

Rare Blossoming of Bamboo Pandas' Survival Threatens



By George B. Schaller
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This giant panda in China's Wolong Natural Reserve crunches a bamboo shoot in its powerful jaws. It may con-

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National Geographic News Service

WASHINGTON—The village grandfathers recall that it last happened during the time of the Long March in the 1930s bamboo bursting into flower high up in the mountains in the heart of China's panda range. But no one knows for sure.

It is certain that when some mysterious internal clock tells bamboo to blossom, about every 30, 60 or 120 years, it signals danger for the already endangered giant panda.

When bamboo flowers, it dies—within a few years. And it can take five to 10 years for new seedlings to mature. In the meantime, there may be no food for pandas, which live almost exclusively on a few kinds of bamboo.

Arrow in Bloom

Arrow bamboo is now flowering more than 8,000 feet up in the Qionglai Mountains of Sichuan Province. It is the principal diet of the 125 to 150 pandas inhabiting China's largest panda reserve, Wolong. The same species, *Arundinaria fangiana*, also is blooming in nearby Baoxing County, where at least 200 more pandas live. Altogether there are only about 1,000 pandas left in the wild in China.

"There's the potential of an emergency," according to Dr. George B. Schaller, co-leader of the panda field research project jointly funded by the World Wildlife Fund and the Chinese government. "The situation must be monitored carefully, and we must be prepared to help if pandas can't find alternative sources of bamboo."

About 140 pandas starved to death in the mid-1970s when another species of bamboo blossomed in another region of China's panda range. That calamity was a major impetus in launching the panda research project, which began in 1980. As China becomes more and more developed, pandas may have an even harder time finding food.

"The pandas in Wolong spend most of their time high up in the mountains where the arrow bamboo grows," says Dr. Julian J.N. Campbell, who was plant ecologist

sume more than 30 pounds of bamboo a day. A rare die-off of arrow bamboo in the Wolong area threatens the pandas.

for the World Wildlife project. "Now they will be forced down to try to eat other kinds growing in the lower regions, but there are people down there too, living right in the reserve. The pandas could be squeezed out."

And pandas need a lot of bamboo. Each panda consumes from 22 to 33 pounds of bamboo a day. Their digestive tracts are able to extract little nutritive value from each plant, which has only about as much nutrition as an onion.

Unexpected Flowering

The emergence of the tassel-like brownish blossoms in Wolong was not predicted. "A patch here, a patch there had blossomed in the last few years," says Schaller. "At the end of 1982, only about 5 percent was in the process of blooming. Now over 90 percent of it is in blossom. We knew it was building up to it, but we didn't know it would happen this year."

Why bamboo flowers is still a mystery to scientists. "There's some internal mechanism, with a predetermined cycle. Regardless of the environment, when it's time to flower, it flowers, and we have absolutely no idea what triggers this," says Dr. Thomas R. Soderstrom, curator at the Smithsonian Institution's department of botany.

Despite the long intervals between flowering, bamboo's preset calendar remarkably causes all plants of the same species—wherever they are in the world—to burst into flower at roughly the same time.

In China, government officials are now surveying the bamboo outside Wolong to determine the extent of flowering elsewhere and the availability of alternative food sources.

Once this survey is complete, says Schaller, "we will know exactly how seriously the pandas will be affected in the next few years." Food may have to be delivered to pandas in certain areas, or the pandas themselves may have to be trapped and moved to places where bamboo is plentiful.

This year's flowering of arrow bamboo will barely be noticed by the pandas at the National Zoo here. That species is not part of their diet. They eat several varieties of bamboo that are home-grown in gardens in the Washington area.

Lichens

N.C. Botanical Garden

During the winter, when much of the vegetation in the woods and fields is dormant, people have an excellent chance to observe an unusual group of plants.

These are the lichens, which are highly diverse and can be found in all sorts of locations. They appear as crusty spots on rocks, greenish fuzz on the bark of trees, orange splotches on sea cliffs, pinkish patches with cottony fibers on roadcuts and in ditches, or as greenish-gray, moss-like patches on forest floors.

There are, in fact, some 10,000 species of lichens, roughly classified by their characteristic forms: crusty, leaflike or shrubby, and some intermediate types as well. The variations in form are matched by the variety of hues: grays, greens, reds, pinks, oranges, browns and blacks. Some lichens, though, are small and inconspicuous and therefore easy to overlook.

Lichens are actually composed of two plants: a fungue and an alga. Most lichens have single-called green algae, though a few types contain bacteria instead.

The fungus and the algae help each other to survive in a cooperative relationship known as symbiosis. The bulk of the lichen—and its most conspicuous part—is the fungus, which provides the minerals the plant needs, secretes substances to help anchor it to rocks or other substrates and stores water for itself and its partner. The green algae manufacture carbohydrates by photosynthesis and thus help feed the lichen pair.

Lichens are important in being "pioneer" plants. They are among the first in nature to colonize barren areas, rocky spots and other inhospitable places that most plants would shun.

After the lichens slowly become established, other plants can come in and take root. One can find a regular natural sequence in which mosses and grasses follow the lichens, and then woody and flowering plants can succeed. Thus it is the lichens that paved the way on once bare and lifeless spots for the ultimate growth of many of the higher orders of plants.

Lichens are useful in other ways. Reindeer and caribou depend on lichens for food, and extracts from a few species have served as antibiotics for humans. Other, perhaps better-known uses include the making of dyes once used for Harris tweeds and of the dye employed in litmus paper for measuring the acidity of solutions.

Next time you are out for a stroll, look around for some lichens. The gray-green crust that you see on a boulder is a marvelous plant, alive and transforming nature right now for future generations of other plants.

For more information about lichens, call, write or visit the N.C. Botanical Garden at the University of North Carolina at Chapel Hill. Many lichens can be seen along the nature paths at the garden.

Treat Tree Damaged By Ice, Snow, Wind

Ice, snow, wind and lighting damage many shade trees each year.

If the damage to your shade trees is minor, you may wish to clean up downed trees or repair damaged trees yourself. Ask your county office of the Agricultural Extension Service for advice.

Bent limbs or tree trunks are under extreme pressure. Be careful, they will spring up when cut. In no case should you attempt to remove limbs or trees which are on electrical lines.

If you hire the work done, get a reputable tree service. Before hiring someone, check to see if they are listed in the telephone directory, ask for references, and ask about their liability insurance.

If all your tree needs are correct, pruning don't let

anyone cut the limbs back until the tree is nothing more than a stubbed pole, resembling a hat rack.

If lightning strikes a shade tree, there is no simple way to determine if it will live or not. Chances are the tree will die if the trunk is split or the roots are damaged. Don't do a lot of work or spend a lot of money on a tree that has been struck by lightning until you see if it is going to live or die. Fertilizing and watering it will help. However, these practices are no guarantee the tree will live.

Check with your insurance agent to determine if storm damage to trees is covered. Both the state and federal governments allow income tax deductions for the loss of shade trees.

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