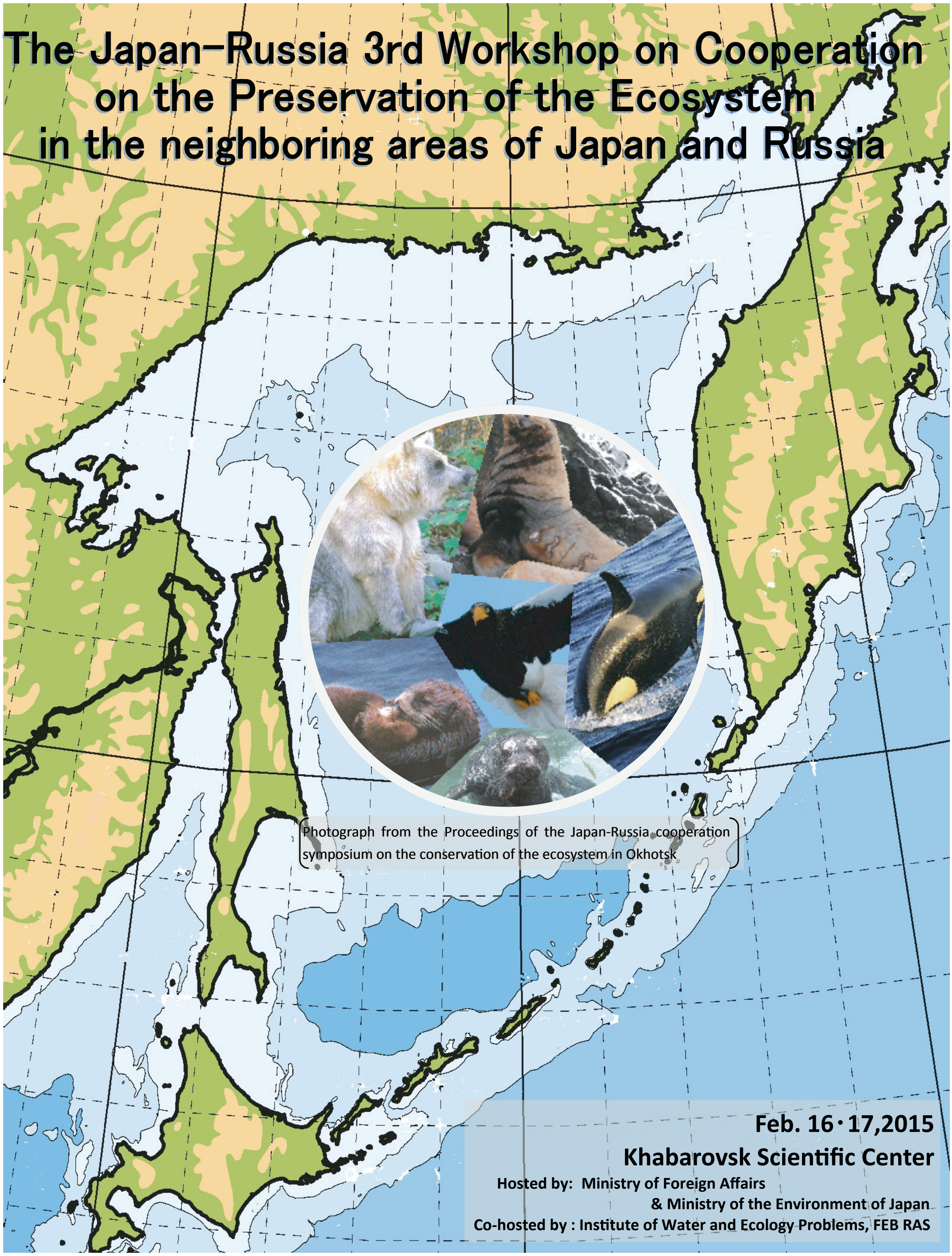
ABSTRACTS

The Japan-Russia 3rd Workshop on Cooperation on the Preservation of the Ecosystem in the neighboring areas of Japan and Russia



Photograph from the Proceedings of the Japan-Russia cooperation symposium on the conservation of the ecosystem in Okhotsk

Feb. 16・17,2015

Khabarovsk Scientific Center

Hosted by: Ministry of Foreign Affairs & Ministry of the Environment of Japan

Co-hosted by : Institute of Water and Ecology Problems, FEB RAS

（map from "ecosystem and its conservation in the Sea of Okhotsk",Hokkaido Unv. Press)

Organizing Committee of 3rd WS CPE of Jpn & Rus.

Feb,2015

Objectives

We have held the two symposiums and two workshops based on "Cooperation Program between the Government of Japan and the Government of the Russian Federation in the neighboring areas of two on the study, conservation and rational / sustainable use of ecosystems" which was signed by the Governments of both countries in 2009.

Their outcomes are published in the book "Ecosystem and its conservation in the Sea of Okhotsk" edited by Y. Sakurai et al., Hokkaido University Press, 484pp, 2013.

The purpose of this workshop is not only to take over the outcomes of previous cooperative activities, but also to expand the range of our cooperation by holding it in Khabarovsk where we have never held a such meeting. This time we tried to discuss the several topics more intensively by limiting the number of topics and thereby taking enough time to discuss each topic.

Program

Monday Feb.16

Opening address

Boris A. VORONOV（Institute of Water and Ecological Problems, FEB RAS）
Victor V. BARDYUK（Vice-Minister, Ministry of Natural Resources, Khabarovsk Krai Government）
Koji HIROHATA（Ministry of Foreign Affairs of Japan）
Petr Ya. BAKLANOV（Pacific Geographical Institute, FEB RAS）

Session1. Physical and chemical observations of the Sea of Okhotsk

Chairperson: T. Shiraiwa

1）Takayuki SHIRAIWA, Jun NISHIOKA and Humio MITSUDERA（Institute of Low Temperature Science, Hokkaido University）
Biogeochemical and physical processes in the Sea of Okhotsk and the linkages to the Pacific Ocean

2）Alexey MAKHINOV and Vladimir KIM（Institute of Water and Ecology Problems, FEB RAS）
Extreme Amur Flood in 2013: Major Formation Factors and Aftereffects

Session2. Bears

Chairperson: K. Yamazaki

1）Koji YAMAZAKI（Zoological Laboratory Ibaraki Nature Museum）
Inter-Specific competition between Asiatic black Bear and brown bear and their conservation in Sikhote-Alin Natural Biosphere Reserve, far-east Russia

2）Hifumi TSURUGA（Institute of Environmental Science, Hokkaido Research Organization）
A brief comment about the Russian-Japanese cooperative program on brown and black bear research.

3）Yoshikazu SATO（Rakuno Gakuen University）
Comments: a study plan about comparison in biology of brown bears between continental and island population

4）Ivan V. SERYODKIN（Pacific Geographical Institute, FEB RAS） : abstract submission only
Brown bear research on the Russian far east

5）Andrey PAVLOV, Maksim BORMOTOV, and Aleksandr SENCHIK（Department of Nature, Far Eastern State Agricultural University）
Natural habitat, population and management of brown bear in the Amur region.

6）Sergey A. KOLCHIN (Institute of Water and Ecological Problems, FEB RAS)
The study of Asiatic black bear (Ursus thibetanus ussuricus) on the Sikhote-Alin (Russian Far East)

Session3. Pinnipeds
Chairperson: A.M. Trukhin

1）Mari KOBAYASHI（Tokyo University of Agriculture / Marine Wildlife center of Japan）
Population genetics and phylogeography of Krill harbour seals (Phoca vitulina stejnegeri) in Hokkaido, Japan

2）Alexey M. TRUKHIN（Pacific Oceanological Institute, FEB RAS / Far Eastern Marine Biosphere Reserve, FEB RAS）：in Russian with Japanese translation
Investigations of Spotted Seal in the Peter the Great Bay, Sea of Japan

3）Vyatcheslav V. ROZHNOV（A.N. Severtsov Institute of Ecology and Evolution, RAS）
The study of pinnipeds and big carnivorous mammals in Russian Far East

4）Alexey Y. OLEYNIKOV (Institute of Water and Ecological Problems, FEB RAS)
Studies of the ecological role of alien species of terrestrial mammals in the near-water habitats

General comments
Kosuke NOGI（Ministry of the Environment of Japan）

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Tuesday Feb. 17

Session4. White-tailed Eagles and other birds
Chairperson: M.V. Kryukova and B. Voronov

1）Saiko SHIRAKI（Tokyo University of Agriculture）
A genetic analysis of white-tailed eagles in the far east Russia and Japan for understanding of the population structure and the dynamics

2）Vladimir V. PRONKEVICH and Boris A. VORONOV（Institute of Water and Ecology Problems, FEB RAS）
Abundance and Distribution of the White-tailed Sea Eagle (Haliaeetus albicilla (Linnaeus, 1758))and the Steller's Sea Eagle (Haliaeetus pelagicus (Pallas, 1811))in the Amur Basin and the South-West Okhotsk Sea Region

3）Aleksey I. ANTONOV and M. P. PARILOV（Khingan State Nature Reserve, Amur Province）
Long-term bird population study and its conservational implications on the basis of Khingansky State Nature Reserve in Amur Region

4) Olga VALCHUK (Institute of Biology and Soil Science, FEB RAS) et. al
Russian-Japanese bird-banding project joint achievements and prospects of continued cooperation of scientists and birdwatchers of Primorye and Toyama

General discussion and conclusion
Chairperson：T.Shiraiwa and B. A. Voronov

Closing address
Boris A. VORONOV（Institute of Water and Ecological Problems, FEBRAS）

Group discussion for future joint study

§１－１

Biogeochemical and physical processes in the Sea of Okhotsk and the linkages to the Pacific Ocean

Takayuki SHIRAIWA, Jun NISHIOKA and Humio MITSUDERA

Institute of Low Temperature Science, Hokkaido University

The dense shelf water (DSW) produced in the Sea of Okhotsk causes the deepest ventilation in the North Pacific and plays a key role in overturning to the depth of intermediate layers and in transporting Fe from the Amur River to the Sea of Okhotsk. Based on Japan-Russia collaborative effort, we could describe the variability of DSW salinity in the period from 1950 to 2005 through the analysis of a newly compiled hydrographic dataset expanded with Russian measurements in the Sea of Okhotsk and the Bering Sea. DSW salinity exhibits a decreasing trend of $-0.0024 \pm 0.0015 yr^{-1}$ over 1950-2005, in addition to decadal-scale variability with a typical magnitude of 0.1. We have found that DSW variability is controlled largely by surface salinity anomalies that propagate along pathways associated with ocean currents from the Bering Sea to the Sea of Okhotsk.

Comprehensive observations of Fe distribution in the western Sea of Okhotsk were also conducted and revealed the existence of two Fe transport processes in the sub-polar marginal sea. One transport process is Fe loading from the Amur River and transport by the East Sakhalin Current, and the other is Fe transport by DSW. The amount of total dissolvable Fe and the surface dissolved Fe that cross the surface of the northeast Sakhalin coastal area are estimated at $9.0 \times 10^8 – 1.3 \times 10^9$ g yr^{-1} and $1.0 \times 10^8 – 1.5 \times 10^8$ g yr^{-1}, respectively.

Since the establishment of the Amur-Okhotsk Consortium in 2009, it has provided scientists and researchers in the Amur-Okhotsk region with important opportunities for scientific discussion on transboundary environmental issues in the region. Further discussion on the eco-environmental systems in the Amur-Okhotsk region should be made both in bilateral and multilateral frameworks.

§ 1-2）

Extreme Amur Flood in 2013: Major Formation Factors and Aftereffects

Alexei N. MAKHINOV, Bladimir I. KIM
Institute of Water and Ecology Problems FEB RAS

The flood on the Amur River in 2013 was the most catastrophic and affected vast areas in two neighboring countries Russia and China. Although in the upper and middle Amur reaches the water level did not exceed historical values, in the river lower reaches this flood turned out to be the largest for the entire observation period. The food covered not only the Amur valley, but also areas in the lower reaches of tributaries and large areas around lakes. In some places water moved beyond the floodplain, and flooded vast depressions of the Middle-Amur Lowland.

The flood was caused by a unique combination of heavy precipitation in the Amur basin and movements of flood waves on the major Amur tributaries. Besides, these events happened in the period of high water content in the basin, which started in 2009. Geomorphological features of the Amur also significantly affected the flood behavior in some river passages. In the mountainous parts of the valley the flooded area was relatively small, whereas on the plains huge areas were flooded, including most low-lying areas of the largest cities (Khabarovsk and Komsomolsk-on-Amur). Moreover, in some places an especially high water level was caused by anthropogenic factors such as construction of bridges, embankments, etc.

Irregular perennial fluctuations of river runoff are well-marked on the Amur. For the time from 1896 to 2012 (115 years), a period of instrumental hydrological observations on the Amur at Khabarovsk, high water contents were observed in the following years: 1896-1911 (the maximum level of 642 cm), 1927-38 (616 cm) 1951-64 (634 cm), 1981-98 (620 cm). Water levels over 600 cm during this period were observed only 8 times, including four times in the period from 1951 to 1959.

The Amur valley geomorphology is of a complex structure. At its various parts the flood wave height is not the same. Within the floodplain extensions it drops, but in the mountainous parts of the valley it increases. For example, in Komsomolsk-on-Amur the amplitude of water rise over the summer low water in 2013 was 6.76 m, whereas at Troitskoe village it just exceeded 4 m. The maximum flood duration was observed in the plains, especially within Middle-Amur Lowland. Large near-floodplain lakes also had a significant flood-regulating affect there in 2013.

Structural specifics of the Amur valley caused irregular daily rises of water level in different river parts. Near Khabarovsk at first a moderate increase in daily water levels was observed (10 to 15-20 cm), and then the rise intensity decreased until the flood peak. Near Komsomolsk-on-Amur daily water level rises were more irregular. The maximum daily water rise was almost 40 cm.

Anthropogenic factors affected flood behavior mostly in big cities. Near Khabarovsk they are a polder on the Bolshoi Ussuriisky Island, bridges and railway embankments. Near Komsomolsk-on-Amur these factors were also a railway bridge and embankment. Floodplain expansions, located before these constructions, played the role of accumulating containers, from which water rushed into a narrow valley, thus increasing the flood wave height and its duration.

After the flood the Amur channel underwent evident deformations and redistribution of water flow within the branched channel due to the deep and lateral erosion in some branches and clogging with sediments of some others. Numerous islands, sand bars and shoals appeared. Sediment accumulation up to 1.2 m thick took place in large floodplain areas.

No doubt, a huge mass of Amur water released into the Okhotsk Sea affected water salinity in large sea parts.

§ 2-1)

Inter-specific competition between Asiatic black bear and brown bear and their conservation in Sikhote-Alin Natural Biosphere Reserve, far-east Russia

Koji YAMAZAKI
Zoological Laboratory, Ibaraki Nature Museum

Sikhote-Alin Natural Biosphere Reserve is very unique place where both Asiatic black bear (*Ursus thibetanus*) and brown bear (*Ursus arctos*) are occurred at same area. Both species can also be occurred in North Korea and North-Eastern China, however, both local populations seems to be facing nearly extinction.

Therefore, Sikhote-Alin is only place where study on the inter-specific competition of both species can be carried out over the world. The aim of this research is to investigate relation and habitat use differences between black bear which is adapted to plant feeding and brown bear which is more omnivore than black bear using modern study techniques such as satellite telemetry system and DNA barcoding. We also look for a best way to conserve both species in future using obtained scientific data.

1. STUDY PERIOD

For 5 years (1 April 2013 to 31 March 2018)

2. STUDY AREA

Possibly along the Maisa and Tsunsya River in Sikhote-Alin Natural Biosphere Reserve

3. GRANTS

There are start-up grants as below, however we need to secure more grants in near future.

1) Japan Society for the Promotion of Science (JSPS) KAKENHI Grant Number #25304002 (The grant period is 1 April 2013 to 31 March 2018)
2) Mitsui Co. Ltd. Environmental Found #R13-0041 (The grant period is 1 April 2014 to 31 March 2017)

4. JAPANESE SIDE PERSON

1) Koji Yamazaki. Dr., Chief Curator, Ibaraki Nature Museum
2) Shigeyuki Izumiyama, Dr., Professor, Shinshu University
3) Hifumi Tsuruga, Dr., DVM, Chief Researcher, Hokkaido Institute of Environmental Sciences
4) Shinsuke Koike, Dr., Associate Professor, Tokyo Noko University
5) Yusuke Goto, MSc., Curator, Tateyama Caldera Sabo Museum

5. RUSSIAN SIDE PERSON

1) Ivan Seryodkin, Researcher, Dr., Pacific Geographical Institute, Russian Academy of Science
2) Dmitry Gorshkov, Dr., Director, Sikhote-Alin State Natural Biosphere Reserve
3) Dale Miquelle, Dr., Director, Wildlife Conservation Society Russian Program
4) Yura Petrunenko, MSc., Ph.D. candidate, Graduate School of Far East University

6. STUDY METHOD

Bear capturing: using 4 culvert traps with bait (e.g., honey / or ungulate fresh)
*The traps were made in Hokkaido, Japan, and have already transported to the study sites. This because of using foot snare is being temporally prohibited by Federal Government.
*Immobilization drug can be Zoletil (Zolazepam HCL and Tiletamine HCL mixture)
Range use analysis: using satellite (Iridium) communication type GPS collars (Vectronic Aerospace Inc., Germany) with a proximity sensor for interaction monitoring of both species. 10 of the collars have already placed an order.
Food habit analysis: using scat content analysis and hopefully by DNA barcoding analysis. All collected scats can be applied species determination using DNA analysis.
Population estimation: using camera trap / or using hair snagging trap
*The challenge is to export DNA samples (i.e., scats, hairs) to Japan for the analysis.
Habitat analysis: applying with HSI (Habitat Suitable Index) / or Maxent model

7. <u>COLLAR DEPLOYMENT PLAN</u>

Ideally 5 collars for Asiatic black bears during 2015-16.
Ideally 5 collars for brown bears during 2015-16.

8. <u>TENTATIVE SCHEDULE</u>

For 5 years study * physical years
2013: Getting research agreement, getting bear capture permission, trapping site selection, getting radio and satellite equipment permission.
2014: Settings bear traps
2015: Camera (hair) snagging trap setting, trap setting, deploying collar, collecting bear scats, data analysis
2016: Camera (hair) trap maintenance, setting bear traps, collar retrieve and re-deploying, collecting bear scats, data analysis
2017: Camera (hair) trap maintenance, collecting bear scats, collar retrieve, data analysis, writing a report

9. <u>OTHER</u>

A HDD handy-camera is possibly deployed with the collar. This can be carried out by cooperation with NHK (Japan Broadcasting Corporation).

§2－2）

A brief comment about the Russian-Japanese cooperative program on brown and black bear research

Hifumi TSURUGA (Hokkaido Research Organization)

We have been conducting the Russian-Japanese co-operative program on brown bear (*Ursus arctos*) and black bear (*Ursus thibetanus*) research in Sikhote-Alin Reserve since 2013. This cooperative program includes population density estimation of both brown and black bears inhabiting the Reserve. It is planned to employ the camera trap method for this purpose, and we will also examine the possibility to apply the hair snagging method. In North America where the hair snagging method developed, grid systems are commonly employed for density estimation. In Japan, bears mainly inhabit steep mountain areas and it requires a huge effort to install hair traps (hair snagging stations) by means of the grid system because of the difficulties in the accessibility. We established a population density estimation method optimized for the Hokkaido brown bear with a spatially explicit mark-recapture model. The accuracy of the estimation was better in the results by using random placement of traps than that of homogeneous placement. This method will be able to be applied to study areas without a road network, such as natural reserves.

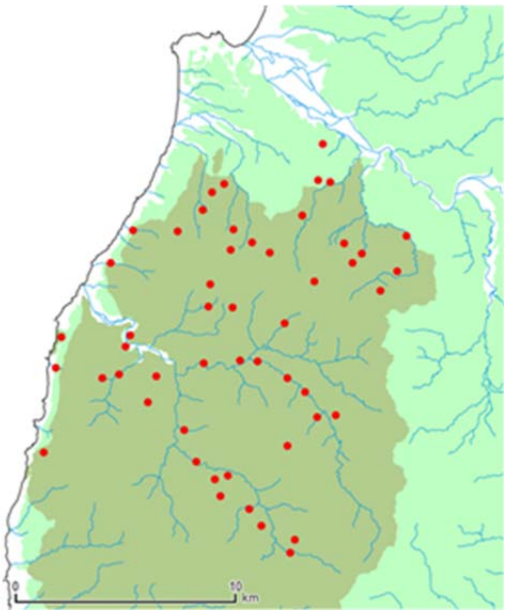


Fig. 1. A Random hair-trap placement in the study of brown bear density estimation in Hokkaido

Fig. 2.　A female with a yearling visited a hair trap

§ 2-3)

Comments: a study plan about comparison in biology of brown bears between continental and island populations

Yoshikazu SATO
Rakuno Gakuen University

We have studied ecology of brown bears, *Ursus arctos*, in the main island of Hokkaido, Kunashiri Island, and Etorofu Island (Fig. 1). The main island of Hokkaido is a large island (78,000km^2) where 5.5million people and several thousands of brown bears live. There are severe human-bear conflicts such as invasion of bears into human residential areas and agricultural crop depredation by bears. Since the 1990s, population of sika deer, *Cervus nippon*, has increased abruptly in the main island of Hokkaido and became an important food source for bears by way of predation on neonates and/or scavenging carcasses after sport hunting or control kills. Wolves, *Canis lupus*, as a potential predator for bears have been exterminated before 1900. Major mortality of bears in the main island of Hokkaido are nuisance kills to prevent property damage or protect public safety since bears often come close to human residential areas and use human-derived food sources such as agricultural crop and deer carcasses left after shootings. There were differences for food habits among individual bears.

Fig. 1. Location map of study area.


Fig. 2. Ininkari bear in Kunashiri Island.

In Kunashiri (1,490 km^2) and Etorofu (3,186 km^2) Islands, high density of brown bears live in wilderness area where human population is low and abundant salmon run rivers during late summer and autumn. White colored brown bears (Ininkari bear) are observed in these islands (Fig. 2). We have interest in an adaptive significance of its white pelage of these bears. Bears in Kunashiri and Etorofu Islands used herbaceous plants in spring and early summer, salmon in late summer and autumn, and berries in autumn. There was little difference for food habits among individual bears. There were neither wolves nor sika deer in both of Kunashiri and Etorofu Islands. There is low human-derived mortality of bears.

We have compared ecology of bears in the main island of Hokkaido with Kunashiri and Etorofu Islands in terms of the difference of human-derived impacts on bears. Both of these areas, however, are island habitat. We, therefore, would like to compare the difference between continental and island habitats for bear biology. Amur region is a typical continental habitat. We can easily find a difference between continental and island habitats in terms of species diversity. Brown bear is a common species for both habitats. Bears in continental habitat historically have predators such as wolves and tigers, *Panthera tigris*, and various prey ungulates, whereas bears in island habitat have no predators and less (the main island of Hokkaido) or no (Kunashiri and Etorofu Islands) prey ungulates. Bears in continental habitat have no salmon species to eat, whereas bears in island habitat have abundant salmons in rivers. It would be significant to study how the differences in predator and prey species among habitat of continent (Amur region), large island (the main island of Hokkaido), and small island (Kunashiri and Etorofu Islands) affect the biology of bears in each habitat such as reproduction, mortality, growth, and morphology. Understanding the biology of brown bears from a broad perspective through the comparative study of these 3 areas would contribute conservation and management of brown bear population.

§2−4)

Brown bear research on the Russian far east

I.V. SERYODKIN

Pacific Geographical Institute FEB RAS, Vladivostok, Russia

In the last two decades, the Russian Far East has several programs for the study of the brown bear. For the animals study were used different methods such as radiotelemetry, satellite tracking, visual observations, phototraps and the study of bears by the traces of life. The results of studies has practical application in the conservation and sustainable use of this animal and its habitat.

In total 23 brown bears were radiocollared in the Sikhote-Alin Reserve (Primorsky Krai) in 1992-2002. As a result of this program for the first time in the region were obtained data on home range size, length of daily and seasonal movements, rhythm of daily activity; characteristics and types of dens; data about feeding and intra- and interspecific relationships, hibernation chronology.

Kamchatka Brown bear conservation and research program has been carried out in 1996-2006. In the Kronotsky Reserve and the Kamchatka river basin were equipped with radiocollars 24 brown bears and four individuals were tagged with satellite collars (GPS / ARGOS). Application of GPS-collars showed that Kamchatka bears have big size home ranges and for the stable existence of their population requiring extensive living space. Also studied the distribution of bears in different seasons, feeding and marking activity.

Brown bear conservation and research program of Sakhalin region realized in 2009-2014. Three brown bears were fitted with GPS-collars in 2011. The distribution and marking activity of bears was studied using camera traps. Satellite tracking has confirmed that in Sakhalin, as well as on the Kamchatka peninsula, the well-being of populations of bears depend on salmon. By visual observations on the bears, feeding on spawning rivers, were evaluated their needs of salmon. We studied the relationship between bears and humans, identified the causes of conflicts between humans and bears to create a plan for their prevention and resolution.

In the present time is planning Russian-Japanese research program on brown and black bears in the Sikhote-Alin. Participators from the Russian side are Sikhote-Alin Reserve and the Pacific Geographical Institute FEB RAS. The goal of this study is to explore the relationship between the two species of bears and compare their ecology. The objectives of the study include: the identification of differences in the territory and home range use by brown and black bears, habitat preference; study of food preferences and their competition for food resources; study of the brown and black bears behavior when they met each other and live together in the same area; Estimation of population densities of the two bear species in the reserve; Exploring ways of interspecies and intraspecies communication between bears. Bears will be equipped with Vectronic satellite collars (GPS Plus-2 Collar Iridium) of communicative type with sensor, which is responsive for the approach of the animals to each other, to study the interaction between the two species. Bear nutritional analysis will be implemented through content analysis of excrements and food remains. It is planned to develop recommendations for the optimal conservation of both species in the future, using the scientific findings.

§ 2-5)

Natural habitat, population and management of Brown bear in the Amur region

Andrey PAVLOV, Maksim BORMOTOV and Aleksandr SENCHIK
Far Eastern State Agricultural University, Blagoveschensk, Russia

At present time, the actual problem in Amur region (Russia) is the population of brown bear. Forest fires have direct impact upon the conditions of this species' habitat. Fires destroy their food supply and impair protective and breeding conditions. Brown bear is forced to migrate in search of food and sufficient habitat.

Brown bear (Ursus arctos) is one of the biggest predators in the Amur region. According to our research there are species whose height reaches up to 2,5 m., and weight – up to 700 kilograms. On the average, a bear's weight is 150 - 300 kilograms. Usually male bears are considerably bigger than females.

Different subspecies have various fur color. In total sample, brown and grayish-brown colors of various brightness from light and whitish to dark brown prevail. Winter fur is very thick with well-developed undercoat. That is why during winter season bear's skin is considered to have the best trophy qualities.

Bear's annual cycle of life can be divided into two periods: wakeful state (from spring to the beginning of winter) and hibernation (from the beginning of winter to spring). During summer bears can migrate in search of food.

Bears have well-developed hearing and sense of smell; their eyesight is less developed. The usual bear gait is slow and calm ambling, but in case of need an animal can run with the speed of up to 50 kilometers per hour.

Bears are omnivorous animals. Their teeth structure points out that they are used to vegetable rather than to animal food.

The most typical habitat of brown bears in the Amur region is taiga and the subzone of mixed forest. Often they come out of forests to moss moors.

Females usually produce offspring once in 2-4 years. If a female has a non-manifest pregnancy, an embryo will not be developing before November, when the female goes to its den. The pregnancy lasts for 6-8 months, and the delivery occur from January to March, while a female is still in hibernation. Bears reach puberty at the age of 4-6 years, but keep growing until 10-11 years. Their life span can be as long as 20-30 years.

Bears do not have many enemies. Rarely a pack of wolves may attack a single animal. Sometimes a tiger can attack them, but big brown bear species are serious opponents for a tiger.

The main subspecies in the Amur region is Amur brown bear (Ursus arctos lasiotus Gray, 1867). In our area they go to den by the end of November, and come out of hibernation at the end of March or beginning of April. The seasoning may vary due to weather (air temperature, precipitation) or feeding conditions. Occasionally there are non-hibernating bears.

Brown bears are widely spread in taiga zone. In steppe areas they are rarely to be encountered.

The population of brown bear in the Amur region vary slightly, but the general tendency during the period from 2012 to 2014 is that it grows.

§２－６）

The study of Asiatic black bear (Ursus thibetanus ussuricus) on the Sikhote-Alin(Russian Far East)

S. A. KOLCHIN

Institute of Water and Ecological Problems, FEB RAS, Khabarovsk

Studies of Asiatic black bear have been conducted for over 14 years (2002-2015) in different areas of the Sikhote-Alin Mountain Range.

The following methods were applied: visual observation; studies of trace (including of tracking animals in the snow); remote monitoring (using camera traps); experimental method (work with orphaned bear cubs); morphometry; collecting genetic samples.

Main research areas were as follows:

1. **Behavioral ecology and ontogeny of behavior.** The studies included such topics: nutrition and feeding behavior; behavior in the selection and making bears lairs of various types; behavior during the hibernation; protective behavior using trees; behavior when meeting with humans; behavior in the area of human activities; conflicts with humans. The attention was also given to adaptive abilities and behavioral plasticity of the species under human impacts; social organization and social behavior (intraspecific relationships); interspecific relations (biocenotic bounds with ungulates and large predators; behavioral adaptation to preserve viability in a neighborhood with the tiger (*Panthera tigris*) and the brown bear (*Ursus arctos*); the formation of biological behaviors in orphaned bear cubs in the conditions, approximated to natural; comparative ontogeny of behavior of Asian black and brown bears.

2. **Rehabilitation of orphaned bear cubs.** In 2009-2013 period we worked out methods and techniques of rehabilitation, release in the wild and further monitoring of orphaned bear cubs of Asian black bears and brown bears, based on the method of V.S. Pazhetnov et al. (1999). 21 cubs of both species took part in the experiment. Several cubs born at the zoo also were successfully rehabilitated and released in the wild.

3. **Conservation status and prospects of the Asian black bear conservation in Russia.** The studies are focused on the present day distribution of this species in Russia, the degree of its areal fragmentation, major negative factors and threats that undermine species conservation in the fauna of Russia. The work also includes developing recommendations for species protection and resolution of conflicts with humans. The aspects of reintroduction are of main concern.

4. **Morphology.** Morphological features of the species. Age, sex and individual variability.

5. **Evaluation of the genetic status** at the present stage is focused at collecting genetic samples.

§３－１）

Population genetics and phylogeography of Kuril harbour seals (*Phoca vitulina stejnegeri*) in Hokkaido, Japan

Mari KOBAYASHI
Tokyo University of Agriculture / Marine Wildlife center of Japan

Harbour seals are amphibious animals that stays around same haul-out site. They have large distribution range that expanded 16,000km over the northern hemisphere (Shirihai & Jarret 2006) and 5 sub-species are recognised (fig 1).

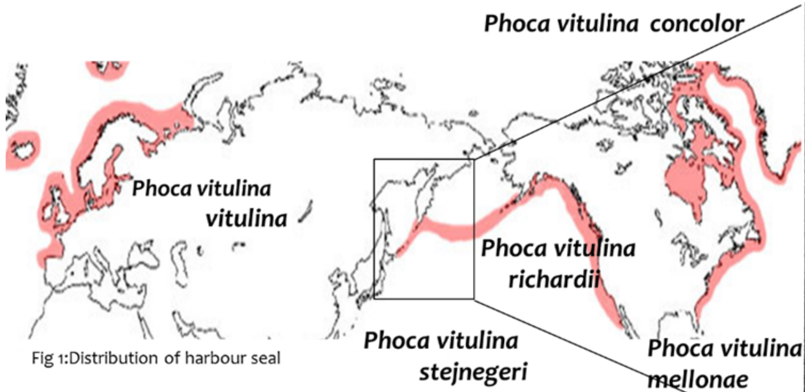


Fig 1:Distribution of harbour seal

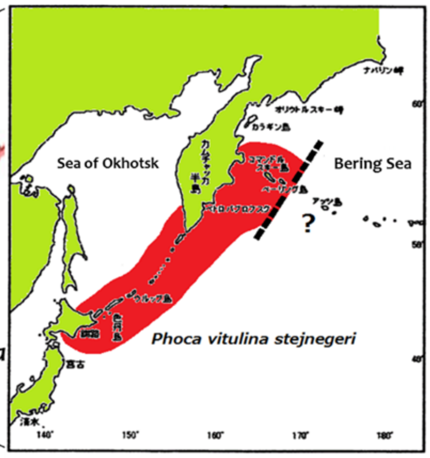


Fig 2: Distribution of Kril harbour seal

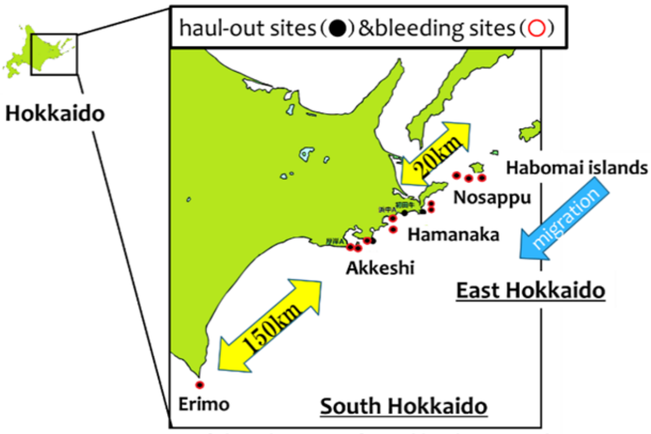
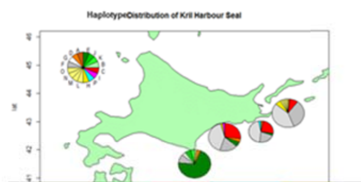


Fig 3：distribution of Kuril harbour seals in Japan

Harbour seals that inhabit Japan are called Kuril harbour seals (*Phoca vitulina stejnegeri*) and they are only found in Hokkaido (fig 2). Their distribution range extended from Cape Erimo as a Southern extremity, to east Hokkaido that includes three areas: Akkeshi, Hamanaka and Nemuro (Nosappu) and 11 haul-out sites are known in total(Kobayashi 2009) (fig 3).

There were thought to be two major populations of this animal, Erimo and east Hokkaido because Akkeshi is 150km distance away from Cape Erimo, and harbour seals are highly philopatric. Although past genetic study supported this population division(Nakagawa *et al.* 2010) (fig 3), new study suggested no genetic isolation for either areas. In the new study, more sampling areas and number were taken, size of the animal were restricted and mtDNA D-loop region was used. As a result, 16 haplotypes were found from 178 samples in total (fig 4). Akkeshi, Hamanaka, and Nosappu area showed high in haplotype



		haplotype	Erimo	Akkeshi	Hamanaka	Nosappu	
Found mainly from Erimo	1	E	35	3	1	0	39
	2	J	3	0	0	0	3
	3	K	2	0	0	0	2
	4	B	1	0	0	0	1
Found mainly from Akkeshi	5	C	0	13	7	4	24
	6	I	0	1	0	0	1
Found mainly from Hamanaka	7	P	0	0	1	0	1
Found mainly from Nosappu	8	H	0	1	0	3	4
	9	L	0	0	0	1	1
	10	M	0	0	0	1	1
	11	N	0	0	0	1	1
	12	O	0	0	0	1	1
Found from all 4 locations	13	F	5	9	6	17	37
	14	G	2	20	13	21	56
Same numbers were found from 2 locations	15	D	2	2	0	0	4
	16	A	0	0	1	1	2
		合計	50	49	29	50	178

Fig 4: Distribution and number of 16 haplotypes that are found in Hokkaido

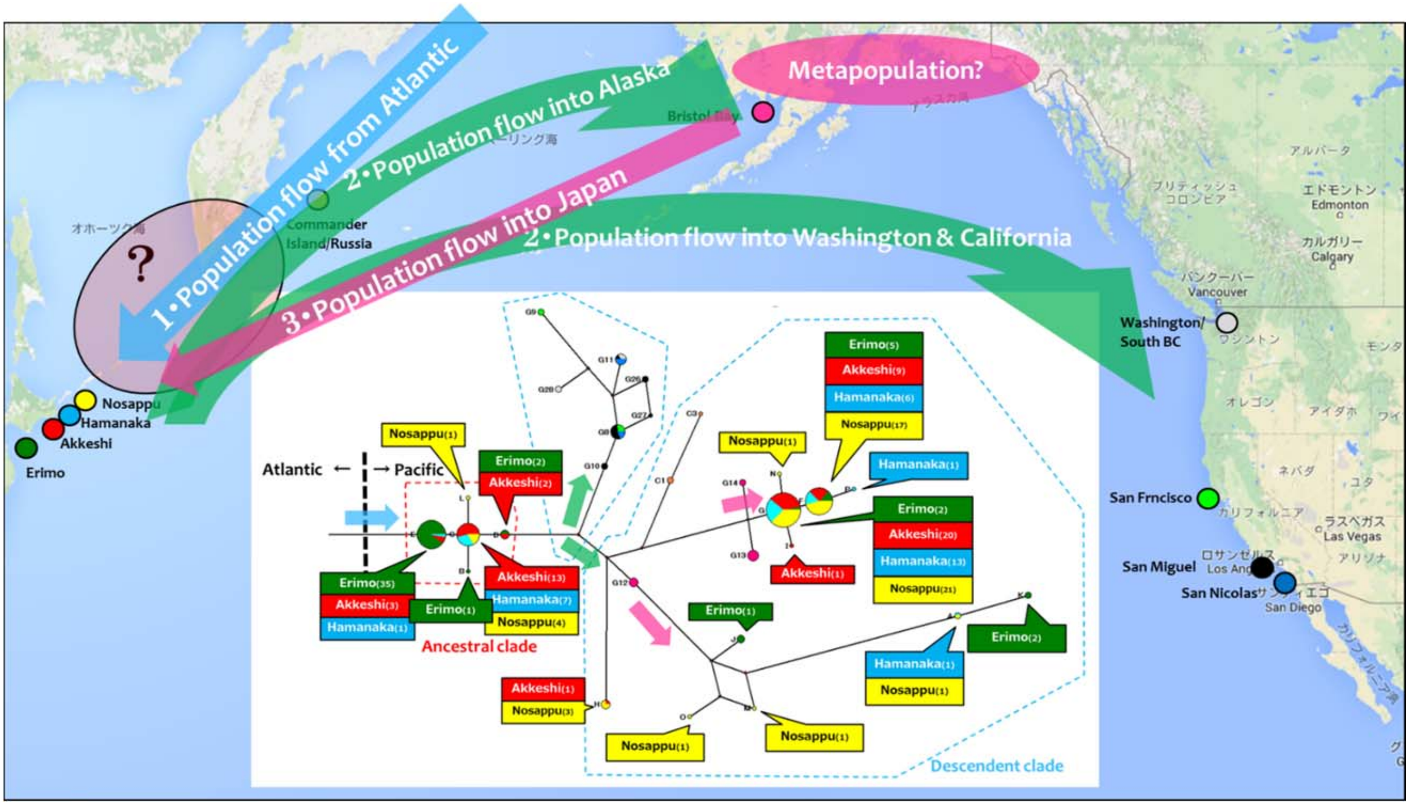
diversity but low in nucleotide diversity. This suggests these areas experienced mass expansion of the population after population bottleneck. On the other hand, Erimo showed low in both haplotype and nucleotide diversities. This could be a result of a long term or severe population bottle neck and the population only recently started to recover.

Haplotype network was constructed using data from this study and all distribution range around the world (fig 5). Result showed the Japanese haplotypes are divided into two major clades; One was ancestral clade that was closest to Atlantic and the other was descendent clade that contains two further divisions: East Pacific of Washington and San Francisco, and North West Pacific of Alaska, Commander islands and Japan. This suggests the population in Hokkaido contains two different haplotypes that have different history of divergence.

Within descendent clade, Japanese and Alaskan haplotypes share same hypothetical ancestral haplotypes. This suggests a meta-population in Alaska and population flow occurs when the Japanese population drops. Same Japanese haplotypes could be found from the population between Hokkaido and Commander Islands and genetic information between these areas are needed for further study.

It is commonly known that sub-adult harbour seals have wider movement range than the adults(Lowry *et al.* 2001; Bjorge *et al.* 2002) and same trend were seen from Erimo and Akkeshi individuals(Shimizu 2012; Haneda 2013). Also, satellite tagging data of Akkeshi showed movement differs between seasons (Haneda 2013) and the study of the other subspecies of harbour seals showed higher probability of female return to the same breeding ground(Womble & Gende 2013). Therefore, the population of krill harbour seals in East Hokkaido could be divided into smaller groups by restricting the sampling season into breeding season and taking samples from only adult or new born pups.

For future study and management of krill harbor seals, it is important to carry out genetic study using samples that are taken at appropriate time, location and from suitable animals, but it is also critical to get genetic data outside of Japan especially from the northern islands of Hokkaido.



§３－２）

Исследования ларги в заливе Петра Великого, Японское море

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Ларга (*Phoca largha*) – обычный представитель ластоногих, населяющих северную часть Тихого океана. Центр ареала этого тюленя - Охотское и Берингово моря; на долю этих акваторий приходится около 95 % численности мировой популяции вида. Залив Петра Великого (ЗПВ) в западной части Японского моря населяет одна из восьми современных популяций, здесь ларга обитает вблизи южной границы ареала. Это единственный вид ластоногих, круглогодично обитающий и размножающийся в пределах ЗПВ.

До середины 1990-х годов исследования ларги в ЗПВ проводили эпизодически. В 1996 г. в ЗПВ обнаружено место массового размножения, которое оказалось приуроченным к островам архипелага Римского-Корсакова (АРК). Здесь тюлени размножаются на небольших галечных пляжах мелких островов, в отличие от ларги из северных районов ареала, где процесс размножения происходит на льдах.

В ЗПВ ларга щенится на десяти компактно расположенных небольших островках и имеет очень ограниченный по площади репродуктивный ареал - всего около 50 км ^{2}. Пик размножения тюленей приходится на вторую половину февраля. К началу апреля сезон размножения завершается, и здесь же начинается линный период. В это время на АРК скапливается почти вся местная популяция. Максимальная численность ларги в ЗПВ наблюдается обычно в середине апреля. В этот же период на АРК наблюдается снижение численности сеголетков, которые начинают в массе покидать акваторию островов и уходить за пределы ЗПВ.

Оценивая многолетнюю динамику численности ларги местной популяции, можно заключить, что в течение двух-трех последних десятилетий она находилась в стадии роста. Этому процессу, безусловно, способствовало создание в 1978 г. Дальневосточного морского заповедника, в состав которого вошел весь АРК. Заповедный режим в местах размножения тюленей привел к постепенному увеличению численности, которое сопровождалось расширением мест деторождения. В последние годы ларги начали массово размножаться в тех местах АРК, где еще одно-два десятилетия назад рожали лишь единичные самки (о-ва Большой Пелис, Стенина).

Последний учет численности ларги на АРК выполнен мной в 2014 г. 26 марта 2014 г. на АРК было учтено 678 тюленей, а в последующие дни численность линяющих тюленей на АРК стабильно росла. 9 апреля 2014 г. здесь было учтено уже 2630 ларг. Нынешняя численность популяции ларги в ЗПВ составляет около 3 тыс. тюленей.

Современный статус ларги в ЗПВ и кажущееся благополучие местной популяции, репродукция которой приурочена к охранной зоне заповедника, на самом деле весьма неустойчивы. Следует иметь в виду, что продолжительный период годового цикла значительная часть популяции проводит за пределами заповедника. Мечение тюленей в местах размножения и последующие регистрации меченых животных позволили сделать вывод, что тюлени, рожденные в ЗПВ, совершают протяженные миграции, в течение которых они подвергается множеству опасностей и рисков.

Особенно ощутимая убыль популяции ларги происходит в результате гибели тюленей в стационарных орудиях лова рыбы. Гибель ларги в орудиях лова только на акватории ЗПВ может достигать полутора – двух сотен особей ежегодно. Кроме того, побережья ЗПВ плотно населены человеком (более 100 населенных пунктов с численностью более 1 млн. человек), и на акватории залива отмечен значительный фактор антропогенного беспокойства: интенсивное судоходство и рыболовство, возрастающая туристическая активность. Здесь выявлена повышенная степень загрязненности среды обитания продуктами техногенной сферы: тяжелыми металлами, хлорорганическими пестицидами и другими загрязнителями. Заметное беспокойство тюленям доставляют браконьеры, ведущие в ЗПВ нелегальный промысел трепанга, причем нередко в акватории заповедника в непосредственной близости от мест размножения.

На сегодняшний день Морской заповедник, получивший недавно статус «биосферного», имеет решающее значение в сохранении популяции ларги в ЗПВ. Исследования ларги в заповеднике в настоящее время проводятся на регулярной основе.

日本海及びピョートル大帝湾におけるゴマフアザラシ調査

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ゴマフアザラシ（*Phoca larga*）は、北太平洋に棲息する鰭脚類の一種である。オホーツク海とベーリング海が棲息域の中心であり、世界の全頭数の約 95%が集中する。日本海西部に位置するピョートル大帝湾には、現在 8 群ある個体群の一つが棲息しており、本種最南限の個体群である。1 年を通して湾内で過ごし、繁殖もしている唯一の鰭脚類となっている。

90 年代半ばまで、ピョートル大帝湾におけるゴマフアザラシの調査は不定期にしか行われていなかった。1996 年になって、湾内のリムスキー・コルサコフ群島に大規模な繁殖地のあることが確認された。通常氷上で出産する北方個体群と異なり、ピョートル大帝湾のゴマフアザラシは、これらの小島に点在する砂礫浜で繁殖する。

ピョートル大帝湾のゴマフアザラシが繁殖活動を行うのは、湾内にひしめく 10 の小島で、範囲も 50 ㎢と大変小さい。出産のピークは 2 月後半である。4 月初めに繁殖期が終わると、換毛期が始まる。この時期、南限域に棲息する個体は、ほぼ全てリムスキー・コルサコフ群島に集結し、4 月半ばにピョートル大帝湾全体の個体数がピークとなる。その後は、当歳獣が親離れして一斉に湾外に出るので、その数を大きく減じる。

長期の個体数変動をみると、最近 20～30 年間は上昇傾向にあるとみてよい。極東海洋生物保護区が 1978 年に設置され、ピョートル大帝湾全域がその保護対象域内に含まれてから、目に見えて頭数が増加した。保護区の規制によって、繁殖地の個体数も一貫して上昇しており、面積も拡大した。ボリショイ・ペリス島やステニン島などのように、10～20 年前は出産する雌の頭数が一ケタ台だった場所でも、ここ数年は多くの個体が集まり一斉に出産するようになっている。

筆者が最新の個体数調査を行ったのは 2014 年である。同年 3 月 26 日にリムスキー・コルサコフ群島で 678 頭を確認したのを手始めに、換毛期が始まってからも増加傾向は変わらず、4 月 9 日に 2630 頭を数えた。現在ピョートル大帝湾の群れの頭数は約 3000 頭とみられる。

湾内のアザラシの置かれた環境と、保護区内の好調な繁殖活動によって、この個体群の棲息状況は一見良好であるが、実は危うい側面をはらんでいる。多くの個体が、1 年の大半を保護区の規制のかからない湾外に出て暮らしているからである。繁殖地における捕獲・標識付けと追跡調査を行ったところ、湾内で誕生したアザラシはその後長い回遊に出るが、多くの危険やリスクにさらされていることが判明している。

とりわけ個体数が大きく減少する原因になっているのが、氷下網漁による混獲である。混獲による死亡例は、ピョートル大帝湾だけで年 150～200 頭に達する。また、湾岸地域は人口が稠密で（100 以上の市町村があり、総人口 100 万人以上）、船舶の航行、漁業操業、観光客の増加等人間活動による大きなリスクが存在している。重金属、有機塩素系農薬等工業・産業活動の汚染物質の排出も確認された。湾内で横行するナマコの密漁も大きな阻害要因で、しばしば保護区海面のすぐそばでも違法操業が行われているのが懸念される。

海洋生物保護区があるからこそ、現在の個体数が維持されているといっても過言ではない。保護区内のゴマフアザラシ調査は、現在は定期的に行われるようになっている。

§３－４）

Studies of the ecological role of alien species of terrestrial mammals in the near-water habitats

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The control of alien species, which transform the habitat, is a serious problem for both Russia and Japan and is in the focus of researchers' attention. In Japan 39 species of alien mammals are registered (The wild…, 2010) and in the Russian Far East 25 species (Khlyap et al., 2014). In both countries by their origin these species can be divided into three categories: (1) intentionally introduced; (2) accidentally introduced and (3) self-introduced.

There are a number of alien species common to both countries. These are synanthropic species such as pet dogs and cats, gray rats and house mice. Common species, native to the Americas, are the American mink, muskrat, North American raccoon, nutria. Also one Russian species – the Siberian stripped weasel lives in Japan, and the Japanese weasel (itachi) is found in Russia. These facts, as well as a close geographical position of Japan and the southern part of the Russian Far East cause research interest and make possible joint studies of introduced species and their relationships with the native flora and fauna.

Studies the ecological role of alien species of terrestrial mammals in near-water habitats in the southern Far East have been carried out since 2001. Populations of near-water mammals (otter, American mink, muskrat, beaver) were investigated. Other species living in the floodplains are also of interest, including Japanese weasel (itachi), sable and some others.

Main areas of the undertaken research were as follows:

- impacts of alien species on the native flora and fauna (natural ecosystems);
- nutrition and trophic relations;
- biotopic location, size and density of population of the complex of near-water and semi-aquatic mammal species (American mink, weasel, muskrat, beaver, otter, and others);
- population structure;
- daily activity;
- distribution and settling process;
- diseases and parasites;
- microevolution processes in populations;
- developing methods for population management.

Study methods included:

- species counts at stationary plots by tracks in snow (American mink, weasel, etc..) and at individual plots (muskrat);
- using camera traps and routing method to determine the biotope distribution and daily activity;
- processing (helminthological, morphometric) carcasses of animals which died or were hunted;

- revealing ecological and population characteristics with non-invasive genetic methods (collection and analysis of hair, feces);
- nutrition studies using methods of recovery of consumed biomass by feces, the contents of the gastrointestinal tract;
- genetic studies;
- comparative morphometry.

In the course of studies we obtained several key results on introduced semi-aquatic species and their impact on native species.

During the XX century was four semi-aquatic mammal species were introduced in the Sikhote-Alin mountain region, which populations became part of local biocenoses with varying degrees of success. The American mink and muskrat settled most rapidly and occupied all suitable habitats.

Population densities of otter and American mink are interrelated with an inverse dependence, and a bigger species plays the dominant role in the ecosystem. High density of otter population (over 3 individuals per 10 km of the river) limits the growth of American mink population. The maximal population densities in the region are 80 minks and 10 otters per 10 km of the river.

Biotopic preferences of semi-aquatic mammals differ. The upper reaches of the rivers are most favorable for the American mink, whereas beavers and muskrats rarely and irregular observed. River middle reaches are suitable for all kinds of semi-aquatic mammals. They are optimal for otters and are preferable for beavers, although the number of rivers, settled by beavers, is much less. The lower reaches of the rivers and floodplain pools and lakes are pessimal habitats for semi-aquatic predators, but the best for muskrats. Such territorial and environmental fragmentation reduces the tension of interspecies relations between semi-aquatic mammals in the region. This allowed a group of invasive mammals naturalize in ecosystems of the region despite the partial overlapping ecological niches.

In all seasons the otter prefers water food. The mink is less stenophagous and its trophic niche is over 30% wider. Trophic relations between the two predators aggravate in the second half of winter. Food preferences of muskrats and beavers are different; the greatest overlap of the feeding base happens in summer, but is not of a competitive degree.

The annual cycle for the entire group of semi-aquatic mammals is characterized by a long period of under-ice life. Animal migration activity increases during transition periods (spring and autumn). Peaks of movement activities of minks and otters in the day light do not coincide. Increasing day activities of semi-aquatic predators in February-March accelerate and sharpen their competition. Overlapping in the rhythms of activity of these two species is 69.0% in the warm period of the year and 78 .4% during the cold period.

§ 4－1）

A genetic analysis of white-tailed eagles in the Far East Russia and Japan for understanding of the population structure and the dynamics

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A genetic differentiation between regional populations of white-tailed eagles breeding in Hokkaido has been reported (Shiraki et al. 2011). Meanwhile, Taigonos peninsula in Russia may be a boundary of two regional populations in Steller's sea eagles (Utekina et al. 2013), which have different migration routes and wintering sites, respectively. Both of these sea eagles in the Far East probably consist of some regional populations with genetic differences and some ecological distinctiveness. Therefore, the conservation scenarios for sea eagles in this area should be developed with understandings of the population structures and the ecological characters in each regional population.

The monitoring of breeding status of the regional populations, one of the important researches to figure out internal parameters of the populations, have been carried out for Steller's sea eagles in the Amur River basin (Masterov et al. 2000), Sakhalin (Masterov et al. 2013), and Magadan district (Utekina et al. 2013). Meanwhile, the recent exact status of white-tailed eagles breeding in Russia has not been reported. Because the Far East population of white-tailed eagles was distinctly different from the western population genetically (Hailer et al. 2007), the implementations of Japan-Russia cooperative researches and conservation projects for this population are important.

Analyses of DNAs from regional populations of white-tailed eagles breeding in the Far East Russia are going on. I will present interim results of the analyses of part of the D-loop region (500 bp) in the mitochondrial DNA at the workshop.

The genetic differences by F_{ST} were confirmed in all regional population pairs from eastern Hokkaido, northern Hokkaido, and the Far East Russia with DNA samples from the breeding individuals in Primorye, southern part of Sakhalin, Amur River basin, and Kamchatka peninsula. Pronounced differentiations were shown between the populations of northern Hokkaido and eastern Hokkaido, as well as between northern Hokkaido and the Far East Russia. More DNA samples from more various breeding sites in the Far East Russia, and also the nuclear DNA analysis are required to increase the accuracy of this analysis.

In addition, a wintering white-tailed eagle found in Tsushima island, the southern part of Japan, had a haplotype confirmed in the populations of northwestern Eurasia (Sugimoto and Shiraki 2014) but not found in the breeding populations of Hokkaido and the Far East Russia, suggesting that the migration routes of white-tailed eagles in this region may be more complex than it has been thought.

§4-2)

Abundance and Distribution of the White-tailed Sea Eagle *(Haliaeetus albicilla* (Linnaeus, 1758) and the Steller's Sea Eagle (*Haliaeetus pelagicus* (Pallas, 1811) in the Amur Basin and the South-West Okhotsk Sea Region

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To clarify the abundance and distribution of rare bird species we carried out field studies in 2009-2014 and examined the rivers: Amur (from the Zeya mouth to the Amgun of total 1840 km), Bikin, Chor, Anyui, Gur, Gorin, Amgun, Kur; the lakes: Evoron, Chukchagirskoye, Udyl, and the Okhotsk Sea bays: Schastia, Catherine, Reinike, Alexandra, Nicholai, Ulbansky, Constantine.

White-tailed Sea Eagle ***Haliaeetus albicilla***. Within the surveyed area most high numbers of species were observed in the area from Khabarovsk to the Amgun R. mouth. At the end of the breeding season we registered up to 104 birds of different ages from the ship, moving down the Amur R. At the same time, we met only 5 white-tailed eagles in the 1,000 km-section of the main channel of the Middle Amur.

It seems obvious that a higher number of these birds in the Lower Amur section is observed due to more abundant feed resources. The high density of birds was recorded on the Middle-Amur and Udyl-Kizinskaya Lowlands. In addition to these areas the Chukchagirskaya Depression in the Lower Amur region is a highly productive refugium for the white-tailed eagle. No less than 30 pairs nest there.

Among the mountain rivers the spawning Amgun R. provides the habitat for the most abundant population of the white-tailed eagle.

In recent years, this species has become common in the Lower Amur basin in winter. A few dozens of white-tailed eagles winter annually in the Khabarovsk vicinity. This species is also known to winter near most mountain spawning rivers of the region. The largest habitants are located at the Anuy and Nimelen rivers, where up to several dozens of birds spend winter.

Steller's Sea Eagle ***Haliaeetus pelagicus***. The inland area, where the Steller's sea eagle is most abundant, is the Udyl-Kizinskaya Lowland. On the sea coast these areas are the Schastia Bay and the Mukhtelskaya Lowland. It is interesting to note that in 1958, 1959 and 1961 the Steller's sea eagle was found in the Lower Amur region only as a transit form (Kistyakovsky, Smogorzhevsky, 1973).

By 1990-ies the Steller's sea eagle has spread from the Sea of Okhotsk along the Amur to the Gorin R. mouth for a distance of 550 km. Over the next twenty years, the species further penetrated inland to the south. Probably during this period the Steller's sea eagle moved for another 230 km. In 2010 we registered three birds (adults and one young) on the left bank of the Amur opposite the Anyui R. mouth 150 km north of Khabarovsk. In addition, two nesting sites of the Steller's sea eagle were found in 2010 in the Amur passage from the Gorin R. mouth to the Anyui R. mouth.

Evidently the expansion of the Steller's sea eagle into the mainland continues not just along the Amur R., but also through the Evoron-Tugurskaya Depression. In 2013, we registered two nests of this species in the Oldzhikansky wildlife reserve near the Chukchagirskoye Lake 170 km from the Okhotsk Sea coast. Studies of this area in 1990-ies revealed no signs of the Steller's sea eagle breeding there.

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§ 4−3)

Long-term bird population study and its conservational implications on the basis of Khingansky State Nature Reserve in Amur Region

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During last 50 years many of wildlife species of Khingansky State Nature Reserve (coordinates: 48°55'-49°32' N, 129°35'-130°42' E; further in the text: KNR) had been subjected to population monitoring and specific ecological studies. Khingansky state nature reserve is officially admitted as a Ramsar as well as East Asian-Australasian Flyway Partnership (EAAFP) sites. Migratory birds are among the major parts of the environment which especially needs multifunctional consideration and international approach to their research and conservation. Globally threatened Red-crowned and White-naped Cranes, Oriental White Stork, Far-eastern Curlew, Falcated Teal are some of the key waterbirds species in KNR. Conservation studies and monitoring of these particular species are the most immediate task for us.

A various inherent links to Japan territory had been well documented in natural history of many birds breeding or migrating at our study site. For instance, Oriental White Stork inhabited our wetlands is phylogenetically derived from extinct Japan population (Onuma et al., 2011), White-naped Crane breeding in KNR largely confine to Japan in winter (Higuchi et al., 2004), as well as some other migratory waterbirds such as ducks and geese (Yamaguchi & Higuchi, 2008). On the basis of the published materials we assume that southern sectors of Japan archipelago particulary Kyushu Island are more linked with our site through migratory birds.

Waterfowl study is particularly important as this group includes species with strongest decline in Asia. At the same time, examples of long-term waterfowl population monitoring in Far East of Russia are scarce and never were based on the sound statistical approach. Different kinds of avian pathogens associated with waterfowl or possible radioactive contamination spreading scenarios are all deserve urgent investigations and constant surveillance by international scale and scope. Five major species of this group in KNR are Mallard, Mandarin Duck, Falcated Teal, Garganey and Great Crested Grebe.

Forest-dwelling birds are also objects of specific studying in KNR, particularly for their migratory behavior and migration connectivity. White’s Thrush is one of a such passerine bird which the upcoming project of satellite tracking headed on. Changes along migratory routes of all birds are crucially important to know to mitigate or halt its influence towards species viability, but we still hardly understand the migration system of the most of small song-birds in Asia. Number of fundamental questions and hypotheses on bird stopover ecology and migration optimality worthes to be checked in mainland vs. sea coast environments of our countries.

The recent hydro-power energy development on the main tributaries of Amur River affected many populations of waterbirds as well as other wetland ecosystem components directly and indirectly. New Lower-Burea Dam construction on Burea River is going to inundate the only known habitat of Long-billed Plover in Amur Region at the north of its breeding range. Japan experience on the species habitats restoration through man-made nesting areas framing (Katayama et al., 2009) could be valuable for adoption and application in our region. Big dams which are functioning in the upper streams of the rivers supplying KNR territory with water also indirectly influence in cranes and storks breeding success and local productivity (Parilov et al., 2011). Ecological studying of the versatile hydro-power development impacts on the environment of KNR and particularly birds is of a serious contemporary challenges.

Works on wild-fire management and corresponding grassland bird monitoring are also undergoing missions of KNR staff as well as satellite imaging analysis for nature conservation purposes. Long-term animal population evaluation is a prime task of nature reserves in Russia. Nevertheless, funds for the field works are limited and methodology is often old and in many cases inappropriate for the growing needs of the modern world. In this part international cooperation between neighboring countries are desirable and advantageous. Forms of cooperative scientific activity could be as a joint research projects in specialists group, post-doc students involvement to conservational objectives or conjoint working within any of internationally conducted agenda.

§ 4-4)

Russian-Japanese bird-banding project - joint achievements and prospects of continued cooperation of scientists and birdwatchers of Primorye and Toyama

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Russian-Japanese Banding project was started on initiative of the Department of Nature Conservation of the Toyama prefectural administration and with the support of the Toyama Prefectural Branch Japanese Society Preservation of Birds in 1998, and this project continues to the present time. In Russia the project is being realized by ornithologists of NPO «Amur-Ussuri Centre for Avian Biodiversity» and Lab of Ornithology Institute of Biology and Soil Science, RAS, Vladivostok, Russia. The main goal of this project to create a regular banding station in the South of Russian Far East was achieved. The basic questions of researches:

1 Are the birds migrating along the continental edge of Asia capable to overcome ecological barriers such as the Sea of Japan?

2 Is the condition of migrant population is stable or not in today's changing world, and what trends of population are dominate?

Constantly operating Banding station in the Russian Far East is located in the valley of Litovka river flowing into the Vostok Bay Sea of Japan (42.57 N; 132.53 E). Our Japanese partner is the station Fuchu in the Toyama Prefecture. During 17 years (1998-2014) more than 162000 birds of 180 species were ringed in Litovka station. Ringing database consisting of 200000 capture stories includes information about the age and sex structure of populations, body conditions, recapture and length of stopover. In the Fuchu station 59800 birds (1998-2012) were ringed. Were discovered the long-term dynamics intensity of spring and autumn migrations, identified population trends of some species, including negative ones. We received four returns of passerines between Japan and south of Primorye, thus confirming the existence of the flyway through the Sea of Japan (*Ocyris rustica, Phoenicurus auroreus*). For these, as well as several other model species (*O.personatus, Uragus sibiricus, Turdus pallidus, Tarsiger cyanurus, Luscinia calliope*) migrating between regions of the Russian Far East and Japan, we compared the condition of populations and the calendar dates of migrations. Significant fluctuations in population size of *O.rusticus* throughout the flyway were noted, both in Russia and Japan. In recent years in Japan there has been a sharp decline in numbers of this species. The reasons for this are analyzed. The project is of great ecological and educational value. More than 50 participants of the project on each side visited sister Banding stations and exchanged experience. We continue to work on a joint publication of the research results.

General discussion and conclusion

Comment by T. Shiraiwa

This 1.5-days workshop revealed the necessity of trans-boundary effort in clarifying and conserving the Japan-Russia's neighboring ecosystem. The program "the Preservation of the Ecosystem in the neighboring areas of Japan and Russia" is the only one bilateral program in the region and therefore it should be continued in the future. It is also unique in the sense that the program is co-managed by academic researchers and national government administrative organs in each country. We researchers request both governments to make the best effort to facilitate the research activities under current program, because some of the research plans faces difficulties in obtaining research permission and exporting samples. It is also essential to foster younger generations because understanding and conserving ecosystem needs long-term efforts. Hokkaido University has just begun a student exchange program between Russian universities and I hope this sort of activity will expand to other universities.

Comment by B. Voronov

Practically no joint ecological research was conducted until 1970s except for those with Dr. Yuzo Fujimaki and the Yamashina Institute for Ornithology in the Russian Far East. Since then research communication has become more active in various scientific fields and I am confident it should be further strengthened. Studies on disaster prediction and its simulation will be important beside basic natural sciences in this region. This is because both natural and anthropogenic impacts are closely related to environmental changes and disasters, as clearly revealed in the 2013 great flood in the Amur River basin. Synergistic effect of the two factors could result in a catastrophic disaster that might occur once in 300 years.

I found interesting presentations in the bear session. There are new insights into coexistence between brown bears and Himalayan black bears, and interesting discussions were made for the population management. I would like to stress that the ecosystem itself should be discussed with perspectives to future generations. It is also noted that excessive approach will not be fruitful if it is denying any anthropogenic involvement to the nature. We should not avert our eyes from the fact that the little grebe disappeared in 1950s, the Asian crested ibis in 1970s, and the red wolf in the recent decade in the Far East.

I promise you that I will appeal to the Russian government to reduce the difficulties encountered in the Japan-Russia joint research activities. We, researchers, must educate each government. I recommend that next workshop should focus on either comprehensive or unique topics.

Comment by A. Senchik

We collaborate with Chinese scientists in the neighboring region in the study of forest. Our students visit the forest in Heilongjiang district for their research. We will start a collaborative study with scientists from Rakuno Gakuen University, Japan, in the fields of GIS, and deer and brown bear ecology. I found interesting to see younger scientists in this workshop. We will organize a conference on wild animals at Blagoveshchensk this year.

General discussion and conclusion

Comment by Mari Koyano

I am a professor of public international law, engaged in research on institutional frameworks for transboundary environmental co-operation. I have attended this workshop as an observer.

I have found all the presentations and discussions interesting and stimulating. This workshop has made me realize how the Japan-Russia Program for the Cooperation on the Preservation of the Ecosystem in the Neighboring Areas of Japan and Russia is significant from various points of view. The program is to contribute to enhancing academic exchange among scientists between Japan and Russia, promoting bilateral co-operation for the environmental protection between the two countries, managing environmental governance in the North-East Asian region, and supporting stability and development of regional relations in North-East Asia in a wider context. Considering tremendous gaps in the state of development of international frameworks for managing regional environmental problems between the European or North American region and North-East Asia, the value of the Program should appropriately be acknowledged as a rare inter-State framework for the environmental protection in the latter region. In the European or North American region legally-binding instruments, regional or bilateral treaties, are the basis for regional environmental co-operation in many cases, but, relatively a few non-legally instruments, in case of North-East Asia. While North-East Asian countries, including Japan and Russia, are bound by many global environmental conventions, no regional or bilateral treaties have been concluded for their practical applications among them. This is in good contrast with the situations in Europe and North America. Moreover, Scientific knowledge has taken key roles in environmental diplomacy in Europe for decades, but, not, in North-East Asia. Under the circumstances, the Program could enhance managing transboundary environmental problems and contribute to conserving biodiversity and sustainable use of natural resources in the region.

For realizing such possibilities and maximizing them, some efforts may be necessary for pursuing constructive relations between the Program and other co-existing frameworks for environmental protection, such as the inter-State joint commission for the environmental co-operation established by the Japan-Russia treaty for environmental co-operation, the inter-State council for bird preservation based on the Japan-Russia treaty on the protection of migratory birds, the Amur-Okhotsk Consortium organized by scientists of Japan, Russia, China and Mongolia, etc. Attention should also be paid to some factors for the better management of the future workshops. They are, for example, financing, structuring management, giving incentives for scientists' active involvement. Thank you.

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