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How the Poyang Lake drought is affecting migratory birds

Jia Jiabing of the International Crane Foundation discusses the impacts, and explains why ecologically friendly fishing methods may benefit both birds and people

Photo: Courtesy, Poyang Lake Wetland Ecosystem Observation and Research Station

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Crested ibis, wind whipping up dust, people searching for food in the mud, and a lake that has almost disappeared. These are the images people see in the middle of Poyang Lake, China's largest freshwater body, during the drought this summer.

Sustained high temperatures and lack of rainfall caused the lake to enter its dry season 350 days earlier than usual — the earliest since records began in 1951. Water levels dropped to a new low, Shati Pell further in Ordos, the traditional start of the dry season.

It is normal for the birds and people of the lake to fluctuate between water and land, but this year's drought has left many in a quandary. For the birds, the large provincial government has for years wanted to build a controversial dyke-dam between the Poyang Lake and the Yangtze River, to ensure water supply. This year, however, the lake dried up during summer.

The extreme drought spelled concern for the finless porpoise and other endangered species that use the lake. Poyang also provides wintering grounds for countless migratory birds, including the Siberian crane, which is considered critically endangered by the IUCN as critically endangered and vulnerable. The fate of these visitors was also a cause for worry.

The map on the left shows the western and central lakes. The one on the right shows the eastern lake with the wintering grounds of Poyang Lake. Photo: Courtesy, International Crane Foundation/Poyang Lake Wetland Ecosystem Observation and Research Station

China.org.cn: Lives taking off from a shallow pond in Nanchang Jiangxi. Kirsten Butler / Photographer

We spoke to Jia Jiabing, the International Crane Foundation (ICF) Poyang Lake Coordinator, who has been at the lake conducting presents to the wetland of Poyang Lake, and a decade-long fishing moratorium on the Yangtze has reduced the availability of their food, and what measures can be taken to make the lake's waters flow.

The ICF started its operation in China in 1979. It currently works in Jiangxi, Heilongjiang, Jilin, Inner Mongolia and Hubei provinces. It has two crowned cranes, three Siberian crane and white-tipped crane, the south-east with a focus on the black-necked crane, and the Siberian crane. The organization also works with the Poyang Lake, used by the Siberian crane, white-tipped crane and other migratory birds. The Foundation views cranes as umbrella species: protecting them means protecting wetlands that in turn protect other wetlands.

Jia Jiabing joined the organization in 2014 and is based in Nanchang. He was previously head of the research and projects departments at the Jiangxi Provincial Forestry Academy, responsible for monitoring ecosystems and carrying out research projects.

China Dialogue: Poyang is an important wintering ground for threatened species such as the Siberian crane and white-tipped crane. How significant is the lake for the life of these species, and why?

Jia Jiabing: Very significant. Internationally, the Siberian crane had three migratory flyways. The eastern one ran from breeding grounds in south-eastern Siberia to Poyang, the main wintering ground. The western and central flyways ran from Russian Far River, east of the Ural Mountains, to Iran and India. Unfortunately, the western cranes have been seen on the central flyway since 2005, while only a single crane was spotted on the western route last year. It is extremely important that we find the reason for the disappearance of the western crane, because there are also sometimes spotted at Dongting Lake, in Yunnan, China.

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How the lake's water levels affect the birds

In the late Wide and early 2000s, 3,000 or 4,000 white-naped cranes would arrive at Poyang Lake every winter, according to Jia. In January 2020, we worked with other organisations to count the white-naped cranes wintering in the middle and lower reaches of the Yangtze River. We counted 1,000 white-naped cranes. Jia said the decline is only at Poyang for the heads of the lake's ecosystem. It has a huge impact on both these species. They feed at their nigas in the one habitat.

Similarly, 80% or 85% of all Siberian cranes rely on Poyang over winter. Geese and swans, for example, make up 80 of the birds which winter here — hundreds of thousands of them, including the endangered Siberian crane. Jia said the migratory birds have been given geese grazing and even the water levels have been lowered.

Any major changes at Poyang Lake, such as low water levels or scarcity of food, force the birds to move on. They will either "transmate waterbird" — rice and lotus fields — or even other lakes in the Yangtze basin.

What effect do you think this year's drought will have on the migratory birds wintering at Poyang?

It's extremely rare to see a summer drought at Poyang, but it happened this year. Jia said it was the first time he saw a drought in July and winter dry season. The drought also catastrophic for the lake's submerged aquatic plants, while wetland plants stanted their period of growth. Jia said the lack of water in the lake's ecosystem has drew up into a hundred or so smaller and shallower lakes, which is where the wintering migratory birds find their food. The Siberian crane, white-tipped crane and white-naped crane feed on the tubers of the submerged aquatic plants in those shallow lakes. But the drought viewed even those shallow lakes dried up and the plants died. There were no crane tubers for the birds to eat.

There have been some reports of local governments cutting water in spinach sewer and more edible grasses for the birds to eat. But what about waders which eat fish or invertebrates?

There are even fewer sources of food for them. On 28 October, Jia said there were only 1,000 waders, mainly of pounds, Pacifarlas, albatrus by point of mud or shallow water.

Why have the migratory birds escaping Poyang Lake from running to local ponds for food in recent years?

Because their natural sources of food are in decline. Since 1990, we've been monitoring four of those shallow lakes that form part of winter in the Poyang Nature Reserve. Since 2010, we've seen a significant decline in the number of the tubers of the aquatic plants. That means lows food for the Siberian crane, hooks swan, and other waterbirds.

Summer water levels have been generally high recently — on the high side in 2016 and 2017, normal in 2018, high again in 2019, and then a low in 2020. Jia said the high water levels have killed the submerged aquatic plants, which their grass feed. Small aquatic plants and winter water levels were normal those plants, the plants hadn't enough sunlight and formed tubers. And it is the tubers that help the plants survive the lower water levels of autumn and winter.

Surveying bird grazes (above, bottom) and Siberian crane (top) in the Poyang Lake Wetland Ecosystem Observation and Research Station. Photo: Courtesy, Poyang Lake Wetland Ecosystem Observation and Research Station

China.org.cn: Lives taking off from a shallow pond in Nanchang Jiangxi. Kirsten Butler / Photographer

So there's less food for migratory birds if summer water levels are either too high or too low?

Yes. Over the last decades, winter water levels have been higher than average, but the seasons have been starting earlier than usual. Jia said the lake's water levels have been low in the winting sugar fluctuations this year.

So it's not low water levels is winter that cause problems for the wintering birds? Is the higher water levels in summer?

That's right.

If we are this year's record-breaking drought period, perhaps even become worse, what will that mean for the birds?

There's no doubt there's a food shortage this year, and Jia doesn't mean the birds will change their migratory routes. That said, we will need to wait and see. Jia said the birds will stay at Poyang, but it means their numbers will be decreased and they'll go to other breeding grounds later. This means less time to rest, lay eggs and raise their young. In September and October, the birds arrive in turns and it is time to return south, the young birds need to ready to make the trip. This will affect the health of the next generation.

The decade-long ban on fishing in the Yangtze is also affecting the birds, particularly the finless porpoise. Is the ban working? Is it doing more good or harm to the birds?

The ban means fishing on the shallow lakes that form during winter no longer takes place. Jia said the only local people used to manage water levels to suit their fishing actually suited the migratory birds too.

In autumn and winter, Poyang turns from one big lake into 100 or so smaller lakes, ranging from one or two hundred hectares in size, to seven or eight thousand. In the past, locals would build dykes and dams to keep the water in the lake, and then pump it out. The dykes dried out and shrunk further, the fish survived and grew in those enclosures. Then, in October, the locals let the water out and caught the fish. Jia said the ban on fishing in the shallow lakes has coincides with the arrival of the birds. It appears the plants that waters, geese and dusky fland so, as well as the mud for waders and herons, and creates the shallow waters the cranes need.

That method of catching fish is beneficial for the birds and they become accustomed to it.

A satellite image of Poyang Lake in November 2018, a time when relatively low water levels (image: Landsat 8 satellite image)

Prior to the ban, groups of private individuals would lease the fishing rights to the shallow lakes from the local village committees. That would cost them several hundred thousand yuan to several million. Jia said the ban means that the lake's fish, the birds and people and the water levels of those shallow lakes are no longer managed. It does still happen on a small number of shallow lakes owned by the local villages, and people who have leased the rights are not in cash fish. The other shallow lakes are owned by villages or townships and go unmanaged. Last winter, water levels in some shallow lakes were too low, so the fish died and the birds had no geese. And during the drought the water quickly flowed away. Jiangxi as nobody was taking care of the dusky geese and dykes. Some of the lakes within the reserve are still managed by local villagers who were leased out prior to the Poyang Ban. But again, these are now left unmanaged.

Experts have informed the provincial government of the problem and the ICF is in touch with these experts.

So what would you propose?

We think that if the government take over management of the shallow lakes during the Poyang Ban, it could be beneficial. Poyang Lake Wetland Ecosystem Observation and Research Station, Jia said, is due to lack a decade, and the lakes are hospitals of meaning fishing. If the lakes return to permanent state ownership, the government could hire professional conservation foundation. If that doesn't happen, there will be opposition.

So, prior to the ban, that fishing method benefited both locals and the migratory birds perfectly?

Overall, it benefited the birds, but there was room for improvement. First, the changes in the water levels weren't linear to coincide with their arrival. The water was often released prior to Chinese New Year and the birds arrived in November. Jia said the birds would feed on the fish would feed better prices then. Geese and geese arrive in September and cranes in late October or early November. By the time the birds arrived, the fish had been caught and sold. Secondly, Jia said fishing retained in some of the shallow lakes until Chinese New Year. We'd like to see water released earlier and for that to continue until after Chinese New Year. But the market for fish falls off after the festival.

Jung Hui
Jung Hui is a contributing author and former senior editor at China Dialogue. He has been reporting on environmental issues in China and Asia for more than a decade, and has written for Bloomberg, Reuters, Caixin, Yale Environment 360, Nature and Science.
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