

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

**Statement
on the Nomination of Iriomote Island for
inscription on the World Heritage List
from the aspect of conservation of Iriomote cat**



September, 2017

Japan Tiger and Elephant Fund



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1. Introduction & Objective of this report

The objective of this report is to provide information and comment with regard to the nomination of Iriomote Island for inscription on the World Heritage List from the aspect of conservation of Iriomote cat (*Prionailurus bengalensis iriomotensis*), which are considered to be taken into account at the verification of the “Nomination of Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island, and Iriomote Island for inscription on the World Heritage List” by International Union for the Conservation of Nature (IUCN) on behalf of the World Heritage Committee.

The Japan Tiger and Elephant Fund (JTEF), based in Tokyo, has worked closely with local people on Iriomote Island for conservation of the Iriomote cat in cooperation with researchers under the background that Yukio Togawa, a renowned animal novelist and the father of Kumi Togawa, the President of JTEF contributed to “discover” Iriomote cat. JTEF has contributed with information exchange and negotiation with the relevant authorities including the Ministry of Environment of Government of Japan, Okinawa Prefecture and Taketomi Town officials. JTEF launched a local branch office “Yamaneko Patrol” and deployed a full-time staff there to manage daily operations and projects. The JTEF Yamaneko Patrol is a member of the Iriomote Island Sub-local Meeting under the Regional Liaison Committee on Natural World Heritage Nominated Property governed by Okinawa Prefecture.

Our key activities are :

- ✓ To collect the information on present or predicted land use detrimental to the habitat, find necessary solutions to conserve it against the pressure and encourage the relevant authorities to take the appropriate responses to prevent further impacts.
- ✓ To collect and analyze driving behaviors by car patrol at night on the highway , to alert the drivers and prevent road kill of the Iriomote cat and for chasing off the cats sticking to a specific point on the road and the removal of weeds on the road shoulder to secure good visibility for drivers
- ✓ To conduct a long-term capacity building program for school teachers to enable them to educate school children about the concept of “Island’s life together with Iriomote cat forever” and additionally provides school programs for schools
- ✓ To conduct a study tour for educating the participants about conservation and encouraging them to join the action.



School children joining the lecture at a school (left) A lecture titled “Future Conservation of Iriomote Cat and Our Livelihood” targeting the local people (middle) Patrolling during night time for preventing road killing (right)

JTEF has no objection to recognize an Outstanding Universal Value (“OUV” hereinafter) of the entire natural property in Iriomote Island which is benefitted with numerous endemic species through speciation in various evolutionary lineages that occurred alongside the geological processes of separation from the continent and repeated joining and separation among the islands¹, and cover the habitats of various endangered species², in particular, the sole wild habitat of Iriomote Cat which is significantly smaller than other island habitat of kin cat species³.

However, based on the proposal presented by the Nomination prepared by the Government of Japan, there is considerable doubt, specifically in terms of the integrity of the nominated property, on Iriomote Island. This document outlines the justification that **the area of the nominated property should be expanded** in order to ensure the comprehensive preservation of its biodiversity values ensuring the integrity of the habitat of Iriomote cat in particular.

It should be further pointed out that **the Management Plan for the properties in Iriomote Island is seriously insufficient**. In particular, the management concept of the nominated property and the buffer zone is too open to tourism to prevent the OUV of the entire natural property from suffering adverse effects in the near future. Thus, the Management Plan for Iriomote Island should be significantly improved.

Thus, this report will, firstly, present the reason and recommendation on necessity of expansion of the area of the nominated property in order to satisfy the conditions of integrity, and, secondly, the reason and recommendation on necessity of improving the Management Plan.

¹ Criteria for the assessment of Outstanding Universal Value, (ix) “be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals”

² Criteria for the assessment of Outstanding Universal Value, (x) “contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation”

³ Izawa, 2005

2 Securing integrity of the natural property: Necessity to extend the area of the nominated property

According to the “Operational Guidelines for the Implementation of the World Heritage Convention” (the “Guideline” hereinafter), integrity of the natural property and its attributes should be secured for approval of its OUV. More specifically, the property⁴;

- a) includes all elements necessary to express its Outstanding Universal Value;
- b) is of adequate size to ensure the complete representation of the features and processes which convey the property’s significance; and
- c) suffers from adverse effects of development and/or neglect.

One of the most important OUV of the natural property in Iriomote Island is considered to be the existence of the sole habitat of Iriomote cat. Therefore, it should be examined at the judgement on the integrity of OUV if the whole habitat of Iriomote cat is included in the nominated property area.

Based on a geography of Iriomote Island where a stretch of sheer drop partitions whole coastal area and inland area, the outline of the land with 30° of angularity can be regarded as the border between two types of lands, or the “lowland” and the “highland”, which Iriomote cats’ home ranges are not supposed to cross-border⁵.

In the past, the lowland was supposed to be more preferable habitat than the highland for Iriomote cat, so considered to be with higher population density⁶. There is a dense riverine system and various vegetation types found in the lowland, so such environment is considered compatible with the food ecology of Iriomote cats which have depended on various lowland⁷prey varieties. Thus, major parts of the lowland have been regarded as “major habitat”⁸ and designated as monitoring points by the Ministry of the Environment⁹.

Incidentally, a recent study revealed that multiple animals have reproduced themselves in the highland which was once considered as non-preferable for Iriomote cats and now acknowledged that some part of the highland area constitutes a place for breeding¹⁰. Nevertheless, the importance of the lowland as a conservation priority has never changed, considering the miraculous fact that such small area (289m²) has maintained such small population of wild cat species despite the principle of

⁴ Decision 20 COM IX.13

⁵ Nakanishi and Izawa, 2014

⁶ Ryukyu University (2008) estimated the population density in the inland-upland area as one fifth of one of the lowland area, and pointed out that the area on 200m above the sea level or lower, especially on 50m above the sea level or lower is outstanding in terms of density of river-system and diversity of vegetation both of which are preferable for environment selection by Iriomote cat.

⁷ Okamura, 2008, ICCRC, 2011

⁸ Ryukyu University, 2008

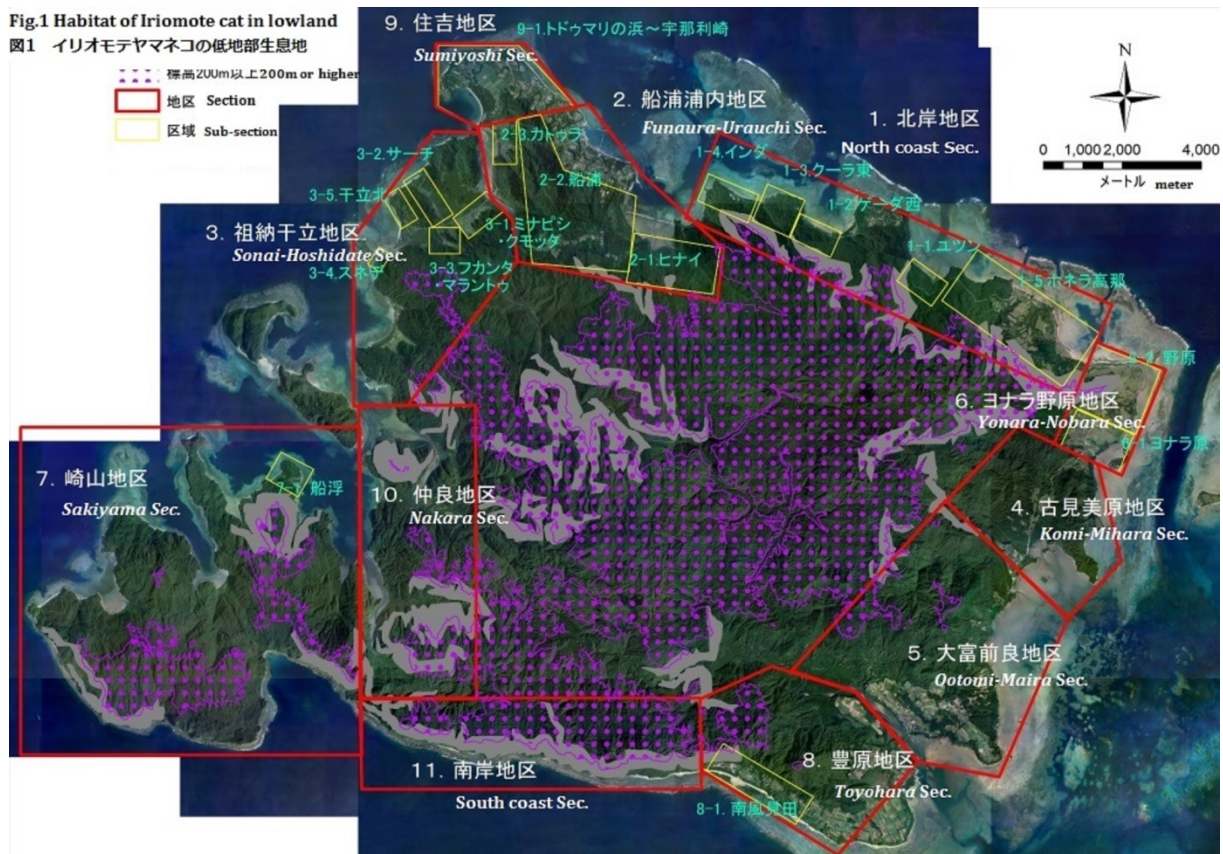
⁹ Okamura, 2008

¹⁰ Nakanishi and Izawa, 2014

ecology¹¹ even though the highland is also judged as preferable habitat for Iriomote cat¹².

In recent days, however, population of Iriomote cat in the lowland has decreased due to degradation of the environment and disturbance, therefore “certain measures are required to prevent the natural ecosystem from being disrupted”¹³. It means that the habitat under stable condition should be maintained as ever while one under vulnerable condition should be recovered, particularly, more disturbances in the lowland should be avoided¹⁴.

Figure 1 shows the lowland of Iriomote island zoned in 11 sections¹⁵.



¹¹ Izawa, 2005

¹² The Nomination stated “recent studies have reported that there is a resident and breeding population also living in mountainous land on the inland side (Izawa et al. 2003; Nakanishi and Izawa 2014), with implications suggesting a similar level of habitat density distribution as in the lowland areas.” Nevertheless, Izawa et al. (2003) is back of the report estimated the population density in the inland-upland area as one fifth of one of the lowland area (Ryukyu University, 2008), further Nakanishi and Izawa (2014) keeps mentioning to “the inland which was assumed as non-preferable for Iriomote cat is considered as an environment satisfying the condition for rearing a cub” and “an intensive ecological survey of Iriomote cat in the inland is expected in the future”. Thus, the quoted papers don’t mention about the comparison of population density between the upland and the lowland.

¹³ Ryukyu University, 2008

¹⁴ ICCRC, 2011

¹⁵ Ibid.

Table 1 illustrates the key elements of the 11 sections in Figure 1 in terms of conservation Iriomote cat's habitat by contrast with the zoning in the Management Plan.

Table 1. Key elements about conservation priority in the lowland of Iriomote Island by contrast with the zoning in the Management Plan

Sections in the lowland	Key elements of the 11 sections in Figure 1 in terms of conservation priority for Iriomote cat's habitat	Risk of road killing	Risk of tourism/visitor pressure	Zoning under the Comprehensive Management Plan	Gap between the conservation priority and the zoning
1 North coast	Very important as the dispersal route of Iriomote cats for securing gene flow between the West part and Southeast part of the lowland, which are facing each other across the North coast section	Very high	High (Concerned for becoming higher)	Mostly included in the buffer zone or the "surrounding area"	High
2 <i>Funaura-Urauchi</i>	A source of the population with significant stability	Partly high	Partly high (Concerned for becoming higher)	Mostly included in the buffer zone or the "surrounding area"	High
3 <i>Sonai-Hoshidate</i>	A source of the population with significant stability	Partly high	Potentially high	Entirely included in the buffer zone or the "surrounding area"	High
4 <i>Komi-Mihara</i>	Potentially important considering the high density until 1990s	High	High (the route of the climb to Mt. <i>Komi-dake</i> , <i>Maira</i> River, <i>Shiira</i> River, etc.)	The mountainside area divided by the highway is mostly included in the nominated property while the oceanside area is entirely in the "surrounding area".	Medium
5 <i>Ootomi-Maira</i>	Partial loss and fragmentation of habitat due to agriculture and road construction are ongoing though this section was once entirely preferable habitat.	High	Partly high (Concerned for becoming higher)	Partly included in the nominated property while largely in the buffer zone or the "surrounding area".	Small
6 <i>Yonara-Nobaru</i>	Important for dispersing and non-residential animals which would come in and out of North coast section thanks to existence of swamps including paddy field and forest patches dotted around while the section is not so preferable for residential animals	High		Partly included in the nominated property while largely in the "surrounding area".	Medium
7 <i>Sakiyama Peninsular</i>	Important as an intact natural environment except for a part remains while the population density of Iriomote cats is considered not so high	No road	Partly high (Concerned for becoming higher) A tourist resort development is in the planning stage.	Mostly included in the nominated property	None
8 <i>Toyohara</i>	The gently sloped area has been used as agricultural and housing land except for watershed area of <i>Nakama</i> River. The developed area is expected to be used as preserving the remaining habitat, maintaining and creating corridors, recovering the habitat through harmonization with human activities.	Concerned near future due to natural recovery of corridor	Tourist resort developments were in the planning stage in the past (possibly revived in the future).	Mostly included in the buffer zone or the "surrounding area".	Medium
9 <i>Sumiyoshi</i>	Iriomote cats uses the section as a corridor while the area is not preferable habitat in general except for the root of the peninsular	Concerned near future		Entirely included in the "surrounding area"	Small
10 <i>Nakara</i>	Occurance of Iriomote cats is confirmed all around while comprehensive research has not been done, and intact natural environment still remains.	No road	High in the watershed of <i>Nakara</i> River and the use is concerned to be expanded	The large part of <i>Nakara</i> River watershed area is included in the buffer zone while the rest part is included in the nominated property.	Medium
11 South coast	Occurance of Iriomote cats is confirmed all around while comprehensive research has not been done, and intact natural environment still remains.	No road	Coastal area is open to tourists and the use is concerned to be expanded	Entirely included in the nominated property	None

Note: "Lowland" means the area on 200m above the sea level or lower in Iriomote Island.

"Sections in the lowland" and "Key elements of the 11 sections in Figure 1 in terms of conservation priority for Iriomote cat's habitat" are referred to ICCRC (2011).

As shown in Table 1, 3 zones (No.1, 2 and 3) out of 11 are almost exempted from the nominated property and put into the buffer zone or “surrounding area” though the three are recognized as particularly important sections for habitat conservation.

Furthermore, the other three (No.4, 8, 10) important sections next to the formers are largely exempted from the nominated property area. Additionally, another zone (No.6) which is still important for dispersing and non-residential animals is mostly exempted from both of the nominated property area and the buffer zones.

Moreover, most of those sections mentioned above have been already impacted (No.1, 2, 3, 4, 5, 6, 9) by documented road kills or tourism/visitor pressure (No.1, 2, 4, 5, 7, 10) though they have yet been suffered adverse effects. The other sections (No.3, 8, 11) are also concerned to be under threat in the future if not protected. It is concerned that those sections may become threatened by the increased visitor/tourism pressure both in quantity and quality encouraged by launch of the World Heritage Site.

In conclusion, it is clear that the nominated property area excludes considerable parts of Iriomote cat habitat with conservation priority.

A buffer zone is an area surrounding the nominated property which has complementary legal and/or customary restrictions placed on its use and development to give an added layer of protection to the property¹⁶. Logically, a buffer zone should neither constitute the nominated property nor supplement it¹⁷.

Therefore, it should not be justified to designate an area as a buffer zone although it is crucial for maintaining the condition of integrity of the natural property.

In fact, the Management Plan (the “Comprehensive Management Plan”) defines the use of a buffer zone as “Buffering functions that contribute to maintaining the Outstanding Universal Value of the property are to be maintained by ensuring coexistence with human activities such as tourism, agriculture, and forestry” and “Mainly in the buffer zone and surrounding area, an appropriate capacity for receiving a large number of people in mass tourism is to be built up and the possibility of installing facilities to make interpretation of the attractiveness of the nominated property is also to be considered”. It means that the supposed “buffer zone” in the Nomination cannot be expected to function even as a “de facto” alternative of the nominated property area for conservation of the natural property.

In conclusion, it should be considered that the present designation of the nominated property cannot secure the integrity of the condition of OUV of the natural property in Iriomote Island.

¹⁶ Guideline “104”

¹⁷ The buffer zone is designated exclusively where it is required for effective protection of the nominated property (Guideline “103”). That’s why the addition / change of the designation is supposed to be done under nothing more than the similar procedure as minor change of the property area (Guideline “107”).

3 Management Plan: Necessity for significant improvement

3.1 Management plan for the nominated property and the related area

The Management plan for the nominated property²⁰ is comprised of the Comprehensive Management Plan which prescribes the cross-regional objective and structure for the management, and the region-specific action plans (“Iriomote Island Action Plan” in the case of Iriomote Island).

3.2 Total volume control and behavior control on tourism/visitor pressure in the nominated property and the buffer zones

3.2.1 Detrimental impact of “eco-tour” to Iriomote cat and the ecosystem of Iriomote Island

In recent years, types of tourism in Iriomote Island have become characterized, in contrast to dominating the market by mass tour in 1990s, by hyperactive “eco-tours”²¹ which are focusing on experience in nature and are organized at small scale²². The menu of the eco-tours includes trekking, nature observation, canoeing and cruising in the river, sea kayaking, diving and angling²³, but are becoming more diversified as including canyoning, shower-climbing, caving, stand up paddling, night tour, firefly watching, appreciation of common putat (*Barringtonia cernosa*)²⁴.

The significant change of the situation between 2000 and 2004 is that a nature observation tour formed by a combination of trekking and canoeing has significantly penetrated into the small and middle sized rivers, and has also advanced into the inland/mountainous area. As an access route to the inland/mountainous area for trekking, they have utilized not only the existing route of the climb e.g. the trans-strait trail of the island between *Urauchi* River and *Ootomi* forest road, and the route of the climb for Mt. Komi-dake, but also the back of *Shirahama* forest road, the tributaries of *Urauchi* River, the mountainous upstream site of *Nishida* River, *Kuira* River, the upstream site of *Nakara* River, *Funauki* and *Sakiyama* Peninsular, where there is no route of climb²⁵.

Ryukyu University (2008) pointed out that the land-based eco-tour, in contrast with the naming, may possibly have substantial impacts to the habitat and behavior of Iriomote cats, and the island's ecosystem.

²⁰ Guideline “108 - 118”

²¹ The tours for experiences in nature at small scale in Iriomote Island is referred as “eco-tour” in this report because they would commonly rephrase such tours as so in the island regardless of the real nature of the tour in question.

²² Ryukyu University, 2008

²³ Ibid.

²⁴ Okinawa Prefecture, 2017.a

²⁵ Ryukyu University, 2008

Furthermore, the new report published in 2016 shows that the number of visitors has increased since 2004 as much as by 44 times more at *Kura River*, 10 times at the mouth of *Urauchi River*, 8 times at *Naara Fall of Nakara River*, 6 times at *Oomija River* and 2.5 times at *Ida-no-hama Beach/Funauki settlement*²⁶. In fact, the eco-tour may have been more rampant than the reported, considering the data in 2016 was obtained through a limited questionnaire survey.

The 2016 report further pointed out that demand for such kinds of tours would inevitably increase as a tour focusing on more exploration and observation of wild creatures than appreciation of the scenery and/or a tour penetrating into the natural areas more deeply. Such tours would increase enormously because even such type of tours in Iriomote Island would not require high technique or physical strength²⁷.

3.2.2 Controls over tourism/visitor pressure to be required for preventing the habitat of Iriomote cat from suffering degradation

The whole terrestrial part of Iriomote Island functions as the habitat of the Iriomote cat, except for the area in the center with settlements or the center of the agricultural land which has transformed the nature entirely. Thus, it is necessary to introduce (a) legally binding total volume control over tourists (number of tourists to be allowed to enter in a specific area, period of entry to be allowed, etc.) and behavior regulation particularly inside the nominated property and the buffer zones including the area to be designated as so. (b) effective enforcement of the controls with regular supervision programs in the field, and (c) continual monitoring of the condition of the natural environment and compliance of the regulation.

3.2.3 Reality of controls over tourism/visitor pressure in Iriomote Island

【Legally binding controls】

There are no laws and regulations to control any total volume control.

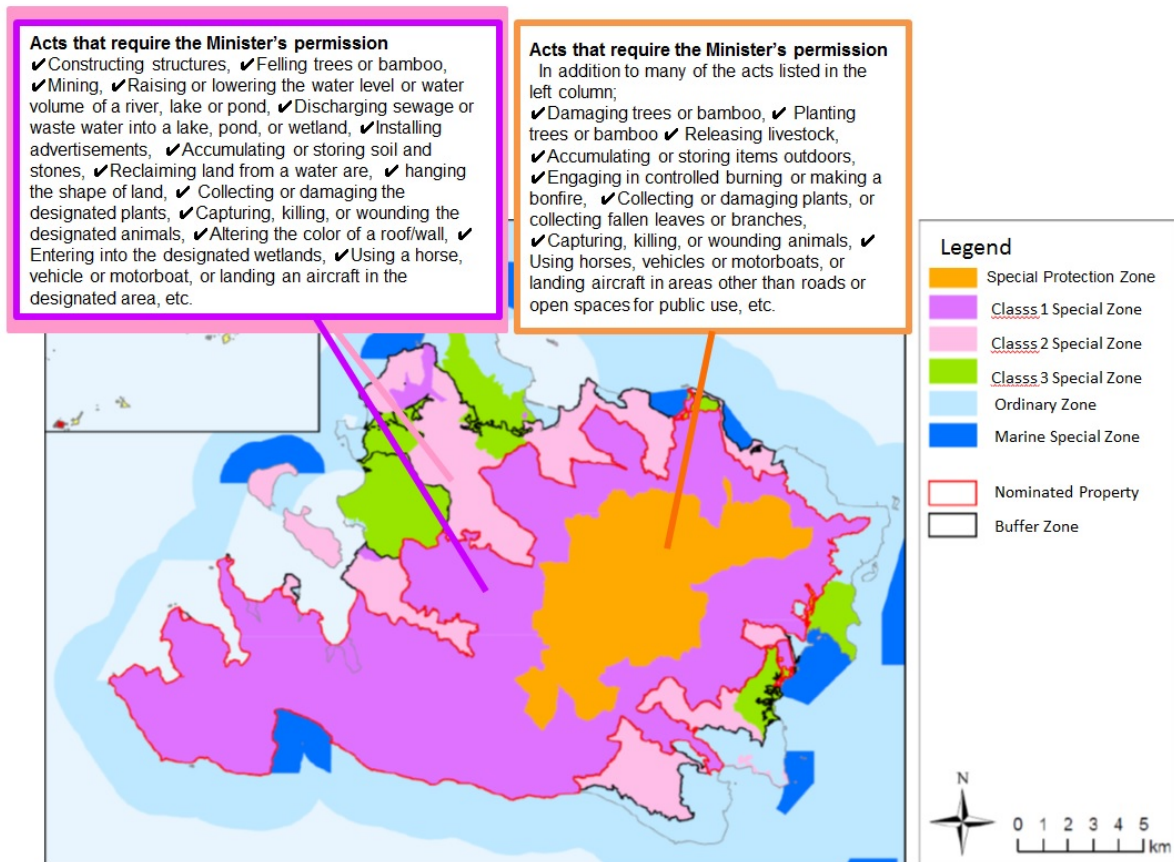
Major behavior regulation is provided by the Natural Parks Act²⁸. The regulated acts inside the designated zones in the National Park by the law, which overlap the nominated property area and the buffer zones are summarized in Figure 2.

²⁶ Okinawa Prefecture, 2017.a

²⁷ Ibid.

²⁸ The acts regulated by the other law and regulation are limited. See 3.3.2.

Figure 2 The regulated acts in the nominated property area and the buffer zones



As shown in Figure 2, the regulated behaviors are mainly focused on the acts having a serious detrimental effect on the habitat of wild fauna and flora which are supposed to be associated with land development.

In contrast, the regulated acts of visitors associated with an eco-tour are limited to a part of the acts having a direct physical impact to wildlife like capturing/collecting. The other type of acts are not covered such as flashing a light non-existent under natural conditions towards wild animals during the night-time, getting close to the breeding nests, making sounds and dumping/leaving garbage packages of food, possibly attracting animals.

【Voluntary management by local tour operators】

Two examples of voluntary management by multiple local tour operators are known. Those are not only given non-legally-binding power but also applied to limited operators and areas.

- ✓ The “*Nakama River Conservation and Utilization Agreement*” signed by 5 tour operators restricts the cruising speed of the river boats and the maximum number of canoes per one party for the purpose of protection of the mangrove forest along *Nakama River*²⁹.

²⁹ Okinawa Prefecture website
http://www.pref.okinawa.jp/site/kankyo/shizen/hogo/documents/nakamakawa_1.pdf

- ✓ 35 tour operators who formulate “Iriomote Island Canoeing Association” restrict the maximum number of visitors comprising one party of their canoe tours based on “Iriomote Island Canoeing Association Rule Book”³⁰.

Nevertheless, those voluntary restrictions neither intend to introduce a total volume control nor function as such.



Figure 3-1 (left), 3-2 (right): Canoes left around the mouth of Kura River (see “1. North coast, 1-3 Kura East” in Figure 1). In reality, there isn’t any total volume control in the form of neither legally binding regulation nor agreement among tour operators.

3.2.4 The plan and its implementation on controls over tourism/visitor pressure provisioned in the Management Plan

The “Comprehensive Management Plan” describes as “Mainly in the buffer zone and surrounding area, an appropriate capacity for receiving a large number of people in mass tourism is to be built up” and “In the nominated property area, a nature-experience type of tourism will also be promoted by using rich nature and native culture, including ecotourism under the rules of proper use³¹”.

On the other hand, “Iriomote Island Action Plan”³² describes as “Preparation of eco-tourism guidelines” and “Consideration of setting up the zoning and usage rules that meet the specific characteristics of individual resources and the reality of the current uses”. According to the summary report on the progress of the “Iriomote Island Action Plan” at the time of July, 2017³³, Okinawa Prefecture is planning to “discuss about usage rules and structure for monitoring and then compile an eco-tour guideline”, and Taketomi Town is discussing about “the options for introducing a control including the regulation based on the Ecotourism Promotion Act or one based on an ordinance of the Town”.

³⁰ Iriomote Island Canoeing Association, 2015

³¹ The Comprehensive Management Plan carefully describes as “appropriate use control measures will be taken, as needed, based on the sufficient knowledge of the characteristics of the attributes to be conserved, their changes, actual use, and situation relative to carrying capacity.”

³² “5) Proper Use and Ecotourism, No.3 “Implementation of appropriate use control and establishment of and compliance with rules for appropriate use”

³³ Okinawa Prefecture, 2017.d

In light of this information and discussion, it is considered that the plan and its implementation on controls over tourism/visitor pressure provisioned in the Management Plan have the problems as follows.

- ✓ The nominated property area is supposed to be open to eco-tourism under the “rules of proper use”. It’s not clear whether the “rules of proper use” means a legally binding one or a voluntary deal among parties concerned³⁴. Considering that Taketomi Town refers to the regulation based on the Ecotourism Promotion Act as an option, and that the Act provisions a legally binding regulation scheme, such regulation with legally binding power could possibly be introduced. However, it is also possible that they would establish an “Overall Concept” certified by the relevant Ministers based on the Ecotourism Promotion Act and implement it as a voluntary rule among the stakeholders. Thus, it is an unpredictable situation whether a legally binding rule would be introduced or not.
- ✓ The buffer zones are supposed to be open to mass tourism and to installing facilities for the use of visitors. The terms of eco-tours are not referred to, however, considering the concept of usage above, it is concerned that control over eco-tours in the buffer zones would be controlled neither legally nor sufficiently. This result completely differs from from the controls over tourism/visitor pressure in Iriomote Island proposed in 3.2.2.

3.2.5 Potential options of legal framework for introducing total volume control and behavior control over tourism/visitor pressure

[Legal framework for total volume control and behavior regulation 1 : Natural Parks Act]

- ✓ The Natural Parks Act³⁵ prohibits various behaviors without permission in the Special Zones or the Special Protection Zones, however, entry into those zones is free in principle.
- ✓ In the case that the Minister of the Environment designated “wetlands or similar areas”, however, it is prohibited to enter into such area during the period designated for each such area without permission³⁶. Moreover, in the case that the Minister of the Environment designated Utilization Management Zones inside Special Protection Zones, any person shall not enter the area during a period designated by the Minister without a certification that the purpose of entry is not utilization of the National Park, etc.³⁷. Any person who has violated those provisions will be punished by imprisonment with work for not more than six months or a fine of not more than 500,000 yen³⁸.

³⁴ The Comprehensive Management Plan seems to suppose a voluntary rule without legal binding power when referring to the description as “In introducing use control measures, a mechanism for cooperation and coordination is to be set up, building a consensus among management organizations, tourism business operators, local residents, and NPOs”.

³⁵ Act No. 161 of June 1, 1957

³⁶ The Natural Parks Act Article 20 Paragraph 3 (p), Article 21 Paragraph 3 (a)

³⁷ The Natural Parks Act Article 23 Paragraph 1 and 3, Article 24 Paragraph 1

³⁸ The Natural Parks Act Article 83 (c)

- ✓ Those regulations apply equally to both local people and visitors.

**【Legal framework for total volume control and behavior regulation 2 :
Ecotourism Promotion Act】**

- ✓ The mayor of a municipality, based on the Ecotourism Promotion Act³⁹, may designate, “Specified Natural Tourism Resources,” pursuant to the “Certified Overall Concept” by the competent Ministers of Government of Japan⁴⁰, 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”⁴¹ that are likely to be damaged by the activities of tourists or other persons and for which it is necessary to take measures for protection⁴².
- ✓ This does not apply to those appropriately protected by other laws and regulations⁴³ while it's not the case that those specified in the “Certified Overall Concept” as the Natural Tourism Resources which are required to be particularly protected by Municipal Ordinance⁴⁴ using these types of restriction actions..
- ✓ Various acts supposed to be made by visitors, e.g. staining, dumping and leaving garbage inside the area where “Specified Natural Tourism Resources” are located are restricted⁴⁵.
- ✓ If there is any person who is engaged in any prohibited act within an area where the Specified Natural Tourism Resources are located, the relevant official of the Municipality may give an instruction to such person to cease such act⁴⁶. A person who fails to follow the instruction is punished by a fine of not more than 300,000 yen (US\$ 2,727)⁴⁷.
- ✓ When a Mayor of a Municipality finds, pursuant to the Certified Overall Concept, that 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 area⁴⁸.
- ✓ When the entry in the Natural Tourism Resources is restricted, the term and the number approved thereof shall be determined by the Mayor of the Municipality⁴⁹.

³⁹ Act No. 105 of June 27, 2007

⁴⁰ The Minister of the environment, the Minister of the land, infrastructure and transportation, and the Minister of the agriculture, forestry and fisheries (Ecotourism Promotion Act Article 18)

⁴¹ Basic Policies for Promoting Ecotourism

⁴² Ecotourism Promotion Act Article 8 Paragraph 1 main paragraph

⁴³ Ecotourism Promotion Act Article 8 Paragraph 1 provisory clause

⁴⁴ Regulation for implementation of the Ecotourism Promotion Act Article 4 Paragraph 1 provisory clause

⁴⁵ Ecotourism Promotion Act Article 9 Paragraph 1

⁴⁶ Ecotourism Promotion Act Article 9 Paragraph 2

⁴⁷ Ecotourism Promotion Act Article 19 Paragraph 1, Article 20

110 yen = US\$ 1

⁴⁸ Ecotourism Promotion Act Article 10 Paragraph 1

⁴⁹ Ecotourism Promotion Act Article 10 Paragraph 3, Regulation for implementation of the Ecotourism Promotion Act Article 5 Paragraph 1

- ✓ If there is any person who enters the restricted area, the relevant official of the Municipality may give instruction to such people to cease the entry or to leave the area⁵⁰. A person who fails to follow the instruction is punished by a fine of not more than 300,000 yen (US\$ 2,727)⁵¹.
- ✓ The restriction does not apply to the cases where the entry is found by the Mayor of a Municipality to be inevitable in view of the public interest or social conventions⁵². It means that the entry continually made by local people as a common practice e.g. collection of mountain vegetables can be exempted from the restriction as long as it is unlikely to give certain damage to the Specified Natural Tourism Resources.

[Discussion: The legal binding regulation over tourism/visitor pressure to be required in Iriomote Island]

The effects of the entry restrictions prescribed in the Natural Parks Act and the Ecotourism Promotion Act are similar as providing a prohibition of entry in a specific area within a specific period and a specific number of people, however, the penalty against the violation of the restriction provided by Parks Act is much stricter than the one by the Ecotourism Promotion Act .

On the other hand, it is reported that the entry of local people into the forest mainly for the purpose of wild boar hunting and collection of mountain vegetables is smaller at the scale and more scattered than the entry of visitors, and that no information is found that the utilization by local people has given a detrimental impact to the ecosystem.⁵³ The entry restriction to the visitors should be carefully designed not to restrict the utilization by local people in an unfair way.

In light of those matters, the regulation by the Natural Parks Act, the compliance thereof is more secured by strict penalty, might be applicable to a limited area inside the nominated property, however, not so in general. It is proper to employ the regulation framework provided by the Ecotourism Promotion Act which can be applied in a more flexible way for deploying a total volume control over visitors inside the Specified Natural Tourism Resources Area, and detailed behavior regulations on those approved to enter there, at the same time, while guaranteeing the legal entry of local people.

3.2.6 Supervising effectiveness of the controls over tourism/visitor pressure in the field

The effectiveness of the controls as mention above is necessary to be regularly supervised in the field.

[Description on the Nomination/Management Plan]

The Nomination describes “Whether poacher encroachment is prevented”, “Number of patrols per

⁵⁰ Ecotourism Promotion Act Article 10 Paragraph 4

⁵¹ Ecotourism Promotion Act Article 19 Paragraph 2
110 yen = US\$ 1

⁵² Regulation for implementation of the Ecotourism Promotion Act Article 7 (xxiv)

⁵³ Kyushu Regional Forest Office, Forestry Agency, 2016

year, number of engaged staff members, etc.” is considered to be monitored while the summary report of the progress of the “Iriomote Island Action Plan” at the time of July, 2017 mentions as “illegal harvest is to be watched for protecting the designated endangered species of wild fauna and flora based on the “Taketomi Town Natural Environment Protection Ordinance.”

According to those descriptions, the targeted acts to be supervised in the field are likely to be limited only to illegal harvest, and neither illegal entry (against a total volume control) nor any other act would be included in the list of the acts to be supervised.

【The supervision to be required in the field】

In order to supervise the violation against a total volume control / a behavior regulation in a specified area, it is necessary to deploy sufficient numbers of well-trained observers for patrolling the area regularly. In the case of difficulty for entitling the observers with an authority of law enforcement, their close collaboration with the police through the relevant local government official is crucial.

3.2.7 Monitoring of tourism/visitor pressure

【Description on the Nomination/Management Plan】

The Nomination lists the “number of inbound visitors and travelers per island, number of users of leading establishments and number of eco-tour participants within national forests” and “number of accredited guides, and number of businesses that have signed a conservation and utilization agreement” as the indicators for monitoring “whether tourism use of the nominated property and areas surrounding it is done in a sustainable way.”

Nevertheless, it should be said impossible to analyze the condition of natural environment in association with the situation of the present tourism/visitor pressure only by using the indicators above. Logically, it is also impossible to evaluate the condition of the OUV and its integrity.

On the other hand, the Management Plan (“Iriomote Island Action Plan”) describes as “The status of uses such as tourism and eco-tours is to be checked. Effective monitoring methods ought to be explored to evaluate the positive and negative impacts of various uses on the natural environment, local community, and local economy. A mechanism that can carry out monitoring and evaluation on a continuous basis should be proposed and re-evaluated.” The details however, are unclear at this moment.

It is considered that the points to be addressed are as aforementioned, continual monitoring of both (i) how the condition of the natural environment is affected by tourism/visitor pressure, and (ii) how effectively compliance of the regulation over the tourism/visitor pressure is enforced.

[(i) Monitoring on the condition of the natural environment in association with tourism/visitor pressure]

The indicators used for the monitoring should cover the disturbance of the primary habitat of the Iriomote cat, loss/aridification of water environment including swamps, swamp forests and mountain stream and change of vegetation and soil, etc.. And, the methodology of the monitoring should be based on the best scientific knowledge and techniques.

The main problem is that the baseline data for monitoring is virtually absent. For example, biodiversity in Iriomote Island highly depends on its water environment, but even a map showing the status of specific areas, which should be the baseline for evaluating the loss /aridification of the water environments over time as use changes, regardless of being new or old, is not available. It is imperative to collect necessary and sufficient baseline data with regard to each indicator for the monitoring as the first step.

[(ii) Monitoring in compliance with the regulation]

With regard to the monitoring on the compliance of the regulation, such indicators and monitoring methods can be considered as follows:

- ✓ Target of monitoring: Actual situation of the entry within the restricted area
- ✓ Indicator: Actual number of people who entered there
- ✓ Method: Recording the entry by camera (if needed, intrusion of privacy should be avoided by only photographing the feet)

- ✓ Target of monitoring: People's compliance of the behavior regulation within the restricted area (illegal harvest of endangered species, significant disturbance of the habitat thereof, etc.)
- ✓ Indicator: Number of the offenders, their knowledge about the regulation and motivation of them to comply with it
- ✓ Method: Analysis of the data records of the regular patrol on those matters above

3.3 Regulation to be required on viewing/filming Iriomote cat in all parts of Iriomote island

3.3.1 The main problem of “Iriomote cat watching”

In recent years, a commercial guided tour / private activities to watch/film Iriomote cats (“Iriomote cat watching” hereinafter) has become popular. However, such Iriomote cat watching is likely to give detrimental impact to the survival of the species for the following reasons:

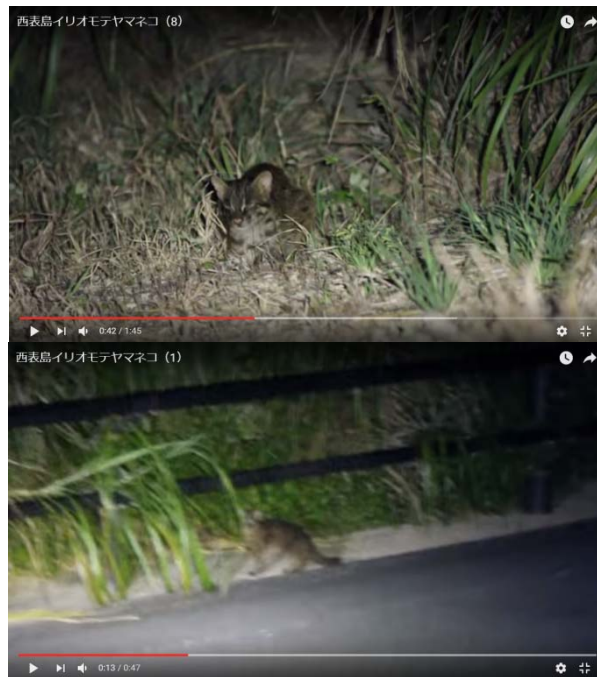


Figure 4-1 (left), 4-2 (right): The video filmed by a tour operator during the Iriomote cat watching. It shows that the tour members got significantly close to the cat and confused it.

【Risk of degradation of the habitat】

- ✓ Due to the entry of human being, the individual cats with a strong fear of humans, including mothers rearing cubs, are likely to avoid using ecologically important key resources including feeding areas, breeding nests and underpasses established to prevent road kill on the highway.
- ✓ Various types of degradation of habitat are likely to happen as well, including escape of prey animals due to excessive entry by people, loss of the cover due to trampling under foot or bush clearing, etc.

【Risk of disturbance to the Iriomote cat】

- ✓ Such Iriomote cat watching is likely to force it to be hypersensitive to constant human disturbance, and as a result may cause a change in the natural behavior and ultimately threaten the survival of the species. It is also of concern that the species' role in the ecosystem as well as the natural processes of evolution of the species could be distorted as a result of high disturbance.

- ✓ The changes in the behavior include neglect of the cubs due to the fear to human being and more various types of them. One of the concerned behavior changes to note recently is acclimating individual cats to tour members. In this case, removing a fear of people from such cats, would likely make them more likely to be seen on the highway with less caution of cars and more vulnerable to become road kill⁵⁴.

3.3.2 Regulation to be required on viewing/filming Iriomote cat within the nominated property, the buffer zones and the other areas

There is no regulation on viewing/filming Iriomote cat under the existing legal system⁵⁵. Furthermore, it is not supposed to be in the Management Plan to introduce such regulation.

Thus, it is primarily of importance to amend the “Taketomi Town Natural Environment Protection Ordinance” to include a provision to set legally binding rules with regard to viewing/filming Iriomote cats. The details of the rules (to be provisioned in the “Regulation for Implementation of Taketomi Town Natural Environment Protection Ordinance”) are proposed as follows.

- a)** When encountering an Iriomote cat during driving a vehicle (including the case the driver thought its's more likely so)
 - i)** Stay in the vehicle
 - ii)** Don't chase after the cat with the vehicle
 - iii)** Don't take any action applicable to "f", "g", "h", "i" (Neither threaten nor attract by using noise, light or other ways and don't feed.)
 - iv)** Leave the place promptly as avoiding making the cat aware of the person's presence more in the case the person is on a bike and cannot hide him/herself
- b)** When encountering an Iriomote cat while on foot on the road

⁵⁴ The analysis of recent records of sighting Iriomote cat suggests as “frequent occurrence of specific individuals on the road is now considered as not a singular phenomenon but a consistent situation. Furthermore, such occurrence has rapidly increased since 2013. Thus, it is concerned that road kills of such cats are likely to increase as ‘without fear to the road’ or ‘don’t escape from a car getting close’” (MoE, 2015).

In fact, such Iriomote cats (in particular cubs) have been frequently found during the night patrol by JTEF Yamaneko Patrol as not showing any fear of the car or the staff and were not escaping from the road even though they came close.

⁵⁵ “Act on Conservation of Endangered Species of Wild Fauna and Flora” only regulates to capture, collect, kill, wound, damage and transfer an individual. “Wildlife Protection, Control and Hunting Management Act” also only regulate to capture (and transfer of illegally captured wildlife).

“Law for the Protection of Cultural Property” prohibits to “change the current conditions or give an impact on the preservation” of the natural monuments designated by the national government without permission of the Chief of the Cultural Affairs Agency. The concept (“change the current conditions or give an impact on the preservation”) has the space to be interpreted broader than “capture”, etc. (Sakamoto, 2014) however, the practice of implementation for the law remains to apply the concept (in the case of animals) to capture and other acts directly causing the death (MoE, 2012). Similar practice would be applied to the natural monuments designated by the local governments.

- i)** Return to the vehicle promptly as avoiding making the cat aware of the person's presence more in the case the person parked the vehicle in the close vicinity
 - ii)** After returning to it, neither chase after the cat in the vehicle nor take any action applicable to "f", "g", "h", "i" (Neither threaten nor attract by using noise, light or other ways and don't feed.)
 - iii)** After returning to the mode of transport, in case the person is on bike and cannot hide him/herself, leave the place as promptly as possible to avoid making the cat aware of the person's presence more
 - iv)** Keep 300 meters or more from the cat to avoid making the cat aware of the person's presence more in the case the person does not park the vehicle in the vicinity
- c)** Viewing/filming Iriomote cat from outside of the road should be conducted under the condition that he/she completely stays hidden from the cat
 - d)** Don't view/film Iriomote cat from farmland
 - e)** Don't pursue the cats once observed
 - f)** Neither threaten nor attract by using noise including ultrasonic wave
 - g)** Don't flash a light (regardless of visible or invisible) non-existent under natural conditions to the cat
 - h)** Neither threaten nor attract by using the other ways than noise and light (e.g. smell)
 - i)** Don't attract by feeding or placing some potential food out for the cats
 - j)** Keep 500 meters or more from the breeding nest areas
 - k)** Keep distance from the entrance/exist of the highway underpasses (anti-road-killing facilities for securing animal movement established under the highway)

3.4 Restriction on development projects of tourism facilities primarily in the buffer zones

3.4.1 The policy to be required in terms of development projects of tourism facilities

As discussed in the 2nd chapter, in order to maintain the population of the Iriomote cat which comprises the OUV of the nominated property, certain measures are required to prevent the natural ecosystem from being disrupted in the lowland⁵⁶. The habitats that are categorized as stable should be maintained as is, while the habitats considered ‘vulnerable condition’ should be restored in the lowland⁵⁷. It means that such development of tourism facilities as modifying the habitat / increasing disturbance should be avoided.

3.4.2 Management Plan’s policy on developing tourism facilities in the buffer zones, and the problem thereof

The Management Plan describes the policy on developing tourism facilities in the buffer zones as “an appropriate capacity for receiving a large number of people in mass tourism is to be built up and the possibility of installing facilities to make interpretation of the attractiveness of the nominated property is also to be considered.” However it fails to attach the condition that “artificial changes to nature will be limited to a minimal level to reduce the environmental burden of human use” with regard to the nominated property.

It means that the policy of the nominator is to promote the development of tourism facilities including construction of buildings or structures for use by a large number of people actively in the buffer zones, but such policy is far removed from the policy proposed in 3.4.1.

Planning development of tourism facilities in Iriomote Island on the occasion of the nomination is mainly facilitated in two platforms⁵⁸. The first one is the “Facility plan for use” of the “Project Plan” incorporated in the “Park Plan of Iriomote-Ishigaki National Park”⁵⁹ managed by the Ministry of the Environment. The second one is the “Iriomote Island Facilities Installation Planning Committee”⁶⁰ mainly comprised of relevant administrative bodies and tour operators.

This report focuses on 5 development projects of tourism facilities in particular, and shows them on Figure 5 which is prepared by adding the project “3”, “4” and “5” planned in the “Park Plan of

⁵⁶ Ryukyu University, 2008

⁵⁷ ICCRC, 2011

⁵⁸ Taketomi Town is also planning to develop some tourism facilities (Okinawa Prefecture, 2017.b).

⁵⁹ MoE, 2016.a

⁶⁰ “Iriomote Island Facilities Installation Planning Committee” was established as a working group of the “Iriomote Island Sub-local Meeting” under the “Regional Liaison Committee on Natural World Heritage Nominated Property”. According to the standing rules of the committee, the purpose of it is said to make a plan on installing the facilities which contribute to promotion of appropriate conservation/management and utilization of Iriomote Island. The members of the committee are the relevant bodies of the national, prefectural and municipal governments, 2 tour operators associations and one organization for promotion of eco-tourism.

Iriomote-Ishigaki National Park” to a project location map produced by “Iriomote Island Facilities Installation Planning Committee.”

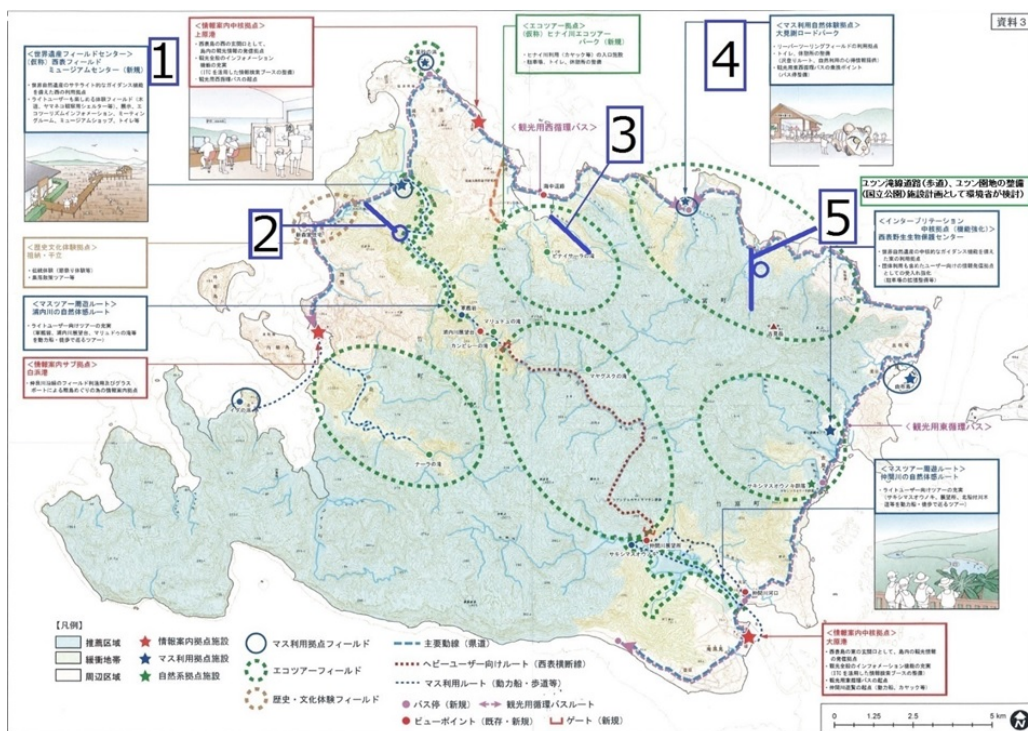


Figure 5 Development projects of tourism facilities based on the Management Plan with conservation concern
 図5 保全上の懸念がある、管理計画に基づいて構想されている観光利用施設整備計画

- 1 Construction of “Iriomote Field Museum Center (provisional title)” 「(仮称)西表フィールドミュージアムセンター」の新設
- 2 Construction of “Urauchi-Inaba road” and “Urauchi recreation site” 「浦内稲葉線道路(車道)」および「浦内園地」の新設
- 3 Construction of “Nishida River walking trail” 「西田川線道路(歩道)」の新設
- 4 Reconstruction of “Qomija road park” and construction of “Qomija recreation site” 「大見謝ロードパーク」の再整備および「大見謝園地」の新設
- 5 Construction of “Yutsun Fall walking trail” and “Yutsun recreation site” 「ユツン滝線道路(歩道)」および「ユツン園地」の新設

3.4.3 Construction of “Iriomote Field Museum Center (provisional title)”

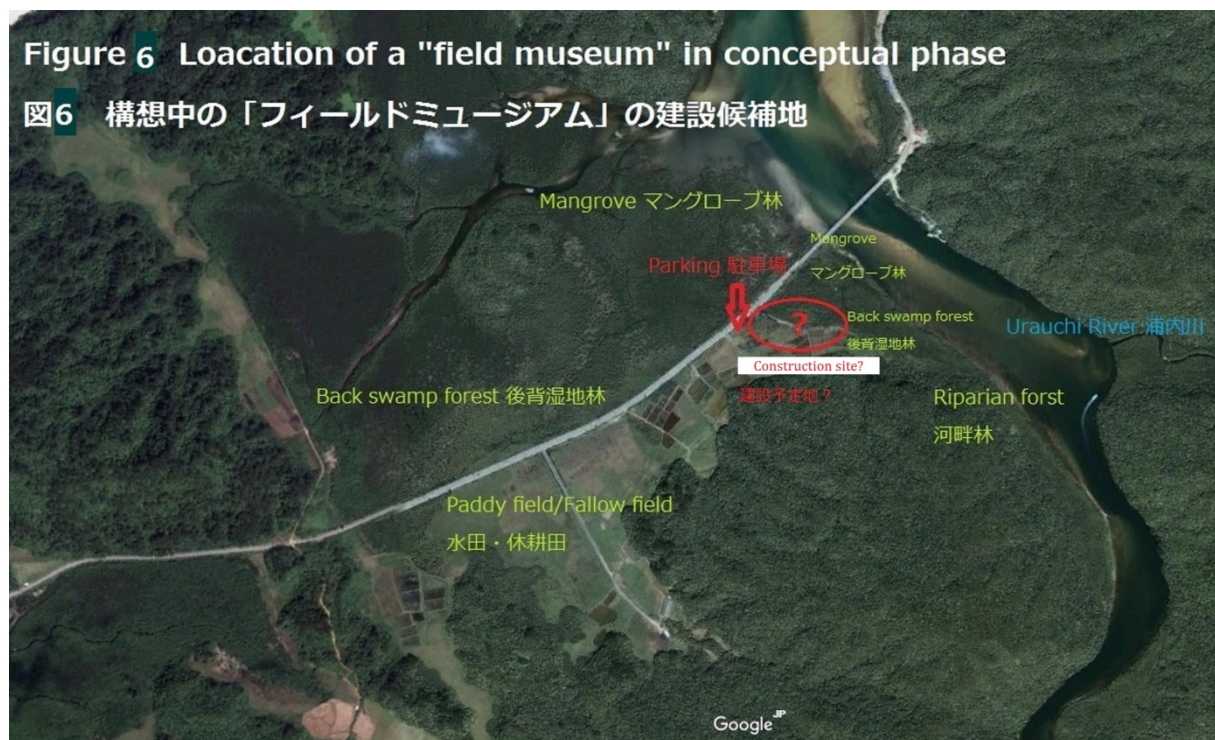
The “Iriomote Island Facilities Installation Planning Committee” proposed to construct the “Iriomote Field Museum Center (provisional title)”⁶¹ (“Field Museum” hereinafter) at the spot of “1” in Figure 5.

The purpose of the project is to establish “a hub for tourism development in the western part of the Island”⁶², at the opportunity of the nomination to the World Heritage Site, which has failed to attract a large number of tourists in round-the-islands mass tourism. Also there are “plans to construct a facility to provide an opportunity to the visitors to enjoy a field experience acceptable for a light user, an exhibition, an information service and a museum shop, etc.”⁶³. In particular, it is outlined to construct a building to house a “museum shop”, a “conference room”, etc. and a “board walk” and a “hut for watching Iriomote cats”⁶⁴.

61 Ibid.
 62 Okinawa Prefecture, 2017.c
 63 Okinawa Prefecture, 2017.b
 64 Okinawa Prefecture, 2017.c

The planned construction site of the Field Museum is around the border between the *Funaura-Urauchi* section and the *Sonai-Hoshidate* section included in the 11 sections in the lowland of Iriomote Island (see Figure 1)⁶⁵. Each section above is, as aforementioned, recognized as the only area where resident individuals of Iriomote cat consistently occur and the stable habitat is considered as significant to the biology of the cat. Thus, these primary and stable areas would serve to provide as an important reproductive source for the Iriomote cat, that would benefit the surrounding areas as dispersal areas for the cats. So, it is important for maintaining the stabilized habitat of these resident individuals, and as much as possible, to avoid any disturbance to prevent negative impacts on the biology of the cats.⁶⁶.

When seeing the present state of the planned construction site, there is only an auto park along the highway as artificial facility with the capacity of 6 tourist buses. The rest of the area is covered by forests, mountain streams, fallow/small-scaled paddy fields, riverine forests, mangrove forests and backland swamp forests along *Urauchi River*, which are the preferable set of environmental elements for the resident individuals of Iriomote cat⁶⁷ (see Figure 6).



The main building of the proposed Field Museum is anticipated to be at substantial scale considering its expected function, thus it will be constructed in the existing wetland area unless it is constructed inside the mangrove forests by cutting down a lot of trees. However, the area including the small-scaled paddy field attached with a path for agriculture is important for the resident individuals of Iriomote cat because it produces a lot of prey animals for them and is close enough to the forest edges to ensure

⁶⁵ Ibid.

⁶⁶ ICCRC, 2011

⁶⁷ Ibid.

easy accessibility from the forests⁶⁸. Furthermore, the proposed main building may not only cause a loss of wetland habitat located at the construction site, but also cause aridification of the vicinity and give detrimental impact to the surrounding swamp environment by the entry of “a large number of tourists in round-the-islands mass tourism”.

Moreover, the outdoor adjunct “board walk” and the “hut for watching Iriomote cats” to the Field Museum are likely to be constructed inside the mangrove forest on the left bank of *Urauchi* River after cutting down the trees, considering the function of the facility as “to provide an opportunity to the visitors to enjoy a field experience.” It is of concern that the plan outlines newly cutting the mangrove forest even if the scale is not so large. The hut in particular, is possibly to be open to the substantial numbers of visitors at or shortly after sunset / at or shortly before sunrise / at evening time, considering the daily behavior of the targeted animals including the Iriomote cat. However, such operations are likely to disturb the natural behavior of the resident Iriomote cats, in an area that is now considered the habitat with leading stability

In conclusion, construction of the Field Museum at the site is likely to give seriously detrimental impact to the habitat of Iriomote cat, which is significantly important for the lowland area of Iriomote Island⁶⁹.

3.4.4 Construction of “*Urauchi-Inaba* road” and “*Urauchi* recreation site”

In the “Park Plan of Iriomote-Ishigaki National Park”, the Ministry of the Environment suggested the construction of “*Urauchi-Inaba* road” and “*Urauchi* recreation site” at the spot of “2” in Figure 5⁷⁰. Those construction sites located in the *Funaura-Urauchi* Section (see Figure 1), which is one of the most important habitats of Iriomote cat.

According to the plan, the “*Urauchi-Inaba* road” is “to explore the section starting from the mouth of the *Urauchi* River up to the ruins of *Inaba* village” and is supposed to lead to the trans-strait trail of the island which runs along *Urauchi* River up into its uppermost stream. Also, the “*Urauchi* recreation site” is planned as “for a nature trip around the *Urauchi* River” and to be located in the vicinity of the end of the “*Urauchi-Inaba* road”⁷¹.

The effects of those facilities may be expected to enable the visitors to easily access the highland area as well as increase the number of visitors on eco-tours.

However, it may increase the disturbance not only to the resident cats in the section but also to the cats inhabiting the highland, which depend on the habitat located along the mountain streams flowing into the upstream and middle-stream of *Urauchi* River.

⁶⁸ Ibid.

⁶⁹ Additionally, it is a matter of great concern that the planned construction site is located in the river mouth as “lifeline of the river” of *Urauchi* River blessed with the largest number of fish species among the rivers in Japan. The projects may give detrimental impact to *Urauchi* River ecosystem.

⁷⁰ MoE, 2016.d

⁷¹ MoE, 2016.f

3.4.5 Construction of “*Nishida River walking trail*”

Incorporated in the “Park Plan of Iriomote-Ishigaki National Park”, the Ministry of the Environment suggested the construction of “*Nishida River walking trail*” at the area labeled “3” in Figure 5⁷². Those construction sites located in the *Funaura-Urauchi* Section (see Figure 1) which is one of the most important habitats of Iriomote cat.

According to the plan, “*Nishida River walking trail*” is for improving “the trail up to *Sangara-no-taki Falls*”.

If construction/improvement of walking trails makes it more accessible to visitors, it will enable people to enter the forests at a given time which may disturb the habitat of Iriomote cat significantly.

3.4.6 Reconstruction of “*Oomija road park*” and construction of “*Oomija recreation site*”

The “Iriomote Island Facilities Installation Planning Committee” proposed to reconstruct the “*Oomija road park*” at the place of “4” in Figure 5⁷³, and, the Ministry of the Environment suggested the “*Oomija recreation site*” in the “Park Plan of Iriomote-Ishigaki National Park”⁷⁴. Those construction sites located in the North coast Section (see Figure 1).

While the North coast section would function as the very important dispersal route of Iriomote cats for securing gene flow within the lowlands between the west and southeastern sides which are adjacent to each other (see Table 1), it is fragile to the anthropogenic pressure.

In this habitat, resident individuals of Iriomote cats are restricted to a narrow range between the root of the stretch of sheer drop and the coastal area because the stretch close to the coast line would serve as a barrier to the movement⁷⁵. In consequence, the home ranges of resident individuals of both male and female would lie in a straight line along the coast, and the route for movement is restricted to be within them⁷⁶. Under these conditions, even the environmental degradation just influencing the survival of one or two resident females may produce a blank area on the linear route for movement of non-resident males, so causing difficulty in being attracted farther down the route because males tend to reside only in the area where females exist⁷⁷. If it comes down to it, frequency of the gene flow will decrease in the lowland of Iriomote Island⁷⁸. Thus, the present natural environment should be preserved in the North coast section to secure the survival of resident Iriomote cats there⁷⁹.

⁷² MoE, 2016.c

⁷³ Okinawa Prefecture, 2017.c

⁷⁴ MoE, 2016.g

⁷⁵ ICCRC, 2011

⁷⁶ Ibid.

⁷⁷ Ibid.

⁷⁸ Ibid.

⁷⁹ Ibid.

The existing “*Oomija* road park” labeled “4” in Figure 5, located on the ocean side of the highway, is comprised of a parking lot for 8 standard-sized cars and one tour bus, an observatory for visitors and a walking trail down to *Oomija* River side flowing under the highway. There is no facility on the mountain side of the highway at present. The “Iriomote Island Facilities Installation Planning Committee” highlighted this facility as one of the “a hub for nature experience provided to the people in mass tourism”, and proposed to construct “toilets”, a “rest house” and “bus stops” for a “cyclic bus between the East and the West.”

The “*Oomija* recreation site” is planned to be used “for a nature trip around the mouth of the *Oomija* River.”

The construction projects, however, may require more openings in the forests on the ocean side of the highway, and if the project could intend to construct the recreation site in the mountain side of the highway (Note: the map attached to the plan appears to be so), it would require for not only newly opening the forest but also land formation to stabilize the building. Furthermore, after the facilities are completed, the visitors there are supposed to dramatically increase their number and spend more time for staying the place included in the natural habitat of Iriomote cat. Such a situation may happen not only at daytime, but also at or shortly after sunset / at or shortly before sunrise / at evening time which are the times when Iriomote cats would increase their activities.

Therefore, the reconstruction of “*Oomija* road park” and construction of “*Oomija* recreation site” may disturb the resident individuals of Iriomote cat in the North coast section. It may even cause their leaving or altering their home ranges and trigger a chain reaction of negativity of less movement of non-resident individuals of males. Which in turn could also result in a decrease in reproduction inside the section and less gene flow in the entire lowland of Iriomote Island.

3.4.7 Construction of “*Yutsun* Fall walking trail” and “*Yutsun* recreation site”

Incorporated in the “Park Plan of Iriomote-Ishigaki National Park” the Ministry of the Environment suggested the construction of “*Yutsun* Fall walking trail” and “*Yutsun* recreation site” labeled “5” in Figure 5⁸⁰. Those construction sites are located in the North coast Section (see Figure 1).

According to the plan, “*Yutsun* Fall walking trail” is for improving “the trail up to *Yutsun-no-sandantaki* Falls”, and “*Yutsun* recreation site” is “for a nature trip around the mouth of the *Yutsun* River.” Those projects are shown in the map attached to the plan as located at the mountain side of the highway⁸¹.

If the project could intend to open an additional forest along the highway, a similar problem may occur to the case in 3.4.6. And if the new walking trail would introduce a lot of visitors inside the forest at any given time, the habitat of Iriomote cat may be significantly disturbed.

⁸⁰ MoE, 2016.b, MoE, 2016.g

⁸¹ MoE, 2016.e

In fact, an overbuilt walking trail up to the top of *Yutsun-no-sandantaki* Falls which is located in the vicinity of the border of “special protection zone” may introduce too many visitors to the area where this intact habitat of particular importance for protection still remains, and it may become threatened by serious damage from illegal collection of unique plant species, introduction of invasive alien species, etc.

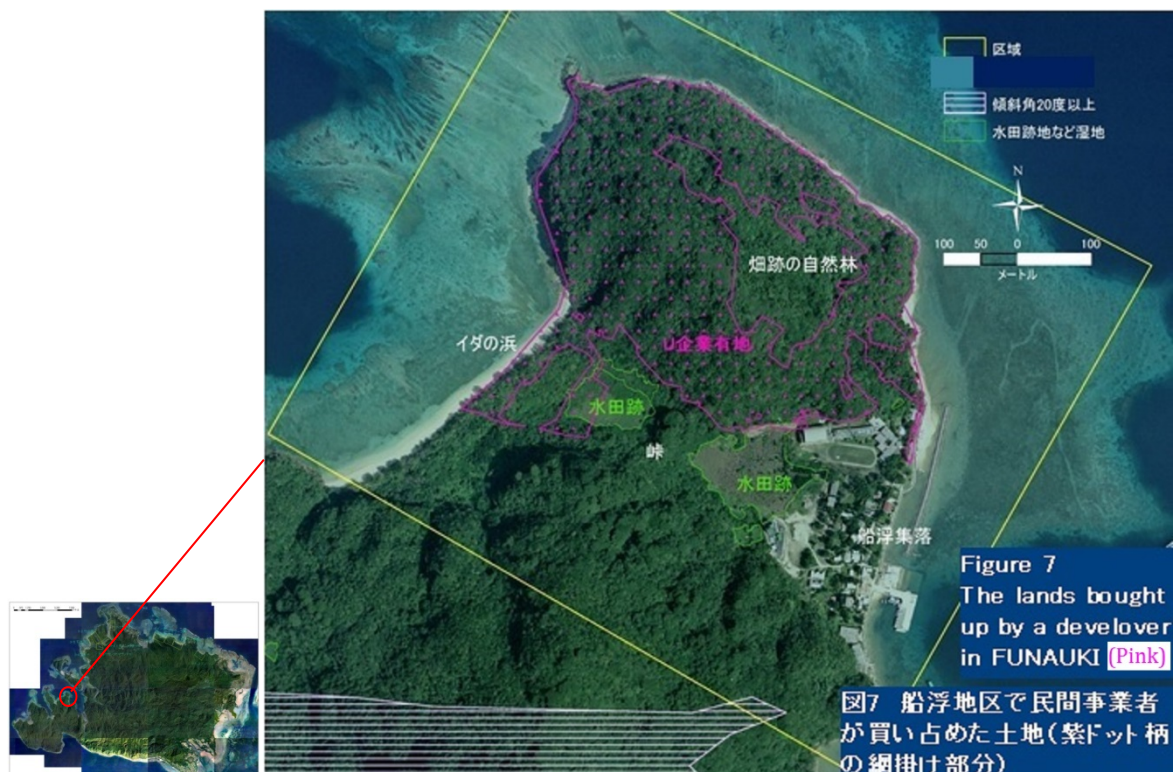
A careful consideration should be made in planning development of these tourism facilities / increasing visitors in the highland area particularly where an intact vegetation still remains because the environment of the mountain with high water-retaining capacity would also maintain the habitat in the lowland as well as the habitat in the highland .

3.4.8 Construction of medium or large-sized accommodation facilities in Iriomote Island

【Development projects of 2 hotels by one private developer】

The *Funauki* section (see Figure 1) is considered to be blessed with consistent occurrence of resident individuals of Iriomote cat due to no recent environmental change giving significant impact to the habitat of Iriomote cat. Furthermore, there is no risk of road kill because the highway doesn't lead to this area. Additionally, the cats are unlikely disturbed in the evening time because most of the tourists here would visit on one-day trips and not stay that late, although the number of tourists has been increasing. Thus, the area is quite preferable for Iriomote cats.

In January 22nd, a publicity made by a developer named as “UNIMAT PRECIOUS” was featured in Nikkei Shimbun newspaper. In the article, the “HOTEL ALLAMANDA IRIOMOTE ISLAND (with 170 rooms)” and the “HOTEL FUNAUKI (with 80 rooms)” were demonstrated to be opened in 2019.



In *Funauki*, the land of 151,462m² was bought up by “UNIMAT ESTATE” (now UNIMAT REALTY) by the intermediary of an Ishigaki Island based real-estate agent on May 9th, 2008 (Figure 7). The happening was largely reported by Ryukyu Shimpo newspaper on September 2nd 2008, and the *Funauki* settlement fell into unpeaceable situation by a fear that a big resort development would launch in the vicinity of the settlement. The planned construction site of the FUNAUKI HOTEL is considered to be the land bought up at the time. Incidentally, the planned construction site of the HOTEL ALLAMANDA IRIOMOTE ISLAND is unknown.

【Capacity of overnight visitors functions as the minimal total volume control】

As discussed in 3.2.2, a total volume control over tourism/visitor pressure is necessary to be applied at least to the each area included in the nominated property area and the buffer zones (to be appropriately designated). Incidentally, visitors on an eco-tour in Iriomote Island, who would tend to spend more time for sight-seeing is more likely to stay than those on mass-tour.

Therefore, it is considered that the capacity of overnight visitors in Iriomote Island (1,711people at present⁸²) may function as a minimal brake on the increase of the number of eco-tourists. If so, allowing / attracting medium-large sized accommodation facilities in Iriomote Island is likely to relax the minimal restriction system.

Thus, a cautious stance should be adopted with regard to allowing / attracting medium-large sized accommodation facilities.

Furthermore, construction and running of a medium or large-sized accommodation facility itself are generally concerned to give a detrimental impact on the fragile ecosystem of small islands like Iriomote Island.

【Increasing the running rate of existing small-scaled accommodation facilities is likely to give back to local communities without increasing anthropogenic pressure to the natural environment】

Shifting the trend from depending on a moving-around-tour for seeing certain tourist spots to promoting a tourism characterized by hands-on experience and extended stays has been one of the main challenges in the tourism policy in Iriomote Island over the years⁸³.

The main reason for pursuing such tourism must be to sustainably return the economic benefit to the local communities. If so, however, the priority must be put on the measures for improving the rate of the existing small-scaled accommodation facilities including guest houses, which include networking information of such facilities to improve the access by the visitors including foreign tourists, and a certain support to the owners of those facilities for improving their management/services to them.

⁸² Okinawa Prefecture, 2017.a

⁸³ Okinawa Prefecture, 2012

3.5 Decisive solution for the road kill of Iriomote cats based on an innovation in technology

3.5.1 Reaching a record of road kills despite of decrease of the traffic speed

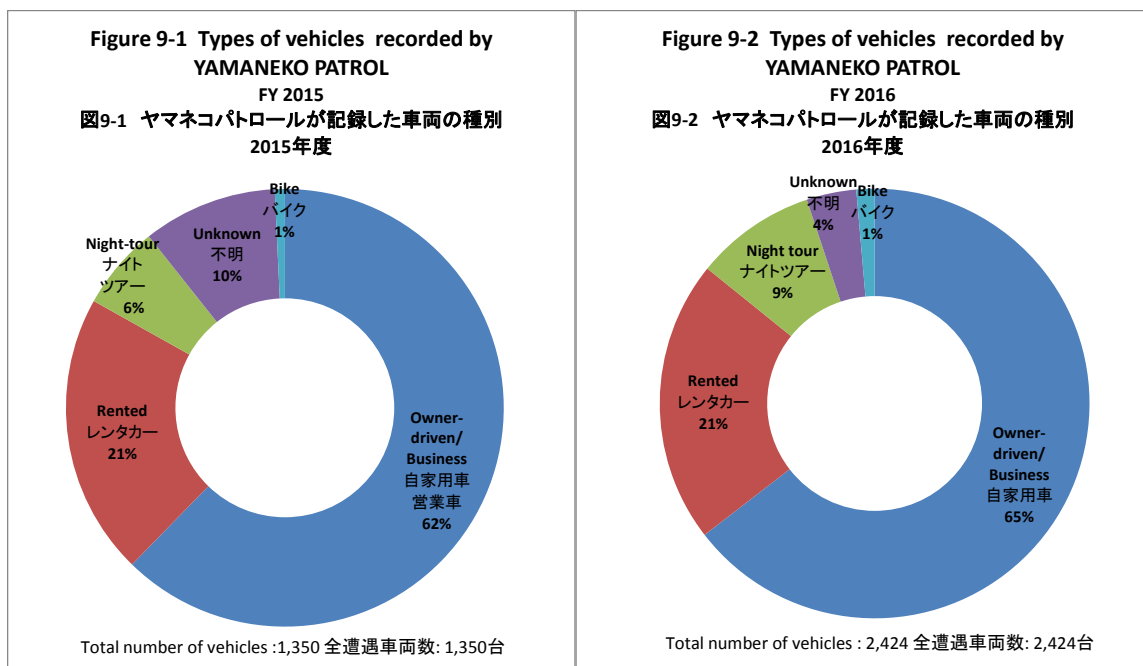
The road kill of Iriomote cat has become more and more serious. The Ministry of the Environment announced that it confirmed the record-high 7 road kills of Iriomote cats in 2016.



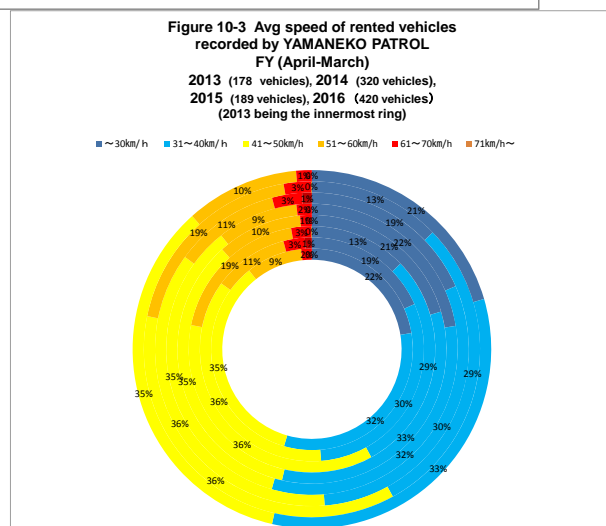
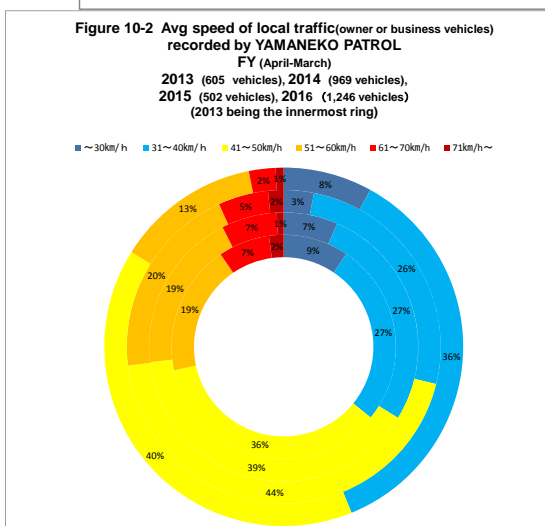
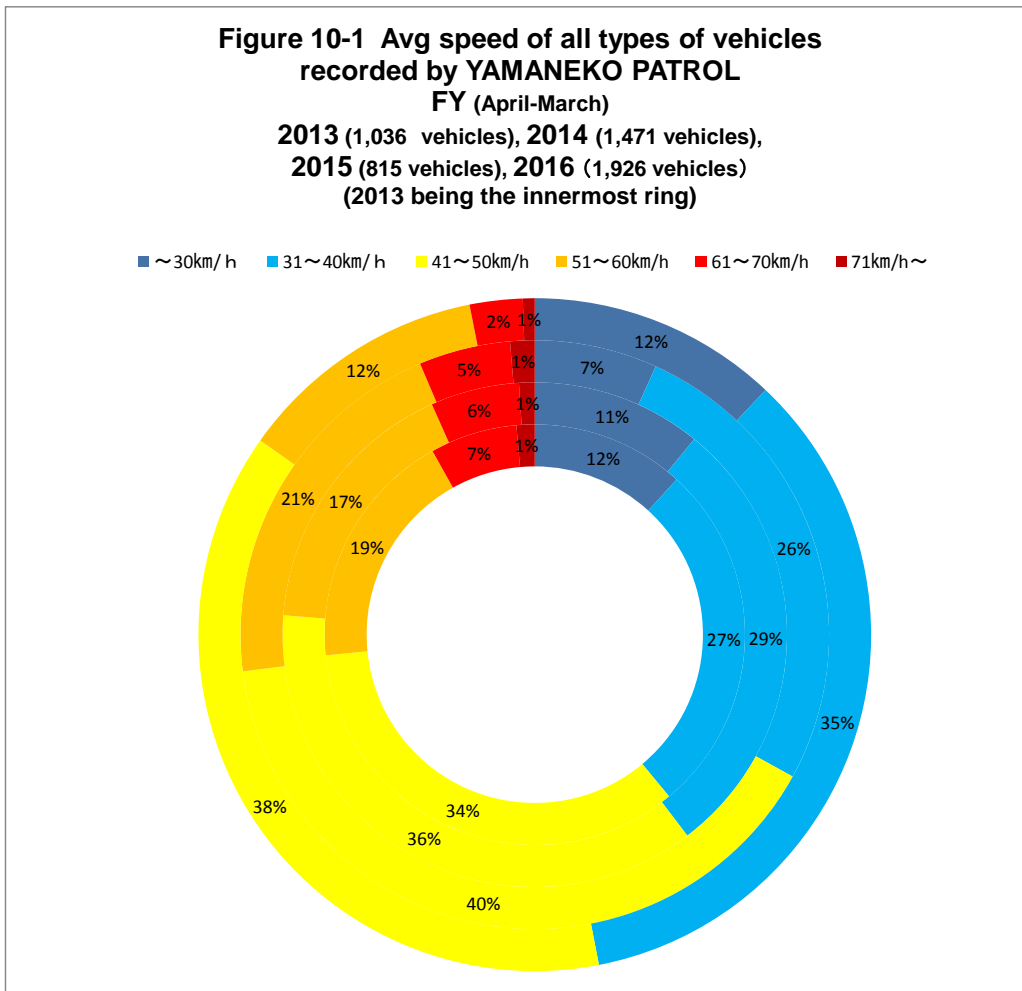
Figure 8 A road kill of Iriomote cat in July, 2016

JTEF has continually conducted a car patrol at night on the highway by driving in 20 -30 km/h; to alert the drivers; chase off the Iriomote cats which were sticking to a specific point on the road; remove prey animals potentially attracting the cats from the road; etc. Furthermore, the number, type (e.g. owner-driven/business car, rented car, etc.) and running speed of the vehicles encountered during the patrol have been recorded.

Looking into the data of the types of vehicles encountered, significant changes between the (fiscal) years could not be found (Figure 9-1, 2).



In terms of the running speed, it is consistent that more vehicles don't comply with legal speed regardless of FY or types of vehicles. However, looking into the details of the records, a specific change of the average speed is found depending on the year and the types of vehicles (Figure 10-1, 2, 3).



A significant change in the average speed of the vehicles is found in FY 2016. The figure is obviously lower than the previous three FYs (Figure 10-1). This trend is generally common to owner-driven/business vehicles and rented vehicles (Figure 10-2, 3), but more significant to the former or the cars driven by local people.

The problem is the fact that road kill of Iriomote cat reached a record in the same year when the trend on decreasing traffic speed appeared. It has to be said that a clue of decisive solution against the road kill of Iriomote cats in the whole island has yet been found.

3.5.2 Hi-tech collision avoiding system may save Iriomote cat

While trying to prevent Iriomote cats from suffering road kill is an uphill battle, the current innovations in technology of automated driving have been remarkably developing. Introducing an automated driving vehicles in Iriomote Island equipped with such a system to detect immediately and predict the behavior of Iriomote cats, and put an immediate brake on automatically to prevent the collusion to the cats must be a decisive solution for preventing road kills of Iriomote cat. A Swedish automaker, Volvo has achieved the practical use of a high-tech to prevent the collusion to large animals like moose, elk, deer, etc.⁸⁴. Though it is said that the existing system of Volvo can't detect partially obscured animals, small animals like dogs and cats, or particularly fast animals, such programmed-based system may provide a big hope in the near future to be applied to Iriomote cat by putting the data of the animal behavior on/ near the road.

In fact, the Government of Japan aims “to build and maintain the world's best ITS (Intelligent Transport Systems) and thereby contribute to its people and the world”, and is promptly pursuing to realize two types of automated driving by 2020 including commercialization of automated driving vehicles (semi-autopilots) and provision of unmanned autonomous driving transport services in limited areas⁸⁵.

Thus, based on the strong initiative of the Government of Japan on ITS and the world-class technology of Japan's auto makers, it is expected that such project on preventing road kills of Iriomote cat by ITS would be established promptly by the consortium of the government, auto makers and researchers pursuing to introduce a fully automated driving vehicle (Level 4) equipped with a system to detect immediately and predict the behavior of Iriomote cats, and put an immediate brake on automatically..

4 Conclusion: the matters to be recommended to the nominator

Based on the discussion above, the nominator of the “Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island and Iriomote Island for inscription on the World Heritage List” should be recommended the following matters with regard to the nominated property and the other areas of Iriomote Island in particular.

⁸⁴ VOLVO'S CARS NOW SPOT MOOSE AND HIT THE BRAKES FOR YOU
<https://www.wired.com/2017/01/volvos-cars-now-spot-moose-hit-brakes/>

⁸⁵ Cabinet Secretariat, 2016

- a) Reclassify the 'buffer zones' designated on the Nomination into the 'nominated property area' as much as possible;
- b) Correctly Designate the primary habitat of Iriomote cat outside the nominated property (expanded as above) as the buffer zones, except for settlement areas and agricultural land already reformed entirely;
- c) Change the management policy of the buffer zones to ensure that receiving a large number of people in mass tourism and constructing tourism facilities should not be allowed in these sensitive areas, and impact and development should be avoided in the 'buffer zones'.
- d) Correctly designate the primary and important habitats of Iriomote cat, which is or likely to be disturbed as the Specified Natural Tourism Resources based on the Ecotourism Promotion Act, and deploy a total volume control over visitors inside the area, and detailed behavior regulation on those approved to enter there while the legal entry of local people should also be guaranteed;
- e) Conduct a regular patrol in the Specified Natural Tourism Resources by sufficient numbers of well-trained observers or site managers with the close collaboration between them and the law enforcement patrols through the relevant official of the local government;
- f) Continually Monitor the condition of the natural environment and compliance of the regulations in the area of Specified Natural Tourism Resources;
- g) Amend the "Taketomi Town Natural Environment Protection Ordinance" to include a provision to set a legally binding rule with regard to viewing/filming Iriomote cat;
- h) Avoid constructing tourism facilities which is likely to degrade the habitat of the Iriomote cat and increase the disturbance to it in both the nominated property area and the buffer zones;
- i) "Iriomote Field Museum Center (provisional title)" should be outside of the buffer zones if it is to be constructed in order to minimize damage to natural habitats;
- j) Review the construction plan of "*Urauch-Inaba road*", "*Urauchi recreation site*" and "*Nishida River walking trail*" with regard to what benefit the project can ensure for maintaining OUV of the nominated property and evaluate the risk effects of those facilities which enable the visitors to easily access to the highland area and increase the number of visitors on eco-tour;
- k) Minimize opening more forests on the ocean side of the highway, and avoid opening the mountain side in the construction plan of "*Oomija road park*" and "*Oomija recreation site*";
- l) Stop the extension of the "*Yutsun Fall walking trail*" at the bottom of the fall and design it so as to limit the number of visitors using the trail at a given time to significantly smaller number of visitors, and minimize opening up the forests for "*Yutsun recreation site*."Apply a strict total volume control in the area in particular including limit of the entry period and number of entry per day based on the municipal ordinance;
- m) Establish a project on preventing road kills of Iriomote cat by ITS (Intelligent Transport Systems) by the consortium of the government, auto makers and researchers will be established promptly, pursuing to Introduce a fully automated driving vehicle (Level 4) in Iriomote Island, which can detect immediately and predict the behavior of Iriomote cats, and put an immediate brake on automatically.

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