

The Fujimae Tidal Flat is a rich repository for many creatures near the large city of Nagoya. What can we do to protect the tidal flat? Let's visit the sanctuary and think about the ways.

## Ramsar Convention

In 1971, the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (popularly known as the "Ramsar Convention") was adopted in the city of Ramsar, Iran, on the Caspian Sea. Japan became a party to the convention in 1980. As of March 31, 2008, 33 wetlands in Japan — including Fujimae Tidal Flat — had been registered as Ramsar sites.

The Ramsar Convention calls for development of a framework for promoting protection and revitalization of wetlands as well as contributing to their sustainable use. It also considers wetlands not simply as habitats for water birds but also as important ecosystems that underpin our living environment. (Under the convention, this concept is referred to as "wise use.")

Fujimae Tidal Flat was registered during the Ramsar COP8 in Valencia, Spain in 2002.

Under the Ramsar Convention, all wetlands in the mountains or along the coasts are considered critical, whether or not they have been registered. The registration of the Fujimae Tidal Flat is not an end in itself; it is a means of restoring the once-rich natural environment extending from Ise Bay to the forest at the riverhead.



## Convention on Biological Diversity

Along with plants, animals and other diverse creatures, we are all part of the global ecosystem. These creatures support our lives in different ways and give us many benefits in the form of food, lumber, and pharmaceuticals. In recent years, however, we have been witnessing an unprecedented rate of loss of biodiversity.

The Convention on Biological Diversity was adopted in 1992 not simply to protect creatures of specific regions or particular species, but to conserve all biological diversity and ensure the sustainable use of its components and the fair and equitable sharing of the benefits arising from the utilization of genetic resources.

In 2010, the 10<sup>th</sup> meeting of the CBD Conference of the Parties (COP10) will be held in Nagoya. This event will provide an opportunity for considering the creatures in the local environment and the chain of life.

## Access to Fujimae Tidal Flat

### Inae Visitor Center, Nagoya Wild Bird Observation Center

- From the Aonami Line: 10 minutes' walk from Noseki Station.
  - From the Meiko Subway Line: 10 minutes' walk from Tsukijiguchi Station.
- You can also board a city bus bound for Noseki at Nagoya Station or Kanayama Station.

### Fujimae Active Center

- From Meitetsu Bus Center (Nagoya Station)
- Mie Kotsu Bus: Board a Mie Kotsu Bus bound for Sunbeach Nikkogawa, Nagashima Onsen, or Minami-kuwana. Disembark at Nanyo-cho Fujimae and walk south along Fujimae Park for 10 minutes.

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# Fujimae Tidal Flat

## A Stopover Site of Global Importance

Welcome to Fujimae Tidal Flat.

Wonder at the migratory birds and the creatures of the tidal flat that nourish them.

Experience all the natural wonders of the tidal flat with your senses.





# Fujimae Tidal Flat: A Resting Site for Migratory Birds

In 2002, Fujimae Tidal Flat was registered as a Ramsar wetland site of international importance that attracts numerous migratory birds.

A widely diverse array of the world's migratory bird species — including shorebirds such as dunlin, Eurasian curlew, and grey plover — can be observed at Fujimae Tidal Flat. The number of shorebirds observed here peaks in spring and again in autumn. Notably, a great number of little tern visit here in summer, while large flocks of greater scaup, northern pintail and other species of duck visit the tidal flat in winter.

In addition to the migratory birds that visit in different seasons are many other species that can be observed on Fujimae Tidal Flat throughout the year, including the great cormorant, spot-billed duck, and osprey.

## Migratory birds that frequent Fujimae Tidal Flat and its environs



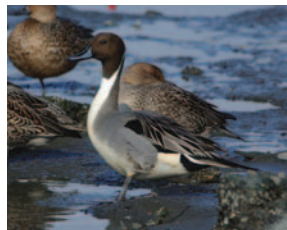
● **Dunlin**  
This small snipe is common in Fujimae Tidal Flat. The species is well known for flying in flocks of several hundred.



● **Eurasian Curlew**  
Renowned for migrating long distances, these large snipes can be recognized by their characteristic long beaks.



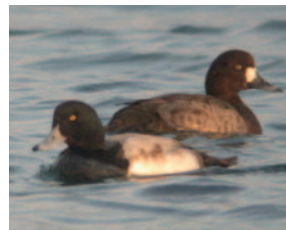
● **Grey Plover**  
These migrating plovers use Fujimae Tidal Flat as a stopover site. Their plumage changes from summer to winter; the photo above shows summer plumage.



● **Northern Pintail**  
These freshwater ducks are recognizable by their long tail feathers. The coloring of male and female ducks differs; the above photo shows the male.



● **Little Tern**  
These seagulls arrive on the tidal flat in summer. They can frequently be seen diving into the water to catch fish.



● **Greater Scaup**  
These sea ducks can be recognized by their black and white feathers. These birds of prey feed on clams and other creatures.

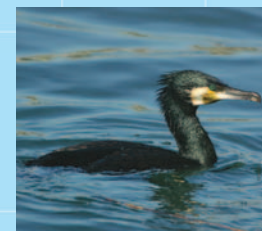
The map at right shows the seasonal flyways of shorebirds. Some species migrate to Siberia and Alaska in summer, while others migrate to Southeast Asia and Australia in winter. These flyways were identified only recently.

In the course of their long journey, the birds use wetlands — such as Fujimae Tidal Flat — as stopover sites to rest and regain their strength. Migratory birds need all the wetlands on their flyways for survival. The Ramsar Convention is intended to preserve the wetlands through international cooperation.



- How can we identify the flyways of migratory birds?
- How are wetlands protected under Japanese law?
- Let's consider the common features and differences between the Geelong Wetlands and Fujimae Tidal Flat.

## Birds observed year-round at Fujimae Tidal Flat and its environs



● **Great Cormorant**  
These birds nest in mountainous areas and feed along rivers and on the sea. Flocks of cormorant feed by pursuing schools of fish.



● **Spot-billed Duck**  
These freshwater ducks can be observed in Japan year-round. Males and females have identical coloring. This species can be recognized by its yellow-tipped beak.



● **Osprey**  
These medium-sized hawks prey on fish. They appear whitish in flight and can often be seen perched on driftwood.

## Wetland Protection Agreement Nagoya and Geelong

In 2007, the City of Nagoya concluded the Wetland Protection Agreement with the City of Greater Geelong, Australia.

Geelong is located in southeastern Australia, and many of its wetlands — including Swan Bay — are registered as Ramsar sites. The wetlands in Geelong and the Fujimae Tidal Flat are on the same flyway. For this reason, birds that winter in Geelong can be found at Fujimae Tidal Flat in spring.



The following website shows live images of the Fujimae Tidal Flat and Geelong Wetlands. Nagoya City Kankyo Joho Net (in Japanese only) <http://www.kankyo-net.city.nagoya.jp/>

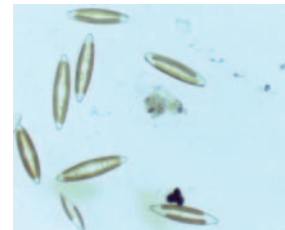


# The Tidal Flat Ecosystem

One important function of a tidal flat is to clean the water. Here, the creatures on the tidal flat play a crucial role.



The river water that flows into the Fujimae Tidal Flat contains a large volume of nutrients from the forests as well as impurities (organic substances) from rice paddies, farms and surrounding urban areas.



● **Diatom**  
This phytoplankton develops in the water or on the surface of the tidal flats. It is one of the organisms that constitute the bottom of the food pyramid.



● **Lugworm**  
Nourished by organic substances in the mud, lugworms are preyed on by fish, birds, and many other creatures.



● **Rivulogammarus**  
These crustaceans measure only a few millimeters in length. Countless numbers of these creatures inhabit the surface of the tidal flats, where they primarily nourish small birds.



● **Japanese Mud Crab**  
Large snipes are fond of this species of crab, which is well adapted to the tidal flat environment.



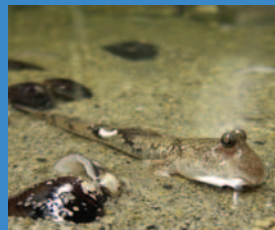
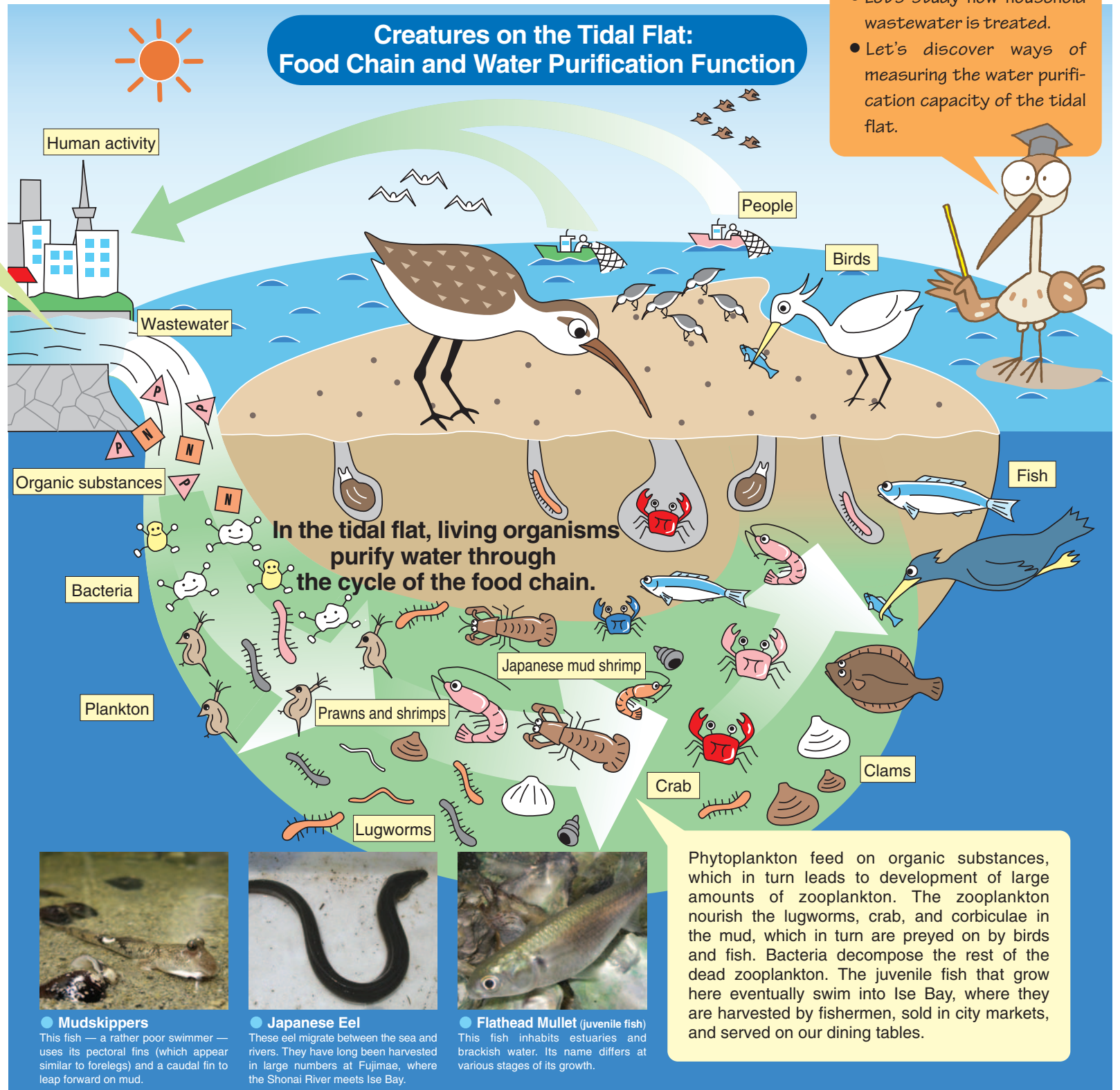
● **Japanese Corbiculae**  
These large corbiculae inhabit brackish water. This is a common clam species on the Fujimae Tidal Flat, as littleneck clams do not inhabit the tidal flat.



● **Japanese Mud Shrimp**  
These shrimp dig holes more than two meters deep in the mud of the tidal flat. They filter and feed on organic substances in the water.

Tidal flats with a well-functioning food chain — as characterized by various creatures living in a relationship of both predator and prey — help to maintain the water quality. Fujimae Tidal Flat is visited by large numbers of birds because it is home to creatures in sufficient numbers to feed these birds. By nourishing the birds, these creatures help to clean the water.

Reclamation of a tidal flat eliminates the creatures that feed on plankton. As a result, dead plankton are simply left to decompose, which results in degradation of water quality (known as red tide) that negatively affects the fisheries. In recent years, efforts have been made to return reclaimed tidal flats to their original state and to create artificial tidal flats.



● **Mudskippers**  
This fish — a rather poor swimmer — uses its pectoral fins (which appear similar to forelegs) and a caudal fin to leap forward on mud.



● **Japanese Eel**  
These eel migrate between the sea and rivers. They have long been harvested in large numbers at Fujimae, where the Shonai River meets Ise Bay.



● **Flathead Mullet (juvenile fish)**  
This fish inhabits estuaries and brackish water. Its name differs at various stages of its growth.

Phytoplankton feed on organic substances, which in turn leads to development of large amounts of zooplankton. The zooplankton nourish the lugworms, crab, and corbiculae in the mud, which in turn are preyed on by birds and fish. Bacteria decompose the rest of the dead zooplankton. The juvenile fish that grow here eventually swim into Ise Bay, where they are harvested by fishermen, sold in city markets, and served on our dining tables.

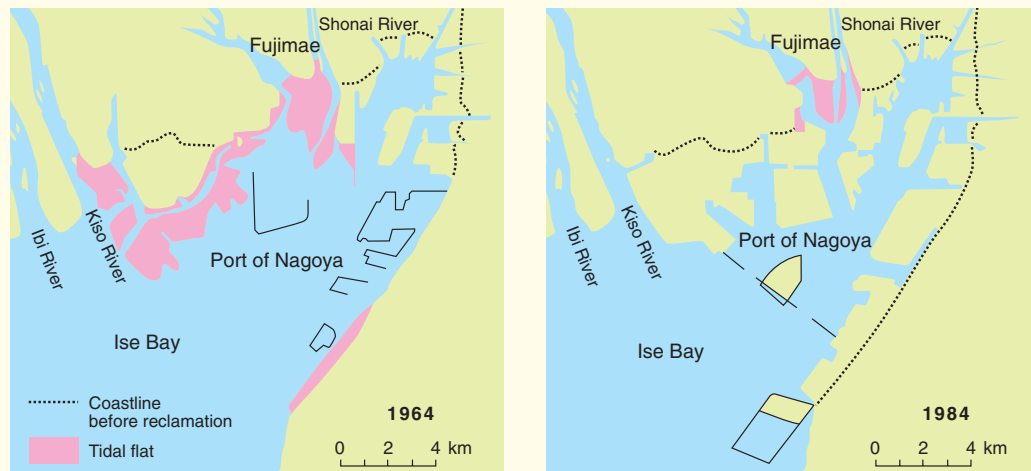
# History of the Fujimae Tidal Flat: The Miraculous Path to Preservation

Inner Ise Bay was once the site of a broad tidal flat that extended from southern Nagoya to the area where Nagoya Station now stands. Known as “Ayuchi-gata,” this vast tidal flat was mentioned in the collection of poems known as *Manyoshu* (*Collection of Ten Thousand Leaves*) compiled in the 8<sup>th</sup> century. *Aichi*, the name of the prefecture where Fujimae Tidal Flat is located, was also derived from the old name for the tidal flat.

Reclamation of the tidal flat to develop new rice fields started during the Edo period (1603–1876). Later, reclamation projects were launched to create housing and industrial sites. Fujimae Tidal Flat is the last small portion to remain intact. The maps below show the area of the tidal flat reclaimed during a 20-year period. Similar reclamation projects were under way across Japan.

Today, Fujimae Tidal Flat is visited by many migratory birds. The number of birds, however, has been declining due partly to the shrinking size of the tidal flat. Although saving this small tidal flat represents an important milestone, now is the time to consider ways of improving the environment to achieve the next milestone.

## The miraculous survival of the Fujimae Tidal Flat amid coastal industrial development projects

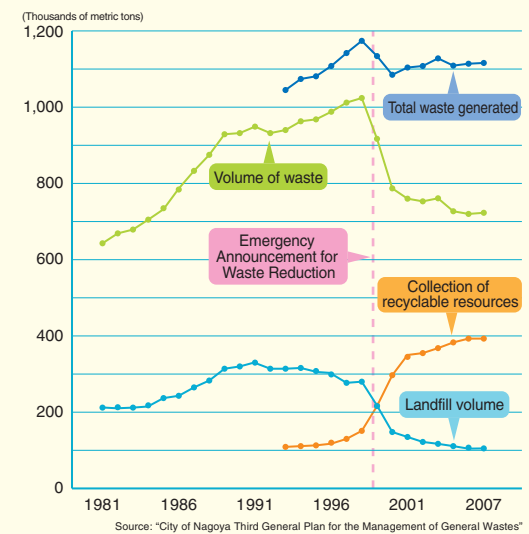


In 1981, a plan was announced to use Fujimae Tidal Flat as a final disposal site for general waste. At the time, the City of Nagoya had three disposal sites that, in light of the volume of waste generated and the limited remaining reclamation capacity, were expected to reach capacity by fiscal year 2000.

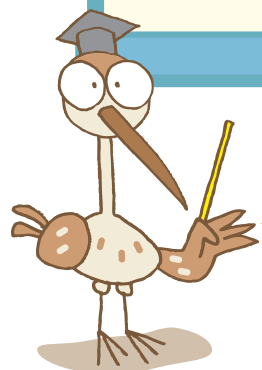
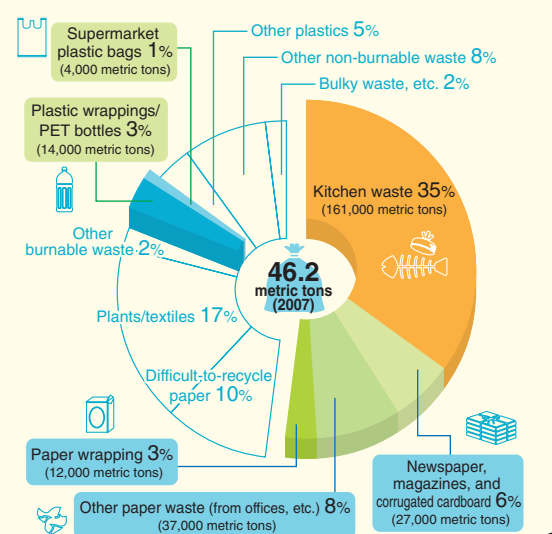
Immediately after the announcement of the plan, a citizen campaign was launched to save Fujimae Tidal Flat. This led to growing public awareness about the need to protect the tidal flat. By January 1999, the city abandoned its plan and instead issued the “Emergency Announcement for Waste Reduction” in February in an effort to reduce waste. In 2000, the city implemented a program to sort waste in order to reduce the non-burnable waste destined for landfills. At the same time, rules for sorting waste and resources were adopted by Nagoya in their current form.

The efforts of all citizens led to a significant reduction in waste. Nonetheless, the disposal sites are expected to reach capacity eventually as a result of the constant waste generation. We must devise solutions now before we reach a dead end.

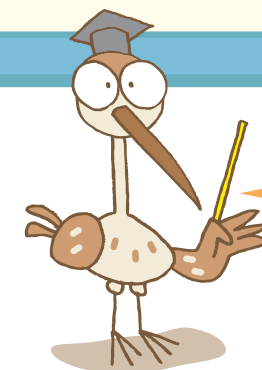
## Trend in waste volume and recyclable resources collected



## Breakdown of household solid waste



- Let's consider why the tidal flat formed in inner Ise Bay.
- Let's find out how many years have passed since the Edo period; and the time *Manyoshu* (*Collection of Ten Thousand Leaves*) was compiled.
- Let's identify other tidal flats in Japan.
- Let's find ways to improve the condition of Fujimae Tidal Flat.



- Let's study how resources and waste are processed.
- Let's consider measures for extending the life of disposal sites.
- Let's consider ways of eliminating waste at source.