

Article

Effective Use and Management of Kunisaki Peninsula Usa GIAHS Long Trail—A Sustainable Tourism Model leading to Regional Development

Hisako Nomura ^{1,*}, Nguyen Bich Hong ² and Mitsuyasu Yabe ³ 

¹ Center for Promotion of International Education and Research, Faculty of Agriculture, Kyushu University, Fukuoka 812-8581, Japan

² Department of Science-Technology and International Cooperation, Faculty of Economics, Thai Nguyen University of Economics & Business and Administration (TUEBA), Tan Thinh Ward, Thai Nguyen City 251370, Vietnam; nguyen.bich.hong85@tueba.edu.vn

³ Department of Agricultural and Resource Economics, Faculty of Agriculture, Kyushu University, Fukuoka 812-8581, Japan; yabe@agr.kyushu-u.ac.jp

* Correspondence: hnomura@agr.kyushu-u.ac.jp; Tel.: +81-92-642-4348

Received: 31 December 2017; Accepted: 9 February 2018; Published: 13 February 2018

Abstract: Despite increasing recognition of the importance of maintaining environmental public goods such as rural landscapes and their ecological systems, it remains challenging to implement a management system where the value of maintaining such public goods is reflected by a means of a support payment. We proposed a tourism model for the regional promotion of footpaths as the main axis in the “Agri-culture System” designated as part of the Globally Important Agricultural Heritage Systems (GIAHS). Applying a Contingent Valuation Method, we asked walkers how much they were willing to contribute to various GIAHS-related activities through volunteering in addition to the participation fee for the walk. We hypothesized that the diverse means and activities to support conservation would contribute to sustainable management of GIAHS. The research findings showed that walkers had options to choose which activity to support. For track maintenance, WTC^L in volunteering is 4.23 days a year. In the case of walkers who had no options, their Willingness to Contribute in Labor (WTC^L) by volunteering is 3.34 days a year. To link the regional resources used for tourism with GIAHS require their effective management and conservation. Thus, it is desirable to formulate a combined approach such as payments by users of the trails and contributions through volunteer activities.

Keywords: GIAHS; footpath; long trail; contingent valuation method; stated preference; willingness to contribute in labor; volunteering; sustainable rural management

1. Introduction

The provision of ecosystem services from regions that are influenced by the practice of agriculture are often considered as public goods, including biodiversity and rural cultural landscapes [1,2]. In the past, the maintenance of public goods required the support of public institutions. However, the Payment for Environmental Services (PES) mechanism where a user pays principle or payment from the beneficiaries proposes that payments are made to farmers, landowners, or other entities who provide environmental services by agreeing to manage natural resources in a certain way [3]. PES has been used to stand for Payment for Environmental Services or Payment for Ecological Services interchangeably; however, we adopt the definition of PES as payment for environmental services that comprise the benefits associated with different types of actively managed ecosystems, such as sustainable agricultural practices and rural landscapes as defined by Muradian et al. [4].

Along with the spread of the PES concept, conservation activities by a variety of entities have also been promoted. Private sector PES is considered to be the promotion of conservation for public good involving entities other than a governmental body or those funded by the government. It is recognized as a joint approach whereby the government and the private sector together support public goods [5,6]. Both World Heritage sites designated by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and Globally Important Agricultural Heritage Systems (GIAHS) designated by the Food and Agriculture Organization (FAO) contain elements of landscapes and seascapes features as well as agro-biodiversity as part of environmental conservation and conservation of agricultural cultural systems. Conservation activities by diverse entities are important concepts in the management of both types of heritage sites.

For the government, the main measures for the provision of environmental services on farmland are agri-environmental payment schemes, which can be effective if well-designed and well-targeted [7], as well as organic labelling schemes to correct environmental externalities in agriculture [8]. When we examined the existing agri-environmental policy in Japan, we found there was growing recognition of farmland agro-biodiversity and rural landscapes as parts of environmental services, accompanied by efforts to support them [9]. The Direct Payment for Hilly and Mountainous Areas introduced in 2000 was introduced for supporting predominantly less favorable areas. However, the Payment for Agricultural Land and Water Conservation Management (formerly Measures to Conserve and Improve Land, Water, and Environment) was introduced in 2007 in recognition of conserving GIAHS-related features. In 2011, Direct Assistance for Environmentally Friendly Agriculture recognized the importance of the conservation of agro-biodiversity for the first time [9]. The most recent agri-environmental policy related to farmland biodiversity in Japan was the Act on the Promotion of Realizing Multifunctional Role of Agriculture introduced in 2014 [10].

However, conserving agricultural and cultural systems is not the main objective of agri-environmental schemes, although it is partially or indirectly related. The most important purpose of GIAHS is to bequeath its value, knowledge, and culture to the next generation. Unlike the World Heritage sites of UNESCO that preserve culturally or physically significant places, the purpose of GIAHS is the maintenance and succession of “living” agricultural and cultural systems, which are still maintained and passed down through people’s activities. If we do not act to conserve these systems, it is easy to imagine that they might disappear. This requires a mechanism to support the activities of rural people that shape features of GIAHS locations. Therefore, Japan’s agricultural environmental policy requires a PES mechanism where we manage, inherit, and evolve agricultural and cultural systems.

The aim of this research was to develop a support mechanism for GIAHS. We investigated support for different conservation activities as well as the implications of providing options for activities to manage GIAHS-related trails in Kuinsaki-Usa GIAHS, thus aiding the continuation of Japan’s original farming cultural systems. In this paper, we first propose a tourism model for regional promotion with footpaths as the main axis in the “Agri-culture System” designated as part of GIAHS. We provide a case study of the Usa area of Oita Prefecture which is a GIAHS site with the concept of resource circulation [11].

Second, we explored the management methods as well as the use practices of the footpaths for their future conservation. To help with the management, maintenance, and repair of sustainable trails, we need to consider alternative sources of assistance apart from government subsidies, including private resources with non-governmental support measures. Thus, we applied techniques from environmental resource economics to evaluate the multi-faceted economic value of the footpaths. Then, we explored the sustainable management support measures for the footpaths that were commensurate with their value.

2. Footpaths as the Main Axis in the “Agri-Culture System”

The farmed countryside has been recognized as a multifunctional space, with its real economic value being more than just agricultural production [2,12]. Through walking, we can absorb and observe the facets of farming culture and its history. When we walk in the countryside, we may discover things about the area that would be missed if we had driven through in a car. A footpath also provides several services and functions. Walking provides multiple benefits [13]. Studies have shown that there is evidence of medical and health benefits associated with walking groups [14]. Exercising in nature can also promote psychological benefits [13]. Apart from providing health benefits, footpaths also harbor rare plant species along their boundaries, reflecting harmony between nature and human activities. Finally, if a footpath is maintained well, it indirectly generates revenue for the rural economy. Thus, having a footpath can provide an additional attraction and income source for the rural economy.

As Vafadari [11] describes, the Kunisaki Peninsula Usa GIAHS which is located in Oita, Kyushu, the Southwest of Japan (Figure 1), features resource circulation with the use of agroforestry where shiitake mushrooms are produced in deciduous Sawtooth Oak (*Quercus acutissima*) forests with the largest growth rate in Japan. Local farmers have always faced a lack of water in the area. Eventually, the farmers overcame the problem by interlinking multiple irrigation reservoirs. The communities with access to irrigation provided water to the villagers in the coastal community, which had no access to irrigation, and in return, the shore community provided the community with reservoirs with access to the shore where they could lay out and dry Shichitoui (*Cyperus monophyllus* Vahl) on beaches. Shichitoui is the raw plant material for traditional mattresses produced only in this part of Japan and which forms an important cash crop for the region. Over time, the interlinked systems of Japan’s greatest area of Sawtooth Oak forests and multiple irrigation reservoirs have facilitated a variety of agriculture, forestry, and fishery industries, which includes the country’s sole Shichitoui production. These systems have allowed the rural economy to flourish as well as preserving the diverse ecosystems.



Figure 1. Location of Kunisaki-Usa Globally Important Agricultural Heritage System (GIAHS), Oita, Japan.

The Minemichi Long Trail in the Kunisaki Peninsula-Usa GIAHS was designated as an official trail by the Japan Trail Council in 2013. The Long Trail is a nature footpath that includes mountain paths and ancient roads while exploring GIAHS features. Walkers can tackle parts of or the whole trail to enjoy the local nature and culture, while connecting with the people of the area. Kunisaki Peninsula has long been a site for temples, termed the “Rokugo Manzan”, which is the generic term for the large and small temples built there by the same religious sect. Rokugo refers to the six towns established along the valleys extending from Mt. Futago, which stands in the center of the region. The monks of the Rokugo Manzan temples have long practiced “mineri”, which is the act of traversing rough terrain for ascetic training using the mountain trails around the Kunisaki Peninsula. These trails have been reconstructed and serve as the foundation for the Minemichi Long Trail. The GIAHS trails are part of this network, with a total length of about 135 km. Kunisaki is the birthplace of the syncretism of Shintoism and Buddhism where some of the unique original landscape of Japan remains. It is a trail packed full of GIAHS features, encompassing Kunisaki’s cultural and natural history through the Sawtooth Oak forests and reservoirs of the GIAHS of the Kunisaki Peninsula Usa area, the Rokugo Manzan temples, and the scenic views of the Seto Inland Sea National Park.

The footpath could be a new axis in the rural development of the region to provide a tourism model for regional promotion. The Long Trail contains multi-functional components of GIAHS such as cultural landscapes, traditional agriculture, agricultural culture, regional food, and biodiversity. The multifunctionality of long trails could attract Japanese and overseas tourists equally as walking in the countryside is becoming popular in Asia. Many GIAHS-themed walking events are organized by various local communities in the Kunisaki and Usa regions throughout the year (Figure 2). The long trails are part of the Satoyama, Japanese commons, which are managed by the local community. Therefore, the maintenance of such trails is the responsibility of the locals.



Figure 2. The red-capped local volunteer guides who explain how local farmers built interlinking reservoirs at the time of severe water deficiency.

At present, the development of sustainable management and use practices for trails are at an initial stage. This study explores possible conservation management systems to promote sustainable tourism on trails and footpaths. We conducted a questionnaire-based survey of people participating in walking events, saying that local groups and citizens were intending to work on activities to maintain and protect the GIAHS sites through selling traditional items such as souvenirs and mowing walking tracks to maintain footpaths.

In the same area, the surrounding forests are “Hoda-ba”, the storage areas where Sawtooth Oak is dried and laid for the fermenting process, which creates high-quality Shiitake mushrooms, the local specialty agricultural forest product in this region (Figure 3).



Figure 3. “Hoda-ba”, where Sawtooth Oak is dried and laid for fermentation to grow Shiitake mushrooms.

3. Methods

Support for conservation activities can be achieved by people spending their time as volunteers for those activities. Recent studies have shown the plausibility of using labor contributions as a payment vehicle in contingent valuation (CV) surveys [15]. The present study adopted the Willingness to Contribute in Labor (WTC^L) approach. In this paper, although we show the WTP in labor terms, here in the methods, the results show WTP in labor terms as a volunteer. The theoretical framework of using time as a payment vehicle for CV studies is based on the notion of a time-compensating surplus, which is analogous to a compensating surplus measure of monetary WTP [16]. Based on this framework, welfare estimates for keeping the current level of GIAHS quality can be expressed as

$$V(M - WTC^L, Z, q^1) = V(M, Z, q^0). \quad (1)$$

where the indirect utility function (V). denotes the amount of time a respondent is willing to contribute to labor (WTC^L). for the proposed activities supporting GIAHS features and can be used to provide a change in environmental service provision, from no provision by non-government support (q^0). to an improved environmental service provision through the support of other entities (q^1). When a person agrees to take part in activities that promote conservation, that person has less time available for other activities. Thus, the labor time contribution to the proposed program represents a payment and involves a reduction in the respondents' time budget (M) available for other activities (work or leisure). The variable (Z). represents the vectors of the socioeconomic variables that vary across the respondents.

In this survey, an open-ended CV format was used to elicit each respondent's WTC^L . This elicitation format has several advantages. First, it reduces the time and expense of the survey process when we are taking up the walker's time during their walking activity. Second, bid ranges can fall within a narrow range of low values. Finally, the amount of starting-point bias may be negligible. The last advantage is particularly important as it is not easy to provide a starting-point for volunteering for conservation activities in each specific case. However, a common drawback of this format is the generation of a considerable number of zero responses [17]. Since Tobit analysis is the more theoretically correct method for willingness-to-pay (WTP) data sets with large numbers of zero bids, a linear specification of the model was performed using Tobit regression. Tobit regression has advantage of taking into account the difference between censored (zero) and continuous observations

in the process of estimation, leading to more consistent parameter estimates [18]. The Tobit regression can be generally expressed as follows [19]:

$$WTC_i^{LTobit} = X_i' \beta + e_i, e_i \sim N(0, \sigma^2). \quad (2)$$

where WTC_i^{LTobit} is an unobserved continuous dependent variable, X_i' is a vector of explanatory variables, β is a vector of coefficients, e_i is an independently distributed error term assumed to be normal with a zero mean and constant variance σ^2 , and $i = 1, 2, \dots, n$ denotes individuals in the sample. The observed WTC^L variable takes the following form:

$$WTC_i^L = \begin{cases} X_i' \beta + e_i & \text{if } WTC_i^{LTobit} > 0, \\ 0 & \text{if } WTC_i^{LTobit} \leq 0. \end{cases} \quad (3)$$

We conducted the survey from 28 October 2016 to 23 April 2017. We interviewed 283 Kunisaki trail walkers and recovered 266 questionnaires (return rate of 93.9%).

Walking participants were asked whether they were willing to conserve the Kunisaki-Usa GIAHS site and what their WTP would be in terms of labor hours by volunteering to support conservation activities related to the GIAHS, namely, support for the Mitsujoyoin Paddy Rice Terrace (rice activity), support for traditional Shichittoi production or its marketing (Shichittoi activity), or support for the maintenance of the Long Trail such as mowing by local communities (walk activity) (Figure 4). The sample size was 230 for the analysis. The versions of questionnaire were (1) all activity options available; (2) support for rice paddy terrace only; (3) support for Shichittoi only; and (4) support for trail maintenance only, and their sample sizes were 84, 48, 50, and 48, respectively (Table 1). We analyzed the data using Nlogit ver. 5.0, Econometric Software, Inc. (Plainview, NY, USA).



Figure 4. Activities to support local Globally Important Agricultural Heritage System (GIAHS) features in Kunisaki, Oita, Japan.

Table 1. The sample distribution by versions of questionnaire.

Questversion	Freq.	Percent
All three supporting activity options available	84	36.52
Support for rice paddy terrace only	48	20.87
Support for Shichittoi only	50	21.74
Support for trail maintenance only	48	20.87
Total	230	100

The sampling distribution is shown in Table 1.

As shown in Table 2, the distribution of labor contributions ranged from 0 to 8 h per year. The average labor contribution was 3.69 days per year. About 44% of the respondents were male and

the average age of the respondents was 52.62 years old. Among respondents, 28% were from Oita Prefecture (not including Kunisaki people), 69% were from the Kunisaki Peninsula, and the remaining 10% were from outside Oita. The average number of visits to Kunisaki was 2.82 times per year and the average time of travelling to Kunisaki was 0.91 h (54.6 min). The average number of people walking together as a group was 4.18, and 7% of the respondents were farmers. About 24% of the respondents received a version of questionnaire with rice activity as a support option, 0 if not. Around 32% of the respondents had received a version of questionnaire with Shichittoi activity as a support option, 0 if not. Finally, 47% of respondents had received a version of questionnaire with walk activity as a support option, 0 if not.

Table 2. Descriptive summary of variables ($N = 230$).

Variable	Description	Mean	Std. Dev.	Min	Max
1. Dependent					
WTC^L	Labor contribution of the respondents to take part in supporting activities (in days per year)	3.69	2.15	1	8
2. Independent					
<i>Socio-Economic Attributes</i>					
$GENDER$	1 if the respondent is male; 0 if female	0.44	0.50	0	1
AGE	Age of the respondent (in 10 years)	52.62	18.98	10	80
$DOITA$	1 if the respondent is from Oita (not including Kunisaki); 0 if outside	0.28	0.45	0	1
$DKUNISAKI$	1 if the respondent is from Kunisaki; 0 if outside	0.69	0.46	0	1
$VISIT$	Times visited Kunisaki (in times)	2.82	1.25	1	14
$TIME$	The time taken to visit Kunisaki (in hour)	0.91	1.05	0.08	8
$PEOPLE$	The number of company	4.18	4.68	1	40
$FARMER$	1 if the respondent is farmer; 0 if not	0.07	0.26	0	1
<i>Option Dummies</i>					
$OPTIONRICE$	1 if rice supporting activity seen as a support option, 0 if not	0.24	0.43	0	1
$OPTIONSHICHITOI$	1 if shichittoi supporting activity seen as a support option, 0 if not	0.32	0.47	0	1
$OPTIONWALK$	1 if walk supporting activity seen as a support option, 0 if not	0.47	0.50	0	1

In Appendix A, we attach the questionnaire addressing the walk participants' willingness to support and their elicited values for activities supporting GIAHS features in Oita, Japan.

4. Results

We asked questions to elicit people's awareness level about the multifaceted constituent elements of GIAHS, such as cultural landscapes, traditional agriculture, agricultural culture, food, and biodiversity, which together form the attractions of the trail. For this reason, the participant's level of knowledge about GIAHS was sought as follows: "Do you know that GIAHS is composed of five elements: cultural landscape, traditional agriculture, agricultural culture, food, and biodiversity?" Of the responses, 25% were familiar, and 58% were somewhat familiar with the components of world agricultural heritage. However, 16% of the participants did not know about the components of world agricultural heritage. These respondents may object to donating or volunteering because the reason for supporting GIAHS features is vague.

The reason why the knowledge of world agricultural heritage was high among the walk participants may be that, during the walk, people from local communities guide the way. The guides

take walkers to the reservoirs and the storage areas for Sawtooth Oak for shiitake mushroom production that is a constituent element of the Kunisaki-Usa GIAHS. The guides also talk about the historical background of traditional agriculture in the Kunisaki Peninsula. Therefore, while enjoying walking in the cultural landscape, there are opportunities for walk participants to learn about traditional agriculture, and to appreciate agricultural culture, food and biodiversity. Walking is different from, for example, a lecture as it is an advantage to learn the value of the GIAHS while experiencing its elements with all five senses. The experiences of walking are an effective way to promote the value of the GIAHS and the necessity of maintaining and inheriting it.

The results of the questionnaire showed that 76% of walking participants wanted to support conservation activities (Figure 5).

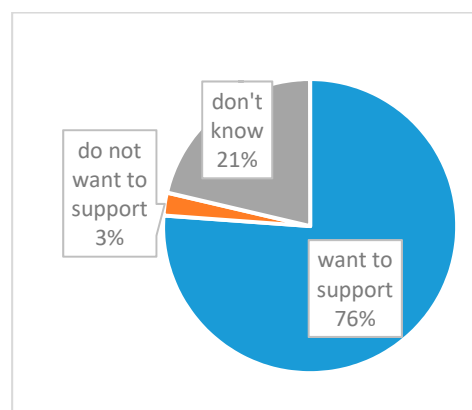


Figure 5. Responses to the question “Do you support conservation?”.

Among them, 50% liked to provide support by volunteering, 24% by donation, and 14% by both donation and volunteering (Figure 6).

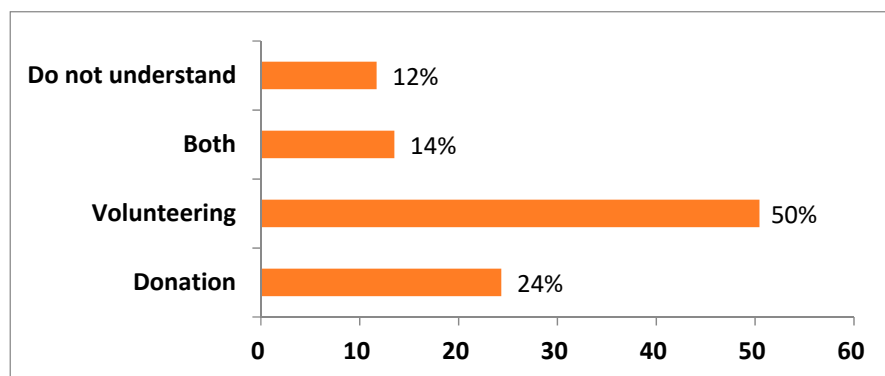


Figure 6. Responses regarding means of support for Globally Important Agricultural Heritage System (GIAHS) features.

Then, we explored support for the variety of GIAHS-related trail conservation activities, namely support for paddy terracing, Shichitai promotion, and trail maintenance. Approximately 42% of respondents preferred to support trail maintenance, while 29% and 24% preferred to support Shichitai and paddy terracing, respectively (Figure 7).

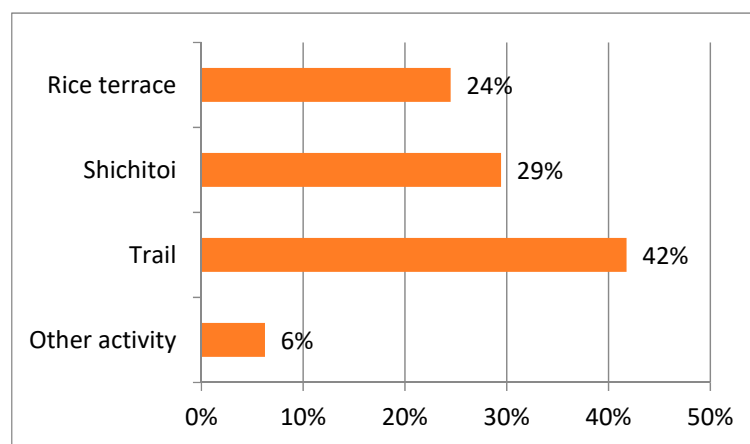


Figure 7. Responses regarding activities to support.

When people had options to choose walk supporting activities, such as track maintenance and mowing (*OPTIONWALK*), they were willing to contribute more volunteering time than those who did not have this option but walk as a supporting activity while other options (*OPTIONRICE* and *OPTIONSHICHITOI*) did not show a difference in willingness to contribute depending on the option availability. The respondents' WTC^L in volunteering was 4.23 days/year among people who had options to choose walk supporting activities (*OPTIONWALK*) and 3.34 days/year among people with no choice. There was no clear difference in volunteering in days when respondents had options to choose their supporting activities for rice terrace activities, 3.90 days/year among with-option people and 3.72 days/year among non-option people, nor was there a clear difference for Shichittoi promotion activities, 3.70 days/year among with-option people and 3.64 days/year among non-option people (Figure 8).

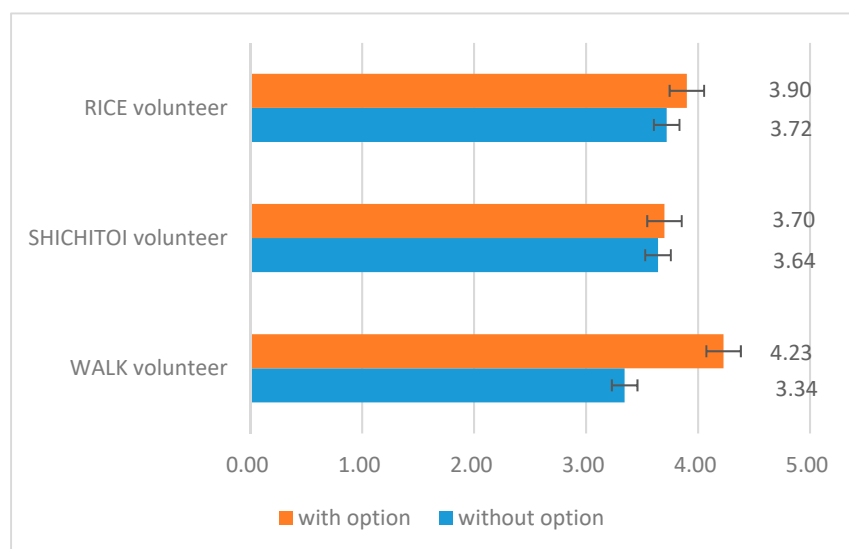


Figure 8. WTC^L by option availability in their questionnaire.

Table 3 presents the results of the Tobit regression analysis of the factors affecting WTC^L for the proposed activities supporting GIAHS features. Model 0 included the all participants of walks. In Model 0, the coefficients for *VISIT*, *PEOPLE*, and *FARMER* were statistically significant. For those who had one additional visit to Kunisaki Peninsula (*VISIT*), there was a 0.506 day (12.14 h) a year increase in the predicted value of WTC^L . Also, each one person increases in those who participated

together (*PEOPLE*) was associated with a 0.103 (2.47 h) a year increase in the predicted value of WTC^L . The predicted value of WTC^L increased by 1.669 days a year for those who were farmers (*FARMER* = 1) than for non-farmer participants (*FARMER* = 0).

Table 3. Tobit results of factors affecting WTC^L .

	Model 0 (<i>n</i> = 115)	Model 1 (<i>n</i> = 26)	Model 2 (<i>n</i> = 40)	Model 3 (<i>n</i> = 56)
	Coefficient (Standard. Err.)	Coefficient (Standard. Err.)	Coefficient (Standard. Err.)	Coefficient (Standard. Err.)
<i>GENDER</i>	−0.148 (−0.47)	0.712 (−1.01)	−0.314 (−0.88)	0.714 (−0.73)
<i>AGE</i>	−0.016 (−0.01)	−0.003 (−0.03)	−0.017 (−0.02)	−0.026 (−0.02)
<i>DOITA</i>	−2.098 (−1.35)	−5.586 * (−2.60)	−0.844 (−2.54)	−0.344 (−2.20)
<i>DKUNISAKI</i>	−0.645 (−1.31)	−5.425 * (−2.39)	1.519 (−2.46)	0.748 (−2.25)
<i>VISIT</i>	0.506 * (−0.27)	−0.103 (−0.62)	−0.432 (−0.45)	−0.551 (−0.44)
<i>PEOPLE</i>	0.103 * (−0.05)	0.052 (−0.20)	0.137 * (−0.11)	0.154 ** (−0.07)
<i>FARMER</i>	1.669 * (−0.88)	—	1.238 (−1.90)	1.614 (−1.00)
<i>OPTIONRICE</i>		1.503 (−1.5)		
<i>OPTIONSHICHITOI</i>			0.611 (−0.83)	
<i>OPTIONWALK</i>				1.146 ** (−0.60)
<i>CONSTANT</i>	3.532 ** (−1.60)	8.096 (−3.93)	1.719 (−2.99)	1.334 (−2.44)
<i>BIC</i>	518.178	126.631	204.803	263.292

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Model 1 included only those who could see the rice support activity as their choice of support option. In Model 1, the coefficients for *DOITA* and *DKUNISAKI* were statistically significant factors affecting WTC^L . The predicted value of WTC^L was 5.586 days fewer for those who were from Oita (*DOITA* = 1) than for participants from outside Oita (*DOITA* = 0). Similarly, the predicted value of WTC^L was 5.425 days fewer for those who were from Kunisaki Peninsula (*DKUNISAKI* = 1) than for participants from outside Kunisaki (and also not from Oita) (*DOITA* = 0).

Model 2 included only those who could see the Shichittoi support activity as their choice of support option. In Model 2, the coefficients for *PEOPLE* were statistically significant. Finally, Model 3 included only those who could see a walk support activity as their choice of support option. In Model 3, the coefficients for *PEOPLE* and *OPTIONWALK* were statistically significant. Each one person increases in those who participated together was associated with a 0.154 day (3.7 h) a year increase in the predicted value of WTC^L . Also, for *OPTIONWALK*, the predicted value of WTC^L was a 1.146-h increase for those who had a support activity for walk in their support options besides support for the rice activity. From Model 0 to Model 3, other socio-economic variables such as *GENDER* and *AGE* were not statistically significant ($p > 0.10$) in explaining the dependent variable.

5. Discussion

The focus of the discussion is on the elicited value of volunteering to support GIAHS activities. In Model 0, which included all the participants of walks, *VISIT*, *PEOPLE*, and *FARMER* are statistically significant. The positive impact of *VISIT* on the contribution in labor time was in line with the finding

of Chen and Liaw [20] in their value study of forested trail eco-tourism values. The more times that people visited a place, the higher their willingness to pay. Also, the positive effect of *PEOPLE* on the contribution in labor time confirmed the findings of Marselle et al. [21] in the efficacy on the mental, emotional, and social well-being benefits from participating in group walks in nature. The result of *FARMER* showed that those who were currently FARMERS or used to be FARMERS had a higher willingness to contribute in volunteering. The elicited value in terms of labor as a volunteer to assist activities showed that participants who were farmers were willing to contribute 1.669 days per year more compared to non-farmer participants to support activities for the GIAHS experience. When we introduced the with-options or without-options for supporting activities, we saw a slightly different picture. This might reflect the fact that farmers understood the importance of landscape maintenance or community support to manage these conservation activities.

From Model 1, for the rice activity, people participating in walking from outside the Prefecture and outside the Peninsula indicated that they were more willing to support agricultural heritage through volunteering than those inside the Peninsula at the 5% significance level. This was also found in Chen and Liaw [20], where years living in the community had a negative impact on the willingness to pay among residents. This is plausible because we would expect more people from outside to appreciate what Kunisaki can provide when they visit and be more willing than those inside the Prefecture. It might be because those from Kunisaki and those from Oita had to support their own family's or relatives' rice activities during the time of replanting and harvesting. The existence of such potential volunteers suggests that, depending on how volunteers are recruited, both the people in the local district and other residents of the Oita Prefecture can be mobilized to support activities.

Models 1, 2, and 3 analyzed the impact of availability of choice among supporting conservation activities. While in Models 1 and 2, other options (*OPTIONRICE* and *OPTIONSHICHITOI*) did not show that the difference in willingness to contribute depended on the option availability, Model 3 showed that when people had options to choose walk supporting activities (*OPTIONWALK*), they were willing to contribute more volunteering time than those who did not have the option but walked as a supporting activity.

From our research, we can estimate the total contributions from all annual walking participants. The turnout of walk participants was 3300 in 2016 according to the Kunisaki Tourism Bureau. We assumed that the annual participation would remain approximately the same. We could only estimate for the *OPTIONWALK* as there were statistical differences between the with-option and without-option groups (Table 4).

Table 4. Summary of the total donation and volunteering for each supporting activity.

Supporting Activity	The Probability of Willing to Contribute and Support the Track Maintenance Activity	Option Availability	Contribution in Labor Days/Person/Year	Contribution in Labor Days/Total/Year
WALK	0.25	With option	4.23	1919
		Without option	3.34	1240

In terms of volunteering, 50% of the participants said that they were willing to volunteer for activities supporting GIAHS features (Figure 5). The probability of walk supporting activities, such as track maintenance and mowing was 50%. This, combined with the probability of those who were willing to volunteer (50%), means that 25% of participants were willing to contribute and support the track maintenance activity, respectively. As 55% of participants were with-options and 45% were without-options we calculated the total volunteering in days for those who had options among supporting activities and those who had no options in supporting activities, separately.

We could have converted the result into monetary terms, however, the number of volunteering days (mobilizing human labor resources) implied the significance of the degree of volunteering.

Therefore, we have left it as total volunteering in days. For walking track maintenance, people with options were willing to volunteer in total for 1919 days ($3300 \times 4.23 \times 0.25 \times 0.55 = 1919$), while people without options said they would volunteer for 1240 days ($3300 \times 3.34 \times 0.25 \times 0.45 = 1240$). Because the respondents were participating in walking events, they appreciated what a well-prepared footpath can provide during the walks and they might have had even more appreciation of how the local community manages and maintains the local footpaths. Further, when they have options of activities to support the GIAHS, their willingness to contribute will be larger when they find the activity they really would like to support. Therefore, our findings imply that providing a diverse range of activities to support conservation would increase total WTC^L and so would contribute to the sustainable management of GIAHS.

6. Conclusions

This research investigated the supporting conservation activities as well as implication of providing options of activities for managing GIAHS-related trails in Kunisaki-Usa GIAHS.

Applying a Contingent Valuation Method, we asked walkers how much they were willing to contribute in volunteering for various GIAHS-related activities in addition to the participation fee for the walk. We hypothesized that the diverse means and activities to support conservation would contribute to sustainable management of GIAHS. The research findings showed that walkers had options to choose which activity to support, then for track maintenance, WTC^L in volunteering is 4.23 days a year, while when walkers had no options, their WTC^L in volunteering is 3.34 days a year. Further, the finding shows that to link the tourism industry using regional resources to rural cultural landscapes like GIAHS and conserve these at the same time, it is desirable to provide diversity in conservation activities in the management mechanism. Finally, it recommends a combined approach such as payment such as participation fee by beneficiaries of the footpaths as well as contributions through volunteer activities for the sustainable conservation of the GIAHS.

Acknowledgments: This research is supported by an Oita Prefecture GIAHS research grant of 2016. It is also part of outcome of the “Study on policy support for promoting biodiversity conservation activities through PDCA cycle and participation and cooperation of various entities” commissioned by the Ministry of Agriculture, Forestry and Fisheries (JAJJ1710006). We thank Leonie Seabrook, from Edanz Group (www.edanzediting.com/ac) for editing a draft of this manuscript.

Author Contributions: H.N. and M.Y. conceived the research idea and designed the questionnaires. H.N. conducted the field survey. N.B.H. input data and H.N., N.B.H. and M.Y. analyzed the data and wrote the manuscript. All the authors read and edited the manuscript and approved the final version.

Conflicts of Interest: The authors declare no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

Appendix A. CVM Questionnaire

Q1. The purpose of the GIAHS is to inherit its value, knowledge and culture to the next generation.

However, since the GIAHS of Kunisaki Peninsula is maintained and inherited by local people's activities, it might disappear if no supporting activity is done. Thus, suppose local groups and public citizens are working on activities to maintain and inherit features of GIAHS, such as rice planting at rice paddy terraces, Shichitai promotion activities, or mowing of walking courses. In that case, do you want to support such activities with donations and volunteers?

☐₁ I want to support

☐₂ I do not want to support

☐₃ Don't know

Go to Q4. If answered ☐₁, otherwise to Q8.

Q2. For those who chose ☐₁ I want to support in Q3, suppose that there are (1) conservation of rice planning at rice terraces, (2) Shichitai promotion activities, and (3) maintenance and management of walking trails, which activity do you want to support?

- | | |
|---|--|
| <input type="checkbox"/> ₁ Conservation of rice terraces | <input type="checkbox"/> ₂ Shichitai promotion activities |
| <input type="checkbox"/> ₃ Maintenance of walking trails | <input type="checkbox"/> ₄ Other, anything specific |
| | () |

Q3. Suppose you support an activity chosen in Q4 by donating or volunteering, which way do you want to support? (Check one)

- | | |
|--|---|
| <input type="checkbox"/> ₁ By donation | <input type="checkbox"/> ₂ By volunteering |
| <input type="checkbox"/> ₃ By supporting both | <input type="checkbox"/> ₄ Do not know |
| <input type="checkbox"/> ₅ Other | |
| () | |

Q4. For those who answered ☐₁ By donation in Q5, how much would you consider donating for each participation in a walk event? Please select the applicable amount (check one).

- | | | |
|---|---|---|
| <input type="checkbox"/> ₁ 200 yen | <input type="checkbox"/> ₂ 400 yen | <input type="checkbox"/> ₃ 600 yen |
| <input type="checkbox"/> ₄ 800 yen | <input type="checkbox"/> ₅ 1,000 yen | <input type="checkbox"/> ₆ 1,200 yen |
| <input type="checkbox"/> ₇ 1,500 yen | <input type="checkbox"/> ₈ 2,000 yen | <input type="checkbox"/> ₉ Other () yen |

Q5. For those who answered ☐₂ By volunteering in Q5, how many days a year do you think you could volunteer to support activities? Please choose the number of days closest to your thoughts from the following.

- | | | |
|--|--|--|
| <input type="checkbox"/> ₁ 1 day | <input type="checkbox"/> ₂ 2 days | <input type="checkbox"/> ₃ 3 days |
| <input type="checkbox"/> ₄ 4 days | <input type="checkbox"/> ₅ 5 days | <input type="checkbox"/> ₆ 6 days |
| <input type="checkbox"/> ₇ 7 days | <input type="checkbox"/> ₈ 8 days | <input type="checkbox"/> ₉ Other () days |

References

- Plieninger, T.; Schleyer, C.; Schaich, H.; Ohnesorge, B.; Gerdes, H.; Hernández-Morcillo, M.; Bieling, C. Mainstreaming ecosystem services through reformed European agricultural policies. *Conserv. Lett.* **2012**, *5*, 281–288. [CrossRef]
- Robertson, G.P.; Swinton, S.M. Reconciling agricultural productivity and environmental integrity: A grand challenge for agriculture. *Front. Ecol. Environ.* **2005**, *3*, 38–46.
- Engel, S.; Pagiola, S.; Wunder, S. Designing payments for environmental services in theory and practice: An overview of the issues. *Ecol. Econ.* **2008**, *65*, 663–674. [CrossRef]
- Muradian, R.; Corbera, E.; Pascual, U.; Kosoy, N.; May, P.H. Reconciling theory and practice: An alternative conceptual framework for understanding payments for environmental services. *Ecol. Econ.* **2010**, *69*, 1202–1208. [CrossRef]
- Nomura, H.; Yabe, M. Private Provision of Environmental Public Goods: A Pilot Program for Agricultural Heritage Conservation. *J. Resour. Ecol.* **2014**, *5*, 341–347.
- Nomura, H.; Huang, J.Y.; Takahashi, Y.; Yabe, M. Study of Environmental Conservation by Citizens' Support System: Measures for Maintenance and Inheritance of Akiyoshi-dai Grassland. *J. Rural Plan Assoc. Rural Plan.* **2016**, *35*, 213–218. [CrossRef]
- Batáry, P.; Dicks, L.V.; Kleijn, D.; Sutherland, W.J. The role of agri-environment schemes in conservation and environmental management. *Conserv. Biol.* **2015**, *29*, 1006–1016. [CrossRef] [PubMed]
- Aldanondo-Ochoa, A.M.; Almansa-Sáez, C. The private provision of public environment: Consumer preferences for organic production systems. *Land Use Policy* **2009**, *26*, 669–682.
- Nomura, H.; Yabe, M.; Nishio, T.; Izumi, M.; Hirai, K.; Kurokawa, T. Framework for improvement of farmland biodiversity in Japan. *J. Environ. Plan. Manag.* **2013**, *56*, 743–758. [CrossRef]
- Nishizawa, E. Agri-environmental Policies of Japan and Shiga Prefecture. *J. Int. Econ. Stud.* **2015**, 23–34. Available online: <http://repo.lib.hosei.ac.jp/bitstream/10114/9982/1/j29-nishizawa.pdf> (accessed on 9 December 2017).

11. Vafadari, K. Exploring Tourism Potential of Agricultural Heritage Systems A: Case Study of the Kunisaki Peninsula, Oita Prefecture, Japan. *Issues Soc. Sci.* **2013**, *1*, 33. [[CrossRef](#)]
12. Pretty, J.N. *Agri-Culture: Reconnecting People, Land, and Nature*; Earthscan Publications: London, UK, 2002.
13. Pretty, J.; Peacock, J.; Hine, R.; Sellens, M.; South, N.; Griffin, M. Green exercise in the UK countryside: Effects on health and psychological well-being, and implications for policy and planning. *J. Environ. Plan. Manag.* **2007**, *50*, 211–231. [[CrossRef](#)]
14. Hanson, S.; Jones, A. Is there evidence that walking groups have health benefits? A systematic review and meta-analysis. *Br. J. Sports Med.* **2015**, *49*, 710–715. [[CrossRef](#)] [[PubMed](#)]
15. Arbiol, J.; Borja, M.; Yabe, M.; Nomura, H.; Gloriani, N.; Yoshida, S.I. Valuing human leptospirosis prevention using the opportunity cost of labor. *Int. J. Environ. Res. Public Health* **2013**, *10*, 1845–1860. [[CrossRef](#)] [[PubMed](#)]
16. Eom, Y.S.; Larson, D.M. Valuing housework time from willingness to spend time and money for environmental quality improvements. *Rev. Econ. Househ.* **2006**, *4*, 205–227. [[CrossRef](#)]
17. Green, D.; Jacowitz, K.E.; Kahneman, D.; McFadden, D. Referendum contingent valuation, anchoring, and willingness to pay for public goods. *Resour. Energy Econ.* **1998**, *20*, 85–116. [[CrossRef](#)]
18. Halstead, J.M.; Lindsay, B.E.; Brown, C.M. Use of the tobit model in contingent valuation: Experimental evidence from the Pemigewasset Wilderness Area. *J. Environ. Manag.* **1991**, *33*, 79–89. [[CrossRef](#)]
19. Kim, H.J.; Cho, Y. Estimating Willingness to Pay for Reduced Copper Contamination in Southwestern Minnesota. *J. Agric. Resour. Econ. Western Agric. Econ. Assoc.* **2002**, *27*, 450–463.
20. Chen, W.J.; Liaw, S.C. What is the value of eco-tourism? An evaluation of forested trails for community residents and visitors. *Tour Econ.* **2012**, *18*, 871–885. [[CrossRef](#)]
21. Marselle, M.R.; Irvine, K.N.; Warber, S.L. Examining group walks in nature and multiple aspects of well-being: A large-scale study. *Ecopsychology* **2014**, *6*, 134–147.



© 2018 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).