A review on Nomination of Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island and Iriomote Island for inscription on the World Heritage List

What is the “holistic approach” to address increasing tourism/visitor pressure in Iriomote Island?

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Japan Tiger and Elephant Fund
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Background and objective

On 17 October, 2017, the IUCN experts arrived in Iriomote Island to conduct an on-the-spot review on the nomination of Iriomote Island for inscription in the World Heritage List. On 19 October, the Government of Japan hosted a meeting between IUCN experts and local stakeholders of Iriomote Island as a part of the on-site review by IUCN. At the meeting, the experts then noted their comments as tentative evaluations, including the outcome of the on-the-spot review. The most important points of their comments are as follows;

Firstly, in the context of inscription on the World Heritage List the most outstanding issue for Iriomote Island is the potential for adverse effects from tourism/visitors pressure on the ecosystem. They also expressed a sincere concern about the prediction of an increase in visitors to Iriomote Island, predicted to be more significant than the 3 other nominated areas.

Based on their observations, they suggested that the key measure for protection and management of Iriomote Island as a World Natural Heritage is to introduce a “holistic (comprehensive)” approach (management) to address increasing tourism/visitor pressure. They also referred to the fact that only some voluntary restrictions have been introduced in a few rivers so far, and recommended the participants at the meeting to have a vision with regard to the limit of the number of visitors to be allowed to enter in the Island overall in other words, to envision what the carrying capacity is for tourists. Judging from their comments, the requirements for the said holistic or comprehensive management should include;

(a) Thinking about the island as a whole unit;
(b) Consistency and Integrity;
(c) Sufficient effectiveness; and
(d) Serving as a total volume control to tourism/visitors pressure.

While JTEF evaluated and made recommendations on necessity for extending the areas of the nominated property and a significant improvement of the management plan in the previous report, this report intends to add 2 new points as follows;

Firstly, more caution is needed to address increased pressure on the natural property caused by an increase of tourism/visitor pressure due to being added to the World Heritage List will be discussed (Section 1). Iriomote Island has already experienced sharp increases in tourists triggered by specific events in the past, so a similar situation is likely to happen if it becomes listed (“1.1”). Recently, the number of Iriomote cat road kills has been increasing and reached a record-high of 7 cases in 2016. This trend may be caused by an acclimatization of individual cats to human beings possibly due to the past 10 years of increasing numbers of visitors coming for invasive “eco-tours” which have penetrated into the critical habitat of Iriomote cats (“1.2”). Based on this, introduction of a comprehensive
management of tourism/visitor pressure, which strictly meets the 4 requirements, will be necessary (“1.3”).

Secondly, the total volume control to be placed on tourism/visitor pressure where management is a serious issue on Iriomote Island will be discussed. The official institution of a comprehensive management scheme needs to first of all be based on a set of concepts, principles and legal framework for the entire island. Then step-down management for the especially vulnerable and small-scale ecosystems separately designed units can be effectively planned, implemented and enforced. Just what level of planning and enforcement required to manage Iriomote Island should be discussed thoroughly. Especially the case study of stream ecosystems in the North Coast Section which is one of the most critical habitats for the Iriomote Cat (“Section 2”).

1 More caution is needed to address increased pressure on the natural property caused by an increase of tourism/visitor pressure due to being added to the World Heritage List

1.1 Expected increases in the number of visitors /visitors for “eco-tour” entered in Iriomote Island

1) Relationship between number of visitors and transportation

The visitors from inside Japan and overseas would arrive at Ishigaki Airport or Ishigaki Port (by cruise ships), and then board an express liner / ferry or a charter boat at the Ishigaki Remote Islands Terminal Port bound for either Ohara (East Iriomote) or Uehara, West Iriomote.

[Entry into Ishigaki Island by air]

Figure 1 show the number of visitors who arrived at Ishigaki Airport.

![Figure 1: Visitors per year at Ishigaki Airport](image-url)
The number of visitors who arrived into Ishigaki Airport which is the gateway of the Yaeyama area has continued to increase almost steadily. It was significantly pushed up by the liberalization of air fare in 2000, then suppressed by the economic recession subsequent to the Global Financial Crisis in 2008 and continued to decline until the year of the Great East Japan Earthquake in 2011. However it recovered rapidly by the launch of the new Ishigaki Airport in 2013 which improved the access to Ishigaki Island supported by direct flights provided by Low-cost carrier (LCC) airlines. Visitors exceeded 1 million for the first time in the year. The number of visitors declined slightly due to the withdrawal of a LCC company but it soon recovered by the entry of another LCC, and is maintaining a record-high-level now.

[Entry into Ishigaki Island by sea]

Figure 2 shows the number of visitors who arrived at Ishigaki Port by sea.

![Figure 2: Visitors per year arriving at Ishigaki Port](image)

The entry by cruise ships from Taiwan and South East Asia into Ishigaki Port has increased. The number of visitors can be determined by the number of entry and the size of the ships. The number of entries was ranked 3\textsuperscript{rd} in the country\textsuperscript{1} at 65 times in 2013, which followed \#1 Yokohama Port (152 times) and \#2 Kobe Port (101 times). In 2016, 11 cruise ships entered in Ishigaki Port at 84 times in total\textsuperscript{2}. In terms of total weight (ton) of ships, which can be used as an indicator of scale of the ships, amounted to 416,016 tons 2015 growing 173.5\% from 2012 (239,826 tons) \textsuperscript{3} as a result of the increase in size of ships during that span.

In 2016, the number of visitors by sea significantly increased and exceeded 250,000 people due to the entry of cruise ships 95 times and the entry of “Golden Princess” with more than 100-thousand tons of weight\textsuperscript{4}.

\textsuperscript{1} Ishigaki City, 2014
\textsuperscript{2} Ishigaki City, 2015,
\textsuperscript{3} Ibid.
\textsuperscript{4} Okinawa Prefecture,2017.a
【Entry from Ishigaki Island to Iriomote Island】

Figure 3 shows the average number of services of express liners / ferries on the Ishigaki-Iriomote route\(^5\).

\[\text{Figure 3: Average number of services of express liners / ferries on Ishigaki-Iriomote route}\]

![Graph showing average number of services from 2004 to 2016 for Ohara and Uehara routes](image_url)

(Made up based on "Directory of transportation" prepared by Okinawa General Bureau, Cabinet Office)

In 2011, the two shipping companies, Anei Kanko and Yaeyama Kanko Ferry, started to share their shipping services and coordinated their competitive services\(^6\). Consequently, the number of services significantly decreased. Apart from that, the trend of the number is mostly in association with the number of visitors entering Iriomote Island (Figure 4).

The most noteworthy is the fact that the launch of new shipping lines (Ishigaki Dream Tours) in 2007 increased the capacity of the boats for visitors transported from Ishigaki Island to Iriomote Island.

【Breakdown of number of entry by port (Ohara, Iriomote-Island East or Uehara, Iriomote-Island West)】

Figure 4 shows the total number of people per year (including the residents) who entered Iriomote Island through the route mentioned above.

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\(^5\) The figure of average number of services was calculated based on the total number of services on Iriomote-East Ohara ↔ Ishigaki route and the West Uehara ↔ Ishigaki route provided by the 3 shipping lines (in the case express liners/ferries 3days a week, the total number of the services was calculated as: 3 ÷ 7=0.4).

\(^6\) *Yaeyama Mainichi* news article dated 1 May, 2011
The number of visitors in Iriomote Island correlates to the visitors at Ishigaki Airport, and has been stable at around 350,000⁷.

In the eastern part of Iriomote Island, Ohara is mainly used as the hub for larger group-tours as coordinated by tour companies which can make efficient itineraries of tours that are a few hours long. This is due to tourism resources in Iriomote Island East like the Nakama River and Yubu Island, which cater to safe and easy trips for enjoying the typical Iriomote Island scenery thanks to stable express services between Ishigaki and Ohara⁸.

On the contrary, the visitors at Uehara Port, the gateway of the western part of Iriomote Island, is as small as one fifth of Ohara Port due to the fragile access caused by more cancellations, etc.. Nevertheless, scuba-divers mainly use Uehara Port because the scuba-diving spots concentrate on the western part of Iriomote Island. That may also be the case for the visitors mainly interested in ecotourism like kayaking and trekking⁹.

Okinawa Prefecture is concerned that the record-high number of visitors to Nakama River and Yubu Island in Iriomote Island East, arguing that this high concentration of visitors should be avoided by allotting it out on a year-round basis¹⁰ and is considering to construct a "Iriomote Field Museum Center (provisional title)"¹¹ in the Urauchi area, western part of the Island for attracting one-day group tour visitors to that area. If this plan is carried out, it is likely that visitors entering in the western part would significantly increase, while they may be still impacted by limited access by express liners.

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⁷ Okinawa Prefecture, 2017.b
⁸ Okinawa Prefecture, 2017.c
⁹ Ibid.
¹⁰ Ibid.
¹¹ JTEF, 2017 See 3.4.3.
Policy to promote the increase of domestic and overseas visitors to Iriomote Island

Okinawa Prefecture is aiming to “form a world-class tourist resort” based on the “Master Plan of Okinawa 21st-Century Vision”, and planning to enhance the function of infrastructures including airport and sea transportation towards the goal of achieving 100 billion yen (US$ 0.9 billion) income and 10 million visitors into Okinawa\textsuperscript{12}. In terms of Ishigaki Airport, Okinawa Prefecture is considering to construct a facility and expand the aircraft parking apron entering by middle-sized jet liners while it is also planning to establish regular international flights and attract new international air lines\textsuperscript{13}. Furthermore, the Prefecture is completing a berth of 70,000 tons-class and newly considering to construct a berth of 140,000 tons-class\textsuperscript{14}. Considering those active promotion for attracting visitors to Ishigaki Island, the number of visitors entering in Ishigaki Island is likely to grow steadily.

As shown in Figure 3 and 4, the change on number of services of express liners/ferries between Ishigaki is in direct relation to the number of visitors into Iriomote Island. Therefore, it is highly likely that the two shipping companies would continue to flexibly increase the number of shared services, as the number of visitors also increases from Ishigaki Island.

If a total volume control at the water-edge of at the Ishigaki Remote Islands Terminal Port is considered, a full cooperation by the shipping companies is essential. Appropriate and efficient procedures to distinguish tourists from residents and putting a boarding restriction on the former would be necessary without negatively impacting shipping services for the daily needs of the residents\textsuperscript{15}. However, such ideas have not been openly discussed in the past.

Moreover, Okinawa Prefecture is considering to attract a cruise line for visiting several remote islands, which will not be controlled by the limited capacity of lodging in those islands\textsuperscript{16}. In 2017, 11 shipping companies and individuals are authorized to run an irregular shipping line from Ishigaki to Iriomote\textsuperscript{17}. It is said that the Ishigaki Dream Tours, one of the three shipping companies which run a regular line between Ishigaki Island and Iriomote Island is likely to launch an irregular line focusing on tourism in April 2018\textsuperscript{18}. It seems to be likely that entry into Iriomote Island by irregular cruising ships may become a more popular route in the near future so extra attention should be paid to potential increases in visitation.

\textsuperscript{12} Okinawa Prefecture, 2017.d
\textsuperscript{13} Ibid.
\textsuperscript{14} Ibid.
\textsuperscript{15} The regular shipping lines to Iriomote Island are officially supposed to be prepared for the local people. However, some troubles have been actually found that they could not board a ship at the busiest time of day for the visitors.
\textsuperscript{16} Okinawa Prefecture, 2017.d
\textsuperscript{17} Cabinet Office, 2016
\textsuperscript{18} Yaeyama Nippo news article dated on October 22, 2017
2) Use of rental car likely to be employed by visitors for “eco-tours”

In terms of transportation on Iriomote Island, eco-tour visitors are more likely to use rental cars while those for group-tours may exclusively only use tour buses. There are only 4 services of local buses a day for east-west routes, and only 9 taxis serve the island\(^\text{19}\). The number of Rental Car businesses and one of the cars owned by those businesses are shown in Figure 5 and 6.

![Figure 5: Number of Rental Car Businesses on Iriomote Island](image)

![Figure 6: Number of cars owned by rental companies](image)

Both the numbers of businesses and cars have increased since the early 2000s. The number of businesses became stable at around 15 after 2007 while the number of rental cars are around 250 with some fluctuation (Figure 4). During these 2 years, two businesses pulled out with some reduction of cars, however, it can be anticipated that inscribing Iriomote Island on the World Heritage List may encourage a launch of new companies and an increase in the number of the rentals.

3) Increase of number and the diversifying of types of “eco-tour” business

The numbers of eco-tourism businesses and eco-tour guides are shown in Figure 7 and 8.

![Figure 7: Number of eco-tourism businesses](image)

\(^{19}\) Cabinet Office, 2017
The number of eco-tourism businesses and number of eco-tour guides were 1 and 7 respectively in 1981 but both of them increased since 2003 (Figure 7 and 8) when visitors entering Iriomote Island started to increase (Figure 1). The numbers continued to increase while the entry of visitors decreased due to the earthquake in 2011, and reached to 67 and 137 respectively in 2014 (Figure 7 and 8). Moreover, the number of businesses are now reported as 83 and still increasing in 2017\(^{20}\). The phenomenon that those numbers have continued to increase while visitors decreased are possibly stabilized now that the trend from domestic tourists have shifted from group-tour to personal tour since around 2007\(^{21}\).

It is also noted as a qualitative change in eco-tourism that the types of eco-tourism business have been diversified over those 10 years (Figure 9).

\(^{20}\) Taketomi town, 2017
\(^{21}\) MoE, 2017.a
In 2004, canoeing, trekking, snorkeling and cruising in the river accounted for the majority of the types of eco-tours led by the businesses, however responding to the boom of experience-based tourism, many new types of tourism including shower-climbing, canyoning, caving and night tours have been developed. In 2016, around half of the businesses engaged in shower-climbing, 40% of them did in caving and 10% of them did in SUP (Standing Up Paddle)\(^{22}\). This also diversifies the natural habits and areas utilized for the respective activities. Consequently, most of rivers are now used by the businesses (Figure 10).

\(^{22}\text{Ibid.}\)
4) Intermediate conclusion

The number of visitors arriving at Ishigaki Island as the gateway of Iriomote Island is continually increasing while the visitors entering into Iriomote Island were less in 2016 than in the previous year. The increased visitors to Ishigaki Airport include the increasing LCC users who can access the island at cheap price. Furthermore, arrival of cruise ships from Taiwan at Ishigaki Port is also increasing. It means thousands of Taiwanese people are simultaneously travelling inside Ishigaki Island and the other Yaeyama islands. If Iriomote Island is inscribed in the World Heritage List, the interest of those visitors would inevitably concentrate on it.

It can be easily anticipated that the stabilized number of visitors entering Iriomote Island would dramatically increase at once because services of express liners and ferries are able to be increased flexibly. Thus, a total volume control on entry of visitors into Iriomote Island at the water-edge should strongly be considered.

On the other hand, even if the entry is considerably regulated, fragile ecosystems cannot tolerate serious damage when those allowed for entering concentrate in a small area. The eco-tourism business is expanding with little regulation, and the eco-tours have already spread and penetrated into the island along various small rivers / streams. It is likely that the
types of eco-tours would continue to become diversified, new entry points would be discovered and inland areas would become more exploited quickly as tourist numbers increase.

Therefore, a volume regulation set at each entry point for each area where an adverse effect is particularly of concern, in addition to an overall total volume control on all entry of visitors at the waters-edge.

1.2 Correlation between an increase of visitors for “eco-tours” and increasing road kills of Iriomote cat

1) Trend of road kills of Iriomote cats

The first road kill of an Iriomote cat was recorded in 1978, the year following the completion of the north coast highway. Since then until now, October 2017, 79 traffic accidents recorded have resulted in 75 dead Iriomote cats (Figure 11).

In 1994, the “eco-road project” on the highway designated as a prefectural road (Shirahama-Haemi line) was launched as a measure to try to mitigate the impact of widening

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23 MoE, 2017.b
of the road to Iriomote cats and other species. Based on the findings of the project, slow-speed-zones, underpasses and other facilities for reducing the road kills were built into the highway. However, the road kill of Iriomote cats was not prevented but instead, increased. Then, the Ministry of Environment and the road construction division of Okinawa Prefecture had an urgent discussion and set up a committee with the participation of experts in 2001 and conducted a verification on the effectiveness of the underpasses for preventing road kills, and provide feedback about the result on future road management.

Consequently, the previously established underpasses were repaired and some new ones were added to make the total number of underpasses 123 until 2015. Though those efforts have been made, the road kills continued to increase and the average number of them reached to 4 per year which is double the average of the 2000s (Figure 12).

![Figure 12: Increase of road-kills of Iriomote cats](image)

Source: "Monitoring on Iriomote cat population", Document No.1 distributed at the meeting in 2016 of Sub-committee on the Plan for Protection and Recovery Program of Iriomote Cat, the Committee on Reviewing the Measures for Conservation of Wildlife, Minister of Environment

Incidentally, it is very rare that the Ministry of Environment is alerted to a cat-kill by a driver who caused the accident. Instead, most of road kills are found by visitors or locals who happen to see and report the site of the accident. Therefore, it is reasonable to assume that the actual number of traffic accidents of Iriomote cats should be larger than the recorded incidents. In fact, multiple cases have been recorded, where the dead cat only happened to be detected due to having been part of a study and wearing a radio collar. Only after an autopsy confirms that the death was caused by collision with a vehicle were the cats catalogued as road-kills.

One theory about why road kills of Iriomote cats have not declined is that the cats have acclimatized to human beings and cars. They have begun to eat the smaller road-killed animals on the road, hunt frogs or crickets by using the curb of the road to help catch the prey

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24 Ibid.
and finally, they are failing to escape the approaching vehicles due to low alertness based on the acclimation.

Figure 13 shows the sightings of Iriomote cats on the road. The phenomenon that they may be the same individual cats (to be assumed so) are repeatedly emerging on the road, has increased since the late 2000s and are maintaining high levels of observance so far (Figure 13).

![Figure 13: Number of sightings of Iriomote cats in each year](image)

The “specific individuals repeatedly sighted” in the late 1990s were a mother and its cubs in an area, and males in the vicinity. On the contrary, the “specific individuals repeatedly sighted” since 2007 have appeared in several sections and over a wide range. It means that the situation has moved from it being abnormal to consistently observable.

Furthermore, considering such individuals have been increasing since 2013, it is concerned that Iriomote cats would be made more acclimated to the road and passing cars, become more bold and failing to escape from vehicles and are therefore more likely to be hit by cars. Generally, such behavior can be seen in cubs and in young non-resident cats. Nevertheless, a case was also found that males attracted by a resident female, which had been more acclimated to the road, also increasingly came to the road and consequently became acclimated to it.
2) Why Iriomote cat would have acclimated to road?

What is the reason for the emergence of the consistent acclimation to the road over a wide range?

One theory is that many opportunities for Iriomote cats to see human being and cars have contributed to the phenomenon. Before the eco-tours prevailed, only hunters for wild boar entered into the forest where Iriomote cats inhabit during the hunting season (November - February). Moreover, there were very few people driving cars during the night until the end of 1980s.

At present, however, human voices can be heard everywhere along the mountain streams in the North coast section, where eco-tours thrive include canoeing, trekking, canyoning and shower-climbing. It is further noted that they can encounter one car per hour even at midnight due to the increase of traffic following the increase of the local and visitor populations.

It is considered that population density of Iriomote cats is particularly high in the lowland with a high density of river-systems and a high diversity of vegetation. Widespread eco-tours may expose the forests along the mountain streams in the lowland, which are important habitats of Iriomote cats. Such a situation is likely to promote the acclimation of Iriomote cats to the road and people and lead to an increase of road kills.

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25 Ryukyu University, 2008
2 Why Total volume control should be required in Iriomote Island
– A case study of the stream ecosystems in the North Coast Section

2.1 Key elements of the North Coast section in terms of conservation of Iriomote cat’s habitat

In the North coast section, there are many fallow areas of paddy fields in the lowland along the coastline, which have been converted from natural swamp forests. Then, the people deserted them 30-50 years ago leaving them as fallow areas.

It is assumed that the area has been continually used by Iriomote cats as a feeding area since the cultivation started. In fact, the loss of forest canopy and disturbance by traffic of people was small thanks to the small-scaled cultivation. Even the relatively large paddy fields are suitable for the Iriomote cats also as a feeding area because the surrounding forest has recovered considerably\textsuperscript{26}.

The lowland included in the North coast section is narrow because there is a steep drop

\textsuperscript{26} ICCRC, 2011
along the entire stretch of the coast line, however it is confirmed that the lowland is lined with the home ranges of 2 resident males and 2 resident females at the time of the study conducted in February 2017\textsuperscript{27}. Because the section is rich in a lot of small and middle-sized rivers (Hohra, Yutsun, Yoshikera, Oomija, Geda, West-Geda, Kura, Nadara) functioning as feeding areas and migratory pathways, it is important as the dispersal route for Iriomote cats for securing gene flow between the West part and the Southeast part of the lowland, which are facing each other across the North coast section\textsuperscript{28}.

2.2 Increase of “eco-tourism” use in the North coast section

<table>
<thead>
<tr>
<th>Site</th>
<th>2005FY</th>
<th>2015FY</th>
<th>Growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kura R.</td>
<td>50</td>
<td>2218</td>
<td>4437%</td>
</tr>
<tr>
<td>Oomija R.</td>
<td>300</td>
<td>1767</td>
<td>589%</td>
</tr>
<tr>
<td>Yutsun R.</td>
<td>750</td>
<td>1213</td>
<td>165%</td>
</tr>
<tr>
<td>Geda R.</td>
<td>-</td>
<td>766</td>
<td>-</td>
</tr>
</tbody>
</table>

(Source: Ministry of Environment Utilization of Iriomote -Ishigaki National Park in 2014 FY)

As mentioned in 1.2, so-called eco-tours in Iriomote Island have been diversified over the past 10 years. The number of visitors for eco-tours, particularly in the North coast section, is significantly increasing due to the ease of access from Uehara Port in the west part of the island to rich resources suitable for eco-tours like downstream mangrove forests, limestone caves, and mountain streams (Table 1). This North coast section is also a popular option for beginners still learning how to enjoy the activities easily. This is also why the area is considered the area of most serious concern. The collapse of these natural ecosystems due to over-use triggered by inscription in the World Heritage list needs to be addressed in the nomination.

Incidentally, a considerable part of the area from Kura River to West-Geda River are owned by private companies, and so these areas are designated as the ordinary zone of the National Park and exempted from the nominated property.

This report will brief touch on the current status and management of Oomija River area and Yutsun River area, which are included in the nominated property and would represent the eco-tour cite in the North coast section.

\textsuperscript{27} MoE, 2017.b
\textsuperscript{28} JTEF, 2017 See Table 1.
2.3 “Eco-tourism” use in Oomija River and the existing management of it

The eco-tour programs at Oomija River are mainly canyoning and include diving into a naturally formed pool and swimming. A half-day trip course which is the most popular, would either start at the Pinaisara waterfall basin & canyoning at Oomija River, or start with trekking along the mountain stream at Geda River & then canyoning at Oomija River.

The eco-tours at Oomija River particularly concentrate in the peak of summer season because of the easy access of a 15-minute drive from both Uehara Port and the auto park close to the Marei River as the entry point leading to Pinaisara waterfall. Consequently, the visitors increased by 589% over the past 10 years between 2005 and 2015 (Table 1) despite the limited parking for cars and lack of facilities further discussed below. There are two access points to the Oomija River; the route of climb on the east of Oomija Bridge (Figure 17); and the route for walking along the riverside from the point just under the bridge. There is a parking lot for 8 cars and one bus, but parking shortages are a common occurrence in the summer season and forces many cars to park on the shoulder of the road.
As mentioned above, canyoning at the downstream pool has intensified recently. A noticeable decline in water quality (due to sunscreen pollution, siltation due to stirring up the water, and loss of vegetation and moss, as well as foul odors coming from human waste) have become major issues at the Oojima River.

In fact, soil erosion can be observed on the route of the climb on the east side of the river (Figure 17). Furthermore, it has begun to be noticed that trekking tours have reached the

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29 Okinawa Prefecture, 2017.e
waterfall at an upstream basin, but the number of visitor there is unknown because of lack of research.

The community of *Salvia pigmaea* & *Lindsaea japonica* on a big rock, which is symbolic of a typical mountain stream's vegetation on Iriomote Island is found at the upper river basin of *Oomija* River (Figure 18). However, the vegetation was ripped out due to foot traffic and treading by the visitors because the visitors would use the rocks and walk inside the stream due to lack of a trekking trail along the stream.

The Ministry of Environment suggested that a monitoring survey is expected to clarify the impact of walking inside the stream and diving to the river ecosystem[^30], but there is no announcement or a specific plan for investigating this issue to date.

2.4 “Eco-tourism” use in *Yutsun* River and the existing management of it

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[^30]: MoE, 2017.a
Yutsun River located in the middle of Ohara, on the east side of the island and near the west side of Uehara, requires a 30-minute drive from Uehara Port or Ohara Port. A cloud forest which is rarely found in sub-tropical area extends over the top of “Yutsun waterfall”. The cloud forest forms a unique example of vegetation comprised of a variety of pteridophytes, creepers, air plants, etc. (Figure 23). Based on the ecological importance of this forest, the surrounding area is designated as a Preservation Zone of the Forest Ecosystem Reserve by the Forestry Agency.

Additionally, a mangrove forest extends around the river mouth which is designated as a marine special zone of Iriomote-Ishigaki National Park. The uses for eco-tours prevail over Yutsun River basin and are categorized as a) canoeing in mangrove forests, 2) canyoning or swimming in the downstream pool (Figure 21), c) trekking to the waterfall located at the tributary, d) trekking for the more experienced hikers to “Yutsun-no-sandantaki (three-step waterfall of Yutsun)” and e) trekking for the experienced hikers from Yutsun River to Mt. Komi-dake.

The land located in the right side of the downstream is owned by and managed privately as a resort hotel in Iriomote Island, which is equipped with a boardwalk inside the mangrove forest and a base for canoeing. There are two entry points for accessing Yutsun River including one leading to the route of the climb and another starting from the base by canoeing. There is no toilet facilities anywhere on the route between the entry points and the top of the waterfall.
The number of estimated visitors per year to Yutsun River grew 165% 2015 from 2005 (750 people) (Table 1). In the past, the predominant activities were canoeing in the mangrove forest (a), and canyoning and swimming in the downstream pools and (b) (Figure 21). But, trekking to the waterfall located at the tributary or "Yutsun-no-sandantaki (three-step waterfall of Yutsun)" to get a nice view is increasing recently.

While detailed information is not available about the entry into the waterfall at the tributary, the number of visitors for trekking to "Yutsun-no-sandantaki" was reported to tremendously grow 1,034% (517) in 2015 from 2005 (only 50) (Table 2). This means a lot of visitors for eco-tours have entered into the cloud forest at the top of the waterfall.

<table>
<thead>
<tr>
<th>Table 2: Number of visitors at &quot;Yutsun-no-sandantaki&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005FY</td>
</tr>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

(Source: Ministry of Environment Utilization of Iriomote –Ishigaki National Park in 2014 FY)

Due to the increase of visitors reaching to the top of the waterfall, the route of the climb has been consistently widened by the increased foot traffic (Figure 24) compared to faint traces of a path were previously found there. Such a situation raises a concern about aridification, invasion of alien plant species and even illegal collection of rare plant species which inhabit
the cloud forest and other inland areas (Figure 25 and 26). Taketomi Town amended the “Natural Environment Protection Ordinance” so that it is prohibited to harvest fauna and flora designated as “special wild fauna and flora species”, however the designated assignee who is supposed to prevent illegal harvest of plants has yet to be implemented and is now only under consideration.

**Figure 24** The route of the climb leading to “Yutsun-no-sandantaki (three-step waterfall of Yutsun)” (Yutsun R.)

**Figure 25** Rare plant species inhabit the mountaneous area including cloud forest (Yutsun R.)

*Calanthe formosana* listed in CR of Japan’s Red List

**Figure 26** Rare plant species inhabit the mountaneous area including cloud forest (Yutsun R.)

*Asarum monodoriflorum* listed in CR of Japan’s Red List (copyright: Mikio Kashima)
There is also dire concern about possible changes in fish biota due to the diving activities in the pool, however the impact cannot be examined due to the lack of quantitative data before and after the launch of eco-tours\textsuperscript{31}. It seems that feeding the fish in the downstream pool by the visitors has become routine, so that *Kuhlia malginata* and *Kuhlia rupestris* would shoal around waiting for food when someone are swimming there (Figure 27).

\textbf{Figure 27} Fish swarming around in feeling someone coming (Yutsun R.)

\begin{center}
\includegraphics[width=0.5\textwidth]{fish_swarming.png}
\end{center}

\textit{Kuhlia malginata} and \textit{Kuhlia rupestris}

2.5 Summary of the status on eco-tours and the management of it in North coast section

The characteristics of eco-tours in North coast section found in the case studies on \textit{Oomija} River and \textit{Yutsun} River are;

\begin{enumerate}
\item The utilization is widespread to the whole area of the North coast section;
\item Many spots would be used for the tours in each segment of the section; and
\item Adverse effects due to excessive utilizations have been already recognized in many spots.
\end{enumerate}

2.6 Consideration of a regulation and monitoring of “eco-tourism” in Iriomote Island by the competent administrations

The mayor of a municipality, based on the Eco-tourism Promotion Act, may designate, “Specified Natural Tourism Resources,” pursuant to the “Certified Eco-tourism Overall Concept” by the competent Ministers of Government of Japan, any “fauna and flora”, “habitats of fauna and flora such as breeding grounds of seabird colonies, coral reefs, and marshland, etc.”, and “geological features such as waterfalls, caves, and geysers” that are likely to be

\textsuperscript{31} Okuda, 2007
damaged by the activities of tourists or other persons and for which it is necessary to take measures for protection. Furthermore, when the Specified Natural Tourism Resources are likely to be significantly damaged by the activities of many tourists or other persons, the Mayor may make restrictions such as to require prior approval of the Mayor for any entry in the area by setting the term and the number of persons to be approved.

However, among the 12 municipalities which received the certification on their “Eco-tourism Overall Concept”, only Tokashiki Village has introduced a legally binding control on the number of visitors based on its ordinance. The other 11 municipalities manage the tourism by voluntary rules based on a guideline adopted by a council of relevant stakeholders.

Okinawa Prefecture and Taketomi Town are pursuing to manage the eco-tours in Iriomote Island based on the Eco-tourism Promotion Act and launched a prefectural project on “facilitating the structure for promoting eco-tourism”. A working group comprised of relevant tourism businesses, Ministry of Environment and Taketomi Town was set up for each of the 6 areas which geographically composes Iriomote Island, and has discussed about the management of eco-tours in each area. The representatives of each WG are supposed to meet 8 times and the outcome of those meetings would reflect on the “Eco-tourism Overall Concept” in 2019FY. However, some tourism businesses did not attend the meeting of the WG. Furthermore, most of the tourism businesses’ interests observed in their comments at the meeting are focused on the establishment of infrastructures by the authorities for securing the safety and user-friendly access for their guests. Considering that, it is hard to say this WG could be considered to come up with an effective total volume control of tourists.

In terms of establishment of monitoring structure, Okinawa Prefecture clarified “a specific survey of vegetation, etc. is out of the scope of the monitoring structure now under consideration. It would be based on the records of what each guide has noticed at the meeting of “Iriomote Island Sub-local Meeting” under the Regional Liaison Committee32. At this moment, any monitoring scheme by experts in the field is not being considered. However, if tour guides are supposed to monitor habitat damages due to excessive use, it would be an ineffective system considering the reality that the guides would suffer from economic loss as the result of closure if they report the habitat damage or not being able to continue to take tours to the impacted areas.

32 Okinawa Prefecture, 2017.f
3 Conclusion and Recommendation

3.1 Conclusion: It is necessary to introduce an unbiased comprehensive management of tourism/visitors pressure, which strictly meets the following 4 requirements

Based on the above discussion, the essence of the “holistic management” on eco-tourism in Iriomote Island should be concluded as follows.

1) Seeing the whole island as one unit

The major types of eco-tours in Iriomote Island including canoeing, canyoning and SUP activities commonly conducted in the rivers, which are spread throughout the island. That’s why the eco-tours have become prevalent throughout the whole island while those same large and small river-systems are also important habitats for Iriomote cats.

The eco-tours currently are using most of the accessible fields and rivers for their activities, however if restrictions or enforced regulations started limiting tourist use, the reality is that the eco-tour businesses would probably start using other less regulated areas. A rush on less regulated or areas of weak regulation would probably occur. Furthermore it is of great concern that such a human traffic would enhance the acclimation of Iriomote cats to human-beings and the road.

Therefore, it is crucial to make a general reference to the whole island as objects of the controls over access and areas negatively impacted by eco-tours.

2) Consistency and Integrity

Considering a high potential for an increase of new eco-tour businesses to be triggered by the inscription of Iriomote Island in the World Heritage List, the very weak controls are a matter of great concern. Controls based on a voluntary rule or a gentleman’s agreement among a portion of the businesses would only bring dissatisfactory results that are only applied inconsistently to some businesses. Eco-tour business operators would flood into areas without regulation or with weak control due to the inconsistency which inevitably occur.

Therefore, a consistent and integrated rules based on laws and regulations are necessary.

3) Sufficient effectiveness

There is no proven success in Iriomote Island with regard to the control over tourism/visitor pressure by a voluntary management by businesses themselves. Far from it, many of the businesses have not experienced even a voluntary rule among them due to the inconsistency of application of the existing voluntary rules. Furthermore, those businesses/tour guides have been increasing year by year. Under such situations, there is no other way than introducing legally-binding controls for managing tourism/visitors pressure effectively.
And then, a procedure and structure for supervising the compliance, and monitoring for assessing the effectiveness of the controls and identifying the change of the natural ecosystem should be required.

4) Provide regulations that serve as a total volume control of tourists/visitors pressure

It is concerned that visitors to Iriomote Island would considerably increase triggered by future inscription of it in the World Heritage List. If those increased visitors entered into the fragile natural ecosystems of the island, and even if certain behaviors of those people would be regulated, the habitat of Iriomote cats and the natural ecosystems are likely to suffer from a high risk of irreversible impact by the encroachment of the visitors. A total volume control is absolutely required.

First, more specifically, controls on the total number of visitors entering from Ishigaki Island to Iriomote Island should be considered.

Secondly, a total volume control at each entry point leading to the areas utilized for eco-tours is necessary, and furthermore, specifying the number of visitors, etc. for each area is required in case the entry point has already been utilized for eco-tours like Oomija River and Yutsun River.

3.2 Recommendation

Based on the conclusion above, the following items should be recommended to the nominator of inscription of Iriomote Island in World Heritage List.

a) Apply an island-wide total volume control and behavior control at each entry point leading to the area utilized as the field of eco-tours based on an ordinance of Taketomi Town;

b) Further Specify the number of visitors and period of entry for each field in case the most of area to be accessed from the entry point has already been utilized for eco-tours;

c) Enforce regular patrols by exclusively authorized observers in each field in cooperation with the local police in order to supervise the compliance of the controls

d) Collect the baseline data for monitoring as a matter of urgency particularly in the areas which have already been impacted by eco-tours;

e) Establish procedures and structure for feedback of the monitoring outcomes in respective areas, including the impartial review process of the data by an independent organization

f) Introduce a mechanism with the cooperation of the shipping companies for controlling the number of tourists who are allowed to enter into Iriomote Island from Ishigaki Island by express liners/ferries/charter boats.
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