

## **Varied Ecosystems Support Abundant Wildlife**

Heavy snowfalls and plentiful water create an unusual variety of ecosystems within Myoko-Togakushi renzan National Park. The deep snow and cold temperatures of the highest peaks create shrub-filled alpine environments, while below them is a subalpine region of dense forests. Below that is the montane zone, where the forest's predominant tree species change from conifers to broad-leafed trees. Finally, at the foot of the mountains, the artificial grasslands such as ski slopes and pastures disperse into the forest. The habitats of plants and animals in the region can be broadly divided into these four zones—alpine, sub-alpine, montane, and grassland.

### Alpine Zone

The park's highest mountaintops are home to plants and animal adapted to alpine conditions. This zone is too cold for most trees, but the peaks are covered with low-growing species like Siberian dwarf pine, mountain heath, and bog bilberry. Rock ptarmigans (*raicho*) and ermine (*okojo*) are year-round residents at this altitude, though in winter they sometimes descend to the sub-alpine zone to feed. Other animals like the satyrine butterfly called *benihikage* and the white-faced darter dragonfly (*kaojirotonbo*) appear in the alpine zone during the warmer months.

### Sub-Alpine Zone

Where the alpine zone ends, forests begin. At higher elevations, these consist mainly of Erman's birch on the steeper slopes and Marie's fir in more level areas. Birds like the Japanese robin (*komadori*), Japanese leaf warbler (*meboso-mushikui*), and spotted nutcracker (*hoshi-garasu*) favor this zone, although the nutcracker also feeds heavily in the alpine zone. A native wild strawberry species called *nogoichigo* is found here, as well as flowers like Japanese false bugbane (*momiji-karamatsu*) and the violet blooms of pasture gentian (*oyamarindo*).

### Montane Zone

This zone is also richly forested, mainly with broadleaf deciduous trees such as the Japanese beech and Japanese oak. Many animals thrive here, including the Japanese black bear (*tsuki no waguma*), tiny Japanese dormouse (*yamane*), grey bunting (*kuroji*), and the cicada species called *ezoharuzemi*. Unusual flowers bloom in the highland forests and wetlands, among them the Japanese wood poppy (*shirane aoï*) and the snow camellia (*yukitsubaki*), the prefectural flower of Niigata.

## Grasslands and Wetlands

### **Grasslands**

The artificial grasslands at the foot of the mountains are marked by human activity. Ski slopes, fields of blooming buckwheat, and the wildflower-sprinkled pastures of cattle farms attract numerous pollinators, including butterflies like the silver-studded blue (*himeshijimi*) and alpine black swallowtail (*miyama-karasu-ageha*). Birds of prey like the eastern buzzard (*nosuri*) and rare golden eagle (*inu-washi*) rely on these open, grassy areas for hunting.

### **Wetlands**

Many of the ponds and wetlands in this zone are filled with flowering Asian skunk cabbage (*mizubasho*) in spring. The foamy egg masses of forest green tree frogs (*moriaogaeru*) are suspended from branches that hang over ponds. Imori Pond, just outside the Visitor Center, takes its name from the area's fire-bellied newts, whose Japanese name *akaharaimori* is often shortened to just *imori*.

### **Rock Ptarmigans: Treasured Survivors from the Ice Age**

The Japanese rock ptarmigan (*raicho*; *Lagopus muta japonica*) is a medium-sized, ground-dwelling bird of the grouse family. The species is endangered, partly because its habitat is limited to high altitudes—mountaintops where deep snows and limited vegetation mimic the ice-age climate in which the ptarmigans evolved. Within Myoko-Togakushi, rock ptarmigans can be found only on Mt. Hiuchi (2,462 m) and its neighbor Mt. Yakeyama (2,400 m), and they support a population of only several dozen birds.

Rock ptarmigans live among Siberian dwarf pines and other shrub-like species that are limited to high altitudes. In spring and summer, the birds feed on the leaves and buds of crowberry and other evergreen shrubs. In autumn, they feed on the seeds of wavy hair grass. In winter, they descend to the edge of the timberline, foraging on the buds of Erman's birches and montane alders.

Camouflage is a key survival strategy for rock ptarmigans. In winter, males and females turn almost entirely white. In spring, their color changes from the breast up—females to a mottled brown, and males a mottled black. In autumn, both sexes molt again and become gray.

Historically, the rock ptarmigan has been protected from predators by its severe alpine habitat, but as the sphere of human habitation advances and the climate warms, Japanese macaques, martens, foxes, and even crows are venturing higher to snatch chicks or unwary adults. Deer and boar now invade their territory as well, foraging on the plants

ptarmigans rely on to survive.

Conservation work is underway on Mt. Hiuchi to improve conditions for rock ptarmigans. Because alpine species are highly adapted to a cold environment, their ecosystem is especially vulnerable to rising temperatures. Sub-alpine grasses and other shrubs have begun encroaching, competing with the ptarmigan's preferred plant species. Japan's Ministry of the Environment and local governments are working to remove these grasses and monitor the populations of potential predators.

### **Finding Food in Winter**

Winter is a lean and difficult time for animals in the park. Deep snow covers the ground, making the search for food a challenge. While species like the black bear and dormouse avoid this struggle thanks to hibernation, others remain active throughout the cold months. Macaques, martens, serows, foxes, and raccoon dogs (*tanuki*) forage in the snow, leaving behind tracks that visitors may encounter on snowshoe walks. Winter bird residents like the Japanese waxwing and Naumann's thrush can be spotted more easily on the branches of leafless trees.

### **Tracks in the Snow**

Tracks in the snow are vivid signs of animal life. Japanese hares leave two vertical dots—their front feet, which fall one in front of the other—followed by larger, side-by-side wedge shapes where their two hind feet land. Foxes have a trotting gait that leaves alternating, widely spaced single dots. The cloven-hooved prints of serow look similar to the tracks of deer. If the snow is light enough, one may also spot human-like prints in alternating pairs of one hand and one foot. These are the tracks of Japanese macaques, often called "snow monkeys," the world's most cold-tolerant non-human primate.

### **Plants and Insects**

The Myoko-Togakushi area has a range of natural environments, from windswept alpine highlands to montane forests, grasslands, and sheltered wetlands. The variety of environments greatly affects insect populations in the region, especially the distribution of dragonflies and butterflies. At the park's highest altitudes, the *benihikage* butterfly and the white-faced darter dragonfly (*kaojirotonbo*) have survived since the last Ice Age. In the Sasagamine pasturelands, more than 90 species of butterflies—including the migratory chestnut tiger (*asagimadara*)—have been spotted. Another eye-catching resident is the Japanese luehdorfia (*gifucho*), a black-and-yellow-striped butterfly with markings that are unique to each population group. Imori Pond is home to many species

of dragonflies, including a species of Eurasian bluet (*ezoitonbo*) and the downy emerald (*karakanonbo*).

### **Birdwatching**

Diverse bird populations can always be found in the park, but the exact species in residence vary greatly throughout the year. Birds such as the goldcrest, Eurasian treecreeper, and Japanese green woodpecker (an endemic species) are present year-round, but others migrate to, from, and through the park as the seasons change. In winter, bramblings and Pallas's rosefinches move in from far north on the Asian continent. In summer, Siberian blue robins, narcissus flycatchers, grey wagtails, brown-headed thrushes, and ruddy kingfishers arrive to breed, bringing brilliant flashes of color to the woodlands.