

Bear Conservation and Biodiversity

Japan Bear Network



Millions of forms of life prosper on earth,
and these are connected to each other by a variety of networks.
This diversity is amazing and overwhelming, and forces us to think about
the intricate relationships that have developed between these diverse
life forms over an unimaginable span of time of 3.5 billion years.
Human beings have been benefitting from this diversity by utilizing raw materials for
pharmacy or other products and even as a source of inspiration for art.
Therefore, it is our responsibility to preserve, foster, and utilize this biodiversity
in such a way that we can pass this wonderful legacy to future generations.
Conservation attempts have now become critical because of the danger of extinction of
many species, and, unfortunately, the risks are imposed by human activities.
Bears who are a part of this biodiversity have now
become one of the threatened species.

Distribution of bears in Japan and its genetic variation

Two bear species are found in Japan: brown bears in Hokkaido and black bears in Honshu and Shikoku Islands. Local populations of each species show genetic differences, and this may ensure their survivorship.



Japanese black bear

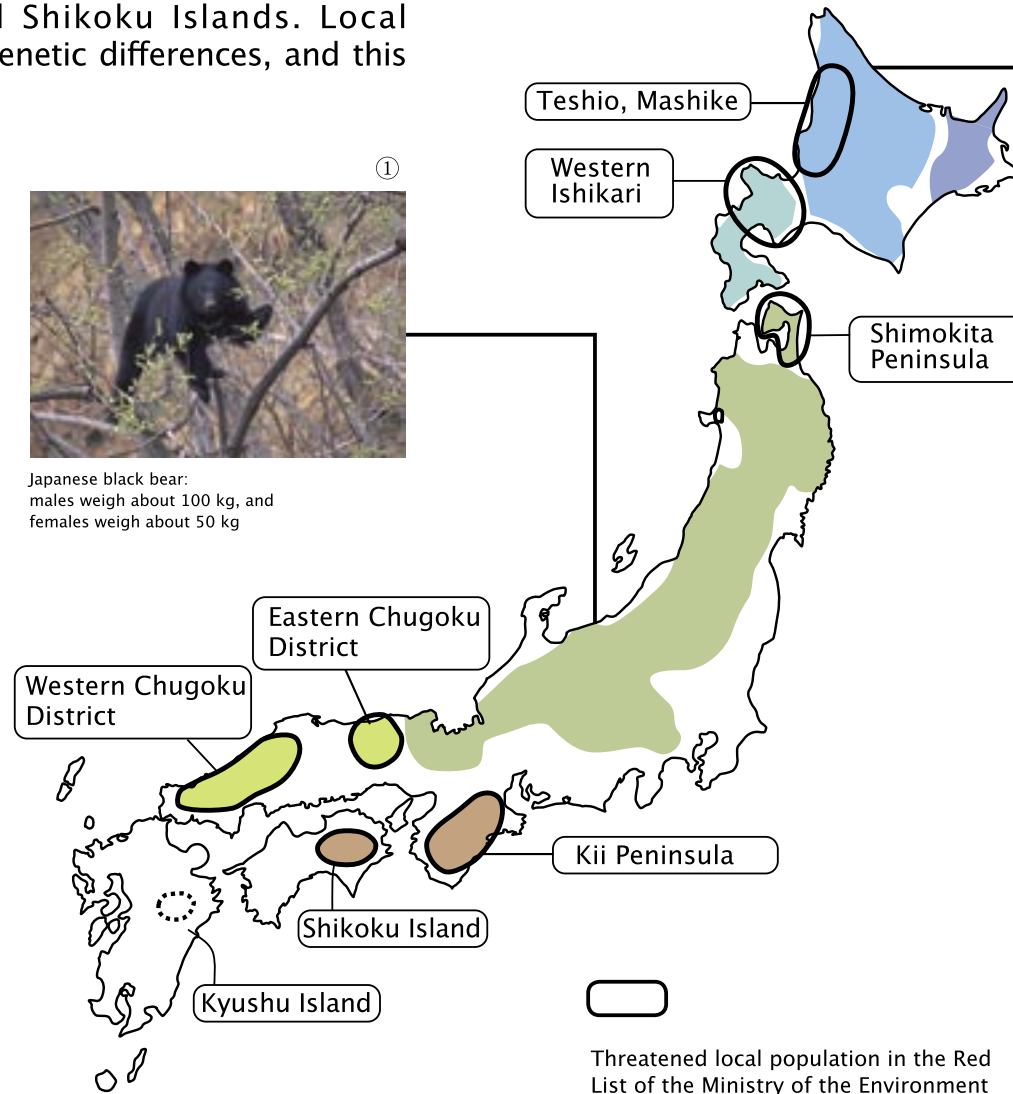
Ursus thibetanus japonicus

Black bear populations in eastern Japan mostly show continuous distribution. However, the population sizes in other 6 areas, namely, Shimokita Peninsula, Kyushu Island, Kii Peninsula, eastern and western Chugoku District, and Shikoku Island, are small, and suffer isolation. Thus, the Ministry of the Environment has listed these populations under “threatened local population.” It is highly possible that the population on Kyushu Island has already been extinct.

Local black bear populations are known to show different genetic characteristics. Presence of a broad genetic variation is thought to confer the ability to adapt to the environmental changes. However, the genetic diversity found in western Japan is lower than that in eastern Japan, which implies the high risk of extinction. Forest exploitation had been an ongoing process since ancient times in western Japan, and logging of broad-leaved forests deprived bears of their favorable habitat; the hillsides had become bare or are now replaced by coniferous plantations. Thus, human activity played a major role in destroying the bear’s habitat and consequently, led to their isolation. Bears in an isolated population have limited number of mating partners. This leads to the decline in genetic diversity.



Japanese black bear:
males weigh about 100 kg, and
females weigh about 50 kg



Hokkaido brown bear:
males weigh about 130–200 kg, and
females weigh about 80–100 kg



Hokkaido brown bear

Ursus arctos ferox

Brown bears inhabit a considerable part of the Hokkaido Island. Populations in Teshio–Mashike and western Ishikari are small and isolated, and are listed in the Red List of the Ministry of the Environment as “threatened local population.”

Brown bears are genetically categorized into 3 groups (north–central, eastern, and southern groups). The north–central group is related to the Eastern Europe and the western Alaskan bears. The eastern group is related to eastern Alaskan bears that had crossed the Bering Sea before the western Alaskan bears. The southern group is surprisingly related to Tibetan bears. Each group possibly reached Hokkaido via different routes at different times in history. We can back track the natural history of bears in Japan by studying their genetic diversity.

Both black bears and brown bears include 3 genetic lineages. Colored areas differentiate these lineages.

Summer is the mating season. Cubs born in the preceding year start living independently by the next summer, by when they are around 1 year 6 months old. With respect to preferred food, bears cannot eat soft spring sprouts and leaves any more, but they find cherries and berries, or ants and bees to feed on.

Black bears and fruits

In summer and autumn, one may find many cherry kernels and berry seeds in bear's feces. Bears eat several kinds of fruits, and while they forage around, they disperse a larger number of seeds than any other animal. Thus, they help afforestation by eating all kinds of fruits and casting the seeds around.



Bears, after waking up from their long winter sleep, eat tree sprouts and newly grown herbs and flowers. They also eat previous year's acorns from the ground and even deer that were starved to death in early spring. Female bears with newly born cubs during the winter-sleep season, stay in the den until the cubs are grown, and they leave the den slightly later than the other bears.



Annual behavior of bears and diversity of its habitat

Bears need to eat a large amount of food to support their large body. They are not only gross feeders but also gourmets. In search of their favorite seasonal forest crop, they cruise through their vast and diverse habitats throughout the year. Habitats that provide abundant food form a favorable environment for other forest dwellers as well.



The bears eat the maximum during autumn. Many trees such as beech, oak, chestnut, and wild grapes produce acorns and fruits. The bears eat excessively and with good enthusiasm; their body stores this food as fat to be utilized as an energy source during the coming winter sleep. For female bears, the amount of food that they eat in autumn determines whether they can successfully bear cubs in winter.

Cubs

The period from late January to mid February is when the female bears have cubs. A new-born brown bear cub weighs about 400 g, while a black bear cub weighs about 300 g. Mother bears feed their cubs with milk that is produced from fat stored in autumn. When they come out of their den in spring, a brown bear cub weighs as much as 4-5 kg, while a black bear cub weighs about 3-4 kg.



Food for bears is scarce in winter. Each bear finds a den and goes into winter sleep. The den can either be a hollow space in a tree or a cave in a rock or in the ground. This winter sleep lasts for around 5 months, i.e., from December to next April. It is said that during this period, bears do not eat or drink, or even excrete.



Challenges faced in bear conservation

1. Shrinkage and isolation of the habitat

During the many years, road construction, pasture creation, and vast coniferous plantations were carried out all over Japan. These events led to the isolation and reduction in the area and diversity of the habitat. Not many areas are spared to function as favorable bear habitats.

2. Conflicts between bears and humans

Human utilization of rural land at the foot of the mountains has decreased, and this led to deterioration of the biota indigenous to this bordered area which had been maintained by human activities. The area that once served as the buffer zone between humans and bears has now lost its function. Furthermore, persimmons and chestnuts that are planted around agricultural fields are now left unpicked on trees. Together with discarded unsellable fruits, these attract bears to appear in the areas of human civilizations. As a consequence, sudden encounters that induce bear attacks and the damages caused by bears to agricultural crops seem to be on the rise.

3. Global warming

Vegetation and fruiting periods shift with an increase in atmospheric temperature. This may lead to changes in the bear's food supply. Less snow cover may also limit the availability of winter dens. Global warming can not only cause a direct impact on the bears' habitat but can also increase conflicts with humans, which may result in their killing.

4. Threatened survival

Several local bear populations are at a high risk of extinction. Isolation and shrinkage of bears' habitat and killing of bears, to avoid damages on human life and properties, may be a couple of the many reasons.

With bear extinction, a large source of seed dissemination diminishes, and consequently, local biodiversity may suffer substantially.

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For bear conservation

1. Conservation of bears and their habitats

Attempts should be made to prevent extinction of bears because of human activities. Preservation of the biodiversity and the bears' habitats should be aimed, and their excess killing should be prohibited.

2. Promotion of survey

Bears play an important role in maintaining the biodiversity in Japan. However, there is a lack of holistic understanding of their life history. Therefore, scientific studies are a must. Complete scientific information about their characteristics and behavior should be procured and circulated to enhance our understanding of this community.

3. Preventing or mitigating damages caused by the bears

While we understand that human life and property should not suffer damages because of the activities by bears, it is also true that innocent bears should not be indiscriminately killed to prevent such damages. We need to closely analyze the current situation to prevent unfavorable events in the future. This is the most basic attitude required to raise awareness of the public for bear conservation.

4. Human network

Conserving bears and preventing damages by the bears require prospective planning and cooperation by the local society. Government, researchers, and civic bodies should unitedly promote all conservation activities.

5. Critical condition of bears around the world

Several bear species across the world are listed as threatened species. Polar bears directly suffer from global warming. Bears in Asia and America suffer from poaching, which mostly aims at an illegal sale of gall bladders and palms. Destruction of bear habitat is also a major factor in Asia. Some bears are kept under hostile conditions just to obtain their bile. Our conservation strategies should consider all these factors and should extend to areas even outside Japan.

6. Environment-friendly life

Conservation of biodiversity and prevention of global warming are both closely connected to our day-to-day lives. Each individual can contribute by making a small change in his/her lifestyle, e.g., reducing energy wastage and buying products manufactured by firms that support conservation.

Japan Bear Network

Habitat conditions for bears are deteriorating, and the conflicts between bears and humans are now becoming a major problem. Japan Bear Network (JBN) was established in 1996, and now various people and groups are participating in the activity: bear researchers, journalists, government officials, college students, agriculture and forestry engagers, city workers, housewives, nature preservation organizations, etc. We, at JBN, share information and make all possible attempts to save bears and to solve conflicts between bears and humans.

JBN also aims at building an Asian network for bear conservation. The information about Asian bears has been provided in "Understanding Asian Bears to Secure Their Future" (Japan Bear Network ed. 2007).

http://www.japanbear.sakura.ne.jp/eng/2007/12/understanding_asian_bears_to_s.html

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