



# Recontextualizing Wildlife Management to Community Revitalization

# 6

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## Abstract

In rural Japanese communities undergoing depopulation and aging, human–wildlife conflicts are becoming a serious social issue, giving rise to concerns about the sustainability of these communities. To resolve this issue, research on and implementation of community-based wildlife damage management are advancing and achieving results in some communities. There are many communities, on the other hand, where the results are not turning out as expected. Sociological research on underlying values among citizens in these areas has indicated a diversity of values regarding wildlife and countermeasures to human–wildlife conflicts, and limits to approaches aiming solely to reduce human–wildlife conflicts. As depopulation and aging are expected to continue across these regions in the future, what will be needed is an approach that aims to connect all of the immediate issues being faced locally with issues regarding inclusive and effective solutions to human–wildlife conflicts. Effective solutions must also resolve these issues while designing site-specific processes in service to community revitalization. Also, it is anticipated that not only will the people affected by human–wildlife conflicts collaborate, but also too will people with diverse skills and knowledge. As such, through collaborative, co-creation of methods by which the community can be enlivened, given the impetus for inclusive solutions to human–wildlife conflicts, they may also create new goods, services, and values that have not been seen before in the rural communities of Japan. While the demand to resolve the social issue of human–wildlife conflicts in Japan grows bigger on the one hand, a problem exists with regard to insufficiencies of human resources and institutions in Japan’s local government bodies that have expertise in these best practices. In the future, a role

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for social sectors is anticipated in supporting local inclusive and effective solutions to human–wildlife conflicts, themselves in service to community revitalization while teaming up with local government bodies and other organizations involved.

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**Keywords**

Human-wildlife conflict · Social sector · Satoyama · Pluralistic values · Co-creation

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## **6.1 Human–Wildlife Conflicts in Rural Japan**

### **6.1.1 Japan’s Depopulating Rural Communities and Human–Wildlife Conflicts**

The landscapes of Japan’s rural communities are known to have been maintained through the daily lives of rural citizens engaging in activities such as farming the fields and paddies (including *nora*), coppicing in the hills, and clearing weeds from field borders and streams. These historical activities were in response to demand for life resources such as food, clothing, and other materials; agricultural resources such as fodder and fertilizer; and energy resources such as firewood that were necessary for people’s lives. Such landscape, which has historical interaction of human and nature, is called *satoyama*. *Satoyama* covers agricultural (*nora*), village area (*mura*), and forests (*yama*).

*Satoyama* was a place that was used and managed as a cooperative system, where festivals and rituals were conducted to give prayers and thanks for the harvest or console the spirits of the deceased. The demand for these “cultural resources,” however, has gradually faded in importance due to modernization of lifestyles and agriculture such as revolutions in fuels and fertilizers and development of distribution systems. Furthermore, Japan’s rural areas have led the world in population decline and aging. As a result, village functions have declined, and it has become hard for them to maintain the *satoyama* landscape and the traditional rites and festivals that have been passed down from long ago. Now, yet another problem is adding to their troubles, that is damage to agriculture and forestry caused by wildlife.

In recent years, there has been a sharp increase in conflicts between wildlife and human activities in many parts of the world. Across rural regions of Japan, the main animals causing damage include the sika deer (*Cervus nippon*), Japanese wild boar (*Sus scrofa*), and Japanese macaque (*Macaca fuscata*), which are causing serious problems by damaging agriculture and forestry and diminishing human quality of life. According to Japan’s Ministry of Agriculture, Forestry and Fisheries (MAFF), damage caused by mammalian wildlife amounts to about 16.1 billion yen in 2020. The seriousness of the economic damage to local agriculture and forestry goes without saying, but what cannot be overlooked is the impact on daily life when

wild animals invade villages and the noneconomic damage to household vegetable gardens cultivated diligently by communities' aged citizens day by day.

For example, by digging up embankments and ridges between rice fields, wild boars ruin farm roads, and agricultural waterways, necessitating expenditures of large amounts of money and labor to repair. Non-native nutrias (*Myocastor coypus*) build nests by tunneling into embankments of rivers and small reservoirs, giving rise to concerns about cave-ins or collapses. Macaques even invade people's homes, entering storerooms and houses and damaging parts of the buildings. In not a few areas, people face danger close at hand from physical harm by Asian black bears (*Ursus thibetanus*) that invade their backyards to eat persimmons growing on trees in their gardens. In areas where sika deer numbers are growing, their grazing causes understory vegetation to decline on mountain slopes near villages, resulting in loss of the forest's water retention faculty, increasing the risk of soil runoff and other issues.

An even worse impact is the harm done to local agriculture for personal use. Farming for personal use has enriched the daily meals of families since ancient times and is part of their lives and cultural traditions. It also provides joy and a sense of purpose to older people in the community. In many of Japan's rural communities these days, it is not difficult to obtain vegetables from supermarkets and other stores, but the luxury of being able to grow food for oneself, harvest fresh, juicy vegetables and prepare and serve them that very day is the true charm of farming village life. There are many people who continue farming not only for their own household's consumption, but also from a wish to provide fresh vegetables that their children and grandchildren can enjoy without worry (Suzuki and Muroyama 2010). Having others enjoy the produce and hearing them joyfully exclaim "that was delicious" provides an incentive for some of them to keep farming.

Currently, human-wildlife conflicts are recognized as the most serious problem facing Japan's rural communities, but it is not only an economic impact expressible in terms of monetary damage. The negative impacts from wildlife affect not only farms, but also citizen safety and security and include many forms of diminishment of the prosperity and well-being of rural community life. If wildlife repeatedly damages the fields that residents have put arduous work into, they gradually lose what little joy there is in harvesting their own fields, and some farming families have abandoned the fields they had been cultivating until recently. To make matters worse, in rural communities where depopulation and aging are progressing, there is a shortage of manpower available for human-wildlife conflict resolution. If not enough context-specific solutions can be implemented as that shortage progresses further, the damage becomes more and more serious, and the number of people giving up farming increases further. Young people attracted to rural communities who move in and newly take up farming find "no one can farm in such a place," and they give up and leave the community. As a result, rural communities become more and more impoverished. Human-wildlife conflicts threaten the continued existence of rural communities, not to mention the will to engage in farming.

### 6.1.2 Local Factors Exacerbating Human–Wildlife Conflicts

The role played by local citizens is considered important where human–wildlife conflicts are a problem in Japan, as in many activities concerning environmental conservation. When considering factors in the occurrence of damage caused by wildlife, increasing numbers of animals are not necessarily the sole cause. Rather, it is thought that the villages themselves have environments that attract wildlife, and therefore, their habitat distribution shifts toward areas of human habitation.

To wildlife that live by seeking out small amounts of food in forests, farmed vegetables, fruit, and other crops high in nutrition and digestibility are an attractive food source like nothing that has ever existed in the forest. The edible parts of crops are abundant as well, and they are cultivated intensively in farmlands, which can thus be said to have extremely high feeding efficiency and thus an ideal place for wildlife to eat. What these wild animals are feeding on in the villages consists not only of produce needed by people for food. There are also many trees around the villages such as persimmon and chestnut that people are not currently utilizing for food. Unharvested vegetables past their prime may be left in the field, or there may be places where food scraps, vegetable waste, and such are dumped at the side of the fields or in the village that wildlife feeds on (Fig. 6.1). These include things that people do not “sense as damage,” but they are a high-quality source of food for wildlife, and villages with an assemblage of these kinds of feeding places can be said to be a highly attractive environment that does not exist in the forest.

While villages have favorable conditions in terms of food, they also have disadvantages such as frequent chances to encounter people, dogs, and other dangers, making it difficult for wild animals to ensure their own physical safety. However, depopulation and aging of rural communities have proceeded in recent



**Fig. 6.1** A troop of monkeys relaxed and eating in the vegetable garden

years and new rules require dog owners to keep their pets tethered. The *satoyama* groves are no longer being maintained, so thick bamboo forests and copses are spreading to the immediate vicinity of villages. These help wildlife approach closer to villages through abandoned agricultural lands (*nora*), which increase year by year, and thus providing further cover for wildlife entering villages (*mura*) areas.

Even where tangible technology is employed to prevent damage, many issues arise. For example, protective fences can be an excellent countermeasure if used properly, with high immediate effect. If fences are built using wire netting or other netting materials that are too high for animals to cross over, penetration by animals can be physically blocked. For macaques and other able tree-climbers, electric fences, in which high-voltage current is passed through electric wires set at certain intervals in the fence, providing an electric shock whenever touched, are an effective device for preventing penetration beyond the fence. Recently, various protective fences have been developed that provide protection against animals with different behavioral characteristics, and the cost of installing them has become quite cheap compared to initially. However, the characteristics of the fences' structure and the nature of the animals they guard against are not fully understood yet, and there have been not a few instances where trouble was taken to install effective protective fences only to find their function could not be fully achieved (Suzuki 2007, 2009, Suzuki and Muroyama 2010).

There is also a method of protecting not only individual farmlands, but entire villages by installing sturdy permanent fences of tough material like metal netting, spanning long distances such as along forest edges and through mountainous areas. The greater the scope of the fences installed, the broader the area protected by them, so at first glance they look like an effective countermeasure. What one has to pay attention to first, however, is that protective fences are installed for long periods outdoors where they are exposed to the elements, so if they are left untended problems will inevitably arise such as damage from falling trees, causing breaches through which wildlife can find ways to enter (Fig. 6.2). For that reason, to maintain the fences' effectiveness, it is absolutely crucial that the citizens perform the task of checking them on a daily basis, and the larger the scope of the fence the bigger that burden will be. Long fences also cost a lot, so almost all of them have been built using subsidies from the national or local governments, but thus far almost no information has been presented beforehand about what is involved in their maintenance. As a result, the villages fail to establish sufficient systems for checking and repairing these fences, resulting in gradual loss of their effectiveness in many cases. On the other hand, villages that assign responsibilities and conduct regular inspections, making efforts such as quick remedial action when problems are discovered, and soundly establish a system for maintaining their protective fences (Fig. 6.3) demonstrate high effectiveness over the long term. Even so, villages where depopulation and aging are progressing are likely to face shortages of people able to undertake this as the years goes by and many community members have concerns about continuing maintenance in the future.



**Fig. 6.2** The tree fell down and breached the fence to prevent wildlife

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## **6.2 Re-Contextualizing Wildlife Management in Pluralistic Values**

### **6.2.1 Promoting Community-Based Wildlife Damage Management and Issues Involved**

In recent years, an evolving set of principles and practices has been presented in wildlife damage management, which are gaining respect on the scene for solving Japan's human-wildlife conflict issues. These practices seek to prevent wildlife damage efficaciously: By using knowledge of the ecology and behavior of the wildlife involved and by incorporating the actions of the farmers and other local citizens, as mentioned above, as integral factors in addressing wildlife damage (Inoue 2002; Muroyama 2003). Also, regarding the actions of farmers that are at issue, the necessity to provide a support system offering appropriate knowledge and information has been pointed out (Inoue 2002), and activities aimed at creating villages resilient to damage from wildlife under the concept of "village-wide" have shown increasing popularity across Japan during the past 15 years. The community unites as one for these activities, with the citizens themselves studying knowledge on factors in the occurrence of damage and implementing countermeasures to the damage, not leaving it up to the government to take measures for reducing the damage occurring in villages or individual farmlands.

Recently, the number of researchers and people engaged in businesses related to resident-led damage control has been increasing. Development of explicit

**Fig. 6.3** Local citizens maintaining fences



technologies that communities can implement, such as ways of managing farms that do not attract wildlife and effective protective fences developed on the basis of behavioral characteristics, and activities to propagate them are gradually increasing. In addition, human resource development through workshops on human–wildlife conflict solutions making use of this knowhow and financial support such as subsidized projects are becoming more substantial year by year. Research results establishing the effectiveness of community-based human–wildlife conflict countermeasures have also been accruing (Saitoh et al. 2006; Yamabata 2010a; Yamada 2012; Suzuki et al. 2013), and conducting human–wildlife conflict countermeasures, village-wide with the community united together, is rated as a desirable method for efficiently reducing human–wildlife conflicts. Recently, villages have been noted that have made use of this support and successfully reduced human–wildlife conflicts, and they are beginning to be introduced as a model for other villages to aim for.

However, while some villages are reporting successes from efforts like these, there are many cases in which the district overall has difficulty making progress in countermeasures. In not a few cases, even methods that have worked well in some districts have had no effect at all when introduced in other districts. In the shadow of

each success, many failures lurk in obscurity. What problems are happening in the places where human–wildlife conflict countermeasures have been implemented? When places implementing human–wildlife conflict countermeasures were investigated, promoting enforcement of countermeasures to human–wildlife conflicts—a serious issue in farming and mountain districts—appears to match the goals of the community’s citizens, but current conditions have arisen in which enforcement of these countermeasures is not necessarily accepted unconditionally.

### **6.2.2 At “Variance” With Communities’ Diverse Values**

Sociological research in recent years on dominant values among the residents of rural communities has indicated the existence of diversity in values regarding wildlife and human–wildlife conflict countermeasures. For example, even if human–wildlife conflict occurs, the residents’ attitude toward it may not necessarily be negative. Diverse values exist, including affirmative values such as “They’re charming” or “They live here,” despite the damage being done (Maruyama 1997; Akahoshi 2004; Suzuki 2007). From the standpoint of implementing human–wildlife conflict solutions, in agriculture giving priority to social or spiritual values rather than economic incentives, such as farming for personal use, the value of the harvest may be obscure, and there are cases in which “damage is tolerated” where countermeasures could be taken (Suzuki 2007, 2009, Suzuki and Muroyama 2010). In the case of full-time farmers, on the other hand, it has been pointed out that they have the rational option of “taking no countermeasures” when making individual business decisions on measures that would not contribute directly to higher earnings, such as removal of things that attract wildlife, such as abandoned fruit trees that provide food for wildlife in winter (Suzuki 2013).

To reduce damage to oneself, it is natural to turn to self-supporting efforts, but the decision by affected farmers on whether or not to implement human–wildlife conflict countermeasures can be considered to be made on the basis of the projected results gained versus the necessary costs in terms of labor, time, money, and so on. For countermeasures that directly guard crops, such as protective fences, it is easy to calculate the value gained for the costs paid. However, countermeasure options such as control of abandoned fruit trees and other extant resources attracting wildlife within villages or maintaining forest-edge environments that make it difficult for wild animals to approach constitute measures expected to have indirect damage reduction effects, and the anticipated results for the costs paid by the farmers are indistinct. In addition, awareness of the value of the results gained through these countermeasures is inconsistent. There are differences between full-time and avocational farmers, of course, and differences among people farming for personal use in terms of how the harvest is used and the amounts needed, and these differ again for each type of item harvested (Suzuki 2007). Moreover, many villages, in fact, include non-farming families too.

Village-wide solutions are effective at reducing human–wildlife conflict efficiently, but they require a targeted space and lots of work so they exert large social



and economic costs on communities. With regard to this, diverse values exist within communities. Also, human–wildlife conflicts are only one of many problems villages face, so in not a few cases “efficacy” for reducing human–wildlife conflicts may not be given top priority. The existence of such “variances” is a factor impeding the promotion of community-based human–wildlife conflict countermeasures.

Recently, where various environmental conservation-related projects have been carried out, problems have arisen as a result of “variances” between the values/ways of reckoning that have formed over the course of the history of the activities of a community’s citizens and the goals/approaches deemed scientifically or socially “appropriate.” The need for methods and schemes for recognizing such “variances” and rectifying them has been pointed out (Miyauchi 2013). Many districts where human–wildlife conflicts are occurring have insufficient knowledge and technology currently regarding human–wildlife conflict countermeasures, and one important course of action in the future will be popularizing and propagating the latest knowledge so that the citizens can easily make use of it. Even in cases where interest in community-based human–wildlife conflict solutions is low initially, there has been empirical research on raising citizens’ awareness that has arisen from honest propagation efforts (Yamabata 2010b). It has been shown, however, that examples exist in which it was difficult to raise citizens’ willingness to undertake this simply by providing knowledge and information on technology alone (Suzuki 2007). Also, in farming and mountain villages, resolving human–wildlife conflict issues is only one of various problems communities face, so there are indications that an approach is needed that looks at concerns familiar to each community’s citizens (Makino 2010).

### **6.2.3 Re-Contextualization From Human–Wildlife Conflict Solutions Toward Community Revitalization**

In coping with human–wildlife conflict issues, community-based solutions are essential. Even then, however, rural communities face depopulation and aging along with reduced village functions due to modernization of lifestyles and agriculture, as well as conditions in which it is difficult to maintain rural community resources. Furthermore, community values are diverse, never presenting conditions in which monolithic efforts would work in human–wildlife conflict solutions.

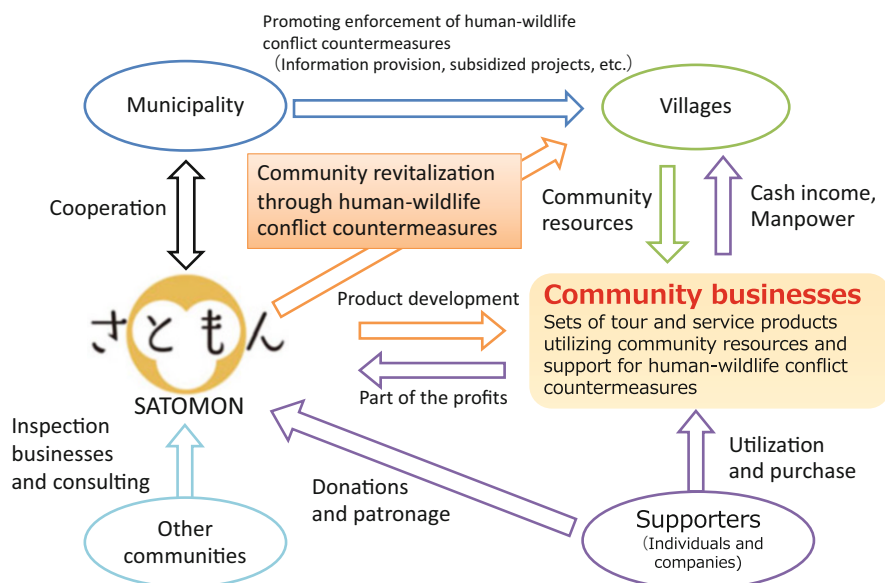
As depopulation and aging are expected to advance more and more in the future, how should the goals and approaches of human–wildlife conflict solutions be assessed? To escape from the vicious circle caused by human–wildlife conflicts in rural communities, an approach has been proposed that aims to solve the problem by linking human–wildlife conflict solutions with all of the familiar issues these communities are facing in their own context, while designing a process for recontextualizing appropriate solutions in the direction of “community revitalization” (Suzuki 2013). In addition, the necessity has been suggested that social sectors acting as intermediaries provide support for these kinds of efforts in a cooperative relationship with local governments (Suzuki 2017).

## 6.3 Co-Creation Through Social Sectors

### 6.3.1 Intermediary Support Aimed for By Social Sectors

Along this line of thinking, I teamed up with local citizens and activists supporting them, who were confronting worsening human–wildlife conflicts in the vicinity of Tambasayama City, Hyogo Prefecture, in west-central Japan west of Kyoto to establish a nonprofit organization, *Satochi Satoyama Mondai Kenkyusho* (Research Institute for the Sustainable Advancement of Traditional Outlying and Mountainous Neighborhoods, SATOMON for short), in Tambasayama in May 2015.

In teaming up with local municipalities and other organizations involved in and supporting communities' human–wildlife conflict solutions from a standpoint familiar to local community members, what SATOMON aims for is a model in which human–wildlife conflict countermeasures are used as an impetus for enlivening the community. Specifically, we aim to identify attractive features such as *satoyama* life and abundant seasonal agricultural and forestry products, to create related products, and through measures such as supporting local community businesses, develop a variety of businesses that can contribute to community revitalization. Together with the communities' citizens, we aim to convey the richness of the rural communities that they wish to continue protecting from human–wildlife conflicts, guard and share them together with people who sympathize with them, build networks to inherit them, and create social business models for their sustainable management (Fig. 6.4).



**Fig. 6.4** The social business model SATOMON is working towards



**Fig. 6.5** A owner family harvesting black soybeans with smile

Specifically, on a daily basis, we are maintaining a website, dispatching information via SNS, and publishing an e-mail magazine to attract and maintain supporters. We are also introducing efforts to resolve issues affecting the *satoyama* and other rural areas, such as human–wildlife conflicts, and preparing a variety of venues for involvement of outside human resources who are interested in helping.

For example, while it would be desirable for the communities themselves to take the lead in implementing human–wildlife conflict countermeasures, they lack sufficient manpower for their own citizens to handle it. Therefore, we provide a list of human–wildlife conflict countermeasure options (such as bamboo forest and *satoyama* grove maintenance, measures against abandoned fruit trees, and inspection of protective fences in mountainous areas) and hold events for people supporting human–wildlife conflict countermeasures, matching urban citizens interested in rural community life with ways they can help. For people who have attended one event and have further interest, we have plans for an ownership system through which they can become involved in crop cultivation, making use of abandoned farmland and thereby protecting it from human–wildlife conflicts (Black Soybean Ownership System—featuring a local specialty)(Fig. 6.5) and are continuing to hold bi-weekly volunteer activities (Fig. 6.6). Through these and other activities, we are also creating a system that enables support to be provided to communities from afar through things such as sales of crops protected against human–wildlife conflicts, which can also sustain and expand their connection with the communities, in which urban citizens can participate in ways suited to their own interests and concerns.



**Fig. 6.6** Building protective fences around the rice field with volunteers

### **6.3.2 Linking Rural Communities and Cities Together in a Gift-Gift Relationship**

Increasing the involvement of those living outside the region often means that they bring relevant knowledge and capacity to community revitalization efforts. These contributions, in turn, are reciprocated through the acceptance of outsiders into the community. For example, in the following responses to our questionnaire survey by urban citizens who had participated in a community's ownership system for 1 year, sympathy and affection for the communities' agriculture and lifestyle values can be seen, with the realization that these should be protected from human–wildlife conflicts.

The information I could receive regularly, even regarding activities aside from events, and observing the growth process of the black soybeans made me aware of the difficulty of raising crops and hard work involved in harvesting them, and the beans we actually harvested and ate were delicious like nothing I've ever had before!! I have been able to learn many things about human-wildlife conflict solutions, and have gained a keen sense of the importance of activities to preserve Japan's agriculture and traditional foods. (Ms. O, Itami City)

By experiencing black soybean production, I was able to get a sense of the thoughts of the people producing them for us. I became aware of how grateful we should be for agricultural crops. Moreover, they were delicious! (Ms. Y, Osaka City)

Until now, I thought that black soybeans were expensive, but when I found out the truth of how much sweat and toil goes into their production, I think they'd be a good deal at even higher prices. (Ms. I, Akashi City)

Until now, my thoughts on wild animals were "How cute!" But I got a sense of how difficult it is to coexist with nature. I became acquainted with the other participants and am really glad—it's like I have my own hometown in the countryside now. (Ms. H, Kobe City)

I took a stroll through the community and became aware of how full of treasures it is, not just the crops, but also the spiritual and local historical aspects. I think how truly awesome the density of these treasures is—they are all over the place. (Mr. A, Sapporo City)

From the communities' point of view as well, the local citizens gave their impressions about having received volunteer support and participation in events from outsiders and their contributions, as follows.

Every year, the resident living alone next door has the rice fields she has devoted the utmost care to torn up by wild boars and has to repair them repeatedly. It was getting to the point that she was losing her will to keep farming. This time, she received help. Thank you so much. My heart was so gladdened. (Beneficiary of volunteer work to repair a protective fence). (Ms. Y, Tambasayama City)

In Tambasayama we have Tamba chestnuts, *matsutake* mushrooms and many other diverse specialties. Of course, we also produce delicious rice not bested even by the famous rice from Uonuma in Niigata Prefecture, so if you are in the market for rice from other areas, buy some from our area. (Mr. M, Tambasayama City)

We have benefited from interest by people from the city in the countryside and have seen many different ways of thinking. Just killing off pests to reduce their numbers as we've always done is not the only solution. I think we should consider how to set up our farmlands and local environment so that animals and humans can coexist here. (Mr. K, Tambasayama City)

In rural communities where depopulation and aging are advancing, the functions of villages are decreasing, and they face difficulties not only with finding human-wildlife conflict solutions, but also with sustaining their *sato-yama* landscapes and resources that were previously maintained through involvement in utilization. Currently, with the modernization of lifestyles and industries, values underlain by farming and lifestyles have diversified among citizens of communities facing human-wildlife conflicts. In other words, each community's conception of "what kind of farming and lifestyles to protect" from human-wildlife conflicts is becoming if anything more obscure.

In this context, making use of the vantage point of outsiders and their values related to nature can lead communities to see their own attractions and discover or

imagine new resources they previously had not realized they had. As the values of outsiders deepen their relationship with these local communities, they continue to shape the communities' future image and vision of what they would like to protect and to pass along to younger generations. Undertaking human-wildlife conflict solutions together with companions who share such goals means providing the communities not merely with labor, but also the shared goal of "community revitalization," and leads to further increases in people cooperating toward that (purchasing farm produce, asking for cooperation from neighboring areas, etc.)

Given the impetus of support for human-wildlife conflict solutions, the communities can offer chances for outsiders to enjoy the local rich natural environment, culture, and traditions and provide opportunities for them to obtain fresh farm produce directly from the producers. They can also offer attractive programs as a venue for environmental study and experiential learning. Offering these programs creates enthusiasts for the communities and is hoped to contribute to assurance of increased numbers of repeat visitors and even people relocating to the communities in the future. These collaborative efforts also develop community businesses that utilize the communities' resources in order to resolve issues facing the community using business approaches and enable economic results to be contributed to the communities involved.

Recently, Japan has been casting about for schemes to call for human resources, especially young people to come out to these communities that are experiencing manpower shortages due to depopulation and aging, and bring about changes. What is most desirable for the communities is that the emigrating (for permanent residence) population increase. However, for urbanites, the hurdles are high, with many disadvantages such as fewer conveniences, fewer medical facilities and schools, and differences in culture and practices. Temporary visits for sightseeing, on the other hand, do nothing to relieve manpower shortages, even if they provide some economic benefits. Here, a new kind of relationship is being imagined, in which outsiders, with their skills and resources, become repeat visitors and as their relationship with the community grows and their love of involvement itself in the community increases, they become involved in community-building. It is thought that even for resolving the conflicts between people and wild animals and to bring vitality to communities, it is important that this population be increased.

SATOMON is engaging in activities for the purpose of bringing together local communities and outsiders, not to gain something that neither side has, but to create a relationship of giving to one another the resources that each side can offer, such as knowledge, technology, and networks that can meet the other side's needs or solve their problems (we call it a "gift-gift" relationship, as opposed to a "win-win" one). This kind of relationship not only helps solve each other's problems and meet each others' needs, but by increasing the participants' sense of usefulness and self-esteem, can lead to more autonomous activities and make it possible to deepen a developmental relationship among all participants.

### 6.3.3 Toward Promoting Co-creation Through Participation by Diverse Human Resources

As depopulation and aging are predicted to proceed further in the future in Japan, new measures are required that not only reduce “damage” caused by wildlife through reliable methods, but also to bring vitality to these communities, using human–wildlife conflict solutions as an opportunity to shift the goal toward “community revitalization.” To achieve that, methods need to be devised that use human–wildlife conflict solutions as an impetus and a means to revitalize the community, with involvement not only of the people directly affected by the damage, but of through the diverse human resources that locals and outsiders bring to these affected communities.

Hopeful future candidates for new participants in human–wildlife conflict solutions are not limited to urban residents. We are conveying our communities’ call to those persons and institutions who have had little connection in the past with rural communities, such as enterprises, universities, and organizations outside the communities, as well as junior high and high school students, people living in residential districts, and housewives within the same local municipality. We are calling for the communities and new manpower to be united in a gift–gift relationship and for co-creation to be promoted with participation of diverse human resources, aiming to bring vitality to the communities involved while resolving their human–wildlife conflict issues. Tambasayama has been holding a forum for this purpose once a year since 2018 (with about 200 people attending in 2018 and about 150 in 2019). In connection with this forum, it has also held a series of five lectures called “Experiential Course on Human-wildlife Conflict Solutions that Revitalize Local Communities” targeting people newly exercising responsibility, especially the local high school students. Through the methodology and technology of human–wildlife conflict solutions and experiences in the field offered by this course, the outsiders contributing participating take a look ahead at the advancing depopulation and aging of society, and consider specific ideas on how to support both human–wildlife conflict countermeasures and community revitalization in a workshop format, presenting their final plan proposals at the forum (Fig. 6.7). High school students have announced proposals such as for human–wildlife conflict tours to convey the reality of human–wildlife conflicts and community revitalization involving utilization of abandoned persimmon trees. High school students from within the area who had participated in the course or forum expressed the following thoughts on it.

Even after I graduate from school, I want to be involved in some manner.

I want to try actually implementing the plan we conceived.

I never think about human-wildlife conflicts in daily life, so I am glad to have had the opportunity to learn more deeply about them, express my views and also think about them with everyone. I think learning and thinking about human-wildlife conflict countermeasures will have been useful when I become an adult and the time comes to contribute to my



**Fig. 6.7** A scenario workshop for community revitalization

hometown. I think this ought not be limited to Sasayama, but applied in resolving human-wildlife conflict issues in the many other communities where they are occurring

Thus, approaches and mechanisms are being considered to encourage participation by diverse human actors in the future, positioning human-wildlife conflict issues in the context of community revitalization.

These kinds of efforts are underway in other municipalities as well. In 2019, the town of Misato in Shimane Prefecture came up with the concept of “Misato Valley,” the human-wildlife conflicts version of “Silicon Valley,” centering on human-wildlife conflict solutions in which the community’s citizens had been making united efforts and effective utilization of trapped wildlife as wild game for consumption. Universities, research institutes, enterprises, nonprofit organizations, and others from Japan and abroad have come together there under the theme of human-wildlife conflict solutions and developed approaches aimed at creating an environment where people, resources, and money gather. Tamasasayama and Misato concluded a partnership agreement in December 2019 for the purpose of promoting human-wildlife conflict solutions and for revitalizing their communities through the participation of a cross-section of stakeholders and skill sets. They are trying to convey to all of Japan the principle of linking human-wildlife conflict solutions with community revitalization and thereby to promote the sharing of know-how and exchange of human resources between municipalities. Co-creation by different types of people, enterprises, and organizations with differing standpoints is anticipated to lead to the creation of new products, services, and senses of values never seen before in Japan’s rural communities.



In the future, it appears that the movement for recontextualizing human–wildlife conflict solutions as part of community revitalization will be occurring all over Japan. For this to happen, the participation of a cross-section of stakeholders and skill sets not only from the community but beyond it as well will be necessary. The problem is who will ascertain the needs of potential stakeholders and take on the role of bringing them together with the community in a positive relationship. As the need to resolve the social issue of human–wildlife conflicts in Japan grows more urgent, another problem exists of insufficient human resources and institutions with expertise in this field among governmental bodies in Japan, who are in the position to provide official support to the citizens’ efforts. This is a problem special to Japan, which has only a short history of managing its wildlife, but as the rural population ages and declines further in the future while the government tries to streamline its services, how to maintain and create human resources and systems with expertise to ensure a wildlife management system will be a pressing issue.

One form of governance anticipated in the future may be like the model introduced by SATOMON’s example of providing support as an intermediary to communities for their human–wildlife conflict countermeasures and community revitalization, while the social sector forms ties with government institutions and related organizations. The conditions for managing these activities sustainably, however, have yet to be arranged. It is thought that at the very least, management rooted in the community is called for, but there are many things that must be considered such as how wide an area it can be applied to, what kinds of expertise and roles are required to be filled, what kinds of systems and links to governmental and other involved institutions and organizations to have, and how to procure funding for operations. On the other hand, if these new governance models are constructed, they will probably be applicable to many other communities facing similar problems. In the future, new governance models and best practices must be considered so that nongovernmental organizations are capable of both managing human–wildlife conflicts and revitalizing communities. These must occur while referring not only to the future efforts of SATOMON that have been described above, but also to the activities of nongovernmental organizations that are providing support as intermediaries for human–wildlife conflict management, natural resource management, and community revitalization for comparison.

These efforts will not only help pass along Japan’s rich rural communities and their traditions to younger generations, but will also contribute to the creation of local societies that can coexist sustainably with diverse nature, including wildlife.

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