

**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**

**-Concept note -**

Amur tiger (*Panthera tigris altaica*) and Amur leopard (*Panthera pardus orientalis*) have shown dramatic population reduction over the past century, and both are designated as Critically Endangered under the Red List of the International Union for Conservation of Nature. To conserve these species in North-East Asia, NEASPEC has worked on the development of a close and efficient collaboration mechanism among all stakeholders to effectively monitor the status of two species and provide scientific basis for developing effective and efficient policy measures.

Since 2014, NEASPEC has implemented the project, “Study on Transborder Movement of Amur Tigers and Leopards using Camera Trapping and Molecular Genetic Analysis”, as a follow-up to the project on “Establishing Coordination Mechanisms for Nature Conservation in Transboundary Areas in North-East Asia” (2010-2012). Under the current project, the first expert group meeting was held in April 2014 to discuss the work plan including scientific approaches for the project activities, expected outcomes, implementing agencies and budgetary matters. The EGM came to the following conclusions on the institutional arrangement and timeframe.

**[Table 1] Institutional arrangement**

Project components		Leading agency	Supporting agencies
Camera trapping		Land of the Leopard (RF)	
		Wildlife Research Institute of Heilongjiang Province (China)	Hunchun and Laoyeling Nature Reserves (China)
Molecular genetic analysis		Feline Research Center (China) – samples from both China and Russia	Seoul National University (ROK) – samples from Russia
Joint field study	Sample collection	Land of the Leopard (Russia)	Far Eastern Branch Russian Academy of Sciences

		FRC (China)	Hunchun Nature Reserve
	DNA extraction	IBSS (Russia)	
		FRC (China)	
Final analysis and policy formulation		WWF-Russia	

**[Table 2] Timeframe**

Year	2014	2015									
Activities	Apr - Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Activity preparation											
Joint field study (camera trapping and sample collection)											
DNA extraction and sample delivery											
Molecular genetic analysis											
Final analysis and policy formulation											

As of August 2015, both China and the Russian Federation completed the field study (camera trapping and sample collection) and DNA extraction, and DNA samples from the Russian Federation are to be delivered to China for further analysis once approved by CITES as well as permitted by the Chinese government. In the meantime, FRC-SFA has started molecular genetic analysis on samples collected in China. Summary on the project progress is prepared based on the reports submitted by two partner institutions.

**Camera trapping:** From the installed cameras in the field, China captured Amur tigers more than 359 times and identified 21 Amur tigers in Changbaishan; and identified 20 Amur leopards including 2 kittens. The Russian Federation installed 314 camera traps in 157 different points where the concerned species inhabit (Annex I), and captured the species' images from November 2014 to March 2015. The outcomes on collected information in May to June 2015 have not yet reported to the NEASPEC Secretariat.

**Sample collection:** Samples in the Russian Federation were collected from the “Land of the Leopard” National Park with its buffer zone and the Kedrovaya Pad reserve twice on foot from November 2014 to the beginning of April 2015 (Annex II). All collected samples were, as agreed, transferred to the Institute of Biology and Soil Science (IBSS) for DNA extraction.

	China	Russian Federation
<b>Overview</b>	Collected 154 feces, 9 hairs, 14 urines, and 9 bloods in snow footprints	Collected 158 scat samples (27 unknown)
<b>Amur tiger</b>	39 feces (out of 76) to be determined as Amur tiger, including 20 individuals (3 females, 11 males, and 6 unknown)	64 scat samples as Amur tiger
<b>Amur leopard</b>	41 feces (out of 78) to be determined as Amur leopard	67 scat samples as Amur leopard

**Molecular Genetic Analysis:** According to the activity report by China, FRC-SFA extracted DNA from 31 feces of Amur tigers and 19 feces of Amur leopards, and molecular genetic analysis has been conducting on those DNA extracts for further analysis. IBSS, in the meantime, received 193 samples, and to get the best result, every sample was processed three times for DNA extraction. As a result, 135 DNA were extracted, including 49 Amur tigers, 57 Amur leopards and 29 unknown. For more details, please see the Annex III. Those DNA extracts are going to be delivered to FRC-SFA for molecular genetic analysis when the permission from the Chinese government and CITES certificate are issued.

### Goals of the Review meeting

As indicated in the project concept note which was prepared for the Expert Group Meeting in 2014, this NEASPEC Project aims to provide policy recommendations to establish or improve ecological corridor management and conservation plan on Amur tigers and leopards in the transboundary areas of the North-East Asia. To achieve the goal, (1) close cooperation among member countries, (2) strengthened scientific understanding on Amur tigers and leopards and their habitat conditions, and (3) sufficient scientific analysis capacity on DNA analysis are required.

Based on the findings from the field survey and DNA analysis (interim outcome by mid-September), the review meeting is expected to seek advice and recommendations from experts who have been involved in the Project. The meeting consists of three sessions:

#### **I. Review of the interim result**

This meeting will review the interim result of the NEASPEC Project, with emphasis on camera trapping, sample collection and DNA extraction. Participants will be invited to present up-to-date information of their survey on target species since last winter.

#### **II. Molecular genetic analysis**

Based on the interim result, this meeting will discuss, but not limited to, (1) how to analyze collected samples/DNA extracts and (2) what kinds of additional information (e.g. coordinates of sample collection) are required for accurate analysis.

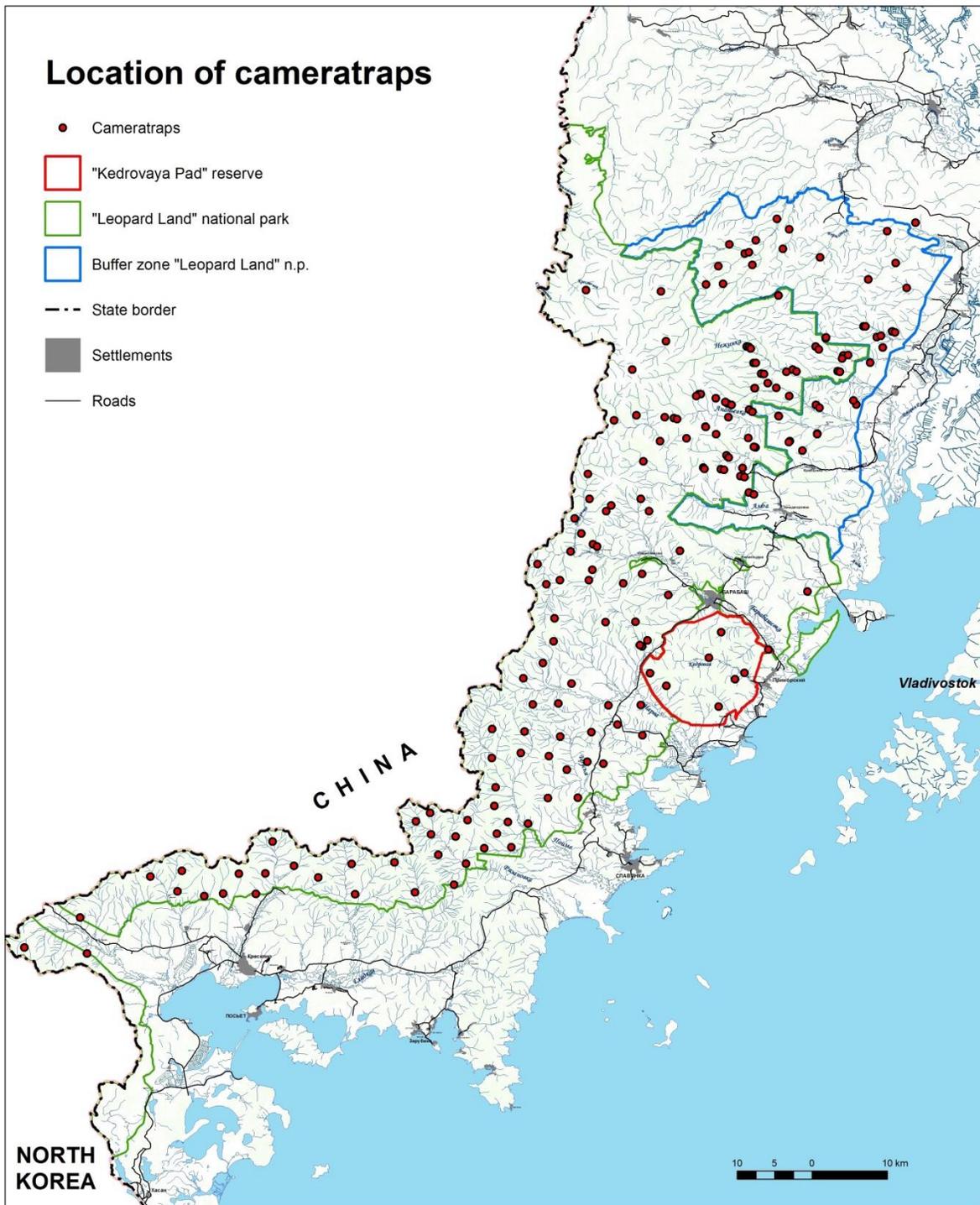
### III. Final project report

The NEASPEC Project aims to provide scientific basis to protect and improve existing transboundary ecological corridors for Amur tigers and leopards in North-East Asia, and the final project report is expected to contain policy recommendations for improved ecological corridor management and conservation plan. The meeting, thus, will discuss how to formulate the final report, including its outline and contents with focus on policy recommendations. Draft “table of contents” is prepared by the Secretariat for further discussion (Annex IV).

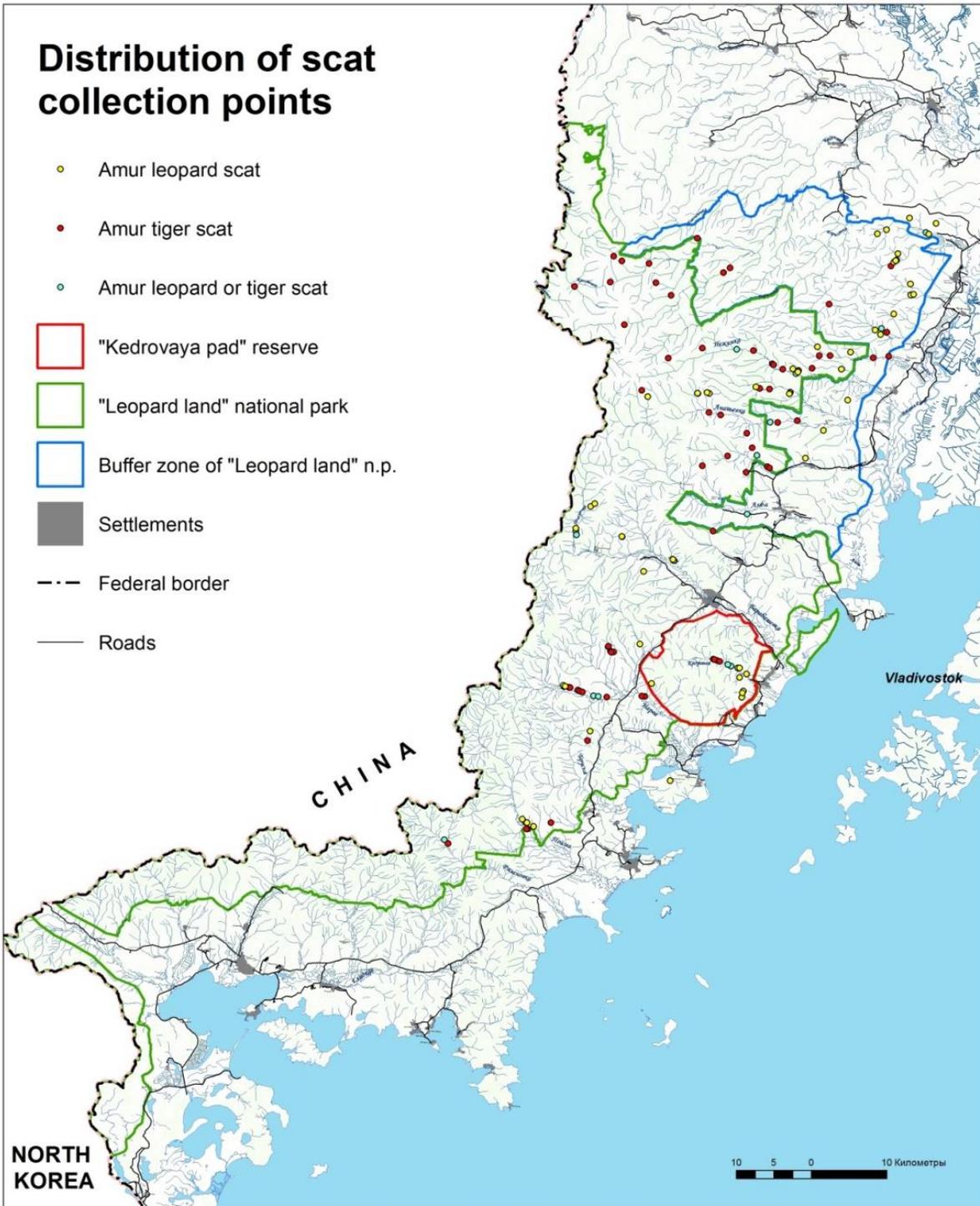
Provisional Programme	
8:40 – 9:00	Registration
9:00 – 9:15	<b>Opening session</b> <ul style="list-style-type: none"><li>• Opening remarks<ul style="list-style-type: none"><li>○ Sangmin Nam, Deputy Director, ESCAP-ENEA</li></ul></li><li>• Welcoming remarks<ul style="list-style-type: none"><li>○ Jianzhang Ma, Academician, China Engineering Academy</li></ul></li></ul>
9:15 – 10:45	<b>Session 1 – Review of the interim camera trap result of the NEASPEC Project</b> <ul style="list-style-type: none"><li>• China<ul style="list-style-type: none"><li>○ Report of SFA<ul style="list-style-type: none"><li>▪ Dehui Zhang</li></ul></li><li>○ Status of Amur tiger and leopard in China and general program progress<ul style="list-style-type: none"><li>▪ Guangshun Jiang</li></ul></li><li>○ Camera trap work of Amur tiger in China<ul style="list-style-type: none"><li>▪ Jiayin Gu</li></ul></li><li>○ Camera trap work of Amur leopard in China<ul style="list-style-type: none"><li>▪ Jinzhe Qi</li></ul></li></ul></li><li>• Russian Federation<ul style="list-style-type: none"><li>○ Conservation activities and study of Amur tiger in Russia<ul style="list-style-type: none"><li>▪ Sergey Aramilev</li></ul></li><li>○ Integrated study of Amur leopard in Russia<ul style="list-style-type: none"><li>▪ Elena Salmanova</li></ul></li></ul></li><li>• Republic of Korea: Hang Lee</li></ul> <p>Chair: Sangmin Nam</p>
10:45 – 11:00	Group Photo Coffee/Tea Break

11:00 – 12:30	<p><b>Session 2 – Review of interim results of molecular genetic analysis of the NEASPEC Project</b></p> <ul style="list-style-type: none"> <li>• China <ul style="list-style-type: none"> <li>○ Molecular analysis method of Amur tiger and Amur leopard <ul style="list-style-type: none"> <li>▪ Hui Liu</li> </ul> </li> <li>○ Molecular analysis results of Amur tiger and Amur leopard in China <ul style="list-style-type: none"> <li>▪ Yao Ning</li> </ul> </li> </ul> </li> <li>• Russian Federation <ul style="list-style-type: none"> <li>○ Interim results of molecular genetic analysis of Amur leopard and tiger scat <ul style="list-style-type: none"> <li>▪ Alexey Kostyria</li> </ul> </li> </ul> </li> </ul> <p>Chair: Yanchun Xu</p>
12:30 – 14:00	Lunch
14:00 – 15:00	<p><b>Visit to Laboratory of Northeast Forestry University / FRC-SFA</b>  – 1<sup>st</sup> and 7<sup>th</sup> floor, College of Wildlife Resources</p>
15:00 – 15:15	Coffee/Tea Break
15:15 – 17:00	<p><b>Session 3 – Final project report</b></p> <p>Chair: Sangmin Nam</p>
17:00 – 17:30	<p>Other matters</p> <p>Closing</p>

[ANNEX I]



[ANNEX II]



## [ANNEX III]

### List of DNA samples

(Russian Federation, prepared by IBSS)

Tube #	Sample ID #	Animal species	DNA concentration	Date of extraction	Tube Vol. (ml)
1	862	PPO	17.18	02.07.2015	1.5
2	863	PPO	22.9	17.06.2015	1.5
3	864	PPO	20.43	01.07.2015	1.5
4	865	PPO	23.08	15.06.2015	1.5
5	866	PPO	25.8	25.06.2015	1.5
6	867	PPO	21.21	25.06.2015	1.5
7	873	PPO	22.78	25.06.2015	1.5
8	880	PPO	37.02	30.06.2015	1.5
9	881	PPO	46.92	30.06.2015	1.5
10	884	PPO	136.68	22.06.2015	1.5
11	885	PPO	29.8	22.06.2015	1.5
12	887	PPO	25.27	11.06.2015	1.5
13	893	PPO	75.81	15.06.2015	1.5
14	894	PPO	34.55	26.06.2015	1.5
15	896	PPO	52.44	30.06.2015	1.5
16	907	PPO	15.57	02.07.2015	1.5
17	908	PPO	28.49	09.06.2015	1.5
18	909	PPO	41.4	30.06.2015	1.5
19	911	PPO	22.57	30.06.2015	1.5
20	914	PPO	23.56	19.06.2015	1.5
21	917	PPO	103.04	15.06.2015	1.5
22	919	PPO	37.43	25.06.2015	1.5
23	921	PPO	21.82	18.06.2015	1.5
24	922	PPO	42.85	16.06.2015	1.5
25	923	PPO	39.85	01.07.2015	1.5
26	928	PPO	28.98	17.06.2015	1.5
27	930	PPO	41.23	01.07.2015	1.5
28	940	PPO	15.81	18.06.2015	1.5
29	942	PPO	61.1	02.07.2015	1.5
30	964	PPO	138.33	22.06.2015	1.5
31	983	PPO	45.02	11.06.2015	1.5
32	986	PPO	22.97	24.06.2015	1.5
33	987	PPO	93.13	17.06.2015	1.5

34	989	PPO	40.48	11.06.2015	1.5
35	990	PPO	69.42	02.07.2015	1.5
36	995	PPO	45.1	15.06.2015	1.5
37	996	PPO	20.72	30.06.2015	1.5
38	997	PPO	23.07	16.06.2015	1.5
39	998	PPO	36.65	26.06.2015	1.5
40	999	PPO	53.48	02.07.2015	1.5
41	1002	PPO	159.05	16.06.2015	1.5
42	1004	PPO	25.55	01.07.2015	1.5
43	1005	PPO	87.08	08.06.2015	1.5
44	1009	PPO	35.89	15.06.2015	1.5
45	1010	PPO	59.05	25.06.2015	1.5
46	1012	PPO	25.49	25.06.2015	1.5
47	1013	PPO	67.37	26.06.2015	1.5
48	1014	PPO	69.45	23.06.2015	1.5
49	1015	PPO	16.78	02.07.2015	1.5
50	1016	PPO	58.37	09.06.2015	1.5
51	1022	PPO	51.5	09.06.2015	1.5
52	1026	PPO	169.29	30.06.2015	1.5
53	1027	PPO	67.33	19.06.2015	1.5
54	1028	PPO	43.31	01.07.2015	1.5
55	1032	PPO	60.17	15.06.2015	1.5
56	1040	PPO	30.25	02.07.2015	1.5
57	1050	PPO	54.02	02.07.2015	1.5
58	861	PTA	159.11	15.06.2015	1.5
59	870	PTA	49.12	02.07.2015	1.5
60	871	PTA	54.25	30.06.2015	1.5
61	875	PTA	64.73	30.06.2015	1.5
62	876	PTA	20.73	17.06.2015	1.5
63	877	PTA	17.39	30.06.2015	1.5
64	888	PTA	31.41	18.06.2015	1.5
65	890	PTA	133.21	30.06.2015	1.5
66	892	PTA	23.69	24.06.2015	1.5
67	900	PTA	224.2	15.06.2015	1.5
68	903	PTA	23.22	26.06.2015	1.5
69	904	PTA	38.14	01.07.2015	1.5
70	918	PTA	47.5	25.06.2015	1.5
71	920	PTA	123.62	30.06.2015	1.5
72	924	PTA	36.8	15.06.2015	1.5

73	931	PTA	38.06	26.06.2015	1.5
74	933	PTA	356.24	15.06.2015	1.5
75	936	PTA	23.54	22.06.2015	1.5
76	945	PTA	127.65	25.06.2015	1.5
77	952	PTA	29.19	23.06.2015	1.5
78	953	PTA	15.55	15.06.2015	1.5
79	954	PTA	139.95	24.06.2015	1.5
80	955	PTA	313.63	15.06.2015	1.5
81	956	PTA	80.65	09.06.2015	1.5
82	959	PTA	20.96	02.07.2015	1.5
83	961	PTA	38.17	22.06.2015	1.5
84	962	PTA	58.94	23.06.2015	1.5
85	966	PTA	17.93	22.06.2015	1.5
86	969	PTA	34.13	25.06.2015	1.5
87	972	PTA	25.38	24.06.2015	1.5
88	973	PTA	15.58	30.06.2015	1.5
89	974	PTA	45.85	24.06.2015	1.5
90	975	PTA	18.88	25.06.2015	1.5
91	976	PTA	104.68	15.06.2015	1.5
92	980	PTA	15.43	19.06.2015	1.5
93	982	PTA	19.48	24.06.2015	1.5
94	984	PTA	32.81	01.07.2015	1.5
95	985	PTA	222.45	26.06.2015	1.5
96	993	PTA	190.38	24.06.2015	1.5
97	1000	PTA	26.99	18.06.2015	1.5
98	1019	PTA	35.82	22.06.2015	1.5
99	1021	PTA	21.1	09.06.2015	1.5
100	1023	PTA	32.36	25.06.2015	1.5
101	1025	PTA	15.51	15.06.2015	1.5
102	1029	PTA	32.96	25.06.2015	1.5
103	1034	PTA	62.04	17.06.2015	1.5
104	1037	PTA	36.96	01.07.2015	1.5
105	1048	PTA	16.78	22.06.2015	1.5
106	1051	PTA	72.6	30.06.2015	1.5
107	899	unknown	38.85	30.06.2015	1.5
108	901	unknown	18.93	19.06.2015	1.5
109	906	unknown	24.43	09.06.2015	1.5
110	910	unknown	32.39	24.06.2015	1.5
111	912	unknown	40.81	24.06.2015	1.5

112	913	unknown	202.91	09.06.2015	1.5
113	932	unknown	27.4	19.06.2015	1.5
114	934	unknown	59.58	26.06.2015	1.5
115	935	unknown	19.85	17.06.2015	1.5
116	937	unknown	75.47	18.06.2015	1.5
117	938	unknown	26.04	30.06.2015	1.5
118	939	unknown	24.7	02.07.2015	1.5
119	943	unknown	21.81	19.06.2015	1.5
120	944	unknown	38.84	18.06.2015	1.5
121	946	unknown	26.72	02.07.2015	1.5
122	947	unknown	22.85	25.06.2015	1.5
123	948	unknown	15.26	16.06.2015	1.5
124	957	unknown	29.58	02.07.2015	1.5
125	958	unknown	89.11	22.06.2015	1.5
126	967	unknown	28.01	23.06.2015	1.5
127	1001	unknown	48.89	15.06.2015	1.5
128	1008	unknown	16.75	11.06.2015	1.5
129	1024	unknown	50.7	26.06.2015	1.5
130	1043	unknown	37.86	18.06.2015	1.5
131	1045	unknown	15.23	02.07.2015	1.5
132	1046	unknown	50.25	02.07.2015	1.5
133	1047	unknown	28.3	17.06.2015	1.5
134	1052	unknown	23.17	16.06.2015	1.5
135	1053	unknown	27.66	22.06.2015	1.5

## [ANNEX IV]

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

## Table of Contents (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
  - Introduction
  - Field study (including GIS information, photo, methodology, etc.)
    - o Camera trapping
    - o Sample collection
  - Molecular genetic analysis (including GIS information, methodology, etc.)
    - o DNA extraction
    - o DNA analysis
  - Outcomes
    - o Conduct comparative study
4. Recommendations
  - Policy recommendation
    - o Transboundary ecological corridor: to establish new ecological corridor and/or to improve existing ecological corridor management and conservation plan in the transboundary areas
    - o Effective cooperation mechanism in NEA
      - e.g. sustainable joint project among multiple stakeholders under NEASPEC
    - o Integrated monitoring and knowledge-sharing system in NEA
      - e.g. climate change impacts on Amur tigers and Amur leopard
      - e.g. establishment of an expert group network; expert/student exchange programme
      - e.g. data-sharing conditions
  - Role of stakeholders
    - o Government

- Local Government
- Academics
- Civil Society
- International organizations

## 5. Conclusions