

UMAJI VILLAGE sprawls across a broad swath of mountainous eastern Kochi prefecture. Sparsely populated but known for its yuzu and cedar products, in summer it bustles with city people enjoying fishing and recreation on its rivers. Traversing the village proper is the Yasuda River ravine. At one time, stretches of the waterway, mainly in the residential area, were straightened out, producing a succession of flat, even-depth rapids inhospitable for fish. In 2007, the head of a farm cooperative had a dream: A stream abundant in aquatic life running through the village's center would enhance its production of health products and its identity as a region that nurtures life.

For a river to sustain diverse species it must have varied habitats; currents, deep pools and sandbars must exist in harmony. The Yasuda River needed its deep pools and

sandy shoals restored. Spur dikes, a flood control device used since ancient times, were utilized, with rocks arranged where flood water would strike harshly, to lessen its impact. Construction was managed by the village and a public works firm; vehicles and materials provided by a local construction company and agricultural association. It took just over one day and was more successful than predicted. The spur dikes diverted flood water from shores, slowing currents and creating back eddies that first vigorously drilled pools, and then, where the currents slowed, formed gravel and sand banks as sediment dropped out, thus protecting the riverbanks. The riverbed environments changed dramatically — naturally. Zero problems with flooding, the reason for the original damaging reconfiguration of the river.

Half a year later, the summer 2008 fish survey found that despite hot midsummer days, habitat density around the spur dikes had burgeoned, especially for *amago* trout, who, along with their spawn, were now spared due to the cool deep water created by the spur dikes. These stream fish, glacial-period survivors, must now live with global warming. We are exposing many life forms to the threat of extinction. Often, creating an environment where creatures of the natural world can survive along with humans is comparatively easy and inexpensive. In our daily lives, such opportunities abound; we habitually overlook them. Umaji Village is a shining example: it utilized surplus construction project stockpiles of stone material for the benefit of both the public and nature. ♪

TRANSLATED BY JENNIFER TEETER AND OKAZAKI TAKAYUKI

THE WORLDS OF SATOYAMA: SATOUMI

Satoumi: Wise Use of Coastal Zones

BY WINIFRED BIRD



“SUSTAINABLE USE of marine resources” is hardly a phrase that’s been associated with Japan in recent years. Continued hunting and slaughtering of whales and dolphins as well as the Japanese government’s opposition to a proposed ban on the international trade in Atlantic bluefin tuna — all of these have fueled worldwide outrage against the seafood-loving island nation. Yet in a handful of Japan’s coastal communities, a counter-current is emerging that looks back to a far older history of sustainable marine use: *satoumi*.

Though the history is ancient, the word was coined in 1998 by Kyushu University oceanographer Yanagi Tetsuo. Just as “satoyama” combines the characters for “village” and “mountain,” *satoumi* juxtaposes “village” and “sea” to describe coastal zones — of seas, estuaries or lakes — that are highly biodiverse and productive, yet far from untouched. Humans have been harvesting clams, oysters, crabs and a myriad of other sea-side creatures for thousands of years, and we’ve been adding our waste to coastal waters for just as long. Through both

of these activities, we take part in the nutrient cycles that link land and sea.

Often our involvement is less than beneficial: we either take too many nutrients out of the water (overharvesting) or put too many in (pollution). Yet what Yanagi Tetsuo wants people to understand is that through wise and careful management, humans also have the potential to enrich the coastal ecosystems we use, in a kind of symbiosis. In moderation, some types of wastewater can actually increase the productivity of coastal seas by adding vital nutrients, and humans can help return those nutri-

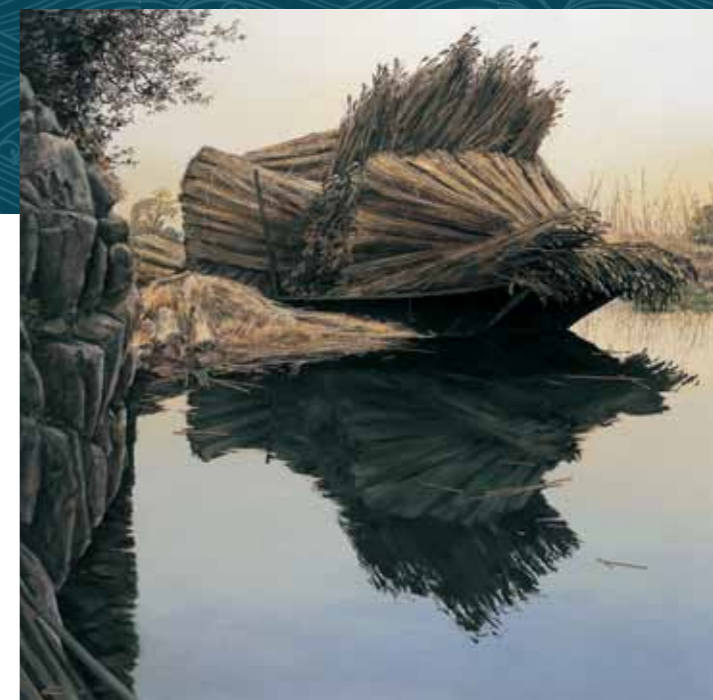
ents to land through fishing and gathering shellfish and seaweed. Conversely, only coastal areas that are diverse and productive will be economically sustainable in the long run.

For the time being, that sort of mutually beneficial relationship remains an ideal rather than a reality in Japan. Large-scale commercial fishing began about 300 years ago, and by the 1980s chronic overfishing had devastated many coastal fish populations. Effluent from urban areas and from chemical-intensive croplands and factories was draining into bays, overloading them with nitrogen and phosphorous and leading to “red tides,” algal blooms that rob the marine ecosystem of oxygen. Public works projects have covered about half the Japanese coastline in concrete. Perhaps the most infamous was the project to transform a tidal wetland in western Kyushu’s Isahaya Bay into agricultural land with a 7-kilometer dike, completed in 1997 despite widespread protest. The dike altered water flow and destroyed both wild habitat and the livelihoods of fishermen and seaweed farmers.

There are encouraging signs of change. In 2007 the Japanese government adopted the creation of healthy *satoumi* as a national policy, marking a shift from simply regulating the discharge of pollutants to managing the coastal ecosystem as a whole. Similar concepts such as Integrated Coastal Zone Management are catching on internationally. One person inspired by the *satoumi* concept is Jack Greer, a journalist, poet, and employee of America’s Maryland Sea Grant College. He has written about marine science and policy and the Chesapeake Bay for 30 years. We asked Greer how *satoumi* might apply to coastal management around the world.

WINIFRED BIRD: *What appeals to you about the idea of satoumi?*

JACK GREER: [Satoumi] gives a philosophical underpinning to the notion of using enclosed seas in varying ways — protecting some of them [from any use], using some of them for very intensive purposes like aquaculture, and then having



PAINTING BY BRIAN WILLIAMS
Bundles of reeds from the Lake Biwa marshes, harvested in autumn and dried over the winter, destined for blinds or thatch.

these managed areas which are used and fished but also really protected and sustainable over the long haul.

I love the notion [in Japan] of some forests being where the gods live. Some areas are sacred in a way, because of the nature, so that’s a great notion, but it doesn’t mean you can’t use anything. There are two other categories: intensive use, like monoculture, that’s highly productive but not nature; and then, places where you really do use something, but at the same time honor it. I really like the balance within human approaches to the world. We’re not very good at that. In the Chesapeake Bay we have people who are very committed to protecting the environment, and we have fishermen who are very determined to protect their rights. Everything becomes polarized and what gets lost is this notion of balance.

Nutrient overload from land sources is a big problem in coastal areas worldwide. Aside from limiting inputs, some here in Japan suggest that increasing what we’re taking out — more harvesting — might help.

That’s certainly valid, and you have different ways of doing that. You can grow plants, including seaweed and so forth, and that helps remove nutrients. You can have oysters that feed on phytoplankton that removes the [excess] nutrients and then the oysters remove the phytoplankton. But if you don’t really understand the material cycle and you’re missing pieces of it, that can be a problem.

With ecology it’s complicated, and that’s why biodiversity is important. It gives you balance between all different parts of the food web, so that if one part crashes the whole system doesn’t fall apart. You have to be careful of unilinear thinking, for example [the idea that you] can just use one species to completely control this cycling. If you get a disease — which happens in monocultures — then that collapses and your whole system is out of whack, and all these nutrients you thought you were going to be taking out are just out there. In the Chesapeake Bay this is what happened to us. In the 19th century it was really a no-holds-barred approach to oysters. We had huge oyster reefs in this estuary, like coral reefs, breaking the surface at low tide, and they just tore them down. It was really like cutting down old growth forest. That really helped to throw the whole ecosystem off, and it took a long time to feel the full ramifications.

Do you think human use can actually benefit biodiversity in coastal seas?

It varies. The concept of *satoumi* is really valuable and can help us as we struggle with this issue of balance, but if you look at it as this three-part paradigm, then the balance needs to include all three: national parks — areas that are special for various reasons, then other areas that are intensively worked, then *satoumi* which is this wonderful place in the middle where you go for sustainable use. ♪

PAINTING OF A BAY IN SOUTHERN SHIKOKU BY BRIAN WILLIAMS