Depopulation and Rural Spacial Management: A Case Study in Shimoina County

Yukihiko Saito

Associate Professor, Faculty of Horticulture, Chiba University, Japan

Abstract

The purpose of this study is to clarify the depopulation issue in intermediate and mountainous areas from the perspectives of 1) the status and history of emigration of farming households, and 2) the management status of vacant houses and farm fields and the attributes of managers. The main results were as follows: 1) Since family members, including descendent and emigrated households, wanted to manage their vacant houses even if they live far away, the level of management tended to decline over successive generations. 2) There was a tendency to consign the management of, or to even sell off, farm fields to people other than close blood relatives. 3) The typical attributes of a manager were as follows: i) a relative or neighbor residing in the settlement (including unrelated persons), and ii) an emigrated, descendent, or related household residing typically in the same or adjacent municipality (mainly blood relatives). The study confirmed that the latter was important in vacant house management, and the former was important in farm field management.

The results suggest that some form of support is desirable, such as the networking of people involved in the management of vacant houses and farm fields.

Keywords: rural planning; vacant house; spatial management; depopulation

1. Introduction

In intermediate and mountainous areas, 1,712 settlements disappeared in the 20 years from 1960 to 1980, and it is estimated that over 2,000 settlements may disappear in the future (Note 1). Furthermore, many surviving settlements have seen some level of diminution in their jurisdiction due to the decline in farming and the shortage of labor, and deteriorations in their living conditions and crop production environment have been reported. On the other hand, in recent years, some areas have seen their local revitalization efforts flourish, encouraged by a new standing of rural areas expressed in such words as urban-rural exchange, green tourism, eco-museum, and satoyama management. Needless to say, it is important to elucidate the issues related to the planning of local revitalization and to promote studies in this area. However, for settlements lacking in will power or physical strength of the community to revitalize itself, it is desirable to develop a future planning method incorporating such factors as natural depopulation due to ageing and abandonment of the settlement's spatial management.

The purpose of this study is to clarify the depopulation in intermediate and mountainous areas from the perspectives of 1) the status and history of emigration of farming households to outside the area and 2) the management status of vacant houses and farm fields and the attributes of their managers. In other words, the author hopes to gain some knowledge useful for planned diminution or survival of settlements by analyzing the process of the disappearance of a settlement from the perspective of the decline of both population and spatial management.

In geography and agricultural economics, there have been studies related to depopulation and "entire household emigration" (where all members of a farming household emigrate out of a settlement) mainly during the period of high economic growth of the nation. In geography, there have been many studies of the spatial and social characteristics of the depopulation of each settlement. In agricultural economics, there have been many studies on analyzing the relationship between the agricultural infrastructure and the depopulation/disappearance of settlements using available statistical data, and on demonstrating the depopulation factors that would be applicable to a wider area (Note 2).

In architecture, there have been studies on the analysis of the correlation between depopulation and socio-natural factors [Aizawa and Ariizumi (1995), Numano (2000)], while an analysis of the reality of the disappearance of settlements by Kaneki et al. was a noteworthy study of nationwide depopulation trends [Kaneki (2003), Kaneki and Sakurai (2006)].

In relation mainly to farm field spatial management under a depopulation state, a study of the role of such management work by family members residing
outside the area and visiting the area occasionally [Hosoda et al. (2003)], and studies of the attributes of farming households in relation to the frequency of their spatial management work [Saito et al. (2000)] [Saito et al. (2001)] have been published. In terms of residential land management, Nakajima et al. and Yusa et al. published studies on the analysis of vacant house management in certain municipalities [Nakajima (2000)] [Yusa et al. (2006)].

However, there have been few studies on analyzing the processes and factors of changes in farm field and house management.

2. Study Methods

(1) Selection of Study Areas

Kaneki identified areas where many settlements were disappearing [Kaneki (2003)]. From among them, Shimoina County, Nagano Prefecture, was selected as the target of this study, because of its convenient temporal distance from our research institute. After referring to an almanac of municipalities [National Almanac of Municipalities (2001)] and conducting a telephone interview with the Ministry of Internal Affairs and Communications, the author selected Oshika Village, Kami Village, Minami-shinano Village, and Tenryu Village as the municipalities to be studied. These municipalities satisfied the following criteria: 1) the aged population accounts for over 40% of the total population as of the year 2000, and 2) the total population declined by more than 30% between 1970 and 2000. Based on the availability of convenient means of transport and the municipality's level of cooperation in the study, the author conducted interviews of the municipalities of Oshika Village, Kami Village, Minami-shinano Village, and Tenryu Village as the municipalities to be studied. These municipalities satisfied the following criteria: 1) the aged population accounts for over 40% of the total population as of the year 2000, and 2) the total population declined by more than 30% between 1970 and 2000. Based on the availability of convenient means of transport and the municipality's level of cooperation in the study, the author conducted interviews of the municipalities of Oshika Village, Kami Village, and Minami-shinano Village. (Note that Kami and Minami-shinano Villages had merged into Iida City by the time this paper was written.) Next, the author conducted on-site survey of the selected municipalities and chose one settlement from each municipality as the objects of the study. The criteria for making this selection were 1) significant depopulation was visibly observable, 2) the number of emigrated households exceeded that of current resident households, and 3) the cooperation of the representative of the settlement was obtainable. As a result, Settlement KJ, KM, SG were selected (see Figs.1., 2., and 3.).

(2) Overview of the Study Area and Survey Method

All the municipalities are located in the valley beyond the Ina Mountains that stretch from Ina Valley to the Southern Range of the Japan Alps. The topology is typically steep slopes that make farming conditions very severe. The temporal distance from the nearest urban area of Iida City center is one hour by car.

The author prepared a blank map from a topographic map of each settlement, conducted an observation of the land use and management status, and performed interviews of all households in the settlement (see the Tables 1., 2. and 3.)

The analysis method was as follows. First, the author collected and sorted the overall settlement-wide data on depopulation. Next, the author analyzed the attributes of the people who had emigrated from the settlement, the history leading up to their emigration, and the management status of their houses and farm fields (reported in Chapter 3). Lastly, the author compared the data of the three settlements and proposed suggestions for future planning, on the basis of the observation and knowledge of the structure of the depopulation process (reported in Chapter 4).

3. Results and Discussion

(1) Depopulation

In Settlement SG, the number of households decreased from 64 to 36 (down 56%) over approximately 55 years, and there were 36 resident households and 24 vacant houses. (Four houses had already been demolished.) Therefore, about 40% of the existing houses in the settlement were vacant.

In Settlement KJ, the number of households declined from 30 to three (down 90%) over approximately 40 years, and there were three resident households and 16 vacant houses. (Eleven houses had already been demolished.) Consequently, 85% of the houses in the settlement were vacant.

In Settlement KM, the number of households declined from 25 to 14 (down 44%) over approximately 50 years, and there were 14 resident households and ten vacant houses. (Two houses had already been demolished.) Therefore 46% of the existing houses in the settlement were vacant.

(2) History of Vacant Houses

1) Settlement SG

Of the 28 vacant houses in Settlement SG, five had become vacant during the previous five years, ten during the previous five to ten years, and 13 more than ten years previously. Of the 15 houses that had become vacant in the previous ten years, 11 had been occupied by a single aged resident; the major reasons for these houses becoming vacant were death of the resident in eight cases, and injury or illness due to ageing of the resident in four cases. In contrast, of the 13 houses that had become vacant over ten years ago, only two had been occupied by a single aged resident. Some reasons for vacating these houses were convenience of employment or schooling, emigration to other areas for agricultural pioneering, and fire. There were few cases of a house becoming vacant due to death or departure of a single aged resident, and in fact, many cases involved multiple, and not necessarily aged, members of a family departing the settlement together.

Of the houses that had become vacant in the previous ten years, the majority of households (five out of seven) moved to locations farther than adjacent municipalities (Iida and Minami-shinano). Of the houses that had become vacant more than ten years previously, five
households moved to locations farther than the adjacent municipalities for the following reasons: pioneering, relocation as part of a landslide prevention project, and house fire. Five other households moved to adjacent municipalities for convenience of employment or schooling.

2) Settlement KJ

Of the 17 vacant houses in Settlement KJ, five had become vacant in the previous five years, three in the five to ten years previously, and nine more than ten years previously. Of the eight houses that had become vacant in the previous ten years, six had been occupied by a single aged resident, and the reasons for the houses becoming vacant were death of the resident in one case, and injury or illness due to ageing of the resident in six cases. Of the ten houses that had become vacant in the previous 20 years, seven had been occupied by a single aged resident, and the reasons for the houses becoming vacant were death of the resident in one case, and injury or illness due to ageing of the resident in eight cases. Of the seven houses that had become vacant more than 20 years previously, only one had been occupied by a single aged resident, and the reasons of these seven houses becoming vacant were convenience of employment or schooling, and a resettlement project in five cases. Only one case involved death.

Among the houses that had become vacant in the previous ten years, three households had moved

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Table 2. Depopulation and Spatial Management of Settlement KJ

| Reference No. | House vacated X years ago | Occupants immediately before house became vacant | Reason behind house becoming vacant | Vacant house owner's place of residence | Vacant house manager | Farm field management status |
|---------------|---------------------------|-----------------------------------------------|-----------------------------------|----------------------------------------|---------------------|-----------------------------|
| KJ1 | 0 | Grandparents | Ageing illness | Ida City | Unknown | x |
| KJ2 | 0 | Grandfather | Ageing illness | Central settlement | Son | Δ |
| KJ3 | 3 | Grandmother | Ageing illness | Ida City | x | Δ |
| KJ4 | 4 | Grandmother | Ageing illness | Ida City | x | Δ |
| KJ5 | 5 | Grandfather | Ageing illness | Ida City | x | Δ |
| KJ6 | 7 | Grandfather | Death | Unknown | Relative | Δ |
| KJ7 | 8 | Grandparents | Convenience of employment | Ida City | x | Δ |
| KJ8 | 10 | Grandfather | Ageing illness | Central settlement | Son | x |
| KJ9 | 20 | Grandmother | Ageing illness | Central settlement | x | x |
| KJ10 | 20 | Grandfather | Ageing illness | Adjacent settlement | x | x |
| KJ11 | 30 | Grandmother, Parents | Convenience of employment | Same settlement | x | Δ |
| KJ12 | 30 | Parents, Child | Schooling | Central settlement | x | x |
| KJ13 | 40 | Parents, Child | Unknown | Central settlement | x | x |
| KJ14 | 40 | Parents, Child | Unknown | Central settlement | x | x |
| KJ15 | 40 | Unknown | Resettlement project | Within village | x | x |
| KJ16 | 40 | Unknown | Resettlement project | Within village | x | x |
| KJ17 | 40 | Unknown | Resettlement project | Within village | x | x |

| Single household | Within village | Δ | Ageing/illness | Partial management | Death |

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Table 1. Depopulation and Spatial Management of Settlement SG

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within the same municipality (to the central settlement of the same municipality), and four households had moved to an adjacent municipality (Iida City). Other than the single case of the resident's death, all seven households had migrated to nearby areas. In the cases of the houses becoming vacant over ten years previously, all but one household moved within the same municipality. The tendency of more households moving farther away in the previous ten years than over ten years previously was the same as in the other two settlements, but Settlement KJ had more cases of moves within the same municipality than the other two settlements. (Eleven out of 15 emigrated households from Settlement KJ, one out of 19 from Settlement SG, and two out of 15 from Settlement KM resettled in the respective original municipality.)

3) Settlement KM

The author analyzed the data of the 11 currently vacant houses plus the houses that had become vacant before the migration of newcomers in Settlement KM. Of the total of 18 vacant houses, four had become vacant in the previous five years, zero in the five to ten years previously, and 14 more than ten years previously. In the case of Settlements SG and KJ, half of the currently vacant houses had become vacant in the previous ten years. In Settlement KM, the majority of houses (seven) had become vacant 20 to 30 years previously. Of the four houses that had become vacant in the previous ten years, two had been occupied by a single aged resident. The reasons for the houses becoming vacant were death in one case, and injury or illness due to ageing in three cases. Of the ten houses that had become vacant more than twenty years ago, only three had been occupied by a single aged resident; convenience of employment or schooling (in five cases) and agricultural pioneering (in two cases) were the prevalent reasons for the houses becoming vacant. Of the ten houses that had become vacant more than 20 years previously, many of the households moved within the same municipality (two cases) or to adjacent municipalities (three cases).

In the case of the houses becoming vacant in the previous 20 years, more households (five) migrated to farther than the adjacent municipalities, indicating an increase in the distance of migration, which is the same tendency as was observed in Settlement SG.

4) Section Summary

In Settlement SG, more houses had become vacant due to ageing in the previous ten years, but in Settlements KJ and KM, more houses had become vacant due to ageing in the previous 20 years. It was assumed that houses had become vacant due to ageing earlier in smaller settlements (KJ and KM) than in larger ones. However, in Settlement KM, due to the influx of newcomers, the number of resident households was higher than that in Settlement KJ (three in KJ, 14 in KM), and the basic functions of a settlement seemed to be preserved. Settlement KJ was observed to have had more moves (11 out of 15) within the same municipality than Settlement SG or KM. The reason for this was hypothesized to be that the economic infrastructure of Minami-shinano Village where Settlement KJ was located was better than that of Oshika Village where Settlement KM was located or that of Kami Village where Settlement SG was located. Therefore, the residents in Settlement KJ were able to sustain a living by moving within the village.

3) Management of Vacant Houses and Farm Fields

1) Settlement SG

Firstly, in Settlement SG, the number of vacant houses, of which management had been abandoned, was high (six out of seven) among the houses that had become vacant ten or more years previously. The number of houses that had become vacant ten or more years previously and that were still being managed
(including the cases of reconstruction and vacant lots) was low (six out of 17). All ten houses that had become vacant eight or less years previously were still being managed. Houses that had become vacant in the previous two years were managed with four to five maintenance tasks being carried out per year, confirming the tendency that vacant house management becomes increasingly sporadic over the years, but that recently vacated houses are managed more frequently.

Secondly, most of the vacant house managers were emigrated or descendent households. However, of the houses that had become vacant 40 or more years previously, three cases where relatives or neighbors in the settlement had bought the houses and were still managing them were observed. There were two cases where the vacant houses were rented to mountain climbing gear shops headquartered in Iida City. These findings suggested that there had been a time when engaging in agriculture and living in the settlement were more justifiable than now, and it had been meaningful to buy vacant houses and farm fields to increase assets.

Of the managers of the sixteen managed vacant houses, with the exception of the three who lived outside the prefecture (Tokyo and Aichi prefectures) most lived within Shimoina County. In particular, three lived within the same municipality and seven within Iida City. This suggested that descendent generations and relatives had the tendency to settle within the same or adjacent municipalities. Of the seven non-managed vacant houses, excluding those where the manager was unknown, only two out of six managers lived outside the prefecture, contradicting the hypothesis that distance might be the reason for not managing the vacant houses.

In terms of farm field management, there were only five cases of complete abandonment, and the rest were cases of some degree of management. Where the houses had become vacant in the previous ten years, five were cases where descendent or emigrated households or relatives commuted from outside the settlement to manage the field. In the majority of cases where the houses had become vacant over ten years previously (nine out of 12 cases of farm fields being managed), relatives or neighbors residing in the settlement had rented or bought the field. In particular, in this settlement, nine out of 12 farm field managers were neighbors. In cases where the field is not managed, there is no tendency related to the generation of a manager. Other than the one case where the manager of the field attached to a house that had become vacant five years previously resided in Iida City, the rest of the managers resided farther away than this and adjacent municipalities, specifically, in Aichi Prefecture, Tokyo, Takamori Town, and Iijima Town. It was assumed that it was difficult for these managers, who lived farther away than adjacent municipalities, to continue farming by visitation for a long time. Therefore, a strong tendency of the responsibility of farm field management being born by parties residing in the settlement was observed. Furthermore, the author observed that there were few cases of family graves being moved, other than cases where the entire family had departed from the settlement as part of landslide prevention or agricultural pioneering projects. Communication between relatives was preserved in most cases. Visits to graves and communication with relatives were not abandoned in many cases where the management of vacant houses and farm fields had been abandoned or transferred to unrelated parties.

2) Settlement KJ

In Settlement KJ, most of the houses that had become vacant over 20 years previously were no longer being managed. Of the total of 17 vacant houses, only seven were being managed. Aside from the cases where a construction company was renting vacant houses, most vacant houses were managed by descendent or emigrated households residing outside the settlement. In contrast to Settlement SG, no case of resident's buying a vacant house was found in Settlement KJ. Where vacant houses were being managed, the managers were descendent or emigrated households or relatives residing in Iida City or the central settlement of the same municipality. In contrast to Settlement KM, Settlement KJ did not have vacant houses being managed by newcomers or relatives, and there were many vacant houses that were not being managed.

In terms of farm field management, there was only one case where the farm field had become vacant over ten years previously but was still being managed. The ratio of managed farm fields was lower than in Settlement SG (and Settlement KM) where there was still a network of relatives and neighbors to manage farm fields in their settlement. On the contrary, more cases of "farming by visitation" from outside the settlement were found in Settlement KJ. The reasons for this were assumed to be that tea farms are easy to maintain, and that many people had moved within the same municipality. The parties maintaining the farm fields were emigrated or descendent households or relatives, and their place of residence was either Iida City or the central settlement.

3) Settlement KM

Data of vacant house management from Settlement KM showed that there were five cases of demolition/abandonment and seven cases of management by relatives or descendent households, excluding the cases of newcomers moving in. There was a tendency of a high ratio of abandonment/demolition among the cases where the houses had become vacant more than 20 years previously. However, in general, vacant houses tended to be managed. (Five out of 18 vacant houses were abandoned/demolished.)

There was only one case where the manager resided in the settlement. This demonstrated a different
tendency than that seen in Settlement SG where relatives or neighbors residing in the settlement had bought and were managing vacant houses. In Settlement SG, although the population was ageing, the number of households was still sufficiently high, and a network of relatives and neighbors still remained. These factors were thought to be the reasons behind vacant houses being managed. In contrast to Settlement KJ, the increase of vacant houses was abated in Settlement KM by newcomers moving in. (Of the total of 18 once-vacant houses, six are now occupied by newcomers.) The number of managers residing outside the settlement was one each in Aichi Prefecture, Shizuoka Prefecture, Okaya City, Ina City, and the same municipality.

In terms of farm field management, seven cases were considered abandoned and six (three, excluding the cases of newcomers) were considered managed. The ratio of abandoned farm fields was greater than in Settlement SG but lower than in Settlement KJ. Of the eight managed cases, seven were managed by managers residing in the settlement, and the remaining one was managed by a manager residing in the same municipality, reflecting the tendency that farm fields were well-managed by residents of the settlement. The ratio of "farming by visitation" from outside the settlement was lower than in Settlements SG and KM. The reason why the ratio of managed fields was higher in Settlement KM than in Settlement KJ was because newcomers managed some fields. Settlement KM was found to be a community where the capability to tend its farm fields is not completely lost; the same could be said of Settlement SG.

4) Section Summary

Many houses that had become vacant more than ten years previously were not being managed in Settlements SG or KJ, and many houses that had become vacant more than 20 years previously were not being managed in Settlement KM. The level of management was highest in Settlement SG and lowest in Settlement KJ, with that in Settlement KM being in the middle. The managers of vacant houses in Settlement SG were relatives and neighbors residing in the settlement who had bought the houses, and descendant or emigrated households residing outside the settlement. The managers of vacant houses in Settlement KM were newcomers who had bought or leased the houses, and descendant or emigrated households residing outside the settlement. The managers of vacant houses in Settlement KJ were newcomers who had bought or leased the houses, and descendant or emigrated households residing outside the settlement. The managers of managed vacant houses in Settlements SG and KJ lived mostly in the same or adjacent municipalities within Shimoioina County. In contrast, the managers of managed vacant houses in Settlement KM tended to reside farther away than adjacent municipalities. Settlement KM demonstrated a tendency of emigration to a wider area than did the other two settlements. An examination of the places of residence of the managers of essentially unmanaged vacant houses indicated that the distance from the settlement might not necessarily be the decisive factor behind the non-management of the house (data from Settlement SG only).

The level of farm field management was highest in Settlement SG and lowest in Settlement KJ, with that in Settlement KM being in the middle. In Settlement SG, farm field management was thought to be consignable or transferable by sale to relatives or neighbors residing in the settlement, and therefore, farm field management had not necessarily become neglected over the years. In the cases of houses which had become vacant in the previous ten years, the management of the farm field tended to be performed by emigrated or descendent households residing outside the settlement. In the cases of houses which had become vacant more than ten years previously, the farm fields tended to be managed by neighbors or relatives residing in the settlement who had rented the fields from the owners. In the cases of houses which had become vacant more than 30 years previously, the farm fields tended to be managed by neighbors or relatives residing in the settlement, who had bought the fields from the previous owners. In Settlement KM, newcomers mainly carried out farm field management, and there were few cases of "farming by visitation" by managers who resided outside the settlement. In Settlement KJ, farm fields were managed by emigrated or descendent households, and there was a tendency for the management to become increasingly neglectful over the years. Where the farm fields were still being managed, the managers mainly resided in the settlement or in adjacent municipalities in the case of Settlement SG. The managers resided in the same or adjacent municipalities, but not in the settlement itself, in the case of Settlement KJ. The managers resided mainly within the settlement in the case of Settlement KM. In short, the author observed "farming by visitation" from faraway locations only in Settlement SG. Where farm field management was being neglected, the managers tended to live farther away than adjacent municipalities, and the correlation was stronger with the place of residence than with the generation of the managers.

4. Conclusions

The study clarified the current status of depopulation, vacant house management, and farm field management in three settlements. From the results, the following conclusions were drawn.

Firstly, descendant or emigrated households made an effort to maintain their vacant house management even when they lived far from the settlement, and with the exception of the newcomers in Settlement KM, vacant houses tended to become neglected over the years. Therefore, the correlation was stronger with
the generation than with the place of residence of the managers.

Secondly, farm field managers were not limited to descendent households or closely related blood relations. It was acceptable to ask relatives, neighbors, and newcomers residing in the settlement to manage or even buy the farm fields. Therefore, if a relative or neighbor willing to do either of the above could be found in the settlement, the level of management was maintained regardless of the generation of the manager. However, if a manager could not be found, farm field management was performed in conjunction with vacant house management, and the level of management tended to decline over generations. In the case where a manager was found in the settlement, the correlation is stronger with the place of residence than with the generation of the manager.

Lastly for continual management of the many vacant houses and farm fields in the settlements, the important factor is whether or not the relatives and neighbors in the settlements have the capacity to be the managers of these houses and fields. The next important factor is the presence of emigrated, descendent, or related households in the same or adjacent municipalities. In other words, the human network of residents in the settlement, including unrelated neighbors, and the human network of residents in the adjacent area consisting mainly of blood relations, which was formed as a result of depopulation, were found to be the supporting pillars of vacant house and farm field management. The study confirmed the following. For a vacant house for which frequent maintenance work is not required but which is a symbol of the continuation of a family or extended family, the latter type of network is more important; and for a farm field for which frequent maintenance work is required but for which emotional attachment is weaker, the former is more important. It is essential to develop new ways of vacant house and farm field management, such as a vacant house bank, promotion of settlement by new residents, and citizen's farms. On the other hand, there are numerous houses and farm fields that become dilapidated before being put to new use. The results of this study suggested that a settlement-wide effort to support and preserve such human networks is necessary. In other words, it can be said that there is a need to recognize and support a lifestyle where house/field managers visit the settlements to manage their properties and live within or near the settlement depending on the season.

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Endnotes

1. See reference 6).
2. See references 13), 14) for geographic studies, and 3), 7) for agricultural economic studies.
3. The preliminary interviews in the three settlements were conducted in August 2005, the survey and interviews in Settlements KM and KJ were conducted in September 2005, and those in Settlement SG in March 2006. In Settlements KM and KJ, the author conducted interviews of ten and three households, respectively, excluding those that refused to cooperate with the survey, or that were not at home at the time. In Settlement SG, because of the limited number of days allocated to the survey, the author conducted interviews of twelve households, excluding those that refused to cooperate with the survey, or that were not at home at the time, by interviewing relatives of households whose houses had become vacant, officials of the settlement autonomy organization, and officials of a village revitalization organization.