

ZHAO Wen and ZHENG Mianping, 2014. The Research of Chinese Salt Lake Organisms: History, Status and Expectation. *Acta Geologica Sinica* (English Edition), 88(supp. 1): 121–122.

The Research of Chinese Salt Lake Organisms: History, Status and Expectation

ZHAO Wen¹ and ZHENG Mianping²

1 College of Fisheries and Life Science, Key Laboratory of Hydrobiology in Liaoning Province, Dalian Ocean University, Dalian 116023, China

2 R & D Center of Saline Lake and Epithermal Dep., Chinese Academy of Geological Sciences, Beijing 100037, China

The research status and the future study prospect of salt lake organisms of Chinese salt lakes were elaborated in this paper. Many saline lakes occur widely in arid and semiarid areas of China, and more than half of the total lake area of China is contributed by saline lakes. However, the biological resources of inland saline waters were little known. Since 70 years after last Century, the studies of salt lake biology beginning to receive attention, many scholars such as Wang Jiaji, Shen Jiarui, Jiang Xiezhi, Wu Yunfei and so on in their work relates to the distribution of some saltwater organisms such as cladocerans, copepods, protozoa and plateau fish etc. He et al. carried out a series of investigation on the biology and ecology of saline lake in three northern of China, had made a series of achievements. At the same time, Zheng had studied halophilic bacteria, plankton and *Artemia* biology in some of the saline lake in northern Tibet, such as Lake Jabu and Lake Lagkor Co. In addition, some scholars had studied the algae of part of saline lake in Tibet, nake carp in Lake Qinghai, rational use of resources of crucian carp and *Leuciscus waleckii* in Lake Dali, organisms of saline lake in Jinan, Shanxi and Lake Ebi, Xinjiang. Especially Institute of Heilongjiang Fisheries Science had made more comprehensive investigation for water chemistry, plankton and *Artemia* resources in saline lake of Xinjiang, Qinghai and Inner Mongolia in 1990'. In Recently, Zhao et al. have studied the biodiversity of salt organisms in some saline lakes of Tibet, Inner Mongolia, some new progress were had been made.

The characteristics of Chinese saline lake habitat were influenced by evaporation, rainfall and other climatic factors. Water level, area and water chemical characteristics in saline lakes have obvious annual and seasonal variation. It is included as follow (1) With high

salinity and full of change; (2) Transparency of saline lake was vary greatly; (3) Water temperature and pH in saline lakes have great changes. (4) COD is generally higher, and it's positively correlation with salinity.

The most common dominant species of phytoplankton in Chinese saline lake were cyanobacteria such as *Spirulina*, *Nodularia* and *Anabaena*. Sometimes, *Chaetoceros* was dominant species. *Dunaliella* belonging to green alga may become the only species when the salinity exceeds 100. *Prymnesium parvum* could be sometimes dominant species in the water body with a low salinity, and caused a large number of fish death. There are few aquatic macrophytes in inland saline lake. In general has no grass when salinity exceeds 20. So phytoplankton was the base of primary productivity. Common salt tolerant plants are *Phragmites communis*, *Potamogeton pectinatus*, *Potamogeton crispus*, *Zannichellia palustris*. Zooplankton of saline lake was composed of protozoa, rotifers, Branchiopoda and Copepoda. Protozoa, especially ciliates was an important zooplankton of inland saline lakes in Sanbei Districts of China. Quantity of rotifers in the sanbei districts sometimes up to above 2000 /L, the biomass was 10-18 mg/L. Major species of rotifer, were *Brachionus plicatilis*, *Brachionus urceus*, *Hexarthra fennica*, *Notholca acuminata quadrata*. The major species of saline planktonic crustaceans were *Artemia*, *Moina mongolica*, *Daphnia magna*, *Metadiaptomus asiaticus*, *Cyclops vicinus*, *Arctodiaptomus rectispinosus* in Sanbei Districts of China, and biomass of each water (excluding *Artemia*) were between 0.1-13.13 mg/L. Benthic animal in inland saline water was mainly composed of Ostracoda, Nepidae, water flies and its larvae, *Chironomus* larva and *Aedes albopictus* and other components, there are little research in China.

* Corresponding author. E-mail: zhengmp2010@126.com

So far aquatic organisms has been developed use or have potential exploit in China were as fellow: salt fish, shrimp, brine shrimp (*Artemia* sp.), *Brachionus plicatilis*, *Moina mongolia*, *Daphniopsis tibetana*, inland brine flies (*Ephydra*), *Dunaliella salina*, *Spirulina* etc..

There are broad prospects in the research, development and utilization of biological resources in saline lake. As a new subject- an important part of Salinology will be progress in the future. The biodiversity, ecology, fishery utilization, domestication and culture of food organisms, biological active substances (functional protein,

astaxanthin, resistance gene etc.) of saline lakes, relationship between mineralization and aquatic organisms, relationship between the carbon cycle and global change and so on would be focus of future researching of saline lakes in China. It is predictably that the exploitation wave of salt lake organisms will be coming.

Key words: salt lake organisms, biodiversity, resources exploitation.