

# 3. Wetland Diversity



Kaisho Forest is dotted with several small wetlands, mainly around the gully. The environments differ depending on the formation of these small wetlands, each of which serves as a home to unique animals.

In particular, plants unique to this area known as the "Tokai hilly land element flora" can be found around the nutrient-poor wetlands and the small wetlands along streams.

## Observation Points

### 3a Nutrient-poor Wetland



At these wetlands the slopes have collapsed and surface layers have been washed away, leaving the gravel beds exposed. Because the gravel beds are poor in nutrients, most of the plants that grow here are not very tall.

Unique plants can be found in this area, such as *Drosera tokaiensis* and *Utricularia bifida* (both insectivorous plants). Unique creatures can also be discovered here, such as the tiny dragonfly (*Nannophya pygmaea*), which favors shallow water environments where short plants grow.



Tiny Dragonfly

*Utricularia bifida*  
[flower: Aug-Oct]

### 3b Star Magnolia in the Small Wetland



This wet area was created by the underground water that gathered in the valley area, turning spring water into flows. Fallen leaves accumulated and soil developed here, so even tall trees can grow in this swamp forest.

Here we can see the red-stemmed barberry (*Berberis sieboldii*) and other members of the so-called "Tokai hilly land element flora." These semi-shaded wetlands are also breeding grounds for larvae of the dragonfly, *Tanypteryx pryeri*.



Star Magnolia  
[flower: Mar-Apr]

*Tanypteryx pryeri*  
(larva)

### 3c Wet Meadow of the Shinoda Pond



The upper part of lakeshore of the Shinoda Pond is a wet meadow. There are signs that this wetland was once a rice field.

Mainly reeds grow thick in this area, but aquatic plants such as *Eupatorium lindleyanum* and *Lobelia sessilifolia* can also be found here. There are also trees that tend to flourish in wet locations such as willows and alders.



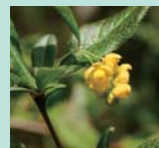
*Eupatorium lindleyanum*  
[flower: Sept-Oct]

*Lobelia sessilifolia*  
[flower: Aug-Sept]

## Topic: Tokai Hilly Land Element Flora

Plants endemic (or semi-endemic) to the hill of the Tokai area are consisted of the some species that grow in and around the nutrient-poor wetlands.

These include the star magnolia, red-stemmed barberry, *Symplocos paniculata*, *Eriocaulon nudicuspe*, and *Drosera tokaiensis*.



Red-stemmed Barberry  
[flower: April]



*Drosera tokaiensis*  
[flower: Jun-Sept]

# 4. Waterside Life



The Kaisho Forest waterside environments are an ever-changing mosaic of branches from the Yada River, the small streams that these branches feed into, the ponds and small wetlands that are formed with the erosion control dams. Waterside life differs here depending on the water depth, water flows, shore formations and plant growth conditions.

## Observation Points

### 4a Life of the Kaisho Pond



Dragonfly larva shells can be found along the shore



Black-spotted Pond Frog  
*Rana nigromaculata*

During summer and fall, various dragonflies can be seen flying above the water and along the shores. Dragonfly ovipositing grounds can be either shallow or deep water areas depending on the species. The Kaisho Pond has a variety of ovipositing environment and so attracts numerous dragonflies.

And there is an ecosystem along the waterside including frogs that eat dragonflies and other insects, fishes that feed on aquatic insects, and kingfishers that feed on these animals.



Common Kingfisher  
*Alcedo atthis*



Male

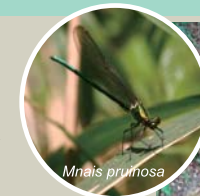
Female

Oviposition of *Sympetrum risi risi* (resting)

### 4b Life of the Yoshida River

The Japanese firefly (*Luciola cruciata*) and fishes such as the dark chub (*Zacco temminckii*) and Japanese eight-barbel loach (*Lefua echigonia*) live in the Yoshida River.

Various dragonflies can be spotted along the river such as *Mnais pruinosa*, *Asiagomphus melaenops*, *Davidius nanus* and *Stylogomphus suzukii*. Larvae tend to be found in those parts of the river where sand and fallen leaves have collected and there are many small herbivorous insects to feed on. The Japanese Eight-barbel Loach is also fond of these areas where fallen leaves collected.



*Mnais pruinosa*



Collection of fallen leaves favored by larvae and loaches

## Topic: Japanese Eight-barbel Loach 4c

Various fishes live in the small streams fed by mountain spring water and the rice paddy waterways. In recent years these habitats have decreased due to the creation of irrigation channels.

Kaisho Forest still has many small water flows. This is particularly true for the Hotoke-zawa in the Yoshida River tributary. The habitat conditions and environments for the eight-barbel loach are continuously surveyed in Kaisho Forest to protect this fish.



Japanese Eight-barbel Loach