

## Following the footprints of Chinggis Khan : Research travel to Eastern Mongolia, and the Daurian Steppe during 2003 June 06-12

著者	BOERNER Wolfgang-Martin, AMARSAIKHAN D., SATO Motoyuki
journal or publication title	Northeast Asian studies
number	8
page range	177-185
year	2004-03-19
URL	<a href="http://hdl.handle.net/10097/41096">http://hdl.handle.net/10097/41096</a>

# **Following the footprints of Chinggis Khan: Research travel to Eastern Mongolia, and the Daurian Steppe during 2003 June 06 - 12**

**Wolfgang-Martin BOERNER\*, D.AMARSAIKHAN\*\*, Motoyuki SATO\*\*\***

**Keywords: Eastern Mongolia, steppe, migratory birds, wetlands, Chinggis wall**

Since there is a great need for environmental monitoring of the northeast Asian region by remote sensing, we can expect to obtain a better understanding in case we can identify the objectives and determine the applicable methods in situ. Most of Eastern Mongolia is a steppe of undulating short-grass rather flat ranges; the Daurian Steppe is an ideal site for obtaining the pertinent know-how. This region is the lowest in altitude within Mongolia, it continues into the Inner-Mongolian autonomous region of China and the southeast part of Siberia. Moreover, it is known also as a breeding ground of many species of small to large migratory birds, such as swans and cranes nesting in swamps and wetlands in the steppe and/or along and in the rivers and lakes, which are slowly drying out and endangering the livelihood of most of the migratory birds in this region. Most of the migratory birds migrate to the south towards China but most of the cranes are migrating via the DMZ in Korea to Izumi in Kagoshima-ken in Japan or to the East Asian coastal wetland areas, and determining the migratory flight-corridor requires improved knowledge about the existing wetlands of the entire East Mongolian region.

The microwave remote sensing techniques, which we are developing, are suited excellently for the wide area monitoring of wetlands and its soil moisture by applying the Polarimetric Synthetic Aperture Radar (POL-SAR) remote sensing methods developed for the PALSAR sensor on the satellite ALOS, which Japan is developing for earth observations and is planning to launch in September 2004. In addition, the Ground-Penetrating-Radar (GPR) technology developed in the GPR-SAR Laboratory of the Tohoku University, Center for Northeast Asian Studies (TU-CNEAS) establishes a most essential monitoring tool.

In June 2003, Professor Wolfgang-Martin Boerner - a visiting professor from the University of Illinois at Chicago at the TU-CNEAS; Dr. Damdinsuren Amarsaikhan - a current visiting researcher of the Mongolian Academy of Sciences in Ulaanbaatar; and their host, Professor Motoyuki Sato, Director of the GPR-SAR Laboratory of the TU-CNEAS, performed a field survey in Eastern Mongolia of the Daurian Steppe towards the

---

\* University of Illinois, Chicago, USA, CNEAS Tohoku University

\*\* Institute of Informatics and Remote Sensing, Mongolian Academy of Science, Ulaanbaatar, Mongolia, JST fellow, CNEAS Tohoku University

\*\*\* Center for Northeast Asian Studies, Tohoku University

Khentii Mountains. Next to the investigation of the possibilities of wide areas of the vegetation cover and underlying geology by methods of remote sensing, another main purpose was an investigation of the wetland ecology under the guidance of Dr. Natsagdorjiin Tseveenmyadag (*TSEVEEN*) of the Mongolian Academy of Sciences, Biology Institute, Ornithology Section, who is one of the top Mongolian experts in studying the ecology of cranes, the Daurian or White-Naped Cranes (*Grus vipio*) and the Demoiselle (*Anthropoides virgo*), together with his former ecology and zoology student Shagdaryn Baatartsogt (*BAATAR*), who was selected to become our very knowledgeable and experienced driver. The regular appearance of the common or Eurasian Crane (*Grus grus*) and of the red-crowned, Manchurian or Japanese Crane (*Grus japonensis*) plus the rare appearance of some Sandhill Cranes (*Grus canadiensis*) — a close relative of the Common or Eurasian Crane — was also discussed whenever we saw their rare appearance, and all of them we were able to see.

We, the three of us from TU-CNEAS and Dr. Tseveenmyadag, were flying with a twin-engine passenger plane from Ulaanbaatar to the main city of Dornot Aimag, Choibalsan, of the Eastern Mongolian region. We were met by our driver, Baatartsogt and immediately explored the Choibalsan settlement, the fourth-largest of Mongolia and, traveled to the wetlands along the southern banks of the Kherulen River up to about 30 km west of Choibalsan, and back via a still operating open-pit coal-mine to our accommodations at the To-Van Hotel in Choibalsan.

The entire distance back from Choibalsan via the Daurian Steppe, the Ulz, the Onon and upper Kherulen river valleys to Ulaanbaatar was done by a Russian 4WD Power Outdoors Vehicle. There are actually no roads but only multiple parallel tracks and driving through swampy wetlands and the open steppe is sometimes the only choice; and where no paved roads exist, traveling is cumbersome and slow and it took for us three nights and four days for driving about 1000 km, although we drove every day for ten hours or more. The travel route that we followed from Choibalsan to Ulaanbaatar is shown in Figure 1.

On the second day, we went towards the Salt-lake Yahi Nuur from Choibalsan in northly direction straight across the Daurian Steppe. Lake Yahi Nuur was originally a freshwater lake, however during the past decades due to droughts, it was rapidly drying up and the entire lake surface was covered with salty brain. During the never disappearing strong wind gusts the salty brain from the Salt-lake is soaring towards the sky and the air looked white from a distance or like plumes rising from a huge chemical plant. The salt is a true pest for the fragile steppe and destroying the surrounding plant life causing desertification slowly to emerge. Yet, there are still swamps and wetlands on the outskirts of this and other similar lakes that lost their fresh water, where small migratory birds and also some Demoiselle cranes live. This kind of reduction of lake area is seen in various places, and we are worried about how it could greatly be affecting the migratory flight-routes of migratory birds, and especially of the cranes. It seems that another cause of the drying of the lakes is caused also by extensive pumping of the groundwater for livestock breeding and in turns by the livestock wading into and destroying the few existing wetlands and swamps. We were able to see that there are still

many cranes in the open steppe and in the wetlands with many more whooping swans nesting in ponds at various sites along our travel path, although according to our scientific guide, the numbers are dangerously dwindling, causing the Daurian crane to be placed on the list of seriously endangered Cranes. Some of the cranes migrating in the areas of Eastern Mongolia are shown in Figures 2 and 3.

During our entire travels our vision was blurred badly due to the smock created by the forest fires southeast of Lake Baikal, which had broken out weeks before and by the end of summer covered a region as large as Texas. The scent of the burning forest vegetation was everywhere during our entire stay in Mongolia, and the smock was drifting eastwards with the prevailing winds for days without end. Gigantic forest fires exist also in the forested regions of Northern Mongolia, and tracking them by satellite remote sensing from space is of great urgency for enhancing environmental disaster monitoring for Mongolia.

It was early June, and still the time for various migratory birds to prepare for breeding and making nests in the open wetlands of the steppe. The lovely songs of the Daurian Steppe Lark were always around us, so also the marmots' warning of us intruders into their solitude constantly by shrill whistling sounds, and the Daurian gazelles were hushing by us several times with a watchful Daurian steppe eagle soaring above us many times. June is the season of flowers, it must have been raining a little before we made our travel, and during our entire travel we saw wild flowers such as light to dark blue short-stem steppe iris, red steppe phlox, wild steppe mustard, blue short-stem and long-stem gentian, wild steppe poppies, yellow steppe snap dragon, mountain buttercups and many more, which at times covered the wetlands with colorful mixed blue, yellow and red carpets in many places on the first day and during the rest of the entire travel. Typical examples of vast steppe grassland and different flowers distributed in regions of Eastern Mongolia are shown in Figures 4 and 5.

There exists a very long wall called "*Chinggis Wall*" made of a mixed soil and rock, a mound-wall of a certain height, along which a track is following on its side for a long way; and this mysterious mound-wall is of 4 to 5 m width - crossing the Ulz river towards the west and reaching the Khentii mountain ranges, the border between Mongolia and Russia; and to the east extending through Inner Mongolia to Manchuria. Although the Japanese and Western travel guidebooks provide little or no description about this immensely long prehistoric wall, a map which we obtained in Ulaanbaatar had the position of the wall covering hundreds of km marked rather accurately. But little of it is remaining due to wear and tare by the steppe winds and rough year-around weather as well as by plundering over at least thousand if not more than two thousand years, and it is certainly not easily found without expert knowledge like that of our guides who ancestors were nomadic herders of this region. A part of this mysterious wall is shown in Figure 6.

We traveled along this wall for many hours until we reached the river Ulz, where we put up our tent camp for the first time. The third day, we traveled from the broad valley

of the shallow slowly flowing Ulz River - via a hilly forested region with many canyons - to the mighty rapidly flowing Onon River (Figure 7), which is parallel to the river Ulz. It is the region where the Buryats are in the majority, and the appearance of the herders, their gers and wooden block houses are starkly different from that of the Mongolian herders in the open steppe. Because the tracks — and there are no roads what so ever — were very soggy, we could not reach the hamlet within the forested region of Dadal Sum — about 25 km further north from our resting place - considered to be Temujin's birth place. In 1162 in the forested area of a deep ravine west of the Onon stream, Temujin, later to be known as the Chinggis Khan, was born. We turned around and traveled on southward across a very well looking grass-steppe and set up our second tent camp at a larger wetland through which a tributary of the Onon River was flowing, on a high bank overlooking the entire lovely wetland region. We could see not a single ger not even in the far distance but several families of various kinds of ducks, geese, whooping swans, both the white-naped or Daurian and the Demoiselle cranes nesting and breeding.

When we were traveling on the fourth day to the southwest from the Onon River towards the upper Kherulen River, we saw many more of the Demoiselle cranes on the open steppe but fewer Daurian cranes. Also, we passed various living scenes, such as active gold dust extraction sites, large-sized agricultural farming of vast wheat fields, lush green meadows filled with livestock, many sedentary but no nomadic herders with a great diversity in livestock, an ancient cemetery which may predate the Mongolian culture of the region, and a large-scale very famed Buddhist temple, which had been destroyed during the cultural and religious purges of 1936-37 by the Communist regime, and which was now under restoration; and various picturesque limestone canyons with mysterious prehistoric engravings were also encountered.

In the late afternoon of the fourth day of our excursion, we drove southwards through the Khentii Mountain ranges towards the Blue Lake Khukh Nuur, where the tribal chief Temujin was said to have been elected to become Chinggis Khan, the leader of all Mongolian tribes in 1206. It was told that Temujin unified the tribes at the tribal meeting place, called Ikh Khurildai at Lake Khukh Nuur. A historical monument existed there for several centuries, had been destroyed by the Communist Regime and was rebuilt by the current government only a few years ago. We stayed overnight at the Khukh *Nuur* close by in a lakeside tourist ger camp, and explored the region, where the sound of the cuckoo could be heard all around us from very early morning to late evening until sunset, the roaring of the elks during early morning and evening hours, and the distant howling of wolves during night. Our team standing besides the monument of Chinggis Khan at the Khukh Nuur is shown in Figure 8.

We then, on our fifth and last day of exploration, traveled on across steep tracks of the undulating steppe ranges via the Kherulen river towards Ulaanbaatar. About 100 km east of Ulaanbaatar, construction work of a large-scale bridge across the Kherulen River was ongoing.

This modern bridge is a part of a major future Mongolian Interstate Road, called

millennium road, which runs through Mongolia from east to west. The Millennium Road is already completed from the bridge to Ulaanbaatar. The Millennium Road is partially paved and to become fully paved in the future but currently there are still many unpaved sections, which on either side are dashed - along the former tracks - by old abundant heavy-duty trucks. Due to the ongoing use of heavy-duty trucking along the multiple tracks, sand dust is rising and distributing into the steppe — the Mongolian prairie — causing serious overall damage to the fragile steppe environment; and construction of a network of paved Interstate Mongolian Roads must be considered to be of top priority.

Although we are specializing on advanced research in remote sensing theory and technology, we are at the same time strongly involved in the application of this modern airborne to space-borne POLSAR and GPR Remote Sensing technology to environmental stress change monitoring. In conducting our research, in this context our exploration into Northeast Mongolia was most timely and important in order to obtain practical outdoors in-situ experience which cannot be obtained by doing research in a laboratory only.

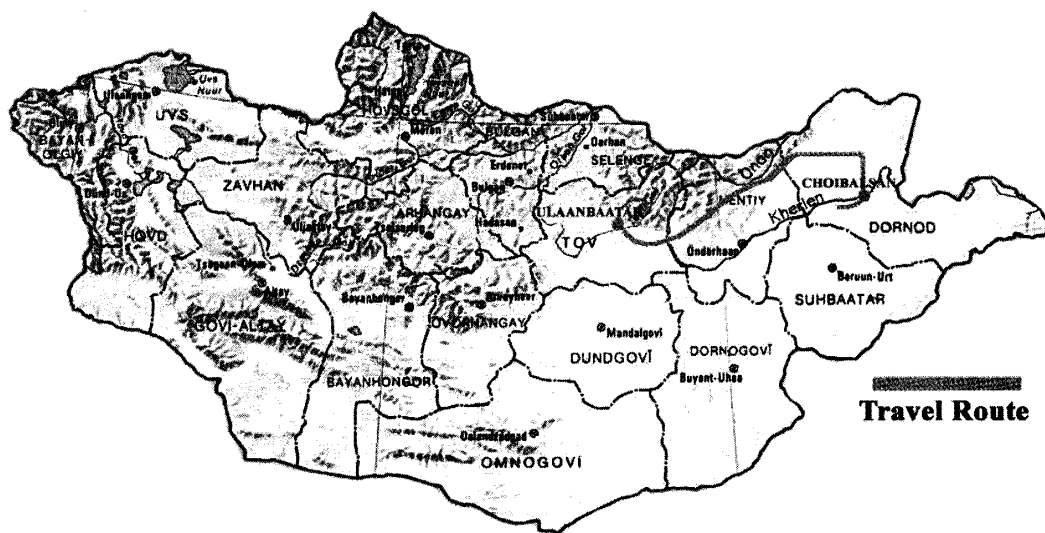


Fig. 1. Our travel route from Choibalsan to Ulaanbaatar.



Fig. 2. Migrating cranes.



Fig. 3. A crane family migrating in wetlands of Eastern Mongolia.



Fig. 4. Typical vast steppe grassland of Eastern Mongolia.





Fig. 5. Typical flowers distributed in regions of Eastern Mongolia.



Fig. 6. Prof.M.Sato standing on the ancient Chinggis Wall.



Fig. 7. Our team standing on the shore of the Onon River.



Fig. 8. Our team standing besides the monument of Chinggis Khan at the Khukh Nuur.