shop, as we planned. Therefore, the team had to print the booklets in TCE's office with several A3 printers, which is time consuming. Even if we chose this cheaper solution, it seems that our 2015-2016 expenses will be higher than expected. Thus we are currently seeking for additional funding in order to secure the last months of the programme.

## Next steps

We are currently implementing the second half of the 2015-2016 school year:

- **Lesson 4:** Primates, Crested macaque (*Macaca nigra*) and the Macaca Nigra Project (*In classrooms, January-February 2016*) - with the help of the Macaca Nigra Project and Selamatkan Yaki.
- **Lesson 5:** Field trip to Tangkoko to observe the macaques and other wildlife. (*In Batu Putih recreational park, March-April 2016*) – with the help of the Macaca Nigra Project, Selamatkan Yaki, BKSDA and the local guides.
- **Lesson 6:** Threats towards endangered and protected wildlife of Indonesia and conservation solutions. (*In classrooms, April 2016*) - with the help of BKSDA and Tasikoki Wildlife Rescue Centre.

We are currently creating a new lesson (Lesson 7): **Marine and Coastal Flora and Fauna**, together with the help of nature clubs and the education programme of the Tasikoki Centre. This lesson will be delivered as a pilot project in Arpil 2016 in several TCE schools which are situated near the coast in Batu Putih, Makawidey and Kasawari villages. We will also deliver this lesson to SMK Bahari in Bitung, where pupils are being trained to work in sailing companies.

For this second part of our TCE programme, we plan to organise several awareness campaigns through the following thematic: Indonesian Primate Day and TCE 5<sup>th</sup> anniversary (30<sup>th</sup> January), International Macaque Day (16<sup>th</sup> March), Coral Day and Earth Day.

Like every year, we plan to implement a **TCE celebration event**, as this is the opportunity to show how much the pupils have learnt about protecting their environment, and how they can spread the conservation message to a wider audience. However, we feel that we don't reach enough local people by doing this event in Tasikoki Centre. Therefore, for this 2015-2016 school year, and thanks to our MoU with the Education Department, we plan to implement such event in the Municipality of Bitung. This event will consist in setting up information stands for our partners, a concert, an exhibition, and information stands with our partners, in order for TCE and the pupils to reach as many people as possible in a festive way.

In June 2016, Mathilde Chanvin will be back in the field to evaluate this school period as well as prepare the 2016-2017 school year together with the local team and partners.

We hope to be able to strengthen our collaboration with the local government through renewing our MoU with the Education Department of Bitung, as well as the other Department we are working with in the other regions. We also hope to be able to gather and include a common syllabus in the North Sulawesi academic education curriculum, together with our partners.

We are currently seeking funding to secure the last months of the 2015-2016 school year and the 2016-2017 school year.

Finally, as stated in the grant application ("Outcomes" part), we are about to submit our first publication to the Indonesian Journal of Natural History (as recipient of a Rufford Grant) with some results concerning the teachers and parents questionnaires (2013-2014 school year) (Chanvin et. al, 2016, in prep.).

## Our partners

For this 2015-2016 school year, TCE would like to thank the Rufford Foundation as well as the following sponsors and partners for their support:



## References

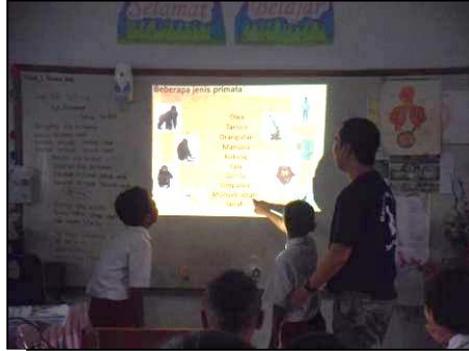
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## Tangkoko Conservation Education - Pictures (January-June 2015)

- Theoretical interventions in class (Lesson 4 and 6)



Lesson 4 syllabus together with Stephan from the Macaca Nigra Project (Pinangunian Junior High School)



Game about primates with Stephan from the Macaca Nigra Project (Sagerat primary school)



Lesson 6 about wildlife conservation with Ibu Tini from BKSDA (Tuminting primary school)

- Lesson 5 : Tangkoko trip and observation of the crested macaques



Biodiversity survey with Stephan



Observation of the crested macaques together with Yandhi from the Macaca Nigra Project



Cleaning the beach after observing the macaques

- Awareness campaigns and celebration event



Coral day in Bangka Island : Discovering the mangrove with Nona



Earth Day with Sagerat pupils



The participants of TCE's celebration event

## Tangkoko Conservation Education - Pictures (July-December 2015)

- Teachers' training: 29th and 30th July 2015



Nona explaining the lesson 3 to teachers



Observation of crested macaques in the Tangkoko forest



The teachers being introduced to the lesson 5: Tangkoko trip

- Pre-programme evaluation questionnaires



Pupils from SMP Makawidey (a new school) completing the questionnaires



Parents from SD 48 Primary School in Tumiting completing the questionnaires



The Headteacher of Danowudu primary school answering the questionnaires

- Theoretical interventions in class (Lesson 1 to Lesson 3)



Lesson 1 in Batu Putih Bawah primary school with Fadila



The pupils of Tumiting with their syllabus (Lesson 2)



Lesson 3 in Airmadidi together with Kasa (TCE volunteer)