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In This Issue

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Editor's Foreword

This issue of *SILnews* includes, among others, articles from Tamar Zohary, the SIL Secretary, and Yves Prairie, the SIL President. Both these contributions are dedicated to revitalising the SIL. Restoring to the SIL its old glory but at the same time adapting to the present day situation, partly relating to climate change, etc. are thus the main paradigm of their messages. Tamar has, according to me, very rightly chosen the path of stimulating the students' interest to invigoratingly participate in the SIL academic activities during the upcoming meetings. It should be interesting to have a national platform of students'academic activities through which to qualify for a plenary lecture at the upcoming SIL Congress in Torino, Italy, in 2016. Such plenary lectures are normally awarded on invitation to well known experts in their respective fields of interest. Yves Prairie "reminds" us that the ASLO (which meets at Granada, Spain, in Feb. 2015) is a sister organisation of SIL. I understand that SIL will be represented at the upcoming ASLO meeting as an invited speaker in the Plenary Lecture Sessions.

Also, it is encouraging to note that the sustained efforts of the SIL Secretariat started since the SIL Congress in Montreal in 2007 have continued unabated. Consequently, the SIL has been successful in not only having its own Scientific Journal *Inland Waters* but the journal that is already recognised by the ISI and has received an Impact Factor too. The Journal has in Jack Jones not only a well-recognised Editor–in-Chief but he has an impressive list of subject editors on his editorial board. The Journal is very soon entering 5th year of publishing peer-reviewed articles. This journal accepts the manuscripts submitted for both Congress Proceedings Volumes as well as submitted directly—just as other aquatic journals accept direct submissions (read more about this elsewhere in the newsletter).

The newsletter includes a few announcements and several reports of meetings that did not directly originate as SIL sponsored activities but are closely related to the activities of the SIL working groups. Two of these relate to Cladocera Meeting held in Czech Republic and the triennial Conference on Shallow Lakes in Turkey. Both these meetings are reported in this newsletter. Thanks to Dr. S.S.S. Sarma and Dr. Nandini Sarma from Mexico. Sarmas are also playing hosts to the next Shallow Lakes Meeting, to be held in Mexico in 2017. I thank them both for their help in reporting for this newsletter. Other reports in the Newsletter come from Aral Lake reported by Nikolay Aladin and colleagues. I must thank Nikolay et al. for regularly keeping us apprised of new developments in Lake Aral, which has suffered badly from climate change effects. The last biennial ILEC Meeting held in September 2014 at Perugia (Italy) is reported by Dr. Luigi Naselli-Flores (Palermo, Italy). Bob Wallace from the US and his colleagues report on their workshop deliberations on cryptic speciation in *Brachionus pliciltilis* complex. Brian Moss (former SIL President) reports on "Rewilding Limnology", based on a conservation approach to shallow water bodies in Tanzania, the term *rewilding*, is apparently borrowed from terrestrial ecology.

Last but not least, I cannot refrain from a brief comment on the functioning of our SIL Working Groups: despite all the recent efforts at rejuvenating the SIL, I am perturbed to note that the group scientific activities have now dropped to a low ebb, but this based purely on my feedback from these groups. I may be wrong but as it is I am a bit dismayed. I hope this is a momentary slump. The WG Chairmen, nevertheless, need to think about it. They are always welcome to contribute briefly to the Newsletter of their scientific activities.

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carbon cycle relationship and global changes through a peer-reviewed publication of the data collected.

Literature

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Development of IL²BM platform for Transboundary Lake Aral[1]

The Aral Sea is a terminal lake, lying amidst the vast deserts of Central Asia. From the 1600s to the 1960s, the hydrological regime of the Aral Sea was in reasonable balance. Since 1960, the anthropogenic regression and salinization of the Aral Sea have not been underway. These changes have not resulted in the disappearance of most of its species of invertebrates and fish. At the end of the 1980s the Aral Sea divided into a northern Small Aral and southern Large Aral, which have different hydrological regimes (Micklin, Aladin and Plotnikov, 2014, Chaps. 1&15).

Regression and salinization of the Large Aral continue unabated. After construction of the Kokaral dam (Aladin, 2014) the Small Aral Sea level began to rise and a gradual decline in its salinity ensued. To date, salinity of the Small Aral Sea is lower than it was before the 1960s. A process of restoration of the former biodiversity of this water body is underway. Many invertebrate species are reappearing. Commercial freshwater fish species returned into the Small Aral from the Syr Darya River and lakes in its lower reaches. Fisheries are recovering and catches are growing (Aladin, Plotnikov, 2012; Aladin et al., 2012; Plotnikov et al., 2012).

At present the Aral Sea is divided into a number residual parts. The Large Aral Sea is the most ecologically devastated part of the lake. At the beginning of the 21st century it was divided into three parts: Western Large Aral Sea, Eastern Large Aral Sea and Tsche-Bas Bay (Micklin, Aladin and Plotnikov, 2014, Chaps. 6&14).

[1] In our studies of Aral Sea we are using IL2BM platform (Integrated Lotic/Lentic Basin Management) (http://www.ilec.or.jp/en/).

Fig.1. Spillway of Kokaral dam.

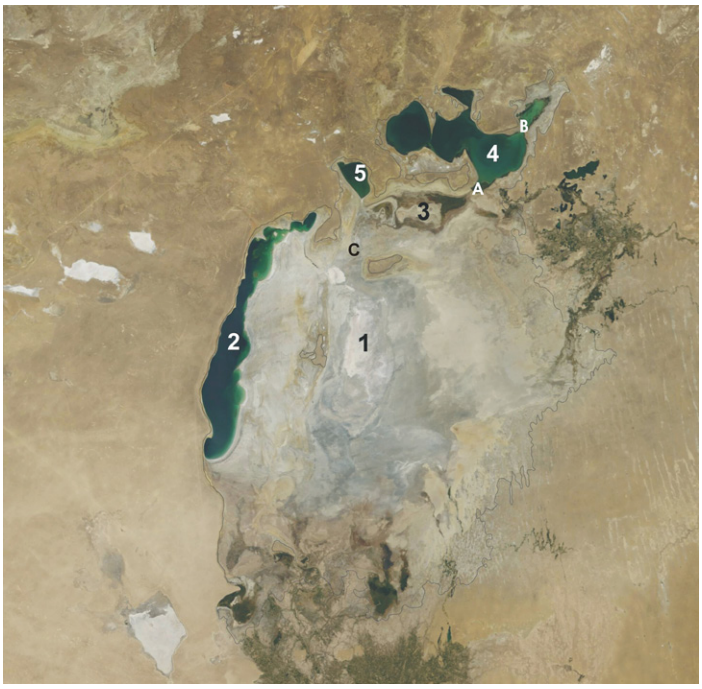

Fig.2. MODIS image of the Aral Sea acquired on August 19, 2014 (250 meter resolution; true color using bands 1-4-3): (1) dried Eastern Basin of the Large Aral Sea, (2) Western Basin of the Large Aral Sea, (3) New Central Aral Sea, (4) Small Aral Sea, (5) Tsche-Bas Bay, (A) Kokaral dam (Central dam), (B) Nothern dam, (C) Southern dam. The faint line shows the 1960 dimensions of the Aral Sea. Source: NASA Earth Observatory (http://earthobservatory.nasa.gov/IOTD/view.php?id=84437).

Over the last decade, a new fourth part of the Large Aral Sea has appeared: the Central Aral Sea. It owes its origins to outflow from the Small Aral via the Berg Strait (Kokaral) dam (Figure 1). Its has great seasonal variation in area: largest in spring (April and May) when outflow is highest and lowest in summer (late August and September) when outflow is very low. On April 17, 2014, the area of the Central Aral, determined by analysis of Landsat 8 satellite imagery, was just >1000 km^2, but by August 29 it had shrunk to around 300 km^2. When the Central Aral is largest, it connects through a narrow channel with Tsche-Bas Bay and supplies that water body with some water. This new water body is shallow, also because it loses a great deal of water via

Fig. 3. Fresh fishes from the Small Aral Sea.

Fig. 4. White sacks with Artemia cysts collected in Western Large Aral Sea in Chernyshov Bay.

evaporation and evapotranspiration from the extensive reeds that grow in it.

Summer 2014 marked another milestone for the Large Aral Sea. For the first time since late Medieveal times, the Eastern Large Aral Sea completely dried up (Figure 2). So we have now again only three parts (Western Large Aral Sea, Tsche-Bas Bay and New Central Aral Sea).

Earlier, in September 2009 the Eastern Basin had shrunken to two very shallow residual lakes with an aggregate area of around 860 km^2 but have not completely disappeared (Micklin, Aladin and Plotnikov, 2014, Chap. 5).

From May to September 2014, a number of field trips around the Small Sea were made to study Small Aral Sea, Tsche-Bas Bay; Western Large Aral Sea (only Chernyshov Bay); and New Central Aral Sea.

Salinity in the Small Aral Sea ranged from 1 g/l to up to 8 g/l. The lowest level was observed in May near the Kokaral dam and the highest – in August in Butakov Bay. The level of the Small Aral ranged from 42.1 to 42.6 m a.s.l., the lowest was in August, the highest was in May.

In the Small Aral Sea the most numerous zooplankton species are: *Keratella quadrata*, *Brachionus plicatilis*, *Evadne anonyx*, *Calanipeda aquaedulcis*, *Cyclops vicinus* and an unidentified species of *Synchaeta* rotifers. Besides Rotifera, Cladocera and Copepoda in zooplankton, there were found a few species of freshwater and brackish water planktonic Protozoa. Four species of zoobenthos were numerous: *Hediste diversicolor*, *Chironomus plumosus*, *Syndosmya segmentum*, *Cyprideis torosa*. In addition to, Polychaeta, Diptera insects, Mollusca, and Crustacea in Small Aral Sea zoobenthos, we detected a few species of freshwater and brackish water unidentified benthic Protozoa.

In Small Aral Sea, 14 commercial fish species that were numerous are: pike, bream, asp, crucian carp, shemaya, carp, grass carp, sabrefish, roach, rudd, wels, perch, zander, Black Sea flounder (Figure 3). Six non commercial fish species were also abundant: ruff, nine-spined stickleback, atherine, bubyr goby, sand goby, round goby (Ermakhanov et al., 2012).

Salinity in Tsche-Bas Bay ranged from 78 g/l to 89 g/l. The lowest salinity was observed in May near the connection to the New Central Aral Sea and the highest in August near the northern coast of Tsche-Bas Bay. The water level ranged from 28.7 to 29.1 m a.s.l. The lowest was in August, the highest in May. Two zooplankton species were numerous: brine shrimp *Artemia parthenogenetica* and halophilic ciliate *Fabrea salina*. Three zoobenthos species were plentiful ; halophilic ostracod *Eucypris inflata*, euryhaline ostracod *Cyprideis torosa* and halophilic larvae of *Chironomus salinarius*. There were no fishes in Tsche-Bas Bay owing to high salinity (Ermakhanov et al., 2012).

In the northern part of the Western Large Aral Sea (Chernyshov Bay) salinity ranged from 143 g/l in May to 169 g/l in August (Fig. 4). The water level varied from 24.9 to 25.5 m a.s.l. The lowest was in August and the highest was in May (data by Ermakhanov and Mangistau Bioresource Company). Only one zooplankton species – brine shrimp *Artemia parthenogenetica* was numerous. One zoobenthos species was abundant from: halophilic larvae of *Chironomus salinarius* (Micklin, Aladin and Plotnikov, 2014, Chap. 6). Fish are absent in Chernyshov Bay due to high salinity (Ermakhanov et al., 2012).

Salinity in the New Central Aral Sea varied from 6 g/l to 77 g/l. The lowest salinity was observed in May near the Kokaral dam and the highest in August near the connection to Tsche-Bas Bay. Zooplankton, zoobenthos and fishes were studied only in these two places. The New Central Aral Sea compared with the described parts of Aral is studied very poorly and more studies are needed to be done as soon as possible.

Preliminary results from the recent work on the New Central Aral Sea are as follows. Biodiversity of zooplankton, zoobenthos and fishes are the highest near the Kokaral dam. Three Rotifer species were numerous: *Keratella quadrata*, *Brachionus plicatilis*, *Calanipeda aquaedulcis*. Four zoobenthos species were also abundant : *Hediste diversicolor*, *Chironomus plumosus*, *Syndosmya segmentum*, *Cyprideis torosa*. Nine commercial fish species that were quite common are: pike, bream, shemaya, carp, roach, wels, perch, zander, flounder. Biodiversity near the connection to Tsche-Bas Bay is the lowest. Abundant zooplankton species are :: *Artemia parthenogenetica* and *Moina mongolica* from May till September, halophilic ciliate *Fabrea salina* from June till August. Only one commercial fish species, Black Sea flounder, was present in this part of the New Central Aral Sea but it was very rare and caught several times only in May-June.

From the above mentioned data collected this year (2014) from May till September the great practical and commercial importance is evident of all four Aral Sea areas in Kazakhstan: Small Aral Sea, Tsche-Bas Bay, Chernyshov Bay and New Central Aral Sea.

Major positive changes in the Small Aral Sea environment and in the Aral Sea fisheries happened immediately after the construction of

Kokaral dam in the Berg strait. Today local people and the Kazakhstan Government are discussing the idea to improve this dike. We are supporting this discussion and we advise to raise the dike from 42-43 meters above ocean level to up to 46-48 meters as it was advised earlier by us in 1992.

We also propose to build two more dams (Figure 2) in addition to this (A) Central dam. The Northern dam (B) could be placed at the entrance to the Bolshoy Sarychaganak Bay near Trekhgorka, which literally means three peaks in English. A canal from Kamyslibash Lake to Bolshoy Sarychaganak Bay is also required. The dam should be 49-50 meters a.s.l. The Southern dam (C) could be built at the southern edge of the New Central Aral Sea where it joins the Tsche-Bas Bay. This dam will allow keeping in the Republic of Kazakhstan water that is flowing over the Kokaral dam via its spillway rather than let a part of it flow southward into the now dry Eastern Basin of the Large Aral. However, this proposal needs detailed ecologic, engineering, and economic analysis before going forward with it. The Aral Sea in Kazakhstan in the future should have three levels: 1). 49-50 m a.s.l. with freshwater ecosystem, 2). about 42-48 m a.s.l. with brackish water ecosystem, and 3). about 29-32 m a.s.l. with marine-hyperhaline ecosystem.

This paper is dedicated to the memory of Dr. Sandeep Joshi, Director of SERI (India) who passed away on 23rd September 2014 in Delhi due to sudden cardiac arrest.

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Nikolai Aladin, Philip Micklin, Zaualkhan Ermakhanov, Igor Plotnikov

12th International Conference on Salt Lake Research: summary and analysis

The 12th International Conference on Salt Lake Research was successfully held from July 14 to 18, 2014 in China. The conference was jointly organized by the International Society for Salt Lake Research (ISSLR) and Research and Development Center for Saline Lake and Epithermal Deposit of the Institute of Mineral Resources (Chinese Academy of Geological Sciences).

Since the First International Conference on Salt Lake Research held in Australia in 1979, about every three years, salt lake researchers have met in international conferences in various countries rich in both salt lakes and scientific interests in saline lakes. The informal group of scientists that organized the meetings was renamed the International Society of Salt Lake Research in 1994 and was officially registered as society in 2000.

The conference was opened with plenary talks by Dr. Aharon Oren (Israel) and Dr. Mianping Zheng (China). During the following five days, the partcipants focused on limnology, sedimentology, geology, geochemistry, biology, ecology, management and conservation issues of such saline lakes. They presented about 100 talks and a similar number of posters. The topical sessions were organized on the 1) Global Change and Salt Lake Record; 2) Salt Lake Ecology and Biological Resources; 3) Geochemistry and Biochemistry; 4) Salt Lakes, Surrounding Environments and Environmental Management; 5) Salt Geology and Resource Prospection; 6) Chemistry and Chemical Engineering; and 7) General Issues.

The detailed overview of the conference is not necessary as the extended abstracts of the conference were published in the Acta Geologica Sinica (Vol. 88, Supp. 1, 2014). Selected papers presented at the Meeting will be published in the proceedings of the conference in special issues of the Chinese Science Bulletin and the Chinese Journal of Oceanology and Limnology. It is worth mentioning the winners of Bill Williams awards for the best young scientists talk and poster. Awards were established to keep the memory on the founder of ISSLR, outstanding salt lake scientist Bill Williams (Australia). This year the winners were: Luo Jiaoyu from Anhui Institute of Optics and Fine Mechanism (Chinese Academy of Sciences), for the poster "Preliminary measurements of boundary layer reactive halogens based on MAX-DOAS technique over Salt Lake in West China" and Wang Shuli from the Institute of Mineral Resources (Chinese Academy

Photo 1. Opening ceremony