

Research on changes in the relationship between a river and human beings - The case of the lower reaches of the Inukami river -

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Abstract:Inukami river is a river channel with a length of 27.1km and a river basin area of 104.3 square kilometers. It flows in the eastern part of Shiga prefecture. Its lower reaches have a history of suffering from floods. On the other hand, the river was used for fishing, felling bamboos, and recreation until the 1960s.

In spring and summer people enjoy the evening cool, students chat pleasantly, others walk a dog etc. There are also many people who visit from neighboring prefectures.

When deciding on a river improvement, reflection of the local residents' opinions has become indispensable since the River Law revision of 1997. For example, a "Meeting about works to improve Inukami river" was sponsored by Shiga prefecture, and held in 2001. Reflection of the residents' opinion was achieved through this workshop. Moreover, the Landscape Law was established and a residents' association was also started. Thus a new relationship between the river and local residents was begun.

This research paper considers the future social settlement and the relationship between the Inukami river and local residents.

1. Introduction

(1) River law

Before the River Law came into existence in Japan each local community used to carry out independent management of its own area with regard to river improvement, irrigation, and fishing. But in 1885, 1895 and 1896 there was widespread flood damage throughout Japan, leading to the enactment of the first River Law with emphasis on "river improvement" in 1896. This first River Law established in principle a river administrator in all prefectures, and when a river is used his approval is needed.

Since high economic growth in the 1960s caused a rise in water demand, a new River Law which added "irrigation" to "river improvement" was enacted in 1964. Thanks to this River Law, basin systems began to be managed consistently. In this way upstream and downstream river improvements and irrigation came to be undertaken.

Thus the River Laws of 1896 and 1964 strengthened the management of rivers at both local (i.e. prefectural) and national levels.

The River Law of 1997 added "environment" to "river improvement" and "irrigation", but in addition as a basic policy it stated that the opinions of local residents must be reflected in all plans for river improvements.

In the point of urging the participation of residents, it can be said that the quality of the management policy was upgraded.

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(2) Research Objectives

This research aims at understanding how river use by local residents is changing, based on changes in the River Law. In addition, the future relations between rivers and settlements is considered from the point of view of river management.



*fig.1 The lower reaches of Inukami river (Ima-bashi)
Since the right half fell, it was reconstruction.*

2. Method

(1) Method

This research was conducted by reference to existing literature on the subject, and by fieldwork investigations at the outfall of the Inukami river in Kaideima-cho and Hassaka-cho.

(2) Target sites for this research

Inukami river is defined as a Grade One river under the River Law, with a length of 27.1km and a river basin area of 104.3km². It flows in the eastern part of Shiga prefecture. The alluvial fan with a radius of about 5-6 km is formed from near Kanaya Kora-cho.

With regard to the climate of the Koto bloc region where Inukami river flows, average annual temperature is about 14 degrees (Hikone observatory), and annual precipitation is about 1,600mm in the plain, and about 1,800mm - 2,000mm in the mountainous area.

According to the research of Kibayashi and others (2002), the downstream cross-section of the river channel is a composite shape. It is an anastomosing channel in a fan shape, and has a meandering channel below in a natural levee area. It has stream-side forests which consist of Zelkova, Tabunoki, Wild cinnamon, Arakashi, Japanese timber bamboo, etc. existing in a high water bed. The sediment of the low water bed of the lower stream is terraced to a height of about 2m. On the terraces, herbs such as Kudzu Vines, and trees such as Baby rose and Willows are advancing. The place is thickly covered with Japanese honeysuckle, and is also on a gravelly sand of lower grade. So the lower reaches of the Inakami river offer much greenery (ex. fig.1).

According to the research of Kanao and others (2002), sweet fish, Biwa salmon, three-spined stickleback, pale chub, and 21 other species of fish were confirmed. The sweet fish has been observed throughout the lower stream. Since there are very few sweet fish south of Inukami river, it is a very suitable place for fishing.

In history, the Inukami river is one of the historic battlefield sites of the Jinshin rebellion of 672 A.D. In modern times, water disputes became a big problem. For example, in 1932, a newspaper report said "about 400 peasants confronted each other with bamboo spears." So, in 1934, the construction of the Inukami dam which was the first full-scale concrete gravity dam for agriculture in Japan was started. It was completed after World War II in 1946. Its construction was a first also as a prefectural enterprise.

Kaideima-cho and Hassaka-cho which are the target sites are located in the Inukami river's outfall (fig.2).

3. Result

(1) Before the first River Law of 1896

The oldest record that shows the relations between the Inukami river and human beings is a folktale. In Kanro-cho, there is a tradition of the young girl "Omaru-san" who became a human sacrifice so that the levee of Inukami river might not break.

In Kaideima-cho, two portraits of RENNYO and SHINRAN are deified at Kakusho-ji temple, and it is said that the Two Buddhas protect the levee. The origin of this tradition is the story that Mr. Imamura who was a wealthy landowner of Kaideima-cho, and the Sasaki family of Kakusho-ji contributed to the embankment.

In more recent times the construction of the embankment by the combined efforts of villagers was performed in 1877-1884. The flood disaster which was the cue for the establishment of the first River Law raged also in Kaideima-cho and Hassaka-cho. As a result of the typhoon which attacked from the end of August 1896 to the beginning of September, Hassaka-cho which is a lakeside village was inundated. Its residents took refuge in Kaideima-cho where the levee of Inukami river had already broken. This flood disaster did serious damage to houses and fields, and became the cause of emigration to the U.S. and Canada.

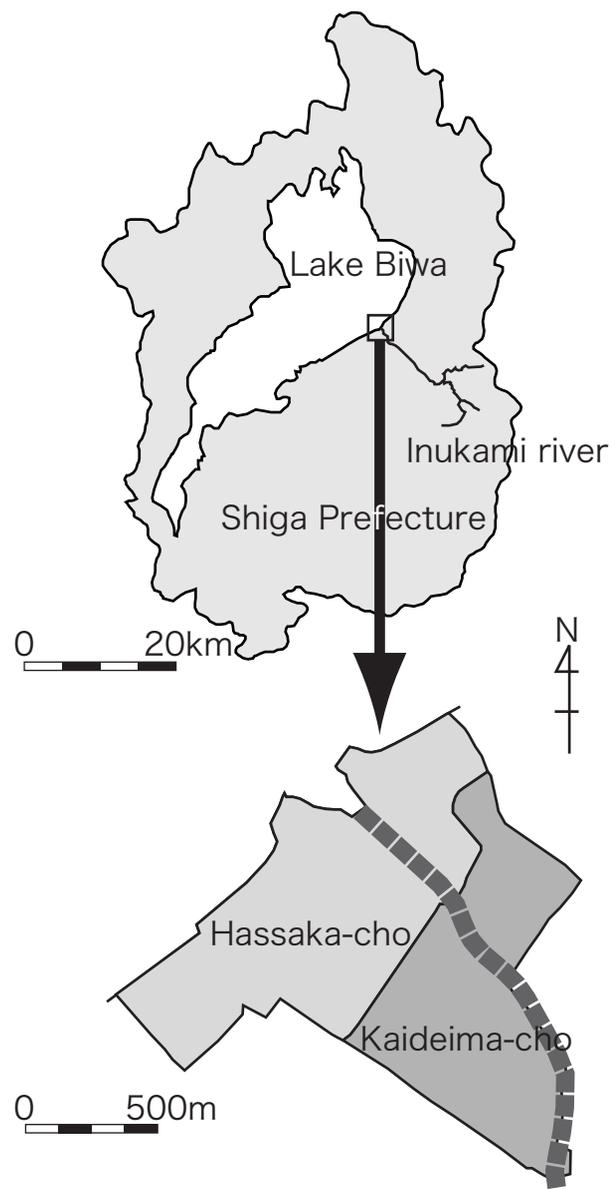


fig.2 Location map for Hassaka-cho and Kaideima-cho

(2) History of the operation of the first and second River Laws

Even after World War II, bridge falls and levee collapses occurred again and again from 1951 to 1965. On the other hand, the river improvement works were started in 1979. After the Inukami-gawa-bashi bridge was swept away in 1990, reconstruction of bridges, embankments, etc. was started from the outfall.

As for the bridges, Minami-Aoyagi-bashi's concrete-izing (1931), its reconstruction (1974) and the construction of the present Ima-bashi bridge (1967) were performed.

In 1994, a fish weir used in the outfall for about 90 years since the Taisho era (1912-25) was abolished with river improvement. Now, the ruins of the fish weir remain in the right-side high water bed near Inukami-gawa-bashi bridge.

The influence of flood damage on agriculture is remarkable. Inukami river was the main water resource of Kaideima-cho town, which was drawing water from four places of the river. But by the prefectural Noda-numa irrigation drainage enterprise undertaken from 1946 to 1968 and the Lake Biwa storage pump installed at Hassaka-cho in 1968 (reverse water irrigation), the irrigation side was improved. So, water intake from Inukami river was abandoned.

In use of stream side forests, it has become clear that bamboo was bought and sold, and the plant was used in daily life. However, the bamboo was no longer the object of commerce after the second half of the 1960s, and the plant

was no longer used for daily life. Therefore, the value of bamboo bushes fell. Now, stream side forests are only used for gathering bamboo shoots (takenoko) or rice-plant racks etc.

On the other hand, residents of Kaideima-cho planted cherry trees, which they continue to care for and enjoy cherry-blossom viewing (hanami) under to commemorate the bank's completion in the 1960s. The shade of these trees is usually used as a place to relax.

In recreation, there was kind of sport of jumping into the river from Minami-aoyagi-bashi and Shosakai-bashi once in the Kaideima-cho. There was also fishing as well as jumping into the river. However, the place of recreation was changed from Inukami river to Biwa lakeside in Hassaka-cho after degradation of the river bed by mining of gravel and the completion of a school pool. On the other hand, Hassaka-cho's place of recreation is Lake Biwa and Ezura river. So, there was apparently no recreation in Inukami river from the beginning. In addition, the local elementary school has forbidden recreation in Inukami river for reasons of safety.

(3) After the enactment of the third River Law (1996-)

A private field used by residents for growing vegetables which remained in the high water bed disappeared with river improvements in 1998.

Now, there is much use by people who are not riverside residents in high water bed, except grand golf or cherry blossom viewing. There is much use for sweet fish angling or barbecues in the consecutive holidays called Golden Week in May and in the summer(ex. fig 3). Many people from outside Shiga prefecture are also included in these uses. Moreover, although the prohibition of recreation in Inukami river by the local elementary school was cancelled in 1999, there are few students at the river.

On the other hand, as the dialog of the residents and administration in river improvement, there were until now only local explanation meetings. However, as an opportunity to reflect local opinions for the basic policy in river improvement of Inukami river, a "Meeting about works to improve Inukami river" was held 7 times from April, 2001 to February, 2002. It is based on the River Law revision of 1997. Its participants were riverside residents and other users, and the number exceeded 50 persons. The result of the meeting was summarized in seven policies.

The society of Inukami river was started in spring of 2002 focusing on the participants who regretted the end of the meetings. So, through this society, study meetings and investigation activities towards the future improvement of the river are being advanced.



fig.3 Recreation in Inukami river (Kaideima-cho)

4. Discussion

This research showed the following points.

1. Because of various measures (river improvement, irrigation, a school pool's construction, extraction of gravel, etc.) or approval of administration, uses of the river such as irrigation, fishing, recreation, and private field was mostly lost (fig.4).
2. The commercial value of bamboo was lost because of circulation of products instead of bamboo. Therefore, use of the bamboo in stream side forests decreased (fig.4).

3. The cherry trees planted and cared for to commemorate the bank's completion are used for cherry blossom viewing or as a break place.

4. At the conventional local explanation meeting, the opportunity of a dialog with administration was given only to riverside residents. By the meeting of Inukami river, users other than riverside residents are also beginning to participate in the dialog about the river.

In order to preserve riverside residents' life and property, river improvement is required also for the future. On the other hand, the budget of Shiga Prefecture which manages Inukami river is reduced. And as for river management, not only river improvement but management of garbage or weeding out etc. exists. The present situation is that a budget cannot be attached to all these activities.

In order to make the compromise between a river and human settlement in such circumstances, the relation between a river and citizens which disappeared by the past measures of the administration is reconstructed. And it is indispensable that citizens participate in the activity of a river. Point No.3 indicates that the cherry trees have the factor by which residents want to participate in the river. And No.4 indicates that users other than riverside ones can participate in a river where only riverside residents have been participating until now.

From the above, the point is not to manage all aspects of rivers, but how to divide the maintenance between the local government administration and the residents, after allowing nature to play its part. It will be hard to revive management of a river in areas such as irrigation and fishing. However, the participation of local residents in the management of a river is possible by adding factors in which they want to participate in the river for river improvement.

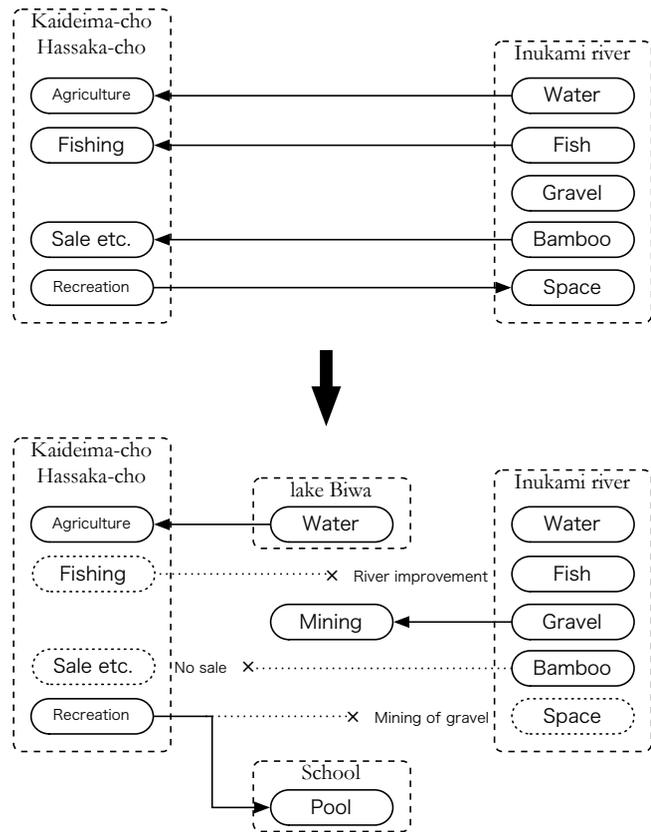


fig.3 Change of use in Inukami river

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