

# **Information system “Reindeers of Eurasia”**

**Prepared by:**

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# Problems of current situation (regarding all observation data):

1. Very **diverse** data and conditions
2. Data are **poor** organized, **poor** structured, almost no regular data
3. Data are **multidimensional**
4. Often we have just small pieces of information, just small table.  
But we have **a lot** of such small tables!

# Tree hierarchy

*1st Level. Population of wild northern deers.*

## [-] 1. Taimyr population

*2nd Level. Main population groups (herds)*

### [+] 1.1 West-Taimyr

### [+] 1.2 Central-Taimyr

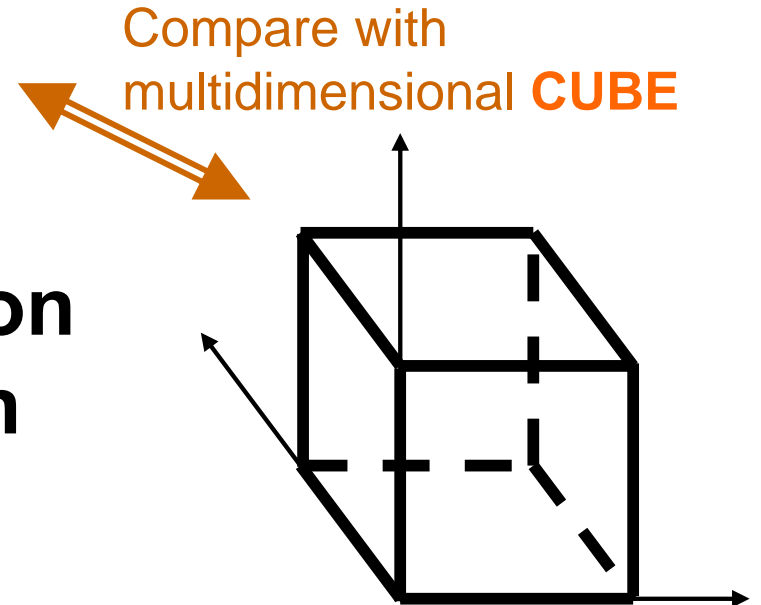
### [+] 1.3. East-Taimyr

## [+] 2. Leno-Olenek population

## [+] 3. Yano-Indigirka population

## [+] 4. Chirinskaya population

## [+] 5. Chukotian population



**+** Expand    **—** Collapse

*1st Level. Population of wild northern deers.*

**1. Taimyr population**

*2nd Level. Main population groups (herds)*

**1.1 West-Taimyr**

**1.2 Central-Taimyr**

**1.3. East-Taimyr**

**2. Leno-Olenek population**

**3. Yano-Indigirka population**

**4. Chirinskaya population**

**5. Chukotian population**

**1.1 West-Taimyr**

**Sex and age structure of the population of the west ranges based on air observations 1990-2003 years, %**

Sex and age groups	1990	1991	1993	2003
<b>growth males</b>	<b>15,0</b>	<b>7,2</b>	<b>8,9</b>	<b>9,6</b>
<b>growth females</b>	<b>-</b>	<b>37,5</b>	<b>42,7</b>	<b>33,7</b>
<b>Young (1-2 y.o.)</b>	<b>-</b>	<b>23,4</b>	<b>18,5</b>	<b>-</b>
<b>Calves</b>	<b>23,1</b>	<b>31,9</b>	<b>29,9</b>	<b>18,6</b>

Author: Ivanov Ivan

Published on Dec. 1, 2008

Commentaries:

Please, provide source information.

Example of factual data

Table 3. Age changes of the body build of males of deers of West Taimyr, cm

<b>Indicators</b>	<b>2 months, n</b>	<b>2 months, M±m</b>	<b>2 months, C</b>	<b>4 months, n</b>	<b>4 months, M±m</b>	<b>4 months, C</b>	<b>12 months, n</b>	<b>12 months, M±m</b>	<b>12 months, C</b>	<b>2 years, n</b>	<b>2 years, M±m</b>	<b>2 years, C</b>
<b>Body length</b>	8	103,2±3,7	10,1	25	126,2±1,7	6,8	3	133,3±4,4	3,3	7	152,0±4,2	7,3
<b>Height</b>	8	75,2±7,5	28,3	24	87,4±0,9	4,9	3	92,7±5,4	5,8	7	107,4±3,4	8,3
<b>slanting body length</b>	8	66,0±2,1	9,2	24	82,2±0,7	4,4	3	85,0±0,6	1,2	7	97,7±2,1	5,8
<b>chest</b>	8	65,0±2,0	8,7	24	82,3±0,9	5,5	3	91,7±3,2	6,0	7	105,3±3,8	9,5
<b>Tail length</b>	8	10,1±0,2	6,3	22	12,4±0,3	12,9	3	12,7±0,9	12,0	7	15,1±0,4	7,0
<b>Ear length</b>	8	9,3±0,3	9,5	23	10,4±0,2	9,4	3	12,0±0,6	8,3	5	13,2±0,8	14,5
<b>cyst length</b>	3	28,7±0,3	2,0	13	30,6±0,4	5,1	3	32,0±0,6	3,1	7	34,7±2,6	20,1
<b>foot length</b>	3	40,0±1,1	5,0	14	43,5±0,5	4,2	3	44,7±1,5	5,9	7	47,6±2,1	11,9

*1st Level. Population of wild northern deers.*

## **1. Taimyr population**

*2nd Level. Main population groups (herds)*

### **1.1 West-Taimyr**

*3rd Level. Ecology-population characteristics (populations or herds).*

#### **1.1.1. Internal structure of population.**

##### **1.1.1.1. Status**

##### **1.1.1.2. Morpho-physiology**

###### **1.1.1.2.1. Body-build (Table 2, 3. Age changes of the body-build...)**

###### **1.1.1.2.2. Morphological indicators**

**(Table 4. Morphological properties, Table 6. Age changes)**

###### **1.1.1.2.3. Horns (antlers) (Table)**

###### **1.1.1.2.4. Skulls (Table)**

##### **1.1.1.3. Genetics**

##### **1.1.1.4. Biochemistry**

###### **1.1.1.4.1. Biochemical structure of flesh (Table 7. )**

###### **1.1.1.4.2. Biochemical structure of fat (Table)**

###### **1.1.1.4.3. Biochemical structure of antlers of young stags**

###### **1.1.1.4.4. Medicinal raw materials.**

##### **1.1.1.5. Growth and development**

##### **1.1.1.6. Food.**

##### **1.1.1.7. Weight- and energy-balance.**

##### **1.1.1.8. Reproduction**

##### **1.1.1.9. Mortality**

##### **1.1.1.10. Population and sex and age related structure based on aircalculation**

##### **1.1.1.11. Sex and age related structure based on teeth histocuts**

##### **1.1.1.12. Population size balance.**

##### **1.1.1.13. Behavior and activity.**

##### **1.1.1.14. Spatial structure.**

#### **1.1.2. Population in ecosystem.**

##### **1.1.2.1. Trophic relationships**

Tree hierarchy (Classification)

# First Levels of tree hierarchy

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**1.1.1.2.4. ....**

**1.1.1.3. Genetics**

**1.1.1.4. Biochemistry**

**1.1.1.5. ....**

**1.1.2. Population in ecosystem.**

**1.1.3. Habitation Environment**

**1.1.4. Economic utilization**

**1.1.5. Monitoring and protection**

**1.2 Central-Taimyr**

**1.3. East-Taimyr**

**2. Leno-Olenek population**

**3. Yano-Indigirka population**

**4. Chirinskaya population**

**5. Chukotian population**

# Problems of the system:

1. This is **information** system, it does not provide any analysis tools.
2. Difficult **to compare** the data in different branches (e.g. between populations)
3. No possibility to run **automated reports**
4. Very **depend on moderator's** expertise.



# Advantages of the system

1. Allows gather, edit, change, etc information from many authors **in one place**
2. Allows to contain **any diverse information** (text, tables, graphs, pictures, links, etc)
3. Tree is a very **good organization structure**.  
User will spent time to get acknowledged with the tree, but after that it became very convenience.
4. Tree allows **to see what information is available**, and what is missing (so, tree allows to define where to dig deeper)
5. etc.

# To make analysis, it is necessary to do the following **before analysis**:

1. Data should **be gathered**, before they could be analyzed.
2. Data should be “normalized” everywhere, data must have **unified thesaurus** (conditions, measures, definitions), before they could be compared.
3. Data should be ready to **be transferred or integrated** with relational database, to run statistical or other analysis and reports.

# Conclusions

1. After gathering data, the first step towards modeling or analysis should be **development of definitions, unified thesaurus** (conditions, measures)  
(Task of CARMA)
2. All data should be **transformed** with accordance of this thesaurus (“normalized”).  
(Task of scientists who collect data)
3. All data should **be transformed to relationship system**, integrated with analysis systems, etc.  
(Task of IT engineers)
4. Any (not local) analysis or data comparison is **useless** before the preconditions above.

**These concusions could be also**  
**considered as steps to do**