

## Why Should We Use Winter-flooded Rice Farming?

Migratory birds leave their feces in rice paddies. Rice straw and stubble are decomposed by fungi and tubificidae in winter to form a natural compost and nutrient source for algae, such as filamentous green algae, in the spring.

Projects have started to make the most of these natural organisms, as a means of replacing conventional farming dependency on pesticides, herbicides and chemical fertilizers.

Rice from winter-flooded paddies is also in high demand for the table.

Winter-flooded rice paddies also contributes to the natural restoration of *satoyama* by enhancing biodiversity, water purification and recharging ground water.



▲ Winter-flooded Rice Paddy in Tajiri, Osaka

### Expected Benefits of Winter-flooded Rice Farming

#### ◆ Environment (multi-function of the rice paddy = external economy)

- Recovering wetlands rich in organisms
- Enhancing biodiversity (including birds, insects, and aquatic organisms)
- Feeding and/or roosting sites for geese, ducks, swans, shorebirds and other fowls.
- Groundwater re-charging
- Water purification
- Oxygen from algae

環境

#### ◆ Agriculture

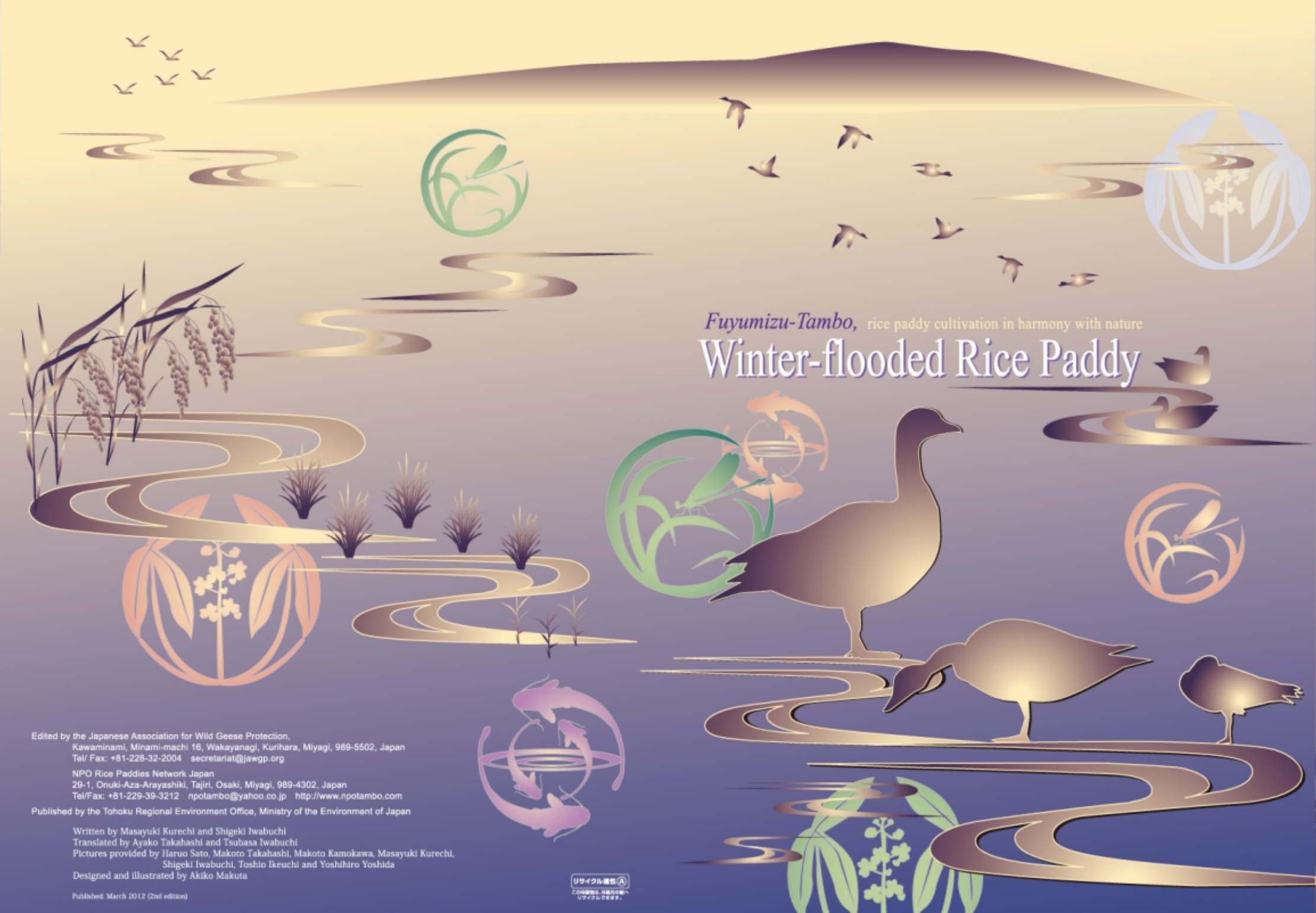
- Restoration and conservation of the natural environment
- Raising consumer's awareness of agriculture
- Production of high value rice
- Maintenance of traditional village society
- Agriculture independent of pesticides, and with the help of increased populations of natural enemies including spiders, frogs, and swallows
- Use of natural fertilizer (bird feces and aquatic organisms decomposed by microbes)
- Weed control (due to formation of *Toro-toro*: a moist, upper soil layer with microbes and excreta of organisms including tubificidae worms.

農業

#### ● City Government Support of Winter-flooded Rice Farming in Tajiri, Osaka (Miyagi Prefecture)

Farmers and others in Tajiri, Osaka, discussed the promotion of rice paddies that provide additional resting sites for more than a hundred thousand of White-fronted Geese overwintering in the Kabukuri-numa wetland. This wetland supports various organisms including fish, frogs and worms. In 2004 the city government, and later the national government, began financial supports for environmentally friendly farming based on winter-flooded rice paddies that do not use pesticides, herbicides and chemical fertilizers.

Winter-flooded Rice Paddies Enrich Soil and Nurture Organisms



*Fuyumizu-Tambo*, rice paddy cultivation in harmony with nature

## Winter-flooded Rice Paddy

Edited by the Japanese Association for Wild Geese Protection, Kawaminami, Minami-machi 16, Wakayanagi, Kurihara, Miyagi, 989-5502, Japan  
Tel/ Fax: +81-228-32-2004 secretariat@jwagp.org

NPO Rice Paddies Network Japan  
29-1, Onuki-Aza-Arayashiki, Tajiri, Osaka, Miyagi, 989-4302, Japan  
Tel/Fax: +81-229-39-3212 npotambo@yahoo.co.jp http://www.npotambo.com

Published by the Tohoku Regional Environment Office, Ministry of the Environment of Japan

Written by Masayuki Kurechi and Shigeki Iwabuchi  
Translated by Ayako Takahashi and Tsubasa Iwabuchi  
Pictures provided by Haruo Sato, Makoto Takahashi, Makoto Kamokawa, Masayuki Kurechi, Shigeki Iwabuchi, Toshio Ikeuchi and Yoshihiro Yoshida  
Designed and illustrated by Akiko Makuta

Published: March 2012 (2nd edition)



Winter-flooded Rice Paddy - Rice Paddy Filled with Water during Winter

## Winter-flooded rice farming has been practiced in Japan since the Edo period (1603-1868)

Winter-flooded rice farming is both a traditional and innovative agricultural technique. The word *Tafuyumizu* first appears in an agricultural manual, *Aizu Nousho*, published in 1684.

This is an agricultural method that the author, Yojiemon Sase, tried himself. In the manual he explains that it is a good idea to flood a rice paddy during winter whether it be located in the mountains or the plain.

The advice suggests that he was aware that winter flooding increased productivity by encouraging growth of organisms including fungi, tubificidae worms and chironomidae.

Winter-flooded rice farming has now been re-introduced as a way to promote harmony between farming and nature.

*Flood rice paddies in winter  
Organics accumulated on the dry ground  
Ferment to make good soil  
(Yojiemon Sase)*

*Snow blown like petals of a flower  
Behind the wind  
Waves occur on a pool of rice ears  
Like the water surface  
(Shigeki Iwabuchi)*

冬水かけ上田へこみたままり  
土もくさりて能事すかし  
雪花の散りぬる風のなごりには  
穂並みたらける

### Winter-flooded rice paddies at home and abroad

#### Wild Geese, Swans, Cranes, Ibises and Storks, and Their Connection to Winter-flooded Rice Paddies

Besides being an innovative agricultural method, winter-flooded rice paddies are also important for many wintering water birds, including migratory geese, swans and cranes, that use them for roosting and feeding. Ibises and storks also use them as feeding sites. There are now many projects to restore endangered or extinct species such as the Japanese Crested Ibis, the Oriental White Stork and other species depending on rice paddies.

▶ Japanese Crested Ibis (Sado City, Niigata Prefecture)



▲ Oriental White Stork (Toyooka City, Hyogo Prefecture)



▲ White-fronted Geese and Whooper Swans (Tajiri, Osaka City, Miyagi Prefecture)



▲ White-necked Cranes (Imari City, Saga Prefecture)

### What's Perellona?

Along the Mediterranean in Spain, farmers flood their rice paddies with water after harvesting rice from November to January.

This agricultural method, known as *Perellona*, has been in use for 200 years, and takes its name from the village of Perello where it was first practiced. The areas of *Perellona*, around Lake Albufera and Ebro Delta are all registered under the Ramsar Convention on wetlands.

Winter-flooded rice paddies in Spain



Winter-flooded Rice Paddies at Ebro Delta in Catalonia