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Meeting Report of the Review Meeting on the NEASPEC Project,
"Study on Transborder Movement of Amur Tigers and Leopards using
Camera Trapping and Molecular Genetic Analysis"

15 September 2015, Harbin, China

1. The NEASPEC Secretariat organized the Review Meeting of the Project, "Study on transborder movement of Amur tigers and leopards using camera trapping and molecular genetic analysis" on 15 September 2015 in Harbin, China. The Meeting brought together experts involved in/relevant to the Project, from China, Republic of Korea and the Russian Federation to review the interim outcomes of the field study and molecular genetic analysis, as well as to seek advice and recommendations for the final project report.

2. **[Field study]** China has installed camera traps in Heilongjiang and Jilin Provinces, with density of 1 camera trap in every 10 km^2 and 2 cameras in each trap. For Amur tigers, 358 photos or videos were recorded and 21 individuals with 3 families were identified; and 339 photos of Amur leopard were captured with 21 individuals identified through their side patterns to-date since 2012. Most images were captured near the Sino-Russian border, providing strong evidence to strengthen international cooperation for conservation of the concerned cat species.

3. The Russian Federation also conducted field study on Amur tigers and leopards in Primorsky and Khabarovsky Provinces. By snow tracking conducted during November 2014 to February 2015, 523-540 Amur tigers were identified including 133-137 males, 208-214 females and 98-100 cubs. According to a full range census which takes place every 10 years in Russia, the number of Amur tigers has increased from 417-476 in 1996 and 428-502 in 2005. The number of Amur leopards has also increased from 28 in 1972 to 47 in 2013 and 50 in 2015 by snow tracking, as well as 49 in 2013 to 57 in 2015 by camera trapping. Russian experts reiterated the importance of international cooperation in transborder areas, highlighting that more than 600 camera traps were installed near the Sino-Russian border (inside the border fence) and photos from both Russia and China should be compared for accurate information on census and behavior of the two species. The Russian Federation will conduct the next full-range Amur tiger census this coming winter.

4. **[Molecular genetic analysis]** While conducting the field survey, researchers collected non-invasive samples (e.g. feces, hair, blood, etc.) of Amur tigers and leopards in the wild, and extracted DNA from those samples for further analysis such as individual identification, gender determination, health condition, genetic diversity, and a family tree.

5. China identified at least 24 Amur tigers and 21 Amur leopards in the wild with a high genetic diversity from non-invasive samples collected since 2010. Chinese experts will conduct molecular genetic analysis for the samples collected since late 2014 in due course, and report the outcome to the NEASPEC Secretariat for the final project report.

6. Russian experts extracted DNA of Amur tigers and leopards from 196 fecal samples collected from late November 2014 to the end of March 2015 in the Land of the Leopard National Park, and processed every sample three times for the best result. Thus 135 DNA samples were extracted, including 57 Amur leopards, 49 Amur tigers and 29 unknown. DNA extracts will be delivered to China (Feline Research Center of Chinese State Forestry Administration, College of Wildlife Resources of Northeast Forestry University) for further analysis once the required documentation is completed.

7. The Republic of Korea reported its scientific progress on molecular genetic analysis. The new methodology, which is under development, aims to improve accuracy in identifying concerned species and their individuals by using non-invasive samples from the field. It is also expected to increase cost- and time-effectiveness by reducing current two-step procedure to single-step procedure. As non-invasive samples collected from China and the Russian Federation are required for further development, the Meeting thus recommended Sino-ROK and Russia-ROK cooperation.

8. **[Other matters]** The Meeting agreed that camera trapping results will be analyzed by the Russian Federation and molecular genetic analysis will be conducted by China. Chinese experts will visit the Russian Federation in due course with captured images from the Chinese side for comparative analysis; and bring Russian DNA samples to China for further analysis. It is expected to take approximately three months to complete molecular genetic analysis after receiving Russian samples.

9. **[Final project report]** The Meeting reviewed the draft Table of Contents (ToC) of the final project report prepared by the Secretariat, and the revised ToC is attached in Annex I. The final project report will be prepared by WWF-Russia according to the Expert Group Meeting decision in April 2014, and is expected to be published in early 2016.

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Study on Transborder Movement of Amur Tigers and Leopards using Camera Trapping and Molecular Genetic Analysis

Table of Contents (revised draft)

1. Introduction

2. Overview of conservation initiatives on Amur tiger and Amur leopard in NEA

- National level
- Local level
- Intergovernmental level

3. Study on transborder movement

- ✓ Timeframe: late 2014~ (within the agreed timeframe, i.e. NEASPEC project)
- ✓ Need further discussion on to what extent the partner institutions will share information and the final report will disclose the information

- Introduction
- Field study
  - o Camera trapping
    - ▪ This part will be prepared by Russia.
    - ▪ Chinese experts will visit the LLNP to share their outcomes and it will take up to 3 days to complete the comparative study.
    - ▪ This part will contain the methodology, the minimum number of individuals, gender, and photo of each individual with general locations or GIS information (if required).
    - ▪ This part will also provide maps to show species distribution and their transborder movement in China and the Russian Federation. The maps should use the same scale.
  - o Sample collection
    - ▪ Maps to present general locations of sample collection
- Molecular genetic analysis
  - o DNA extraction
  - o DNA analysis
    - ▪ This part will be prepared by China.

- This part will also contain the methodology, the minimum number of individuals, gender, family tree, genetic diversity and maps with the same scale, but not limited to.
  - Outcomes
    - Comparative study to identify individuals crossing the border

4. Recommendations

- Policy recommendation
  - Transboundary ecological corridor
    - to establish new ecological corridor and/or to improve existing ecological corridor management and conservation plan in the transboundary areas
    - to seek possibility to remove military fences in the Sino-Russian border
    - to connect unequal distribution of Amur tiger and leopard
  - Effective coordination and cooperation
    - to designate one coordinator or focal point each country (one for Amur tiger and one for Amur leopard; or one for both species) as it is effective to facilitate interagency cooperation within/beyond the country
  - Integrated and standardized methodology for monitoring the concerned species
    - to develop an integrated scientific research mechanism on camera trapping, sample collection and genetic molecular analysis (e.g. a standardized genetic marker system suitable for non-invasive samples from the field)
  - Effective cooperation mechanism in NEA
    - to establish sustainable joint project among multiple stakeholders under NEASPEC (e.g. an expert group network)
    - to seek possibility to work with DPRK
- Role of stakeholders
  - Government
  - Local Government
  - Academics
  - Civil Society
  - International organizations

5. Conclusions