

# Integrating “Fish Skin” and Tourism: A Sustainable Livelihoods Approach

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## Abstract

As a kind of handicrafts with strong social and cultural connotations, the production and consumption of fish skin handicrafts have a high potential to be integrated with tourism to enhance community livelihood sustainability. A sustainable livelihood approach is used in a fish skin tourism context in Jiejinkou Town, Heilongjiang Province, China, to examine critically the interactive relationships between “fish skin” and tourism. Face-to-face semi-structured interviews were conducted with management officials, community leaders, representatives of fish skin handicrafts and village residents in four field investigations in 2020. Improvement in community livelihood sustainability was identified through the enhancement of livelihood diversity and choice. However, impacts on household livelihood sustainability varied as tourism participation is restricted by the level of livelihood assets. The increase of the within-community income gap may generate social problems in the long run. The current level of “fish skin” and tourism integration is limited. The history, culture and traditions related with fish skin handicrafts are not widely disseminated by local fish skin handicrafts producers. Opportunities for in-depth and diversified fish skin tourism experiences are being recognized, which calls for partnership with those involved in tourism. Practical implications are discussed to enhance fish skin handicrafts and tourism integration, boost local participation, enhance local benefits, and particularly, to engage those with lower levels of livelihood assets.

**Keywords:** livelihood, sustainability, fish skin, ethnic area

## 1. Introduction

In recent years, the research methods of sustainable livelihoods have been introduced into the research on tourism development in ethnic areas.

According to Tao (TAO TCH & WALL G, 2009), although the concept and practice of sustainable development and its derived sustainable tourism are often criticized by researchers from all walks of life because of its faultiness, in fact, when tourism was introduced into the community, people in the community had more ways to maintain their livelihood. That is, the introduction of tourism is not to replace the original way of livelihood, but to supplement the existing lifestyle.

The concept of sustainable livelihoods actually proves the impact of the introduction of tourism on residents in ethnic areas from three aspects: poverty alleviation at the national level, economic development at the social level, and changes in personal life. It can be seen that this perspective has pioneering significance for us to further study tourism development.

In fact, in many parts of the world, agriculture is no longer the main source of income for rural communities, and

rural communities often use multiple strategies to earn a living (Fleischer, A. & Pizam, A., 1997). Among various strategies, tourism is generally regarded as an important means to accelerate the pace of rural revitalization and realize rural modernization (Sharpley, R, 2002; Muresan, I. C., Oroian, C. F. & Harun, R., 2016). This is because, first, the development of tourism can retain labor, so that villagers who go out to work will gradually return to their homes and choose a means of earning a living with the development of tourism projects. Second, tourism development, especially tourism development in ethnic regions, can protect ethnic culture to a certain extent, thereby realizing the purpose of revitalizing ethnic culture. Third, tourism development can strengthen the construction of regional infrastructure and improve service facilities such as medical treatment and sanitation (Sharpley, R, 2002; Muresan, I. C., Oroian, C. F. & Harun, R., 2016; Briedenhann, J. & Wickens, E., 2004; Luo, X. R. & Bao, J. G., 2019). However, tourism is not a “magic bullet”, especially for tourism development in ethnic areas, it will also bring certain adverse effects, such as accelerating the changes of ethnic culture and destroying the primitive ecological environment in ethnic areas (Sharpley, R, 2002). Therefore, In the process of developing ethnic tourism, it is also necessary to manage its possible adverse effects on the social culture and natural environment, so that tourism development truly becomes an effective way for the development of rural communities (Wall, G. & Mathieson, A, 2006).

In this article, two major aspects were studied from the perspective of sustainable livelihood. That is, first, the relationship between fish skin making skills and tourism. Second, the impact on the sustainability of community livelihoods brought by the integration of fish skin making skills and tourism. The investigation was conducted at Hezhe Township, Jiejinkou, Tongjiang City, Heilongjiang Province and the results were analyzed by the qualitative method of Repertory Grid Analysis and quantitative analysis of questionnaire survey.

The survey revealed that the development of tourism had improved the sustainability of the livelihoods of the local Hezhe people, and the livelihood options available to villagers had increased. As a traditional national handicraft, fish skin making skills had a bigger market with the development of tourism, which also created a variety of employment opportunities related to fish skin culture for more villagers. Therefore, the study on the sustainability of the livelihood of the residents of this community has certain practical significance in the current social environment. The specific questions studied include: How do local people feel about tourism in the process of developing from traditional agriculture and fishery to modern tourism? In what way are fish skin culture and tourism combined? Is the new livelihood model formed by this integration sustainable? What is the impact of the new livelihood model on local people? The exploration of these issues is not only related to the development of tourism in practice, but also related to the well-being of local people. In theory, this article aims to make up for the lack of tourism research on sustainable livelihoods and deepen the understanding of the complex relationship between rural communities, sustainable livelihoods and traditional culture.

### *1.1 Sustainable Livelihood Theory*

The idea of sustainable livelihoods originated from the research on poverty by Sen, Chambers (Zuo Bing & Chen Weibo, 2016) and others in the 1980s and 1990s. Livelihood includes the abilities, assets (including material and social resources) and activities required (Susan Mbithe Matiku, Jethro Zuwarimwe & Ndivhuwo Tshipala, 2020). Livelihoods are sustainable when they can cope with and recover from stress and shocks, maintain or enhance their capabilities and assets without damaging the natural resources (Zuo Bing & Chen Weibo, 2016). In 1999, Department for International Development in UK established a sustainable livelihoods analysis framework to analyze the background of rural vulnerability. It links the livelihood capital, livelihood strategies, livelihood outcomes, factors affecting livelihood strategies and other core elements, which are generally considered as the appropriate tools for livelihood analysis (Carney D, 2003). Based on this, Shen et al. proposed a sustainable livelihoods framework for tourism (SLFT), which includes capital, tourism activities, results, institutional arrangements and fragile environments, and links sustainable livelihoods with tourism (Shen F. J., Hughey K. FD. & Simmons D. G., 2008). Based on the SLFT research method, empirical studies on sustainable livelihoods of the tourism industry have increased in recent years, which mainly discussed the impact of tourism on family livelihood (Ashley, C., 2000; Melita, A.W. & Mendlinger, S., 2013; Nepal, S. K., 1997; Anup, K. & Parajuli, R. B. T., 2014; León, Y. M., 2007). However, the relationship between ethnic handicrafts, family livelihood capital and family living strategies were less mentioned. It might have a significant impact on the life of ethnic groups to discuss ethnic handicrafts and tourism from the perspective of livelihood sustainability.

### *1.2 Research on Ethnic Handicrafts and Tourism*

The current international research on the relationship between ethnic handicrafts and tourism mainly focused on three aspects. The first was to study the issue of handicrafts in the development of tourism (Buenano-Allauca MP., Flores ERS. & Andrade NEG., 2016; Popelka, CA. & Littrell, MA., 1991). For example, Buenano-Allauca, MP (Buenano-Allauca MP, Flores ERS, Andrade NEG, 2016) and others analyzed the tourism development of Otahua Rockchiwa in Imbabura Province, Ecuador. Studies had shown that the development of tourism had

greatly promoted the development of local people's living standards for the handicrafts that originally existed in indigenous societies, and the handicrafts have entered the global market. At the same time, the indigenous languages have been better inherited, and the use of Chikwa has become a part of cultural tourism. The second is to study the self-adjustment of handicrafts in tourism development (Choudhury Birinchi, 2018; Hudson, C., & Silva MI., 2016). For example, Choudhury Birinchi (Choudhury Birinchi, 2018) believed that bell metal crafts are important crafts in Assam. Although the craftsmanship of this kind of crafts is completely hereditary, it still has a strong ability to adapt to the market. The third is to study the issue of how to revive and inherit the handmade art in the development of tourism (Canazilles KSA., Alves GL. & Matias R., 2015; Zhao SD. & Guo HB., 2015). For example, Canazilles, KSA (Canazilles KSA., Alves GL. & Matias R., 2015) and others investigated Bonito, an eco-tourism city in the southern state of Mato Grosso, Brazil. The traditional handicraft Kinikinau in this area is considered to have been "extinct" for more than half a century. However, the development of ethnic tourism has allowed Kinikinau to re-flow to the market and become the main tool to strengthen national identity.

### *1.3 Fish Skin and Traditional Livelihood*

The livelihood system of a certain community is often shaped by tourism activities (Su, M. M., Wall, G, Wang, Y. A. & Jin, M., 2019). The development of fish skin tourism is mainly based on the traditional fish skin culture of the Hezhe nationality at the beginning. The processing of fish skin handicrafts can create new livelihood strategies and integrate fish skin culture with existing livelihoods. This method could be used as an alternative to full-time or part-time livelihoods (Stone, M. T. & Nyaupane, G. P., 2018). The integration of fish skin handicrafts and tourism could be applied to explore the relationship between the community and the development of tourism. In the study of rural livelihoods, the livelihood methods usually focus on how individuals, families or communities use natural, material, economic, social and cultural assets to make a living (TAO TCH & WALL G, 2009). Livelihood strategies are situated in a diversity of macro conditions and social trends, mediated by institutions, organizational structure and socio-cultural relations (Ellis, F., 2000). The livelihood system is dynamic and interactive, as livelihood outcomes can also impact the macro context, shape the evaluation and allocation of livelihood assets, and trigger changes in the policy environment and institutional arrangements (Stone, M. T. & Nyaupane, G. P., 2018).

Various attempts have been made to assess livelihood sustainability. Livelihood diversity has been used as a key indicator to evaluate livelihood sustainability. The diversity of available livelihood options (Mbaiwa, J. E., & Stronza, A. L., 2010), balanced income allocation from integration of livelihood activities (Su, M. M., Wall, G, Wang, Y. A. & Jin, M., 2019) and synergistic relationships among potential livelihood strategies are all critical to the enhancement of livelihood diversity. Besides, livelihood freedom, or choice, is another indicator that has been used in previous research into livelihood sustainability (Su, M. M., Wall, G, Wang, Y. A. & Jin, M., 2019). Besides, livelihood freedom, or choice, is another indicator that has been used in previous research into livelihood sustainability (Su, M. M., Wall, G, Wang, Y. A. & Jin, M., 2019). It refers not only to the freedom of choice to select among livelihood options but also the ability to move among different livelihood strategies when necessary. Such indicators are suitable for analyzing the status of livelihood sustainability at the individual, household or community.

A restructured sustainable livelihood system is shown In Figure 1. It depicts the interaction between the development of fish skin tourism and the livelihood system and its impact on the sustainability of livelihoods. As a powerful cultural media, fish skin handicrafts are important resources that integrate with other assets to form new livelihood strategies. The integration of various elements of fish skin and tourism has affected the production and development of new livelihood products. That is, the sustainable livelihood approach recognizes that multiple and evolving livelihood activities occur (Su, M. M., Wall, G, Wang, Y. A. & Jin, M., 2019) and, as such, has shown strength for the analysis of complex community livelihoods (TAO TCH & WALL G, 2009).

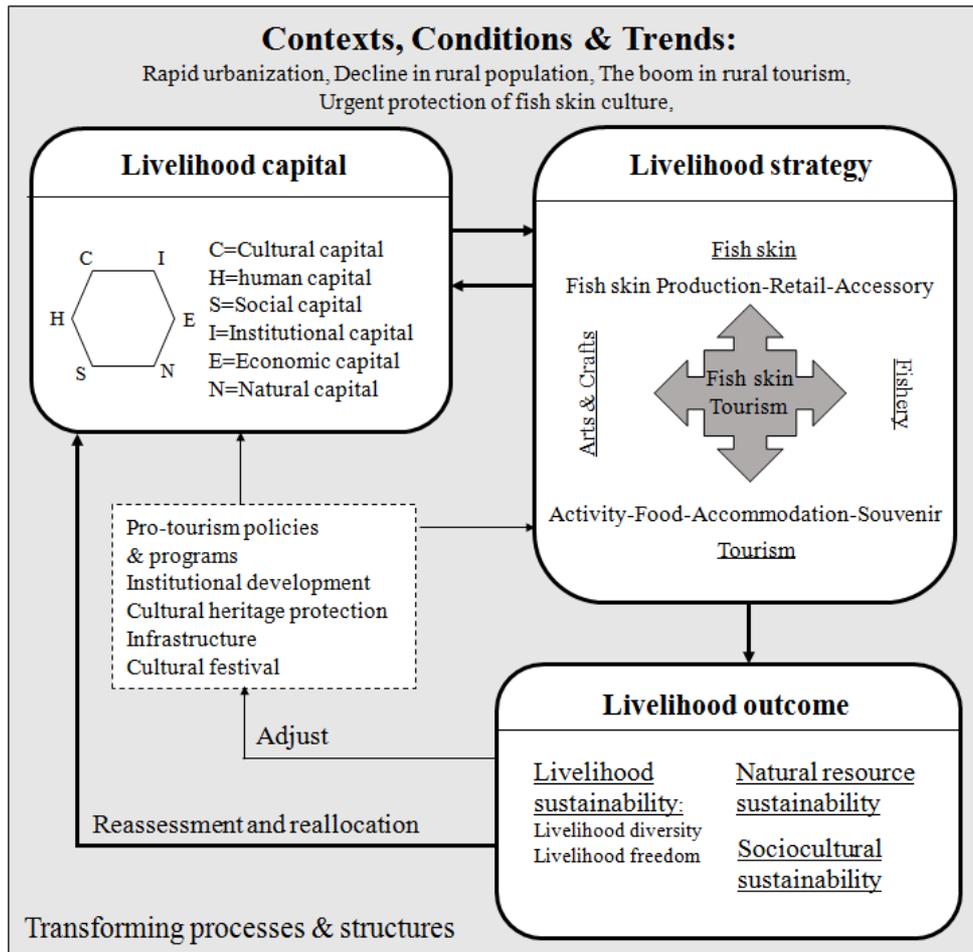


Figure 1. Sustainable livelihood system

**2. Materials and Methods**

*2.1 Jiejinkou Hezhe Township*

This article chooses Hezhe Township, Jiejinkou, Tongjiang City, Heilongjiang Province as the case site. The reasons are as follows: Firstly, the Hezhe nationality is an indigenous people with a long history living in the border areas of Northeast China. Since ancient times, it has thrived along the waters of the Heilongjiang, Songhua River and Ussuri River. It is a typical fishing and hunting nation and also the one of the smallest ethnic groups in China. The development of Hezhe people’s residence proves the attention of contemporary capital to ethnic areas. Secondly, Jiejinkou is a typical representative of the development of ethnic tourist villages in the residential area of the Hezhe nationality. Since the late 1990s, without the intervention of the government and developers, due to the entry of Japanese tourists, local people have independently developed ethnic tourism and have the initiative to choose livelihoods. Thirdly, in recent years, Hezhe people have integrated border tourism with fish skin culture, and developed a series of fish skin culture products, which promoted the development of local tourism industry. In this process, the livelihood of local people has changed greatly. These changes reflect the self-adjustment and adaptation made by the residents of minority communities when they comply with the trend of the times.

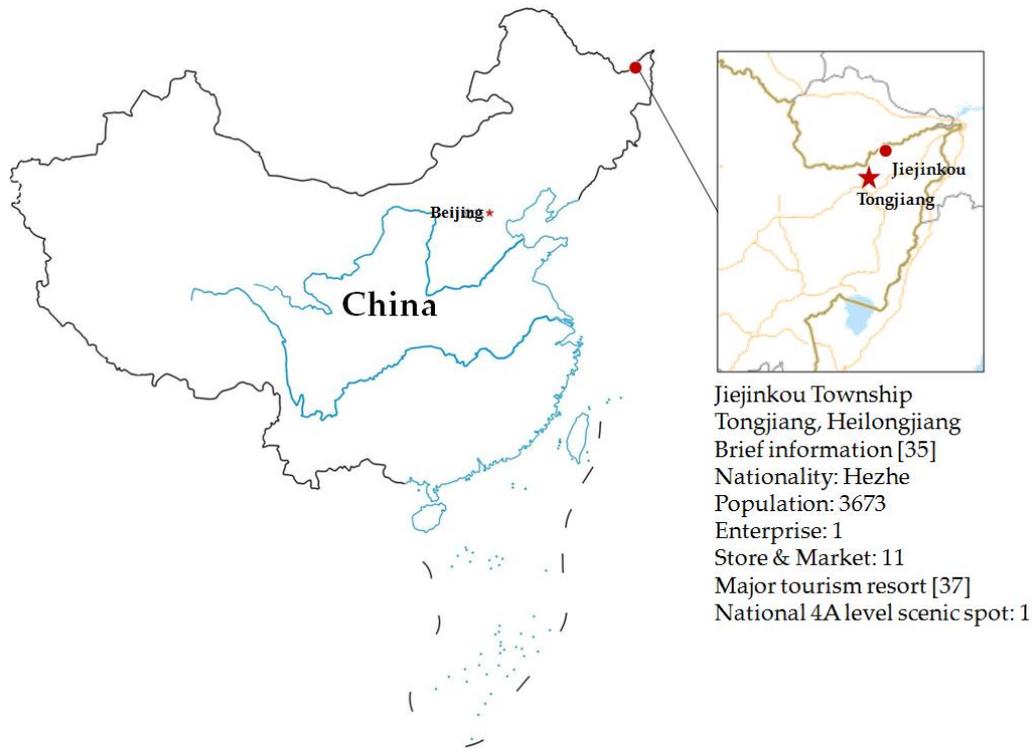


Figure 2. Position and brief introduction of Jiejinkou township



Figure 3. Scenic view of Jiejinkou township (provided by Yulin Sun, an inheritor of fish skin skill)

Jiejinkou is a township governed by Tongjiang city which locates in the South Bank of Huntong River downstream of the confluence of Heilongjiang and Songhua River (at the foot of Jiejinkou Mountain on the south bank of the middle reaches of Heilongjiang), across the river from Russia (on the other side of the river are the following Ningskoye in Russia), and it is 45 kilometers away from Tongjiang city. Figures 2 and 3 show the position, brief introduction and scenic view of Jiejinkou township. It is surrounded by mountains on three sides and water on one side (shown in figure 3), with beautiful scenery and rich natural resources. In September 1988,

Tongjiang City set up Tourism Bureau, mainly dealing with foreign tourism business. In June 2000, the development and management Office of Jiejinkou Hezhe tourist resort was established. Since then, the ethnic tourism projects in Tongjiang area began to develop gradually. Figure 4 (<http://www.tongjiang.gov.cn/>) shows the changes in the number of domestic tourists and the comprehensive tourism income from 2006-2019 (data in 2015, 2016 wasn't published) in Tongjiang. Meanwhile, Jiejinkou is the major scenic spot of Tongjiang city which indicates that the tourism here has increased annually. Besides, Jiejinkou is also the birthplace of fish skin making skills and the main gathering area for fish skin craftsmen. At present, there are nearly ten elites engaged in the production of fish skin handicraft products, such as national inheritors of fish skin making skills and provincial inheritors of fish skin costume making. Nowadays, Jiejinkou has become the main production area of fish skin handicrafts in Tongjiang area.

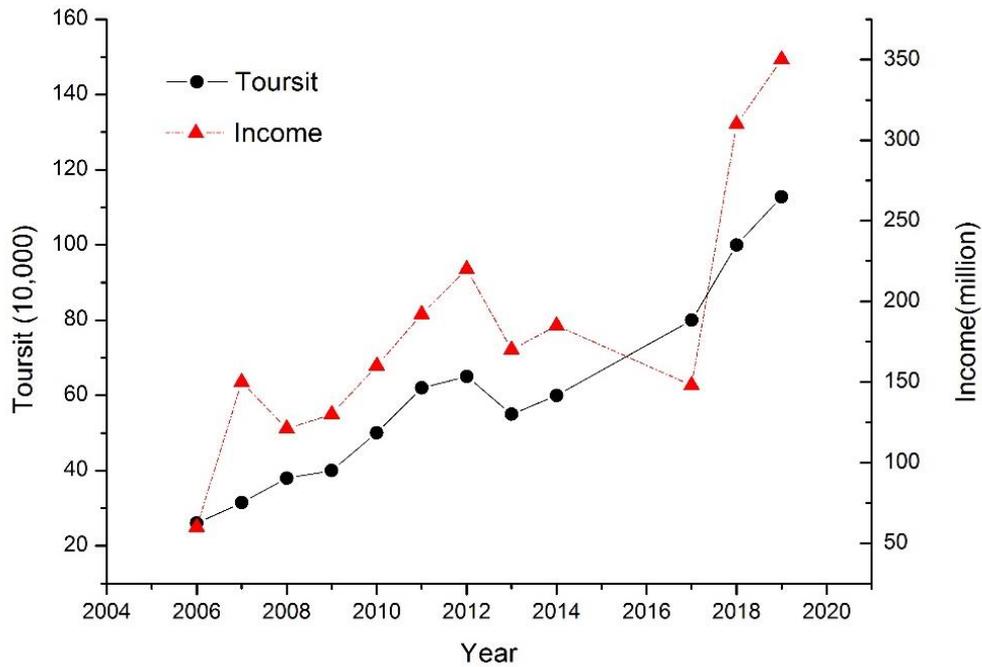


Figure 4. Changes in tourist number and tourism income of Tongjiang city

## 2.2 Research Methods

### 2.2.1 In-depth Interviews and Questionnaire Surveys

From July 2020 to September 2020, the field investigation was conducted twice in Jiejinkou Hezhe Township. The main interview objects of the investigation are the inheritors of fish skin making skills, folk fish skin handicraft producers, fish skin product sellers, and scenic staff, Restaurant operators, village officials and some villagers, etc. The recordings of these personnel have been encoded to protect the privacy of the interviewer and their names are simplified by acronyms (see Table 1).

The content of the interview mainly focused on:

The basic family situation of the local people and whether the livelihood mode has changed due to tourism development.

The positive and negative effects of the integration of fish skin culture and tourism (“the integration of fish skin culture and tourism” is simplified as “fish skin” tourism in the following article). The changes in personal life before and after tourism development, and whether the changes are related to tourism and villagers’ views on participating in tourism-related activities, etc.

Table 1. Basic information of 10 in-depth interviewers

Number	Name	Gender	Age	Profession
1	YWF	Female	69	Inheritor of fish skin production

2	WBC	Male	63	Fisherman
3	YXY	Female	65	Tour guide
4	SFH	Male	64	Peasant
5	LTH	Female	30	Catering operators
6	ZJ	Female	31	Market operators
7	WLM	Female	56	Fish skin painting family workshop operator
8	ZJ	Female	35	Fish skin products seller
9	SY	Female	32	Scenic service staff
10	ZQ	Female	34	Family Hotel Operator

From August 20 to August 29, 2020, a questionnaire was designed according to the representative conclusions in the former interview. Another survey was conducted in Jiejinkou to explore whether these conclusions are universal. About 53 people were interviewed and 40 valid questionnaires were collected. The basic information of the interviewees is shown in Table 2

Table 2. Basic information of interviewees

Demographic Character		Percentage	Demographic Character		Percentage
Age	18-35	19.2	Nationality	Han	40.4
	35-45	65.4		Hezhe	55.8
	>55	15.4		Other	3.8
Gender	Female	61.5	Marital Status	Unmarried	7.7
	Male	38.5		Married	80.8
Education	Primary school	19.2		Divorced/Widowed	11.5
	Junior high	34.6	Family size	<=2 persons	3.9
	Senior high or equivalent	44.2		3 persons	19.2
	College	2		4 persons	34.6
	University	0		>=5 persons	42.3

### 2.2.2 Repertory Grid Analysis

Repertory Grid Analysis (as RGA in the following article) is a structured qualitative research method. It includes three parts: element, construction and link mechanism, and its application is divided into three stages: element selection, construction extraction, completion grid and analysis grid.

#### (1) Element selection

The element selection directly determines the specific object of the research. Fransella (Liu Xiangjun & Sun Jiuxia, 2019) suggested to follow the principle of “specific, from the same category or field, representative, and familiar with the interviewee” when selecting elements. Therefore, the elements that reflect the way of livelihood were chosen as follows: agriculture including rice and corn, fishery including salmon and crucian, handicraft manufacturing including fish skin pendants, fish skin paintings, and tourism including souvenir shops and hotels. This is in line with the requirements of RGA, and the number of elements is suitable between 6 and 11 (Hankinson G, 2004).

#### (2) Construct extraction

In the RGA, “construction” can help the interviewee to clarify the differences between the various elements, thereby helping the researcher to summarize the various properties of the elements. Generally, the “construction” is extracted through the “three groups” method (Kelly G., 1963). In the survey, the three elements were grouped together, and the interviewees were asked to express them through simple descriptions. For example, “Knowing more about Hezhe culture (construction) is not important for planting corn (essential) and fishing salmon (essential), but very important for souvenir shop operation (factor).”

#### (3) Repertory Grid Analysis

The interviews would be conducted with specific questions during the survey, such as “Which of the three, rice planting, souvenir shop and hotel management, do you think is similar but different from the third? Please explain through specific items.” The interviews of each villager would produce a repertory grid. The structure and statistical results are shown in Tables A3 and A4 (see Appendix A). However, “Completing the repertory grid is a very time-consuming process” (Hankinson G, 2004), and the interview time for each respondent was not less than 2-3 hours. Accordingly, the interview results with 10 representative villagers are applied to finish the RGA to discuss the impact of the “fish skin” tourism on their livelihood.

**3. Results**

The impact of the livelihood changes to Jiejinkou villagers are sorted out from Table A3, Table A4 and analyzed from multiple aspects. The statistical results show that the differences among villagers in economic conditions, traditional culture, livelihood skills, and daily life are relatively significant. In order to further explore the specific circumstances of these differences, an analysis framework of “economic income-cultural skills-daily life” is constructed. From this framework, six factors are chosen to examine whether the qualitative analysis of the accumulation grid has universal significance, and they are: total family income, stability of family income, knowledge about traditional culture of Hezhe nationality, livelihood skills, family relations, and career choices. Based on the analysis of RGA, these six factors are redesigned into 6 independent questions along with a dependent question (How about the sustainability of livelihood of your family?) in Likert scale to conduct a questionnaire survey on the villagers in Jiejinkou as a supplement of view compared with the qualitative analysis of the RGA. These questions are as follows in Table 5:

Table 5. Independent and dependent questions

Independent questions (independent variables)		Simplified version
Economic income	How about your family total income?	Family income
	How about the stability of total income?	Income stability
Culture & Skills	How about your traditional cultural knowledge?	Cultural knowledge
	How about your skills for livelihood?	Livelihood skill
Daily life	How about your family relationship?	Family relationship
	How about your career choices?	Career choices
Dependent question (dependent variable)		Simplified version
How about the sustainability of livelihood of your family?		Livelihood Sustainability

In Table 5, the simplified versions of the questions are listed and would be used in the following article.

In the 40 valid questionnaires, the number of people engaged in the “fish skin” tourism-related work is 15, and the number of people not engaged (or little engaged) in the “fish skin” tourism is 25. For each question, the score ranges from 5 to 1 respectively. The statistical results are analyzed by SPSS.21 data analysis software. The results are shown in Table 6-Table 9. In Table 6, the average values of each factor between villagers engaged in “fish skin” tourism (VE) and villagers not engaged in tourism (VNE) are shown along with T tester and significance factor. In Table 7, as for 15 villagers engaged in “fish skin” tourism, the detailed changes are listed accordingly. In Table 8, the method of Linear regression analysis was used to fit the relationship between 6 independent variables and 1 dependent variable.

Table 6. Comparison of views on the sustainable livelihood between villagers engaged in “fish skin” tourism (VE, N=15) and villagers not engaged in “fish skin” tourism (VNE, N=25).

Question \ Result	Independent variables						Dependent variable
	Economic income		Culture & Skills		Daily life		Livelihood Sustainability
	Family income	Income stability	Livelihood skill	Cultural knowledge	Career choices	Family relationship	
VE	4.33	4.00	4.4	4.13	4.33	3.87	4.33
VNE	3.72	3.84	3.96	3.32	2.69	3.56	3.84
T value	6.42	0.65	2.7	3.94	2.56	1.23	2.15

df	38	38	38	38	38	38	38
Sig #	.014*	.517	.036*	.000*	.000*	.202	.038*

# double sided

\*Statistically significant differences are identified at .05 level.

Table 7. Changes on sustainable livelihood of villagers engaged in “fish skin” tourism (VE, N=15)

Independent variables		Improve a lot (%)	Improve (%)	Improve a little (%)	No change (%)
Economic income	Family income	20	70	10	0
	Income stability	40	50	10	0
Culture & Skills	Cultural knowledge	40	50	10	0
	Livelihood skill	30	50	20	0
Daily life	Family relationship	10	60	30	0
	Career choices	40	50	10	0

Table 8. Linear regression model <sup>(a)</sup>

Linear regression analysis		B	T	Sig.	VIF
	(constant)	-1.185	-1.831	.104	
Independent variables	Family income	.390	2.796	.023	1.736
	Income stability	.142	1.182	.271	1.936
	Livelihood skill	.273	1.546	.161	2.925
	Cultural knowledge	.223	1.633	.141	2.411
	Career choices	.194	1.063	.319	2.977
	Family relationship	.075	.491	.636	2.238

a. Dependent variable: How about the sustainability of livelihood of your family?

The impact of the integration of “fish skin” and tourism on the livelihood sustainability of Jiejinkou residents can be summarized as follows:

### 3.1 Economic Income: Increase and Stability

Figure 5 reveals the way that fish skin making techniques and tourism are combined. Generally, four main components of tourism behavior: activities, catering, accommodation and souvenirs can be connected with the four elements (namely, the sales of fish skin paintings, the research and development as well as production of fish skin artifacts, the protection and inheritance of fish skin culture) of fish skin handicraft industry in different ways. In the interview, the villagers explained why they tended to participate in tourism by learning fish skin paintings or fish skin ornaments making. On the one hand, the time for making fish skin handicrafts is flexible, which did not affect their continued agricultural and fishing activities. On the other hand, it is not difficult to learn fish skin paintings, and the learning cost is acceptable. Therefore, many local villagers are willing to participate in the development of tourism by making fish skin paintings or small fish skin pendants.

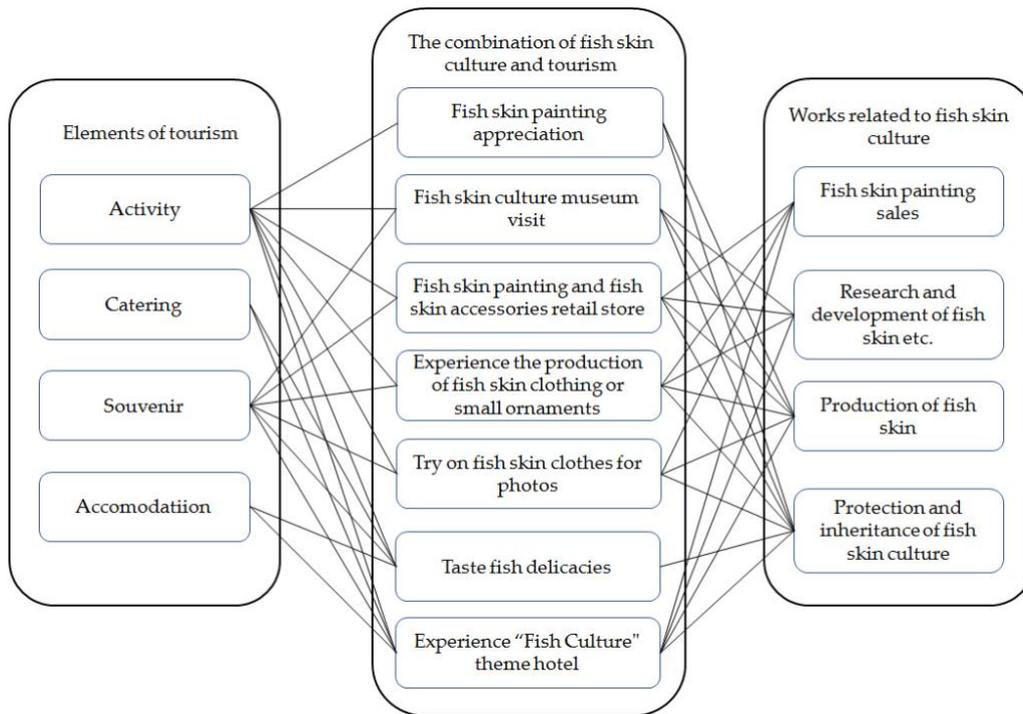


Figure 5. The way that fish skin making techniques and tourism are combined

In Table 6, the average difference of the total family income between the villagers not engaged in “fish skin” tourism and the residents engaged in the tourism activities are 3.72, 4.33 respectively which means that the views of the latter are more positive. Meanwhile, the significant difference is 0.014 (smaller than 0.05), which proves that there is a systematic difference between the two groups.



Figure 6. Typical fish skin products. (a) fish skin painting; (b) handicraft (photographed by author).

For a fish skin painting without mounting, the cost of raw materials is only about 10 ¥, but the market price can buy 150-200 ¥, which indicates that the yield of fish skin painting is considerable. On the other hand, due to the flexible time and high income of fish skin handicrafts, villagers can participate in more than one type of work. That is, making fish skin crafts not only does not replace the original way of livelihood of villagers, but also increases family income. Among the 15 villagers who participated in the “fish skin” tourism, 20% even said that their income from making fish skin paintings was already the main source of family income. Typical fish skin painting and product are shown in Figure 6.

*“My biggest order was one from a few years ago. It was to make 350 paintings for me in one month. This kind of*

*order was big enough. Sometimes the order maybe more than 100 paintings. Sometimes, maybe 150 or 100, or 80, and it is normal for the government to use a few hundred (paintings) a year. Generally, government orders are not delivered at one time, but in batches. When it (market) is good, we can earn about 100,000 a year. When it is bad, like this year<sup>i</sup>, there are fewer tourists, we can also earn tens of thousands” (07WLM20200809)<sup>ii</sup>.*

At the same time, participating in tourism activities by making or selling fish skin handicrafts also helps increase the stability of the villagers' income, especially for the Hezhe people who rely mainly on the fishery. Generally, in a one-year working cycle, the rhythm of fishery and tourism is different. The fishery has a ban period of 3-4 months each year, and this period of time is just the peak tourist season (early May to early October each year), so the income from participating in “fish skin” tourism can help maintain the stability of family income. The main activities of agricultural production and tourism reception of Jiejinkou villagers in one year is listed in Table A9 (see Appendix B).

In Table 8, it reveals that the coefficients of “How about your family total income?” and “How about the stability of total income?” are 0.390 and 0.142 respectively, indicating that the total household income and income stability have a positive influence on sustainable livelihoods. Besides, the coefficients of these two factors count more than 0.5, which means that they have considerable influence compared with the other four factors. It can be seen that the economic returns and the reduction of income volatility are the main driving force to encourage villagers to devote themselves in “fish skin” tourism.

### 3.2 Culture & Skills: Identity and Diversity

From Table 6, in the comparison of “How about your traditional cultural knowledge?”, it shows that there is a significant difference between villagers in two groups indicating that in addition to economic differences, the integration of “fish skin” and tourism also directly affected the villagers' own understanding of the traditional culture of the Hezhe nation. This is also confirmed by the 10 villagers interviewed in depth. Actually, for the Hezhe people, due to the introduction of a large number of cloths in the 1940s and 1950s, the locals gradually stopped using fish skin to make clothing, and the fish skin culture gradually faded out of people's vision. With the development of tourism, fish skin culture was again familiar to people.

In Table 7, 33% of “fish skin” tourism practitioners believe that their understanding of traditional culture has greatly improved, while the 10 villagers interviewed in depth all believe that if they want to make fish skin culture a usable “cultural capital”, they must be familiar with their own fish skin culture at first. A reporter engaged in the catering industry in Jiejinkou said to the author:

*“People in my generation may never wear fish skin clothes, but as you see, Hezhe people in the store now will tell you about that. If one asked you what the fish skin clothes are, you should be capable to tell something, even if you don't know how to do it. Otherwise, people will think that you are not a local person and will not have a good impression of your store” (06ZJ20200727).*

The early fish skin clothing was only a necessity for Hezhe family life. However, for today's Hezhe people, fish skin was also an important means to show their national identity and culture. Especially, after the development of local ethnic tourism, villagers were more willing to introduce their fish skin culture to tourists. This was actually the fact that the villagers used ethnic culture as a background to express the peculiarities of fish skin handicrafts and showed the strong value identity of a nation from the fish skin products. For Hezhe people, who had been in marginal areas for a long time and had a very sparse population, the development of tourism had enabled them to discover the value of their traditional culture. Tourists' interest in fish skin cultural products had prompted people to have more initiative to re-understand their traditional culture. Hezhe people gradually realized that the use of tourism development can fully demonstrate their traditions, and can use their own culture to decorate their products, so as to obtain more economic returns (Peng Zhaorong, 2002). Therefore, in the process of participating in “fish skin” tourism, villagers have undergone major changes in their cognition and understanding of traditional culture.

In Table 7, that 46% of villagers engaged in “fish skin” tourism believe that the integration of tourism and fish skin has also increased their ability in additional livelihood activities. The ability of life skills here mainly refers to the improvement of service, communication skills and the improvement of the ability to use the Internet.

A villager explained:

*“Now if I have some new works or new ideas, I will post them on WeChat. Now you can see the popularity of WeChat business and live broadcasts. We both have Douyin and Kuaishou (app like Tiktok) to make live broadcast about fish skin paintings or sell fish skin paintings, either. And because many people have never heard of fish skin, they will be very curious. Then the popularity will rise. People are willing to watch and pay attention to you. Gradually, there will be orders and our products will be spread. We are definitely different from the old generation who was sitting in the store and selling things. We are all young people. We have to keep up with the times and learn how to do it like the others.” (05LTH20200813).*

Among the 15 villagers engaged in “fish skin” tourism, 93% believed that, in the process of selling fish skin products, how to introduce the difference and meaning of each fish skin work to tourists is the key step. A villager said that:

*“I didn’t like to talk at all. I thought it would be fine to make fish skin paintings. People would buy them if they liked them. But in fact, things don’t go like that. If you can say and introduce your products, you will definitely sell well. This is not like catering or in the supermarket. When people go to my store fish skin paintings will not introduce themselves. Therefore, I am quite capable in explaining fish skin paintings. I can almost say the meaning of each painting.”* (08WZJ20200818)

Therefore, in this process, two changes are happening naturally. First, the local villagers continue to inherit and carry forward the culture of their own nation while engaged in tourism. This would improve their own cultural literacy which will also help the villagers have a broader vision and higher ability to utilize the resources available in traditional culture, so as to realize the interaction between culture and people. Second, Hezhe people will also improve their livelihood ability according to the feedback from the external society, change their actions in tourism activities, so as to better adapt to the market demand and improve their livelihood mode.

### 3.3 Daily Life: Stability and Freedom

In Tables A3, A4 and 6, it shows the impact of participating in “fish skin” tourism on daily life. Most villagers interviewed believed that due to the flexibility of making fish skin paintings, the villagers engaged in this industry can have more time to take care of their families, which helps to maintain the harmonious relationship between families, and thus further improve the diversity and sustainability of family livelihood. Meanwhile, many villagers working abroad, especially women, believed that making fish skin paintings can retain the labor force in the village. Especially for the traditional Hezhe family, making fish skin paintings could provide women with more time to carry out housework at home and maintain the order of family which would help strengthen the connection between family members. An interviewee said that:

*“Our Jiejinkou has a good environment and a good scenery, so the tourism industry in the past two years has been consolidated. Our couple used to work outside and work, that is, it is about 50 to 80 a day, and then Jiejinkou is here. For a few years, it’s not for tourism. We came back. The elderly and children are also in the village, so it’s easy to come back. I learned fish skin painting from the master in the village, and the object was doing food and beverages on the glass plank road, and then our store also sold me. I also sell fish skin paintings on the Internet myself. This way I can take care of the elderly and children at home. After the epidemic has passed and stabilized, we are also planning to do another fish skin painting shop or something. The income must be now. It’s much better than before, and those who stay at home, if you leave it before, you will have to go to work and it is impossible to accompany your children at home”* (09SY20200811).

The rapid development of tourism has provided Jiejinkou with more scenic spots and tourist attractions. The catering, accommodation, retail and transportation industries supporting the scenic spots offered more employment opportunities for local villagers. The direct impact of diversified livelihood opportunities is that most families in Jiejinkou have the opportunity to maintain 2 to 4 livelihoods. In Table 8, the coefficient of “How about your career choices?” is 0.194 indicating that “career choices “ have a positive influence on the improvement of sustainable livelihoods. Briefly, participating in fish skin cultural industry can not only help local residents better integrate into the development of tourism, but also enhance the freedom of career choice while caring family affairs.

In general, for the villagers in Jiejinkou, the connection between tourism and “fish skin” enriches the local livelihood diversity. For families, participating in tourism activities through “fish skin” is a sustainable way of livelihood. This sustainability is manifested in the following aspects.

The integration of tourism and “fish skin” can increase the sales of fish skin cultural products, and at the same time promote the sales of other agricultural products and improve the economic level of the villagers.

Jiejinkou villagers can supplement their family income during slack farming season and closed fishing season by participating in “fish skin” tourism and maintain the stability of family income.

The integration of fish skin and tourism encourages villagers to engage in related industries to learn more about the traditional culture of the Hezhe nationality, thus helping them to develop and utilize the cultural resources of the Hezhe nationality.

From the perspective of livelihood choices, the integration of the two also provides more choices for villagers and enables them to choose among a variety of livelihood strategies according to their preferences and abilities. For example, women who possess more leisure time can engage in fish skin painting business, and women with better craftsmanship can learn to make fish skin clothes.

While the livelihood options are gradually diversified, new requirements are also put forward for the villagers.

Compared with the traditional livelihood method, the new livelihood method requires the villagers to learn more skills. And for villagers, the improvement of livelihood ability will in turn affect their livelihood level, thus realizing a virtuous circle.

The diversity of livelihood options and the improvement of livelihood capacity can not only retain labor in rural areas, but also help strengthen social and family ties, which has a positive influence on the harmonious development of the region.

#### **4. Discussion**

In addition to the conclusions above, there are four aspects worth discussing:

The establishment of links between tourism and national handicraft industry can effectively promote the development of tourism and national handicrafts. However, Jiejinkou as a typical local tourism resort has not yet formed a consistent cultural brand of “fish skin town”. For example, a local fish skin tourism association can be launched to encourage knowledge sharing, establish common goals and objective, cooperate with tourism department of the local government to work out a unified service standard, a unified propaganda, and create an interesting fish skin culture experience to meet the needs of residents and tourists.

The large-scale participation of villagers in tourism activities will bring wealth to some people first. Though this will help the economic development of the village, it may also widen the gap between the rich and the poor among the villagers which may be a hidden danger for the harmony and stability of ethnic regions in the future. That is, the “man” factor should be considered in the analysis when looking into the living conditions and cultural adaptation of the residents in ethnic regions.

In the first half of 2020, due to the outbreak of the new crown epidemic, global economic development has been severely affected. Since Jiejinkou villagers have improved their livelihood sustainability by participating in “fish skin” tourism, have they reduced the risk of encountering economic difficulties in the face of such economic fluctuations? Compared with other means of livelihood, how do villagers who participate in “fish skin” tourism recover or maintain their life and assets quickly from economic fluctuations? The discussion of these issues also has certain practical significance in the current social environment.

At present, although fish skin products help to increase the income of villagers, with the gradual increase of the number of participants, the phenomenon of low-end products and homogenization also appears. From the perspective of long-term development, this is not conducive to the development of fish skin tourism and the sustainability of villagers’ livelihood. Therefore, how to improve product quality, enhance competitiveness, optimize industrial division, enhance innovation, optimize sales channels etc, should draw the attention from the government, NGO, enterprises and villagers in the future.

#### **5. Conclusions**

Fish skin making skills are the most representative traditional culture of the Hezhe people. Therefore, the production and sales of fish skin handicraft products have great potential to help the Hezhe villagers in Jiejinkou improve the sustainability of their livelihoods. On the basis of previous studies on sustainable livelihoods, this article has identified and synthesized the potential connections between the fish skin culture industry and the tourism industry. From the perspective of theory and practice, this paper discusses the integration foundation of “fish skin” and tourism in practice and potential.

The results of this analysis are as follows: The integration of “fish skin” and tourism can be used by people as a sustainable livelihood model. In addition, by the method of Repertory Grid Analysis, a new analyzing framework is established incorporating three levels, namely: economic income, cultural & skills, daily life, to evaluate the impact of the integration of fish skin handicrafts and tourism.

This framework could be used to evaluate livelihood sustainability in different contexts. Though this article is mainly focused on the integration of ethnic handicrafts and tourism, the fundamental purpose of this research is to promote the improvement of the livelihood of residents in ethnic areas and the sustainable development of rural areas.

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**Appendix A**

Table A3. Repertory grid and statistical results of 10 respondents\*

Construct	Element	Agriculture		Fishery		Element	Construct
		Rice	Corn	Salmon	Others <sup>(a)</sup>		
Family income increased		12	13	13	14	Family income not increased	
Income stability improved		14	16	18	18	Income stability not improved	
More villagers value traditional culture		18	18	18	18	No more changes happened	
Need to know more about Hezhe culture		18+2×	18	18	20	Needn't to know more about Hezhe culture	
Help to learn cultural knowledge		19	19	19	19	No help to learn cultural knowledge	
Improve social resources		19	19	17+×	19	No help to improve social resources	
High demands on social skills		18+x	20	19	20	Low requirements for social skills	
Need to learn more network technologies		16	16	16	15	No need to learn more network technology	

Daily life is more busy	15+×	16	18	20	Daily life is more idle
More diverse lifestyles	18	18	16	16	Single lifestyle
More time with family	16	16+×	16	16	No more time with family
Family relations are more harmonious	12	12	14	14	Family relations become more tense
More available time	18	18	19	20	No increase in available time
Satisfied with the living environment	11	11	12	12	Unsatisfied with the living environment
Recognize traditional festivals and celebrate various festivals	10	10	10	10	Do not recognize traditional festivals and celebrate various festivals
The government is very supportive	10	10	11	11	The government is not supportive
Greatly impacted by religious	20	20	18	18	Slightly impacted by religious
Familiar with policies and regulations	10	10	11	11	Unfamiliar with policies and regulations
Need more convenient transportation and logistics	10	10	10	10	Need more need in transportation and logistics

\* When the respondents choose the left item of the table for the answers to each question, the score is “1”, and the score is “2” when the right option is selected. The number of the table is the total score of 10 respondents and “×” means that the respondents have not answered.

a. “Others” refers to fish except salmon, like Crucian carp.

Table A4. Repertory grid and statistical results of 10 respondents\*

Construct	Element	Handicraft (Fish Tourism Shops <sup>(a)</sup> Painting Ornaments	skin)	(Fish	Tourism	Element	Construct
Family income increased	10	10	10	10	10	Family income not increased	
Income stability improved	10	9+×	12	12	12	Income stability not improved	
More villagers value traditional culture	10	10	10	10	10	No more changes happened	
Need to know more about Hezhe culture	10	10	10	10	10	Needn't to know more about Hezhe culture	
Help to learn cultural knowledge	10	10	10	10	10	No help to learn cultural knowledge	
Improve social resources	10	10	10	10	10	No help to improve social resources	
High demands on social skills	13	14	10	10	10	Low requirements for social skills	
Need to learn more network technologies	9+×	10	10	10	10	No need to learn more network technology	

Daily life is busier	10	10	12	12	Daily life is more idle
More diverse lifestyles	13	12	12	12	Single lifestyle
More time with family	10	10	12	12	No more time with family
Family relations are more harmonious	10	10	10	10	Family relations become more tense
More available time	10	10	14	14	No increase in available time
Satisfied with the living environment	11	11	10	10	Unsatisfied with the living environment
Recognize traditional festivals and celebrate various festivals	10	10	10	10	Do not recognize traditional festivals and celebrate various festivals
The government is very supportive	10	10	11	11	The government is not supportive
Greatly impacted by religious	19+x	20	19	19	Slightly impacted by religious
Familiar with policies and regulations	10	10	10	10	Unfamiliar with policies and regulations
Need more convenient transportation and logistics	10	10	10	10	Need more need in transportation and logistics

\* When the respondents choose the left item of the table for the answers to each question, the score is “1”, and the score is “2” when the right option is selected. The number of the table is the total score of 10 respondents and “x” means that the respondents have not answered.

a. “Shops” mainly refers to shops and stores that sell fish skin products and souvenirs.

Table A9. The main activities of agricultural production and tourism reception of Jiejinkou villagers in one year.

Month	Agriculture	Fishing	Tourism
1	Rest for about a month in spring		Tourism off-season Fish skin preparation
	Clean up farmland		
	Prepare for spring farming	Winter fishing	
2	Prepare chemical fertilizers		
	Prepare pesticides		
	Send farm manure to the ground		Tourism off-season Fish skin painting products preparation
	Seedling preparation		
	Seedling bed	Winter fishing	
3	Prepare soil	Mending fishing nets	
	Buy seeds, soak seeds at the end of the month	Repairing ships	
	Promote germination	Purchasing fishing gear	
	Seedling raising		
4	Soil digging	Fishing in mid April	Tourists season: Catering,
	Transplanting in early or mid May	Fishing	Touring,

6	Transplanting in early June Field management		Fish skin products selling
7	Field management: Weeding	No fishing	
8	Fertilization Irrigation		
9	Pest control	Fishing	
10	Harvest	Fishing Fishing banned in the Ussuri River Basin	Tourism off-season, Fish skin preparation
11	Slack farming	Fishing	
12	Prepare new year's goods		

<sup>1</sup> In January 2020, the new crown pneumonia epidemic broke out globally. From January to May of the same year, all scenic spots in the Tongjiang area were temporarily closed. In June, the Jiejinkou scenic spot began to open gradually. Therefore, compared with previous years, the number of tourists in the Jiejinkou Scenic Area has dropped significantly, which has seriously affected the sales of fish skin handicrafts. The “epidemic” appearing in the following refers to the current epidemic.

<sup>2</sup> “07wlm20200809” means that the interviewee's number is “07wlm”, and the interview time is August 9, 2020, similarly hereinafter.

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