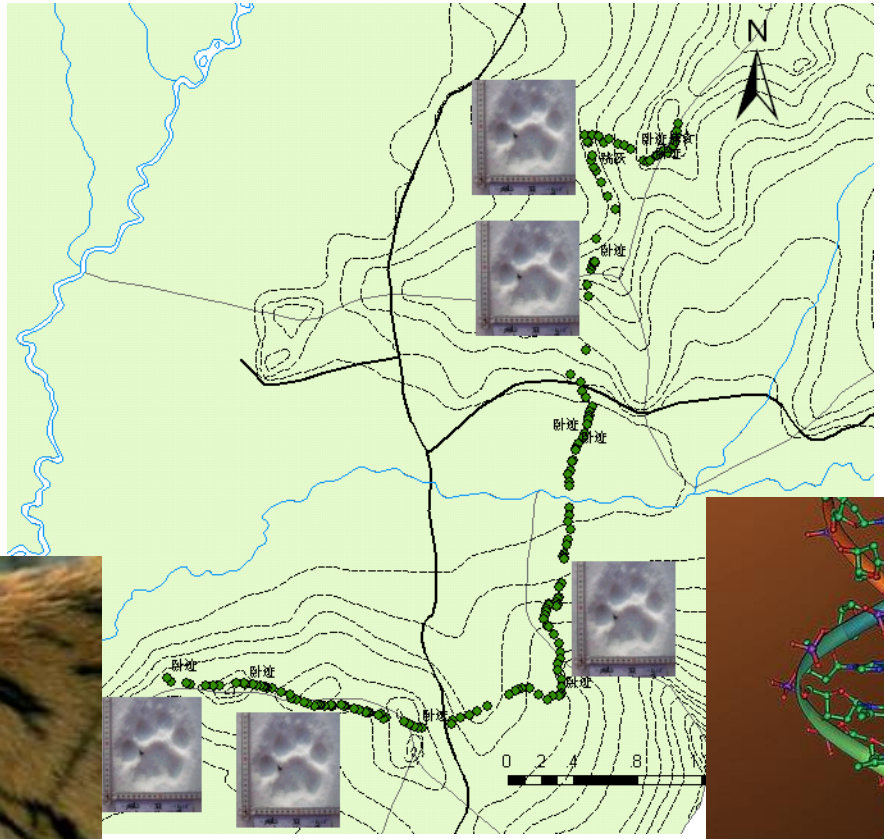
UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific
East and North-East Asia Office

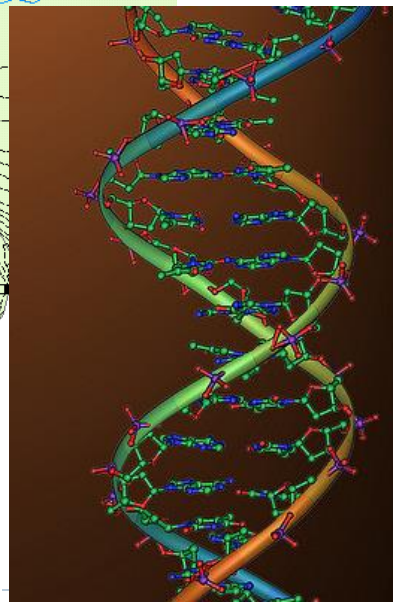
Expert Group Meeting

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

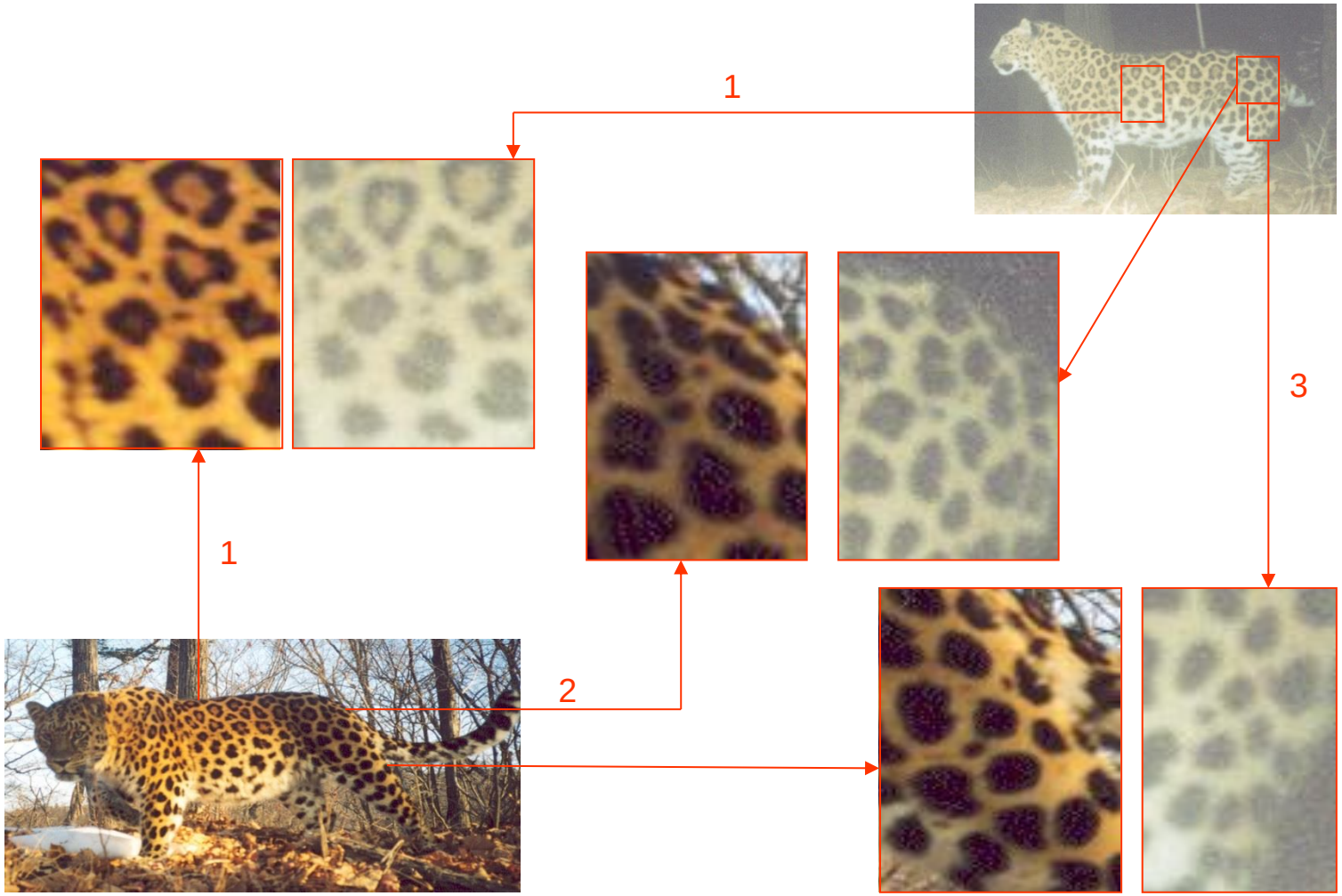
NEASPEC Secretariat

Review of conservation efforts





Camera trapping



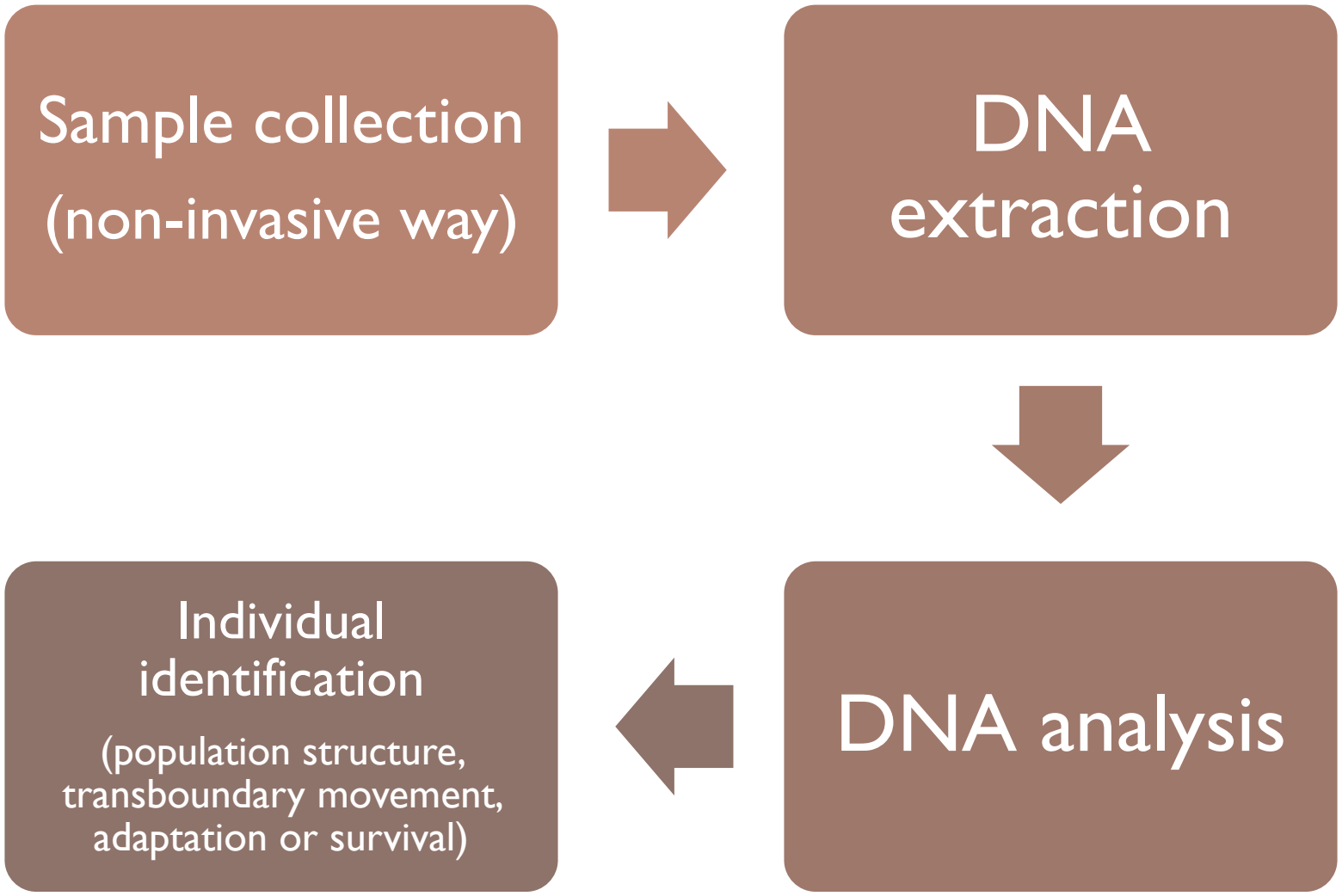
Camera trapping

- Russian Federation: during the last 10 years since 2002 in Nezhinskoe Hunting Lease and in the south-west of the Borisovskoe Plateau Wildlife Refuge in southwest Primorye, camera trapping has identified 41 individual leopards and 17 individual tigers.

- China: camera trappings at nature reserves including Hunchun and Wangqing have been carried out during last 10 years, and recently, a group of Chinese scientists was able to capture the first proof of breeding leopards in the country.

- In order to accelerate the advancement of overall analytical capacity, there is a need to develop a common or harmonized analytic approach to collecting and analyzing data, identifying individuals and sketching population characteristics in the transboundary habitats.

Molecular genetic analysis



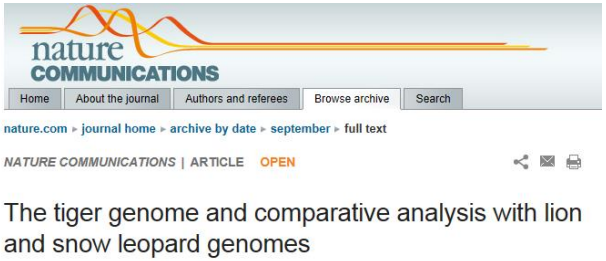
Molecular genetic analysis

- Sample collection
  - Collecting non-invasive samples (ex. feces, hair or saliva) during snow tracking or camera trapping
  - Conducting mostly in the winter period to preserve DNA at the low ambient temperature
  - Delivering silicon dried or directly frozen samples to the laboratory

- DNA extraction
  - Preferably conducting extraction at the lab near the field
  - Using commercial kits (ex. Qiagen kits)

Molecular genetic analysis

- DNA analysis
  - for individual identification, microsatellite markers will be utilized
    - Option 1: 12 microsatellite markers
    - Option 2: multiplex microsatellite PCR system utilizing 22 short tandem repeats (STRs), sex marker (ex. SRY gene), or mtDNA
  - Amur tiger genome map



- Individual identification
  - Species identification, sex determination, relationship between individuals, transboundary movement, animal adaptation or survival, etc.

Questions

- What should be a main research area to achieve the goals and outcomes of the Project, particularly in order to formulate policy options for improved ecological corridor management and conservation plan?
- What will be the best methodology of molecular genetic analysis to figure out current status and design conservation plan of the target species?
- How should the project link with existing outcomes of camera trapping? Would the project need to carry out any additional camera trapping?
- How to organize the Project to achieve the best outcomes?
  - timeframe, budget, leading and supporting agencies, communication channel, role of NEASPEC Secretariat, etc.

Discussion topics

Planning project implementation

- **Sample collection, DNA extraction and sample distribution – I**
  - How many/what kinds of samples have been collected?
  - Do you need further sample collection for the first phase of DNA analysis?
    - If yes, where/when should we visit for sample collection and how many/what kinds of samples do we need more?
  - For the first phase of molecular genetic analysis:
    - 1) Do your labs have enough samples and/or DNA extracts?
    - 2) How do you distribute samples and DNA extracts?

Planning project implementation (cont.)

- **Sample collection, DNA extraction and sample distribution – 2**

  - For the joint field study in 2015:
    - 1) Which areas will be covered for the NEASPEC project?
    - 2) How many/what kinds of samples do you expect to have?
    - 3) when/how long do researchers stay in the field?
    - 4) who/where/how to extract DNA from the collected samples?
    - 5) How to distribute collected samples and DNA extracts?
    - 6) How to link camera trapping with molecular genetic analysis?

  - Other matters to be discussed

Planning project implementation (cont.)

- **Camera trapping and genetic molecular analysis – I**
  - What should be a main research area to achieve the goals and outcomes of the Project, particularly in order to provide policy recommendation for improved ecological corridor management and conservation plan?
    - ex. demographic characteristics, transboundary movement, complementary genetic analysis to describe adaptation and survival mechanism

Planning project implementation (cont.)

- **Camera trapping and genetic molecular analysis – 2**

  - For molecular genetic analysis:
    - Which methodology do you want to apply?
    - How many microsatellite markers do you use?
    - Do you think that SRY gene or mtDNA analysis is also required?
    - What kinds of commercial toolkits do you use?
    - Is it necessary for all participating agencies to use same methodology with same toolkits?
    - How to compile and compare outcomes from all participating agencies?
    - Should we apply same methodology or different one to the first and second phase?
    - To what extent do your agency/all participating agencies draw meaningful outcomes for the NEASEPC project?

  - Communication channel: how to report and share research outcomes with the Secretariat and other participating agencies in a timely manner?

  - Other matters to be discussed

Planning project implementation (cont.)

- **Leading/supporting agencies and their roles and responsibilities**

		Leading agency	Supporting agencies	Roles and responsibilities
Camera trapping				
Molecular genetic analysis	Amur tigers			
	Amur leopards			
Joint field study	Sample collection			
	DNA extraction			
	Sample/DNA distribution			
NEASPEC Secretariat		-	-	

Planning project implementation (cont.)

- **Overall review of the proposed timeframe**

Timeline	Activity
April 2014	Inception Meeting
April-December 2014	First phase of DNA analysis
	First report
January-February 2015	Joint field study for sample collection
	DNA extraction
March-November 2015	Second phase of DNA analysis
	Second (and/or Final) report
December 2015	International workshop
	Completion of the project (or start up new project for follow-up actions)

Planning project implementation: administrative arrangement

- **Institutional and administrative arrangement with the agencies**

Items	Amounts (in USD)
Inception Meeting/ International workshops	35,000
DNA analysis	50,000
Joint field study	10,000
Miscellaneous	5,000
Total Amount	100,000

- **Partnership with relevant programmes**

- **Any other issues to be clarified**