

## OUR VANISHING LAKESHORE BY RECLAMATION

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### ABSTRACT

Continual reclamation of water surface has been carried out in Japan for a term of five hundred years. It has caused the shore environment a lot of damage. Reclamation policy became more systematic and efficient especially in modern times, and therefore, our waterfront environment is vanishing rapidly. People and authorities are awaring of it's seriousness now and make every effort to recover shoreline environment including Lake Suwa.

KEYWORDS; lakeshore policy, reclamation policy, Japanese inlandwater, history, Lake Suwa

### INTRODUCTION

In almost all countries, the increase in food production is one of the most important matters of concern for their people and governments. Reclamation, therefore, attain a high position in the internal policy of every nation.

In the case of Japan, reclamation of water surface has been an important means as well as one of wasteland. Because Japan is a comparatively mountainous country, and rice cultivation needs carefully level-surfaced paddy to irrigate it enough. By the fifteenth century, reclamation of water surface had become a well known technique to extend arable land. In the modern times — after the Meiji Restoration —, both national and prefectural governments also has kept political help to reclamation consistently including in the postwar period.

I intend to explain a history of reclamation in Japan and to discuss how it seriously damaged lakeshore environment in this paper.

### PREMODERN WORKS

We can find several cases of reclamation by drainage from sea surface in the fifteenth century, mainly in the western part of Japanese Islands. By the sixteenth century,

reclamation work spread over throughout the country. Every lord, as well as the feudal Japanese government, encouraged it in order to increase in agricultural products in their fiefs.

In the western and central parts of Japan where there were wide estuaries, people mainly reclaimed by drainage from tideland while in the eastern part by filling up or drainage off lakes and marshes(2). Sea areas in where reclamation was done widely till the mid-nineteenth century were, for example, Ariake Bay, Yatsushiro Strait, Setonai Sea, Ōsaka Bay, Biwa-ko, Ise Bay (Fig. 1). It is true that Japan

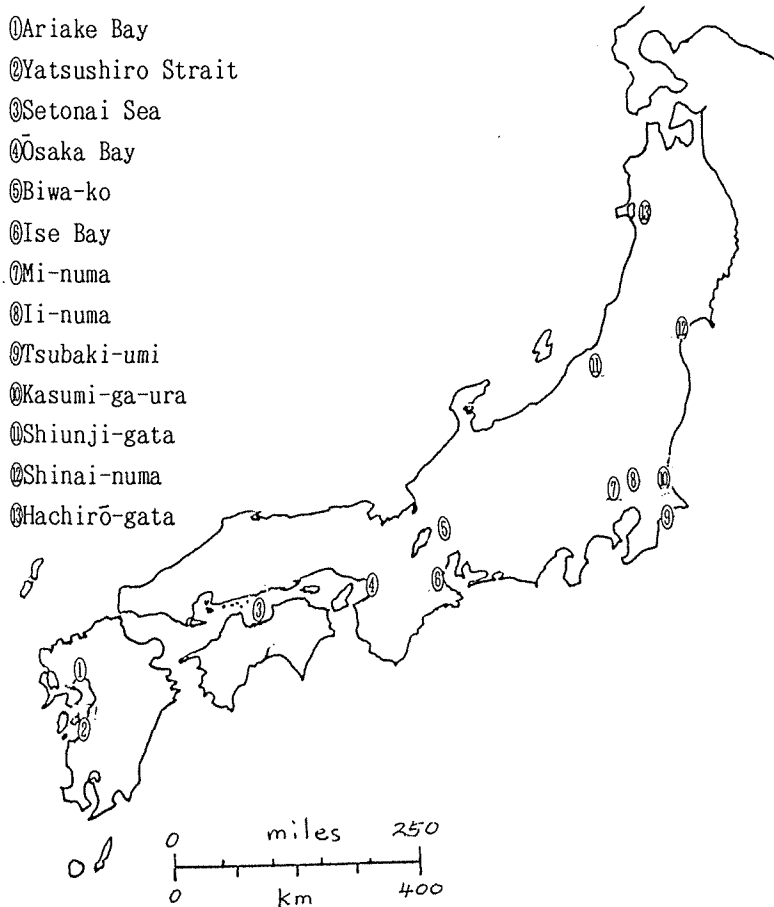


Fig.1. Map of reclamation areas referred in this paper.

could match Holland in drainage work for a long time. And there were many cases of reclamation of inland water surface in the premodern period as well (Fig. 1, Table 1). Reclamation of Tsubaki-umi was a largest lake drainage work

in premodern Japan.

Table 1. Some cases of inland water reclamation  
in premodern Japan.

Lake/Marsh	Prefecture	Year of Completion	Extent of created arable Land (ha)
Tsubaki-umi	Chiba	1670's	4,445
Shinai-numa	Miyagi	1702	600
Ii-numa	Ibaraki	1725	2,000
Mi-numa	Saitama	1728	1,200
Shiunji-gata	Niigata	1729	2,000

#### UNDER THE MODERN RECLAMATION POLICY

After the Meiji Restoration, the imperial government which newly seized power adopted a rapid modernization policy learning from the western countries. Industrialization and militarization were set as the fundamental national aims hereafter. The total population and the ratio of working class in it increased so sharply that the food demand also got larger year by year.

Two wars — the Sino-Japanese (1894-95) and the Russo Japanese (1904-05) — especially caused Japan to get a turning point to become a industrialized imperialistic power by the first decade of the twentieth century. The modern agricultural policy was fixed legally in this period. The Arable Land Improvement Act of 1914 (Kōchi-seiri-hō) encouraged landowners to establish regional corporation for land improvement and reclamation. The act distinguished reclamation not by drainage but by filling (Umetate) from one not by filling but by drainage (Kantaku). Almost all reclamation works of water surface, however, were done by the latter means.

After World War I, the nationwide rioting outbreake in the summer of 1918 over the soaring price of rice. Enactment of the Reclamation Subsidy Act of 1919 (Kaikon-josei-hō) resulted from this rice riots. Through the 1920's and the 30's a lot of reclamation works were carried under the subsidization based on the act. Large scaled sea reclamation

was carried out in colonial Korea as well(3). Even in mainland Japan alone, extent of the reclaimed land from water surface in this period was not a few (Table 2).

Table 2. Extent of the reclaimed arable land from water surface, 1918-1940(1).

Year	Total reclaimed arable Land (A) (ha)	From Water Surface (B) (ha)	(B)/(A)×100
1918-22	232,398	1,177	0.5
1923-27	106,934	2,365	2.2
1928-32	230,625	3,380	1.5
1933-37	205,316	3,065	1.5
1938-40	69,771	1,899	2.7

Though every reclamation work was obliged to delay during World War I, they revived in the postwar period in order to solve the serious food crisis with which Japan faced as soon as she was defeated by the allied powers in 1945. And since Japanese economy restored the level of prewar productivity and turned to high-growth phase in the 1960's, reclamation became more large-scale, efficient work by means of big construction machines.

Some typical cases of inland water reclamation in the modern period are as follows (Fig. 1, Table 3). The case of Hachirō-gata is the largest drainage work carried in Japan so far.

Table 3. Some cases of inland water reclamation in modern Japan.

Lake	Prefecture	Year of Start	Year of Completion	Extent of created arable Land (ha)
Kasumi-ga-ura	Ibaraki	1919	1967	2,500
Biwa-ko's 20 sub Lakes	Shiga	1944- 1967	1951- 1968	2,524
Hachirō-gata	Akita	1957	1964	17,400

Annual rice production in Japan, however, changed into the excessive situation by the late 1960's and the government have adopted the acreage reduction policy up to the present. Each farmer who was settled in the newly reclaimed arable land from Hachirō-gata are never permitted cultivating rice all his estate freely. A lot of reclaimed farmland is turning now into other purposes.

#### CONCLUSION

Spreading of the reclaimed land from water surface must mean disappearance of the shore environment. Concerning the lakeshore ecosystems, they consist of compound structure of bottoms; shallow, photobathic, highly oxygenic waters; and every species, both habitants and occasional visitors in this environment. Human species is also a visitor for the lakeshore ecosystems to fish, to gather, to bathe, and to stroll along or to sit still. It is an undeniable fact now that the lakeshore ecosystems greatly contribute to the self-purification of water quality of the whole lake. Vanishment of the lakeshore ecosystems can, therefore, cause the water quality of the lake serious damage.

In Lake Suwa, though reclamation of arable land have never carried except natural alluvion, some typical lakeshore habitats were disappeared by artificial filling and embankment for the past twenty years. The largest one of them was named Shibu-no-ego, in the southeast corner of the lake. This nice place to where many waterweeds, planktons, fishes, and waterfowls were attracted(4) is now buried exactly under the sewage treatment plant for the Lake Suwa basin. I sometimes wonder whether the plant is more effective for water purification than the fine ecosystems of vanished Shibu-no-ego or not.

Lake Suwa has no longer natural lakeshore utterly. But recently the prefectural authorities of Nagano partly replaced the concrete lakewall with more naturelike stone and sand bank. The environmentally concerned people, as the members of the Citizen's Council for Environment and Town Planning of Suwa Region, also are strongly interested in such new trials.

It seems that now we should recover desirable lakeshore

ecosystems around any remaining lakes in Japan by every possible means.

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