

International Symposium on the Effects of the East Japan Great Earthquake on Animals: Transcript of Lectures



**HUMANE SOCIETY
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International Symposium on the Effects of the East Japan Great Earthquake on Animals: Transcript of Lectures

Study on the Impact of the Fukushima Nuclear Accident on Animals

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東日本大震災が 動物に及ぼした 影響に関する 国際シンポジウム



Introduction

Nobuhiko Ito (Kitasato University)

Good morning, everybody. I am Ito from Kitasato University.

The symposium today is co-hosted by Humane Society International and Japanese Coalition for Animal Welfare. However, it was a little over a year ago that HSI had requested us to conduct investigations on how the animals were addressed. At first, I thought that this would be a lot of work but decided to take on the study, because it is something that must be done by somebody. However, it would be too difficult to just do the investigation among ourselves. At that point of time, we already had colleagues involved in many areas, such as industrial animals and the volunteer sector, so we formed a team centered around these colleagues.

Today, we will be presenting according to this schedule. The presenters are Toshihiro Sato, Takehiko Kakizaki, Jun Kawamata, Shigeki Imamoto, Akiko Kawasaki, and Kunimitsu Masuda. I requested these members to join the team, and we divided the workload among ourselves, held meetings, and decided to investigate the issue in detail in order to document what had happened. The issue is already a national issue, so we were wondering whether to document what had happened nationally, but we decided to look at the issue centered around Fukushima.

And Masahiro Natsuhori and Seiichi Wada, the chairmen for today, have assisted in editing the report. I was the one in charge of overseeing the entire study.

At first, I developed a summary of what had occurred in Japanese. But even if it was a detailed record I thought that it would be forgotten in 10 or 20 years. It was then that HSI had made the request, and I thought that if the issue is documented in English then it would remain for a longer period of time.

I also looked into the situation during the accident in Chernobyl. There are records remaining, but there are very little remaining especially regarding pets.

Some of the things that I had observed and heard last year in Ukraine, which will be included in my presentation, were also things that were not documented. Such things will be summarized and presented today.

I would like to express my sincere appreciation to Humane Society International who has given us this opportunity. Thank you very much.

It will be a long day of presentations, but I would appreciate your attention, and it would be great if you could ask questions at the end. Thank you very much.

1. Situation of Impact on Industrial Animals

Toshihiro Sato (Sato Farm Animal Clinic)

Hello, everybody.

It has been two years and a half since the East Japan Great Earthquake, and my own memory of the disaster is fading away. I will be the first one up speaking today, so I would like everybody to take a look at my slides and refresh your memories on the situation after the disaster. So I would like to begin my lecture.

My name is Toshihiro Sato, and I run a private practice in Fukushima Prefecture. I focus mainly on clinical breeding of dairy cows. I used to work at the Dairy Cooperative Association of Fukushima Prefecture, and when the East Japan Great Earthquake struck I was working at the headquarters of the Cooperative Association and was also involved with treating animals on the site. So, today, I will be speaking about the situation of the impact on industrial animals, but I will be focusing on dairy husbandry.

So, here is the outline. I have developed a chart outlining the impact of the disaster. For the East Japan Great Earthquake we first have the direct damage from the disaster. Then, we also have the suspension of businesses due to the evacuation from the nuclear accident. We need to discuss whether we can continue farming. Another issue is the impact from the radioactive contamination and the suspension orders of sales of products for reasons related to food safety. There were restrictions on shipments for products such as leaf vegetables and milk. In addition, there are harmful rumors from the nuclear accident. The harmful rumors have had an effect on many things such as the sales of products. This is especially the case with animal husbandry – this has caused issues such as restrictions on fodders provided and the restrictions on the production of feed crop. This includes a variety of issues such as the distribution of purchased fodder, the use of land for self-produced fodder, and the distribution of compost.

The situation related to evacuation directives also changed as time passed. The directives and the designation of the evacuation zone were based on the Act on Special Measures concerning Nuclear Emergency Preparedness. However, there was a period where everything was in confusion immediately after the disaster. The directive initially ordered residents within areas 10 kilometers from the nuclear power plant to evacuate, and this later expanded to 20 kilometers. People were ordered to evacuate indoors in areas within 30 kilometers from the nuclear power plant. So, the time until April 21st can be seen as one phase. After that there were designations of exclusion zones, planned evacuation zones, emergency evacuation zones, and specific spots where evacuation was recommended including hot spots. So there were these different areas for which evacuation directives were issued as categories describing the situation of the impact of the disaster.

So, now let us reflect on what happened after the East Japan Great Earthquake regarding how industrial animals were impacted. This was on the newspaper the day after the earthquake. I lived in Koriyama City, and the newspaper was delivered the day after the earthquake, but after that there was no delivery for a while.

This is a photograph of the affected area immediately after the earthquake. I was working on a farm when the earthquake struck. To the left is a cattle shed. There is a road along a mound from the right of the cattle shed. However, the road right in front of me cracked, and if the mound had collapsed, I would have not been able to

return. Actually, there was a person who was buried alive in a landslide in Shirakawa City where I was at when the disaster struck.

This is the office in Motomiya City located in the middle of Fukushima Prefecture. It is about 60 kilometers from where I was working. After the earthquake, the highway was blocked, and the ordinary roads were also crowded, because parts of the road had fallen in. It took me five to six hours to finally return to the office.

This is an image of the tsunami that comes out in places like the internet and newspapers. We could not confirm the details, but there was news that parts of pig pens were swallowed by the tsunami, and pigs were victimized. However, for cows, I have heard that there were no places in Fukushima Prefecture where cattle sheds were swallowed by the tsunami.

I have heard that there were many issues even in areas without direct damages from the tsunami and places that did not have to evacuate from the nuclear accident. One issue would be damages to the buildings, but I have heard that there were no serious damages of buildings. The largest issue was the damage to the lifelines (electricity, gas, and water) and the traffic caused by roads being partly blocked, because parts of the road had fallen in. Communication was also an issue, and cell phones and fixed-line phones could not be used in most occasions.

In addition, food was becoming scarce, and fuel was also lacking. The nuclear accident happened under such situations, and we were unable to get information on the situation of the accident and environmental radiation. The situation at that time was chaotic. This was the time when stakeholders were worried about the expansion of the evacuation zone. So, securing fuel was the priority for everybody, and traffic was created by people lining up to fuel.

I would now like to talk about how animal issues were addressed. Cattle farmers and employees of agricultural cooperatives in Fukushima Prefecture first decided to collect information on the situation of the impact of the disaster on cattle farmers. Evacuation directives were issued along the coastal areas of Fukushima, so evacuation was prioritized over the collection of information, and we were unable to grasp the situation of the impact. The disaster damaged milk factories and other facilities, and various systems were stopped. Milk could not be shipped, and fodder could not be provided to farms. We treated animals, but during this emergency we only addressed emergency patients. In addition, businesses associated with dairy husbandry, such as auctions of farm animals and distribution of beef, were also temporarily stopped because of the disaster. We notified farmers regarding the information that we collected and how the issues were going to be addressed. Under such situations, decisions on how to care for and manage the animals were problematic.

We could not predict when the system for the distribution of commodities would recover. In addition to this, because the milk factories were damaged milk could not be produced and shipped. The initial estimate was that it would take 2-3 weeks for the milk factories to recover.

So, stakeholders came up with the following idea to manage the dairy cows while they wait for the recovery. For example, milking cannot be stopped all of a sudden. We call the process, to “dry off,” when we gradually decrease the amount of fodder to stop milking. We made materials providing guidance with directions such as do not forcefully dry off highly-lactating cows or care and manage your cows in certain ways in terms of providing vitamins and minerals to cows during emergencies. We provided these materials to stakeholders such as farmers, those associated with farms, and employees of agricultural cooperatives.

In addition, as this chart outlines we decided on guidelines on the management during each stage of lactation for producing and non-producing cows, points to be careful of when stopping milking all of a sudden to dry off, points on additive agents and vitamins, and the management of the cows assuming the possibilities of outbreaks of diseases during emergencies. Furthermore, guidelines were discussed on what to do with artificial semination that is done during ordinary times and how to deal with dead cows. We also received a notification from the Ministry of Agriculture, Forestry, and Fisheries regarding “the care and management of farm animals in the light of the nuclear accident.”

As for notifications during the disaster, for example, there was a notification from the National Federation of Dairy Cooperative Associations requesting farms to raise the calves with milk to decrease the amount of waste cow milk. There were also notifications from the Ministry of Agriculture, Forestry, and Fisheries regarding the care and management of cows in the light of the nuclear accident. We must dry off so there were materials regarding technical considerations during emergencies.

So, I would like to explain the impact of the disaster on the industrial animals once again. The research team looked at all sorts of animals, but I especially focused on dairy farms, fattening cattle, and breeding cattle. In addition, there were sheep, goats, pigs, chickens, and horses. I am sure that everybody here knows about this, but in the Soma region, there is a festival called “Soma Nomaoi,” and there are many people who keep horses to be used for this festival, so we also needed to pay attention to horses.

It is difficult to grasp the numbers of animals kept when the disaster struck. It is difficult to estimate the numbers per designated areas, but the numbers divided by areas that resemble the designated areas are shown on this chart. For milk cows there were a little over 4,000, and there were 10,000 including beef cattle. In addition, these are the numbers within the exclusion zone for these types of cows and there were 10,000 in areas under the jurisdiction of the government. There were 5,500 in the exclusion zone. The numbers for horses and pigs follow.

So, next, I would like to explain the types of impact on the farm animals.

As mentioned before, there was very little direct damage from the earthquake and the tsunami. However, there was indirect damage such as the damage of lifelines. For example, when there is no electricity dairy farms would not be able to use water since most of these farms use pumps to use groundwater. Depending on the area it took as long as 3-4 days for the electricity to recover. And basically, the fodder factories and milk factories had not recovered so production stopped. So, in such ways, there were areas impacted not only from the actual evacuation from the accident.

Of course, the caretakers of the animals have evacuated. People actually evacuated, and the evacuation directives also had an impact on stakeholders of farm animals. In addition, contamination from the radioactive materials impacted the production cycle of fodder and grass fields.

Depending on your position, there are many ways of looking at the situation of commodities, but the surveillance system for agricultural and animal products was strengthened for “the safety of food.” There were many systems developed for inspection upon the distribution of these products which was also a characteristic of this entire situation.

This is a slide regarding the evacuation directives. After the nuclear accident, the zone for which the evacuation directives were issued gradually expanded. At first, the zone was within a three kilometer radius. However, the

zone was expanded to 10 kilometers and then to 20 kilometers, and for areas within 30 kilometers orders were issued to evacuate indoors. After April 22nd, the impacted areas were divided into the exclusion zone, planned evacuation zone, emergency evacuation zone, and specific spots where evacuation is recommended. This will come out later on, but another issue was that under such circumstances the movement of farm animals changed over time, and the farm animals that have been abandoned or released have had a variety of impact.

This is a summary of what took place after the disaster, but stakeholders found prospects for solutions regarding the various issues that arose immediately after the disaster in about a week following the disaster. However, at the same time, there were new issues. There was the issue of contamination from radioactive materials even in areas without evacuation directives. There was also the issue of how to deal with the dead cows and the issue of contaminated rice straws which surfaced after a while.

In areas where evacuation directives were issued, especially in the exclusion zone, farm animals were abandoned or released, because it was difficult to continue farming businesses. This led to the issue of starving farm animals and stray farm animals. In the planned evacuation zone the issue was addressed by first creating a system to move the farm animals, then transporting the animals, and finally evacuating the caretakers. So, the situation varied depending on the area.

This also applies to areas outside of the evacuation zone, but there was a notice from the Ministry of Agriculture, Forestry, and Fisheries regarding the care and the management of animals in the light of the nuclear accident. The notice requested stakeholders to use grass from before the accident or those that have been wrapped and have not been aired out. It also requested stakeholders to put a lid on tanks for drinking water at the cattle shed. It also told the stakeholders to not pasture the farm animals for a while.

Monitoring was conducted from fairly early on. Orders were issued to stop shipments of raw milk when radioactive materials were detected from raw milk produced in a farm around this area in Kawamata-machi. The shipments shut down after March 19th, and it was official from the 21st. The milk factories had stopped its operation because of the disaster, and the orders for the shutdown were issued right before the factories were ready to operate again. So, with the exception of a part of the Aizu area milk from Fukushima Prefecture was not put on the market throughout April.

Farmers had to throw out raw milk that could not be shipped, so they sprinkled it in grasslands or dug holes to dispose of the milk.

As this chart outlines, to resume the shipments we needed to go through a lot of steps. In the end, monitoring inspections were conducted, and shipments were resumed after developing a system of inspections. Shipments were resumed at different timings depending on the area, and on April 16th shipments were resumed in the main producing area, Nakadoori (mid-Fukushima) and Iwaki City, and on May 3rd, shipments in Kawamata-machi were resumed with the exception of designated areas.

This is the issue of dead cows. This relates to the issue of farm animals starving to death within the exclusion zone. Currently, slaughterhouses and dead cows are all required to be inspected for BSE. However, we cannot conduct inspections for BSE, because we cannot remove the bodies after the inspections due to the disaster. So, preferential measures were issued, and we do not have to conduct inspections for BSE. Until now, professionals had transported the inspected bodies to facilities that dispose of industrial waste, but because inspections cannot be conducted anymore the farmers must bury the bodies of the farm animals. This is also associated to article

22 of the Rendering Plant Control Act, and there was not much progress with the burial work because of restrictions of the law. Stakeholders needed to apply for permission to use the land for burial. Such issues were resolved as industrial waste disposal companies resumed their businesses, but I would say that dead farm animals could not be disposed of in the usual manner for close to 3 months. The work in the exclusion zone was also similar.

The issue of contaminated rice straws has been covered in newspapers as well. The year that the disaster struck was a little bit different for Fukushima. The rice straws are usually used up by the end of the year or by January or February after the rice is harvested. However, because of bad weather from the previous year, there were straws remaining in the rice paddies until March, and there were many cases where straws were gathered only after the nuclear accident. As a result, cows were fed highly contaminated rice straws collected after the accident.

Due to results of the inspections for monitoring, there were restrictions on the shipments of beef as well. There were many steps that had to be taken to resume shipments. The slide shows the details, but similar to milk cows shipments of beef were restricted, and a system for inspection was developed to resume the shipments. These steps were similar among other industrial animals.

This is the actual number of inspections for monitoring conducted for animal products in Fukushima. In addition to these products inspections were conducted for wild boar meat. As a result, wild boar has not been consumed as food, and I believe it is still not consumed. These inspections were conducted by private sectors that introduced testing equipments.

Regarding radioactive materials in foods, during the initial phase, measures were taken at each production stage based on the provisional standards. In the end the standards were revised, and these new standards were accepted. Stricter standards of 300 to 100 becquerels were also adopted for animal fodder, and those regarding compost used for fields also became stricter. So these standards of treatment were decided as a set within the food cycle.

This is a map showing the areas contaminated by cesium. This is already out on the internet. Soil contamination will be an issue, because as production activities resume it would ultimately use lands such as grasslands. So, following the issue of food inspection would be methodologies for decontamination techniques as listed on this slide. For example, for rice paddies there are methods such as reversal tillage or peeling off the surface soil. Such methods have been used for the past 1-2 years for the decontamination of farm fields. However, there have been cases where the level of air dose has risen again after decontamination or where fodder has exceeded the standards. So these are the current issues, and we still have not figured out any directions in resolving them. There are discussions as to whether these lands should be decontaminated again or whether they should be used for purposes other than farming.

Next, there are still issues related to milk cows, fattening cattle, and breeding cattle. The initial issue was that the standards for the fodder of feeder calves and calves were set to under 3,000 becquerels, because these cows would not be consumed for a while. The standards for fodder of daily animal products, such as milk and fattening cows, were set to under 300 becquerels. Because of this, the issue of accumulation in breeding cattle surfaced. The requirements for shipment of meat were not set for a while, and because of this, there were many cattle that could not breed or be shipped as meat. This is a very complex issue and there were also issues on

coverage by insurance, and the situation reached a stalemate without being able to ship or euthanize these animals. (Currently, shipments are possible depending on the results of biological and blood tests, and the issue is gradually being resolved.) So, such issues were the main problems during the first 1-2 years after the accident.

So this was the situation for dairy farmers. There were 300 cows impacted initially by the disaster, but in the end, I believe that cows from approximately 30% of the farms in Fukushima Prefecture have been damaged from the disaster and the evacuation from the nuclear accident. As for compensation claims, there was a claim of 6,900,000,000 yen, and actual payments are being made after the provisional payments.

This is the situation of evacuation from the designated areas. This is the planned evacuation zone. This is mainly Iidate village, the Yamagiya area of Kawamata-machi, and Tsushima area of Namie-machi. The farm animals in the exclusion zone within 20 kilometers from the nuclear power plant could not be transported. For the planned evacuation zone, cows and people were to evacuate by the end of May. Initially, there were policies to not move the animals in the planned evacuation zone and the areas within 30 kilometers from the nuclear power plant. However, as a result of negotiations between major farmers' groups and Fukushima Prefecture it was decided that in the planned evacuation zone farmers were able to evacuate by transporting their cows or were able to evacuate after euthanizing. Initially, the policy was to not transport the animals in areas within 30 kilometers from the nuclear power plant in the planned evacuation zone. However, the decision was made, because this policy would greatly damage the major production base (mainly around Abukuma Mountain area) of Fukushima Prefecture.

So, the evacuation of cows with the humans followed these steps. However, because there was no time all farmers were not able to sell or transport their cows to evacuate by May. So, we reopened a closed farm in Fukushima Prefecture to secure a place for the cows to evacuate temporarily.

There are procedures you need to take to transport the cows. One requirement is to clear the movement restriction for infectious disease, such as Johne disease, provided in the Act on Domestic Animal Infectious Diseases Control. Other issues are those related to insurance and the submission of notification of transfer to the agricultural insurance association. Also, when temporarily evacuating the animals they are still owned by each farmer, so we have to address the risk of infectious diseases when these animals are managed in groups. So, we needed to clear issues such as vaccinations, skin diseases, and measures against parasites as we evacuated the animals. For stakeholders of livestock hygiene service centers the transportation of the cows was also implemented after screening for external exposure, similar to measures taken for humans. So, many things were monitored upon evacuation. Not all cows were able to evacuate. Some of the cows were high-risk cows that would not be able to withstand the transportation, so such cows were sent to slaughterhouses to be shipped. From June, after the evacuation, the cows were resold from the temporary boarding facilities, but the transport of cows was restricted within Fukushima Prefecture. In addition, the places that bought these cows had to have the milk monitored before shipping them. This methodology was taken in order to secure food safety and as a result of the discussions between the government and farmers' groups.

This slide shows a scene where screening for external exposure is being conducted. Similar to humans, I have heard that there were no cases in which the level exceeded 100,000 CPM.

This shows the situation of how many farms resumed their businesses after evacuating. From after the

evacuation basically farms have closed their businesses or suspended their operation. For farms that evacuated from the planned evacuation zone only two of them resumed their business. The daily cooperative of Fukushima Prefecture has resumed businesses for dairy farms within Fukushima City as a “Recovery Farm” which is a project that started from May 2012 and involves four farms that have evacuated.

This may be off the subject, but one difficulty that impacted people have is that they cannot keep up their motivations. The different areas will now be re-zoned as difficult-to-return zones and residence restricted zones, but impacted people will not be able to keep up their motivation as two, three years pass. It would be difficult to keep up the hopes they have now.

Lastly, I would like to touch on the exclusion zone. This slide shows the report from Fukushima Prefecture. These are the hygiene measures implemented for dead livestock from April 13th to the 15th. For four farms with cows, two with pigs, and five with chickens -- there were 50 cows in total – slaked lime was scattered on the bodies, and sheets were used to cover them. At this time, there was not much else that stakeholders could do.

In this way, there was a notification, “The Treatment of Livestock in Exclusion Zone.” The policy was that farm animals that were alive in the exclusion zone were not to be moved, and they were to be euthanized with the consent of the owners. However, the problem was that the dead bodies of the farm animals, including those of euthanized animals, could not be buried. Since they could not be buried for a while, as a hygiene measure, lime slakes were scattered on the bodies and sheets were used to cover them. (*Dead farm animals were handled as industrial waste contaminated with radioactive materials, and it took until July for the Ministry of the Environment to decide on whether it would be appropriate to bury them. This also became a barrier to obtaining the consent of the owners to euthanize their animals.)

Regarding euthanasia, from the experience of the foot-and-mouth disease outbreak in Miyazaki in 2011, a method of injection of drugs that is simple and does not require a certain technical level was used as a method for euthanasia. Muscle injection of muscle relaxant agent was used for euthanasia. The methodology was developed promptly, and the materials necessary were prepared. However, there was a huge time lag until the actual euthanasia was implemented. Stakeholders needed the consent of the caretakers of the farm animals including sending requests to caretakers to secure land for burial. And as mentioned before, the authorities had not decided on how to handle the dead farm animals, so I believe that this was a large part of the reason why there was a delay in obtaining the consent from the owners. These are the numbers as of January 2012. Euthanasia is still in progress as of today.

I heard from an employee of the prefecture that one of the issues related to measures taken in the exclusion zone was that it was unclear who is going to bear the costs. Another major issue was that during that time the bodies could not be buried temporarily. So, there was such background behind the photographs of the abandoned bodies. In addition, the issue of compensation also became a barrier to obtaining consent for euthanasia. There were various situations in addition to this. There were issues on the abandoned bodies of the farm animals that starved to death, and there were photographs of pigs damaging facilities and eating the bodies uploaded on the internet. There were also people who thwarted the efforts to trap the animals for euthanasia who released these animals, and these animals became strays.

Regarding land for the burial, due to the revision of the Act on Domestic Animal Infectious Diseases Control the

caretakers of the farm animals are now required to secure land for burial. However, at that time, this part of the legislation was unclear, and there was also the issue of the order of priority of related legislations, and it was difficult to move forward. (*Regarding how to treat the bodies the related legislations are the Act on Special Measures concerning BSE, Rendering Plant Control Act, and the Wastes Disposal and Public Cleansing Act, but for this case the Act on Special Measures concerning Nuclear Emergency Preparedness was the law that was prioritized, and this became a barrier to moving things forward.) I believe as a result this led to the abandonment of the dead bodies of the animals.

There was an exceptional case where animals were actually moved from the exclusion zone. These animals were 31 horses used for festivals and cows and pigs used for testing purposes as shown on the slides.

I think many of you may have seen this photograph, but these are dead farm animals. There were cows that were still alive, but the bodies have been left without being treated. Approximately 90% of the Holstein cows died, and 10% became stray cows. This is the actual photograph of the cattle shed in the exclusion zone in about August or September. The cattle shed has been cleaned already. With the restructuring of the evacuation zone, the exclusion zone has been designated as the difficult-to-return zone, the residence restricted zone, and the preparation-for-lifting-evacuation zone.

On the other hand, 10% of the Japanese Black Cattle (Kuroge Wagyu) starved to death and 90% became strays. This is currently an issue. Some of these stray cows have ear tags on them, but there is a gradual increase of cows without ear tags. (*The cows reproduced by natural mating, and the numbers of second generation cows without ear tags are increasing). This photograph is from October, but actually, media such as newspapers have written articles saying that there is an “increase in the number of car accidents” due to factors such as the increase in the numbers of cows.

So, related to the increase and decrease of cows in the exclusion zone, these are the numbers of cows that have died from the tsunami, those that have been euthanized, and the number of bodies of the cows that have been treated. In reality, people believe that there are still over 1,000 stray cows – perhaps close to 2,000 of them.

In addition, there is an increase in the damage caused by vermin. I will not further comment on this, because this will be in later discussions, but other than the fact that game meat can no longer be consumed the number of wild boars and black bears hunted have decreased due to the restriction on shipments and consumption of these meats as food. Currently, the number of cases of crop damage has increased in the surrounding areas as well. So, there is the issue of controlling the numbers by capturing, the increase in numbers by natural mating, and hybridization with wild animals such as the wild boar hybrids. In addition, the impact to livestock industries in the surrounding areas, such as infectious diseases, is also an issue we face.

Lastly, the lessons learned from the nuclear accident can be summarized into the following points. Basically, there is the issue of initial response, and there needs to be deeper discussions in the future regarding how to address the issues that were beyond the scope of our assumption. One issue that we had was that there were conflicting reports, and we also have the issue of evacuees. And this is an industry characteristic, but for pigs and chickens it did not take long for these animals to starve to death once access to fodder was stopped, and this was one difference from cows. There are some pigs that have become strays, but the prolongation of the continuation of farming is unique to cows. Cows can live in the nature to an extent with grass, so this is a difference.

Also, this time, animal industry stakeholders had a lot of difficulties with the order of priority of legislations. If I am allowed to wish so much, one regrettable point is that the authorities did not order prompt, mandatory euthanasia or evacuation with acts on special measures.

When considering the impact of the nuclear accident the evacuation of the caretakers caused a direct impact, but I believe that issues that were already present have come under close attention.

Risk management is also another issue. There is also the issue of contamination from radioactive materials, stray farm animals, wild animals, and infectious diseases of farm animals. Also, I strongly feel that the nuclear accident brought to attention the risk management for food products and the theme of food safety as production was resumed by securing the safety of food. I especially feel that the accident brought attention to already existing problems such as the issue of vermin, fields for growing fodder, deserted cultivated land, and village forests.

Thank you for your attention.

2. Situation of Impact on Wild Animals

Takehiko Kakizaki (Kitasato University)

I am Kakizaki from Kitasato University. I used to be a student of Dr. Ito and Dr. Natsuhori, who are here with us today. I used to study environmental radiation – Dr. Ito has also been involved in environmental radiation for a long time – and I found it very interesting, so I became a faculty. Today, I am in charge of speaking about wildlife. After the disaster in Fukushima, the East Japan Great Earthquake, I was already visiting the sites around the 20-kilometer radius by the end of March 2011. I was collecting various data, and I had had many discussions with Dr. Ito. Wildlife was among the various topics that I had addressed, so I would also like to touch on some of the background information as well.

The slide here shows the impacted area that used to be included in the exclusion zone. Currently, the area is no longer a part of the exclusion zone. People can visit this area during the day, but they are not allowed to stay overnight in this area. Holsteins here do not have ear tags. These cows are now in their third or fourth generation. The condition of their coat is good. It was also mentioned in Dr. Sato's slide, but these cows seem to have good meat, and some areas have these stray roaming cows.

Also, it seems like Japanese people are extremely scared of radiation, and they are very hostile about it. I feel that there is no discussion going on based on scientific evidence, so I would like to touch on this as well.

So, this is the outline of the impact of the disaster on wildlife. First, the main issue is the Daiichi Reactor in Fukushima – that is, the Daiichi Reactor of Tokyo Electric Power Company and the radioactive contamination from its accident. Another issue is the fact that people have abandoned living in the area because of the tsunami and the radioactive contamination. As a result, wild animals are now able to freely access this area. Yet another issue, as Dr. Sato had pointed out, is the fact that farm animals have been released. I wrote on the slide that farm animals had ran away. I would like to speak about how these issues have impacted wildlife.

First, I would like to talk about whether Japan was free from radioactive contamination to begin with. As you can see, many countries around the world have conducted nuclear tests especially on atomic bombs. This has been conducted in the atmosphere as well as underground, so we must consider contamination from such experiments. In addition, I believe that it was in 1985 that the nuclear accident in Chernobyl occurred. The contamination from this accident probably dispersed all over the world. I have learned from Dr. Ito that in the 1970's and the 80's there were considerable amounts of radioactive materials in the rain. So, these are the measurements. In Japan, the level is gradually decreasing, but in the end since the Fukushima nuclear accident occurred in Japan the contamination levels rise significantly. These measurements are taken in Japan. The location for taking the measurement moved from Koenji, Tokyo to Tsukuba in the middle. This is where the accident in Chernobyl occurred, and there has been constant contamination from events such as atmospheric nuclear tests. So, I would like everybody to know that no contamination at all is something that never happened. I should not be saying this, but there is a large supermarket franchise that has announced that they would like to achieve zero Bq in foods. This is impossible. There is natural radiation as well, and through this disaster I have questioned the domestic science education that creates a society in which people say things like this.

I have been at Kitasato University since I was an undergraduate student, and this is data from before I was at

Kitasato University. I got this data from Dr. Ito. This is on copper pheasants, a wildlife species, but this data shows the deviation in the average, and you can see that some of the birds have measurements close to 100 Bq. So, there is no such thing as “0.” Please note that measurements around 10 Bq were already taken from things like bamboo shoots and copper pheasants before the disaster. But since the 1960’s when there were many nuclear tests going on the levels have decreased. However, cesium 137 has a half-life of about 30 years, so please be aware that the material would remain for quite a while.

So, there are impacts from such factors. In addition to the 30 years Japan has a rich natural environment and has a lot of forests. So, if you engage in farming cesium absorbed in the ground would be absorbed by the harvested crops. If we can clean this off we can further remove in addition to the decay, but there is a cycle in the forest environment. The decay is the equivalent of the half-life of the radioactive material, and the level decreases based on the physical half-life of the material. Japan has a rich natural environment and there are a lot of forests, so contamination in woodlands would become even more of an issue in the future. And issues related to removal in areas with landslides need to be further studied.

So, from here I would like to talk about the situation of contamination of wildlife. This is a report by the Ministry of the Environment from fiscal year 2012. Radioactive materials such as cesium have been absorbed by various things, and if animals consume these things as food the animals will become contaminated. Thus, it is no surprise that certain levels will be measured when actual measurements are conducted. The actual levels – whether they are found in high or low levels – and whether the contamination of things that people eat, such as wild boars, would become a source of contamination for people would become the issue. I will touch on this later on.

As Dr. Sato and Dr. Aoki have pointed out the term biological concentration has been used incorrectly, and this also becomes an issue. Unlike things such as organic mercury cesium does get eliminated from the body. So, you would be contaminated if you continue to eat something with high levels of cesium, but if time passes, the levels would return to equilibrium states, and there are possibilities that the levels of concentration would remain the same. However, there is still no data, and this cannot be said for sure. Scientists cannot say no if there is no good evidence, and I believe that the public has an image similar to biological concentration that happens with heavy metals due to the fact that the media writes about this in an amusing way. I am very upset about this.

Regarding cesium 137 it has a long half-life, and it also remains in forest environments for a long period of time. This is data taken from meat of wild boars in Shimogo-machi in the Aizu area of Fukushima Prefecture where the level of contamination is quite low. So, cesium 137 has a half-life of 30 years, and cesium 134 has a half-life of 2 years. If we expect the impact from the Fukushima nuclear accident, the current measure of cesium 137 would be about a half, and the level of cesium 134 would be about a half of that of cesium 137. However, you can see that the measurement exceeds 20 Bq, so the measurements for cesium 134 would be approximately 10 Bq or at least 5-6 Bq. However, the level of cesium 134 was below the limit of detection. So, perhaps this is from past contamination. Actually, there have been reports that there was contamination of cesium 137 in Aomori Prefecture. I think that this was also in cows, but for this case the level of cesium 134 was also below the limit of detection. If such data were publicized without any consideration and without any annotation people who do not have any background information would think that the contamination is from the

nuclear accident. However, there are possibilities that such contamination is not from the nuclear accident. So, I hope that there would be a system where people can provide comments on such background information.

From here, I would like to talk about the radiation exposure of wildlife. I was actually involved in the investigation. Wild boars are considered as vermin, but on the other hand they are also put on the market as good meat. Wild boars are omnivores, and they eat anything. They eat plants, grass, insects, frogs, and earthworms, and when they dig their food up they would also be ingesting soil and dirt from the surface layer. They also carve off moss and eat these, and they also eat a lot of mushrooms. This was also the case with wildlife such as Japanese macaques, but they also capture wild boars to exterminate them because they are pests, and when they are used for food consumption they must be screened and measured. Thus, Fukushima Prefecture has taken the initiative, and we are currently collecting data with the cooperation of Dr. Mizoguchi of Fukushima Prefecture Wildlife Protection Center.

These are the points. This was when it was still difficult to enter the heavily contaminated regions. So, these are the data of wild boars from the surrounding areas. There were approximately 20 samples sent to my place which I measured. Before looking at the results I would like to mention that wild boars yielded very good data regarding environmental radiation. Wild boars have very small territorial areas – they live in an area ranging from 0.1 to one square kilometer. So if they live in a one square kilometer area it would mean that they would be living in one spot of that map of Fukushima Prefecture that I just showed. However, they do move around depending on the time, and this continues for a couple of months when it is long. I mentioned this about food previously, but I mentioned that eating the same food would get the situation to a state of equilibrium, and I believe that there is a possibility that we can tell the maximum level of contamination possible by living in that particular area.

During periods that they move around they move around for two to five days, so they only stay in one area for a short while and then move onto the next spot. So, the period that they settle is longer. Thus, we do not need to consider the movement of wild boars. So, within their territorial area they have a couple of areas where they settle which are also very small areas. This differs depending on the season. If wild boars are in places with a lot of food, where there are lots of wild animals and lots of good vegetation with green leaves, and we catch these wild boars we can observe what is in their stomach and figure out what types of food causes that particular level of contamination. If we look at the contamination of the food itself inside the wild boars' stomachs then we can figure out how much of that is absorbed. From the perspective of the study of radiology wild boars yield very good data in this way.

The data yielded says that the values have increased up to tens and thousands of Bq, but I wanted to see for myself the level of contamination of different areas, and I went to investigate. I will show you the data later on, but making actual measurements is very difficult. When assessing the contamination it is difficult to tell what would serve as an index in the natural environment to clarify the level of contamination of that area. The wild boars are captured with these fence-like structures; when the boars come in, the shutters close down and the boars become trapped. They are to be consumed as food, so they are kept alive.

And to the upper right – this is a bit difficult to see – there is a trap. I was actually caught in there. I had my legs lifted up by the trap, and the guy next to me was laughing his head off. My impression is that you have to see all of this with your own eyes before you express your opinions.

So, in looking at data one has to also examine the background in addition to what is covered by the mass media. Otherwise, I feel that you are only a part of the general public who is influenced by whatever information available.

So, how does the actual content of the stomach of the captured wild boars look like? Actually, regarding this there are no data available in Japan. So, since this is not available the data that I am showing here are those collected during the nuclear accident of Chernobyl. The data on the right show the radioactive contamination – that is, what the content of the stomach was that had the highest level of contamination. So, the content with the highest level of contamination was mushrooms. We do not know whether domestic wild boars mainly eat mushrooms. Maybe the wild boars around Chernobyl live around mushrooms that appeal to wild boars. Maybe the feeding habit of Japanese wild boars is different. We have to yield more data on these points, but the impression I get is that we are not this far, because we do not have enough manpower, opportunities, and experts who can objectively assess these data.

However, this data yielded something that we expected. The horizontal axis to the right indicates the air dose rate. This is in $\mu\text{Sv/h}$, a unit of measure that I am sure you are already familiar with through newspapers, and the horizontal axis shows data for September. The vertical axis is the thigh muscle of wild boars – it shows the level of contamination in the thigh muscles. The graph indicates data on Cesium 137, but there is a good correlation curve with the location that the wild boars inhabit. However, there were cases where the data was off from the curve. These things happen, and I got caught in the trap when I went to check on what actually happened. So, what actually became clear was that the dose was not too high. If you look at the bottom part this area has lower air dose rate compared to that area but has a higher concentration. So, the question becomes what were these wild boars eating? The boars had decomposed, and we could not address this question. You would all know what I am talking about if you have the chance to actually do this, but the meat of wild boars that is left because they cannot be eaten becomes green, and it can blind you with the irritation. So, we have to have good equipment and facility to yield proper data.

Also, I would like to present a topic regarding swallows. There is a report that the birds developed white spots, crooked tails, or lacked air sacs – birds do not use lungs but exchange gas from organs called air sacs – after the exposure from the nuclear accident in Chernobyl. This report is on swallows in Europe, and of course they are different from Japanese swallows. So, there were such reports, but to tell you the truth I am not sure if this is actually true. But at least swallows seem to have high levels of exposed dose. So, you wonder why this is the case. The photograph shown on the slide is a nest of a Japanese swallow. You can see places with streaks. The streaks are rice straws. The surrounding area is made from mud. Swallows do not dig deep into the soil to collect the mud. They pick at the mud on the surface, take the rice straws, and harden these using saliva. The soil on the surface has high levels of radioactive contamination and high radioactive concentration. This is because cesium, such as cesium 137 and 134, is absorbed well by organic substances and clayey substances of the surface part, and they do not get deep into the ground. This is a report from 2013, but it says that the contamination from cesium 137 released during the nuclear accident of Chernobyl is still within 10 cm from the ground despite the fact that it has been close to 30 years since the accident. So, the contamination does not reach far underground and mostly stays on the surface. And plants produced immediately after the accident has measured 190,000 Bq/kg in some cases as shown here if soil from the surface is collected.

We call this the air dose rate, and we have reports on these air dose rates in different locations. However, I believe that to tell you the truth nobody has investigated how much exposure the swallows had. There is nobody that is even trying to calculate.

I guess they have not gone that far. The swallows actually fly out, and the chicks are in their eggs before they hatch. But it is difficult to make a definitive statement that this is the impact of exposure without being able to say how much the total dose is. So, please know that such things are still under investigation. We currently cannot say much, and you cannot derive results without knowing the background.

So, regarding the assessment of exposure dose it is easy to measure the air dose rate with measuring instruments and survey meters, but the measurements will be higher if you are close to what you want to measure. Beta rays do not go far in the air so how does this impact the level of exposure, and including things like that it is difficult to assess appropriately regardless of whether the dose increases or decreases.

Also, there is the issue of whether your measurements indeed indicates exposure, because there is possibility that this is not the case. There are very few animals that can be observed. I recently went to a zoo, but I think that the animals that can be captured have some sort of issues to begin with. For example, the weaker the animal the higher the possibility that this animal can be captured. So, there are still doubts about things such as whether such selection background is taken into account when assessing.

Furthermore, people abandoned the zone and there is the impact from this. From the perspective of wild animals the environment is not necessarily negatively impacted by people. For example, the swallows make their nests under the roofs of buildings inhabited by people. The reason why they do this is because this protects them from crows, their natural enemies. Crows have been revered as a protective god, especially by the Japanese, but they also make mischief because they are clever. So, they are usually shooed away for this. So, the natural enemy of crows is humans. Thus, when people abandon the land the crows will be able to attack swallows directly, and we do not know how much stress the swallows get from this. We must question whether such background can be ignored to assess the exposure. Of course, the impact of the exposure will be more obvious. It is natural that the mutation rate increases as the exposure dose increases, but there are no data where the external factors are taken into account in assessing these issues. So, data only shows that there was change and nothing more.

Also, there is a lot of farming going on in Fukushima, and there are a lot of tasty things that are produced. I visited in the winter from the campus of our university in Aomori Prefecture, and it was great weather in Fukushima as if it was everlasting spring there. There were many agricultural crops. So, among wild animals wild boars and sometimes Japanese macaques steal these crops. They do not have to venture to procure their food, so in this way, people inhabiting the land creates a good environment for them.

And we also have the issue of not being able to exterminate the vermin since people abandoned the land.

In order to live people have not only exterminated vermin but have also eaten meats of wild animals, but this is also not happening currently. So, the relationship between humans and wild animals which people have constructed in Japan has been altered completely. In addition, during this disaster we have released farm animals, especially cows and pigs, and with this we have moved toward artificially destroying the natural environment. I believe that Dr. Sato also used some of these photographs, but it is actually difficult to find cows. So, we cannot assess the current number of stray farm animals. We do not know how many of them there are. It

is difficult to catch them. During the winter plants called *Solidago altissima* grow in the rice paddies. These weeds grow to be tall, and they hide the cows. Also, it is said that 70% of Fukushima is woodland. The green area here is all woodland, and all of this becomes hiding places for the animals. The cows and pigs go out, and there are possibilities that farm animals that are still under the management of humans may be exposed to infectious diseases.

Another issue is the hybrids of wild boars and pigs. People think that radiation, or the stray farm animals, was solely responsible for causing this issue. However, these hybrids had already existed in the Honshu area of Japan. We have to use genetic testing to check, but the most important thing now is that these hybrids are increasing because human intervention has decreased – there is no doubt about this. We probably need to think of some way to exterminate these animals.

Hybrids of wild boars and pigs have high fertility compared to wild boars, and they increase rapidly. Wild boars and pigs are the same species, but I believe that the issue is not whether they breed with each other easily but rather the speed of its reproduction and the fact that they are not exterminated at all.

So, the last part of the lecture touched on a variety of topics, but we established a study group with Dr. Ito as the chairman, and we are currently moving forward with the research. I would like to resolve these issues, including those related to stray farm animals, in a couple of years from now.

There will be a symposium at the Yayoi Hall of the University of Tokyo on I believe September 14th, so please attend if you are interested.

Lastly, my lecture includes my own subjective views so please do not take everything word for word. Regarding the impact of radiation exposure unlike humans wild animals do not have psychological stress, so the impact of the exposure may be straight forward. However, you have to be able to assess the exposure dose itself to assess the impact of the exposure. You also have to take into consideration the environment that has been abandoned by humans. The swallows is an example of this.

Another thing is that we have to address the stray farm animals as wildlife or we would be in trouble. There were mentions about the accidents, but the cows that we utilize will normally approach humans. For humans, when they are afraid they will stay clear, but male Japanese Black Cattles (*Kuroge Wagyu*) with horns weigh 600 to 700 kilograms, some weigh over 800 kilograms, and Holsteins weigh over a ton. These cows may approach you with their horns pointed toward you. A human cannot win these cows. So, people can die from these cows if they are not exterminated as vermin.

During this disaster, the fact that farm animals were released may have had the most impact on wildlife. In the future, I believe that we need to think about the impact of easily releasing these animals and need to develop measures including some sort of a system to address these issues. Thank you for your attention.

Supplemental explanation from Dr. Natsuhori, one of the chairmen

During the lecture, Dr. Kakizaki has confused the data of “copper pheasants” with those of “cinnamon ferns.” The data that Dr. Kakizaki has shown are those from *Osmundaceae*, mountain vegetables. The data shows that levels were high in these mountain vegetables during the period after Chernobyl until Fukushima. So, the data are not from wild birds. So, we would like to see more data collected from wildlife, including plants, in the future.

3. Situation of the Shelter that has been Operating for Two Years Since the East Japan Great Earthquake and Future Challenges

Jun Kawamata (Chiba Small Animal Clinic)

My name is Kawamata and I run a private practice for small animals in Fukushima City, Fukushima Prefecture. As mentioned on my slide, I would like to talk about the shelter, but I would like to touch on other related topics since it would be difficult to see the entire context if I just focus on the shelter. I live in Fukushima City where all of the buildings did not collapse like in some of the townships along the coast. However, around my clinic there were many buildings that had collapsed, such as this university shown on the slide which collapsed completely, and the roads were also damaged as seen here. This is the platform of the Shinkansen bullet train at Fukushima Station that was damaged. Not only the lifelines but also the infrastructure suffered heavy damages. As you all know, the magnitude of this earthquake was enormous. It was 1,450 times stronger than the Hanshin Awaji Earthquake, so the impact it had in Miyagi was tremendous. In Fukushima, the earthquake was intensity 6, and it was a “long” earthquake which lasted approximately two minutes. When the earthquake stopped, as seen in the photograph provided by Dr. Sato, the inside of the clinic was a big mess. Most of the machines had fallen over, and there was no place to step in the room. This is the situation of the tsunami immediately after the earthquake. The tsunami was pretty high, and the town was devoured by the waves. After that, there was nothing left, and ironically, the blue sky was beautiful. Rescue for people followed, but it was a tragic situation where the work was more of recovery work rather than saving lives.

This is the day following the earthquake, on the 12th. The explosion of the nuclear power plant started, and explosions happened one after another. In the local areas, the residents were not shown these pictures, and we only figured out later that this was actually happening. The authorities continued to say that there was water vapor coming out from the reactors, and we only figured out much later on that the next explosion happened. This has already been shown a couple of times, but the black line is the boarder of Fukushima Prefecture, and this is the Daiichi Nuclear Power Plant. In Fukushima, the Daini (No.2) Power Plant is located in the south, but there was no damage there. Radioactive materials were dispersed from here to the south, mainly to Fukushima City where I live.

Regarding evacuation with pets, which was discussed as an issue much later on, immediately after the earthquake and the nuclear accident there were no orders to evacuate with pets since human lives were prioritized. People who wanted to evacuate with their pets had to take initiatives on their own. Local authorities encouraged people to evacuate promptly and to leave food and water for their animals to last a couple of days. They had probably anticipated that the residents would be able to return in a couple of days, but this was not the case and people were unable to return. Only a few people were able to evacuate with their pets. There were only 300-400 people who were able to do so. So, most dogs and cats were left behind.

In the evacuation centers food for people and animals was scarce. Even for people the evacuees would only get two to three rice balls and a couple of candies per day, so some pet owners would share their own food with their animals. Animals were not allowed in the evacuation centers, so these people slept over in their cars.

This is the damage done by the East Japan Great Earthquake. This is the report as of this March. There were

many people who had died from the disaster both in Miyagi and Iwate Prefectures, but there were quite a few people who died, were missing, or were displaced in Fukushima Prefecture as well. This is the report released by Fukushima prefectural government. As of this August, there were 3,200 people dead. The number differs quite a bit, but this is the number of people who died directly because of the disaster, but when including the number of people who died of related causes such as various stresses at evacuation centers and temporary housing communities the numbers increase significantly. There are quite a few people who are still displaced. In Fukushima there are many people who have evacuated to other prefectures and have not returned since then. In such situations the Headquarters for the Relief of Animals in Emergencies was established on March 14th immediately after the earthquake. The Headquarters consists of these four organizations on this slide. They collect information at disaster impacted areas, make arrangements for relief supplies, dispatch task forces to the impacted areas, and collect relief money. With such movements, in Fukushima, the Fukushima Prefecture Headquarters for Animal Rescue was established one month after the disaster – unfortunately, a little while after the onset of the disaster. This consisted of organizations such as the prefectural veterinary medical association and the prefecture. However, the entire prefecture was in a chaos, and we were not in a situation where we were able to establish any organization like this to take on relief efforts. The prefectural department of food hygiene also had to address radiation contamination in foods and was in a chaotic situation, so setting up the Headquarters took a while. The local Headquarters cooperates with the Headquarters for the Relief for Animals in Emergencies to arrange for relief supplies. The Headquarters also ultimately had to establish a shelter, and they also applied for relief money. Such activities are still carried out by the Headquarters. The Headquarters still holds discussions with the Ministry of the Environment to address various issues.

In addition, many veterinarians have also been involved in various rescue activities on an individual level.

This is a support center. It is nothing grand, but in relatively large cities, such as Koriyama City and Fukushima City, there were shelters where animals could evacuate, and the members of the branches of the veterinary medical association went around evacuation centers and provided various types of supports and care to animals that were being kept in cars. For people who were in the process of evacuating or had no places to board their animals after evacuation veterinarians volunteered to board such animals at their own veterinary hospitals. Veterinarians also provided support for treating impacted animals and have also managed the health of the animals boarded at shelters. Also, although there were only limited numbers of veterinarians who did this, there were some who went into the no-go zone (the former exclusion zone) for animal relief efforts.

This is the Azuma Sogo Undo Park, a large park in Fukushima City where I live. At its peak, there were approximately 2,500 people who evacuated to this park. The ex-chairman of the Japan Veterinary Medical Association, Dr. Yamane, also visited this site, and we discussed if there were any possibilities of boarding the animals kept in the owners' cars into a facility. However, human lives were prioritized, and many people were displeased at the situation in which people were trying to address animal issues. In such situations it was difficult to establish any facilities for animals. So, there was a period of time where approximately 2,500 people lived under such conditions.

This is a photograph during meal times, but people had to line up for about an hour to get food. This is a long line. Everybody has a box in their hands while waiting for the food. When entering the evacuation center it was required to have your dose measured. You had to have this certification to enter. The certification has the

amount of dose measured from the person. Unfortunately, some children were unable to receive health examinations, because they did not have this certification.

The park authorities were against this, but we put out a table here, and we provided examinations and health management for the animals that were staying over in cars. This is Dr. Yamane, the ex-chairman of the Japan Veterinary Medical Association, who is examining an animal. This is about the time when the authorities on the site have started to become a little more lenient about addressing animals. We were negotiating with this site for a long while, and we were unable to move forward for quite a long time. In about June, they finally allowed us to rent a part of the park – the parking lot for bicycles – and we renovated a part of the parking space so that it looks nice. We rented a bare concrete area, and with the cooperation of a private organization, we renovated the area as an evacuation facility for animals that had to stay over in cars. This is a facility for dogs. We asked the owners to be responsible for the care of their own animals while they used this space. We also put a hot water dispenser so that the owners can wash their animals, we also got an air conditioner, and we were able to procure a rather equipped facility. Twenty meters in front of the facility for dogs that I just showed you there is a prefabricated building for cats where owners were able to board their cats.

There is a city called Koriyama City, the largest city in Fukushima Prefecture, and this is the evacuation center in this city. This is a facility called Big Palette, and there were 2,700 people who had evacuated to this center during the peak time. So, the center looked like this. The center was very crowded, and people had to stay here for a while. Koriyama City took the initiative to establish an animal facility in Koriyama together with the city's veterinary medical association. They used the outside area of Big Palette, and they used tents. The facility was not as elaborate as the one in Fukushima, but they were very creative and it was well managed. It does not look pretty, but I believe that this was the best that they could do at this point. When I visited the veterinary medical association of Koriyama was holding a consultation event for the health management of animals. The event seemed to have been very successful.

People were afraid to tell authorities that they had animals in their cars, because there were rumors that animals would be taken away by authorities to be euthanized. Thus, many people were hiding the fact that they had animals with them on their cars. In Koriyama, it seemed like the information was managed fairly well, and many people brought their animals to the evacuation center.

We no longer use the term exclusion zone for these areas, but this is the area that was designated as the exclusion zone at that time. I borrowed many of these photographs. These are the figures that were counted by a team of Fukushima Prefecture. They say that there were about 10,000 cats and dogs in the area with the 20 kilometer radius. These are rough estimates, and there are now talks that there were about 20,000 animals in there at the time. Cats are not registered for rabies vaccinations, and it is difficult to grasp the number of cats. The numbers are very rough estimates, but stakeholders estimate that approximately a fourth had died of the tsunami.

As mentioned previously, only about 300 animals evacuated with their owners, and this figure is very close to the numbers confirmed recently. So, there were very few animals that were able to evacuate with their owners. And according to different volunteers there were about 2,000 displaced animals that were rescued.

Regarding volunteers, there were many different types of volunteers, and there were conflicts. There were some who abandoned rescued animals along the prefectural borders, and there were some who threw out the animals

as soon as they got funding for the rescue. There were also some who sold the rescued animals – even adult dogs. So, there were many issues. So, I wrote “different” volunteers.

Out of the 5,000 remaining animals, it is estimated that 80% starved to death or died of emaciation in about a month. Among the 1,000 animals left, 600 were rescued by authorities, and they say that in the end, about 400 animals remained in the zone. These animals died of starvation or diseases, and in some cases they reproduced. I apologize that I am giving a lot of details. The authorities first started investigating the situation of the animals in the exclusion zone during the end of April 2011. So, from April 28th to May 2nd, they were investigating to what extent the animals were exposed to radiation and were not necessarily rescuing the animals. There was one animal that measured 71,000 CPM, but initially, 100,000 CPM was the standard, so stakeholders thought that the level of exposure was not so bad.

After this, the prefecture and the Ministry of the Environment rapidly implemented rescue activities. The government was responsible for taking the initiative for the rescue activities. The private sector was unable to enter the zone. There was a time during the end of 2011 when the government allowed private organizations to enter the zone, but basically other than this time the government was the only one allowed in there. Even veterinarians were not allowed. We were only able to manage the health of the animals that were rescued, so our job was to do this at the shelters. I will be speaking about this, but at first Shelter No. 1 was established in April 2011, and in October Shelter No. 2 was established. Last year, the Ministry of the Environment established another shelter within the premise of Shelter No. 2.

Since the onset of the disaster these are the situation of animals that were rescued by the government. There were a total of 994 animals rescued – 453 dogs and 541 cats. There were approximately 300 animals that were returned to their original owners. This was about 50% dogs and 50% cats. The number of animals adopted by new owners follows.

This is a photograph of the exclusion zone around 2011. These are probably puppies and kittens born after the disaster, but animals seemed forlorn waiting for their owners to return. This is where various organizations are putting out food for the animals. Reflecting back, the food put out was probably eaten by wild animals. I think that putting out food in many places would contribute to the reproduction of wild animals.

This will be discussed later, but animals kept at schools all died because of the disaster. Thus, I believe that we have to think about how to address these animals from ordinary times.

As discussed earlier, if farm animals are roaming, naturally, dogs and cats would also be roaming and breeding. We also have the issue of how to address animals kept at schools, and we also have the issue of changing ecological systems because of the reproducing wild animals – not only mice but other animals as well. There was a discussion on wild boars, but we have to examine the level of exposure of the animals that are in the exclusion zone. No such data were collected during Chernobyl, so I believe that an investigation on dogs and cats should be conducted.

This is only a part, but the pigs in the pig farms have all died, and you can see that the bodies of the animals have decomposed. Some pigs are now living in residential buildings. This is a chicken farm, but of course, animals kept in enclosures have all died. There are some organizations that have tried to keep the cows alive like this. The cows that are released are in good condition. There are places where you can see calves now.

There is also the issue of hybrids between wild boars and pigs. There are lots of hybrids breeding. From this

photograph, I cannot tell whether this is a hybrid or not. There are many hybrids now, and the hunters are all saying “they do not want to kill just for the sake of killing if they cannot eat the game.”

A month after the disaster, Shelter No. 1 was established at last at a place called Iino in the outskirts of Fukushima City. This shelter was intended as an emergency shelter. We rented a warehouse which does not look elaborate – it was a rather dirty looking warehouse – but we could not be picky. The Ministry of the Environment and the Prefecture were already rescuing animals so we needed a place to board them. There were a lot of criticisms regarding this facility. At this point all of us knew nothing about operating shelters, so we just boarded all the animals that were rescued. There were many animals in bad conditions so we were just struggling to treat these animals. So, I think that there are discussions both for and against this shelter, but this was the reality.

The animals were all exhausted. The animals that had just been rescued were all very hostile and exhausted, and some were covered in mud. The animals that came to this facility have all been measured for external exposure during intake. There were animals with slightly higher levels of exposure, but there were no animals that exceeded the standards. However, we didn't feel comfortable with the exposure of the animals, so we did wash them.

So, a lot of the animals were hostile in the beginning, but after 1-2 weeks in the shelter, the expressions of the animals become gentle. This is the cattery. The dogs and cats have different buildings. The buildings are not elaborate. All of the animals are exhausted and hostile, so we made sure that the animals have a place to hide.

This is in June or August when Dr. Aki Tanaka of UC Davis visited. I was acquainted with her, and she told me that she was visiting Japan, so I invited her to Fukushima. These are local veterinarians. We invited them to a lecture on shelter medicine so that we could better manage and operate the shelter. Veterinarians like us who are involved in private practice are only able to manage the health of the animals and treat their diseases. Shelters would be the management of groups of animals, so the idea is closer to that of industrial animals. So, we have to think about the lives of groups of animals instead of a single animal. So, it was something new for us, and we were enlightened by this new idea. It took time for this idea to seep in, but reflecting on everything it makes sense.

This is from last year. The dirty shelter with little staffing became a little more vibrant. Although the change was gradual, there were some improvements such as placing partitions between kennels. There were some volunteers. It was difficult to walk the dogs in the beginning, but gradually we were able to do this. This is a dog trainer that came to the shelter to socialize the dogs.

In the shelter the animals do not breed, because they are all managed separately. But there were quite a lot of animals, especially cats, that were already pregnant when they were rescued. This was problematic, and we repeatedly requested the prefecture to immediately spay/neuter the animals as soon as they come to the shelter. However, the prefecture did not allow this, and these animals were breeding. It was relatively easy to look for new owners for puppies, so finding new homes was not an issue, but this created all sorts of extra work while we were lacking staffing.

These are all cats. During our peak times, we had 60 or 90... When we rescued 60 cats, we had 50 kittens – we had an enormous amount of kittens. We immediately reached the capacity of Shelter No. 1, and we had to build another shelter. It took us a long time to build because of issues related to things such as arrangements of relief

money, but finally, in October 2011 we were able to establish our second shelter. This shelter was also built largely with the cooperation of private organizations. The building was originally a pachinko parlor, so the building is rather flashy. We use the area in this manner like a dog run, but the building is in a nice environment where you can hear the chirping of bush warblers. The shelter is located in the outskirts of Koriyama City. Many organizations have given or rented out containers.

This is a place where the dogs are kept. The dogs were all boarded and managed individually. This is a dog run in the roofed area. The volunteers walk the dogs, but there are very few volunteers. Last year, the Ministry of the Environment built their shelter within the premise of this shelter in the parking lot area. I will show you a photograph of this later. This is a space for cats, and I think they did a good job renovating. Other than this, we also have an examination room. It is nothing fancy, but we are prepared to do minimal treatment here. This is an area where we can wash the animals. And finally, last year, we made a simple operation room so that we can spay/neuter the animals in the shelter. All animals in the shelter have been spayed/neutered. The operation rooms look exactly alike, because we have the same machines, but there are two operation rooms.

We also hold meetings everyday for all of the shelter staff including volunteers. This is a photograph of an animal being adopted. This is Dr. Yamane, the ex-chairman of Japan Veterinary Medical Association, and this is Dr. Watanabe. Dr. Watanabe is the veterinarian who manages the facility in Miharu. He was also affected by the disaster, because he used to live eight or nine kilometers away from the nuclear power plant.

For the first year the head of Fukushima Prefecture Headquarters for Animal Rescue was Fukushima Prefecture. From last March, the head changed to the veterinary medical association of Fukushima Prefecture. The shelter in Miharu also has the shelter of the Ministry of the Environment, so we have divided the management of the clerical sector and the examination sector.

This is located at the evacuation center of Big Palette in Koriyama City which was shown previously. The organization that built animal management facilities and the shelter in Miharu built this next to the temporary housing community. This facility was built so that the animals can be managed. The organization built this using their own funding without using any relief money. They built it very nicely.

This is the shelter of the Ministry of the Environment. This shelter was established around last summer. The shelter is a prefabricated building inside the premise of Miharu Shelter. There are very few dogs in here – most of the animals boarded are cats. There was a large rescue effort at the end of last year. There are a lot of cats – about 150 of them – and most of them are cats that were born after the disaster. So most of them are feral cats rather than displaced cats.

So, this is how the facility looks. The large tanks are places to keep all of the waste material that the shelter makes. All of the waste is treated as radioactive material. So the inside of the shelter is not as elaborate as the main shelter, but there are wooden frames on which cages are placed. All of the animals were hostile at first, and we used manipulators to clean toilets. We got injured in the process, but we gradually improved our ways. Recently, we have rooms like cat cafés. We had the staff socialize the cats, and for those that were well socialized we use these rooms. We have many people support us, and not all of the cats can be housed like this, but we are continuing to improve.

With the support from everybody we were able to transport all of the animals from Shelter No. 1 near Fukushima City to Shelter No. 2, and we were able to close down Shelter No. 1 this January.

So, this is the current situation of Shelter No. 2 and the shelter of the Ministry of the Environment. As of August 10th, there are 38 dogs and 153 cats. The number in the parenthesis shows the number of animals with owners that are being temporarily boarded. As you can see, for dogs out of the 38 dogs there are still 17 dogs that still have not been surrendered by owners. So, the owners of these dogs are still arranging to live with their dogs, and there are not so many dogs that can be put up for adoption. The issue is the number of cats. Out of 153 cats, there are only eight cats that have not been surrendered by owners, so we need to look for new homes for most cats. So, this leads to the issue, “when can we close down Shelter No. 2?” The animals would not be happy if we continue the operation of the shelter like this without a set timeframe, and of course, this would not be good for us. There is a limit to the amount of relief money, so this is the difficult issue that we are facing.

With the cooperation of Dr. Ito and the department of radiology of Kitasato University we were able to purchase this machine to investigate the internal exposure of the animals. It does not look very pretty, and the machine is being improved right now. We had a limit to our funding, and we could not make anything fancy. We have shielded the environmental radiation with plastic tanks that contain water. And as Dr. Kakizaki mentioned, if we measure, we will get certain levels whether it is high or low. I believe that we will not be yielding high levels, but when we think about how the public is going to react to the measurements once we publicize the numbers it becomes a rather delicate subject. We would like to measure the levels, but it would be another issue to analyze the measurements and to publicize the numbers. I am not aware of the details, but many machines were introduced, and we finally started to examine the internal exposure.

We are currently worried that the memories of the disaster would fade. In addition to the impact of the radiation this would lead to the lack of manpower whatever we do. Things such as the socialization of cats take a lot of time and manpower, and we do not have enough volunteers. In addition, even for normal shelters, it is rather difficult to find new owners for adult cats. Here, we have the issue of radiation which I believe makes it even harder for us to find new homes.

Also, we have the issue of what we are going to do with the animals left in the exclusion zone. The Ministry of the Environment also conducted investigations. There is an increasing number of wild animals. There was information that there were no sightings of dogs, but there was an explosion of cats, but we are no longer sure of the accuracy of this information. Through the investigations it seems like the numbers are smaller than we expected, but animals may breed if we just leave them. Today, the Ministry of the Environment is also here, but we would like the authorities to implement a TNR program to control the number of cats. However, in order to implement such a program, we need the consensus of the local authorities, so we would like to move forward as quickly as possible.

In addition, we have managed animals inside the shelter, but we have not been able to support pet owners who have evacuated with their pets and are having difficulties. HSI has also administered a survey, so we would like to take some sort of an action based on such information.

We also have the issue of when we should be closing down the shelter. This is a big issue. It is very difficult to describe in words, but this issue is intertwined with many other issues. We really would like to close down as soon as possible, but we have to think of what to do with the animals that are currently being boarded at the shelter. We are currently working with agencies like local veterinary associations to figure out how to move forward. So, we are considering different measures, but it is another matter whether these measures would

actually work.

So, what are the lessons learned to apply to future disasters? First, the veterinary medical association should construct a system for evacuation with pets. This is very easily said in words, but currently, there is no legal basis to rescue animals from the exclusion zone that was designated because of the nuclear power plant. If we argue with extreme logic there is not even any legal backing for the national and the prefectural governments to rescue animals from the exclusion zone. For this disaster rescue was implemented as a humane measure, but the fact that this was not a rescue effort with legal backing was a major stumbling block.

Especially in Fukushima Prefecture there was a gap between the veterinary medical association and the government. Of course, in Fukushima Prefecture the department for food hygiene was in charge of animal issues, and they were in a chaotic situation with the contamination of food. So, they did not have any time and effort to spare just on animals. I think that we need a proper agreement between the government and the veterinary medical association.

And in addition, there were some disadvantages for us regarding the distribution of relief money from the Headquarters for the Relief of Animals in Emergencies. We were not really unsatisfied – we are on the receiving end so there is not much we should be saying here – but it would have been better if they could make the process a bit smoother.

During this disaster veterinary medical associations of prefectures adjacent to Fukushima, such as Yamagata and Miyagi Prefectures, helped us a lot. Thus, it would have been better if we constructed a network from ordinary times for disaster relief. Of course, it is not only the government and the veterinary medical association. The pet owners should also carry out simulations of what to do in case of disasters, and the veterinary medical associations should be providing such pet owner education.

Also, we need experts on this subject. In the United States, there is the V-MAT, but we need to procure experts who have knowledge and experience in dealing with disasters. We need to develop a system where a team of experts like this can get into the impacted areas as soon as the disaster strikes.

In addition, we have the issue of volunteers. We did not have much knowledge, and we accepted everybody who came to help. Because of this, there was much confusion on the site. Thus, I believe we need to create a system to screen the volunteers.

I have a couple of requests to make to pet owners. I would like pet owners to evacuate with their pets as much as possible during the onset of disasters. The Ministry of the Environment finally developed guidelines for this, and I hope that this would become widespread. When pet owners evacuate with their pets it would be difficult for the animals to live in evacuation centers with people, so they would be boarded in facilities for animals. Thus, I would request the owners to take minimal preventative measures so that their animals do not pass diseases onto other animals. And I would also like to request owners to put identifications on their animals. Also, I would like owners to obedience train their animals. By this, I don't mean extensive training but things like crate training. I would also advise owners to prepare for disasters from ordinary times and to confirm their evacuation route. I believe that the government and veterinary medical associations should be educating owners regarding matters like this. This is a handbook developed by Kagawa Prefecture. It has things on disaster preparedness such as a list of things to prepare. There is also a handbook that the Ministry of the Environment developed, I believe in May, that includes a clause on evacuation with pets.

So I have spoken about a variety of issues, but what we need the most currently are volunteers and relief money. Because we are still uncertain about the future of the shelter we would inevitably need money. I am hoping that we would find some way to terminate the operation of the shelter so that we can keep down the costs. We are still looking for new owners for the animals especially for adult cats. If anybody is interested please look for “Fukushima Prefecture Headquarters for Animal Rescue” on the internet, and please apply to adopt an animal. This is an adoption event that stakeholders held in Kagawa Prefecture for us. So, thank you for your attention.

4. Situation of Animals Immediately After the Earthquake and the Nuclear Accident

Shigeki Imamoto (Shinjo Animal Hospital)

I am Imamoto. I have a veterinary practice in Nara Prefecture, and I had no connections at all with Fukushima. But on March 11th I happened to be traveling to Ryugasaki in Ibaraki Prefecture where my wife's family is for an academic conference the next day. So, I was travelling with my four children and my wife when the train suddenly stopped, and we were locked up in the train for two hours.

After that, as shown in the picture in the center, we moved to my wife's house using a rental car despite all the people moving like this. The scenery I saw then was that Japanese people stay in line, everybody lined up, not hurrying ahead of others, marching, walking home, and us too, asked to get off the train, and walking like this. Here is a high school student, our twin third son, being held and helped down, a high school student, putting his bag down and helping everybody, it was this situation. I thought, "what can I do?" Then I thought, because I am a veterinarian, I can do something through animals, and then when should I go to the disaster zone. That was the feeling I got. It ended up that we stayed at my wife's house until March 15th, and during that time the electricity and water stopped, and we were really planning on going to Disneyland as a family, but the children spent four days with just water, pancakes, and rice balls afraid of the aftershocks as the emergency earthquake alarm was going off. And we returned to Nara on March 15th, but while I was thinking about how I could help, I got a notice through the internet on April 15th that the animals in Fukushima were in trouble.

For this reason, I felt that I could do something, and went there with this feeling in mind. The situation I saw there was that, as written in the syllabus, being a veterinarian for this long I would probably never in my life see so many animals die. And after a week we were no longer able to enter the exclusion zone, so I made a report in a hurry. Actually, at the beginning when entering the exclusion zone there is a checkpoint at the entrance, but if I say "I am a vet and am here to investigate on the animals," the police let me in easily. When I saw the situation inside, there were really many dead animals just like the information everybody was providing on the internet. So, I thought if there was anything I could do. And what I thought of then, was that I obviously could not take care of thousands of cows, pigs, and chickens alone, so I wanted many people to help, and that is the feeling I had when writing up the report. The reason why I took the time and effort to write a report was that I called Fukushima Prefecture prior to entering the exclusion zone. I called the Ministry of the Agriculture, Forestry, and Fisheries (MAFF) and the Ministry of the Environment (MOE) and said, "It's going to become an exclusion zone, but what will happen to the animals? It will become an exclusion zone from the 22nd, but the animals left in the area, the farm owners will evacuate and will be unable to return, what will happen to the animals that cannot live without human care?" And they replied, "It has already been one month since the disaster, so we obviously believe they are dead." According to the internet, people have written that they are "still alive." I went because I wanted to check which was correct. Next, there is an English slide, but this is what I talked about when I was invited to a conference called the National Evacuation Conference in New Orleans, so it has unrelated topics like the number of thefts in the exclusion zone and so on, but please do not mind it so much.

And after April 22nd, it became an exclusion zone. Fortunately, my report had caught the attention of a

politician. Mr. Tsutomu Takamura, he is now a former member of the upper house, but the report caught his attention, and he suddenly called me and said, “I saw your report, is there anything I can do?” But, even if he asked if there was anything, I had absolutely no idea, so I said, “We must think together about what we can do, and there are still people inside working hard to keep their animals, so please listen to their voices.” When entering the exclusion zone buildings had fallen, and the roads were blocked.

What I saw when I entered on April 15th was that Route 6 going south from the Fukushima Daiichi Nuclear Power Plant was all maintained. We went in from the North, from Minamisoma, but the road on this side was in very bad condition, and in some parts there was just enough road left for a small car to barely pass. However, the road leading to the nuclear power plant was properly maintained, and there was construction traffic. The numbers on the dosimeter were high, so something must have happened was the instinct I felt. So, the future of leaving animals behind in such condition is something that I think everybody can imagine. And the conclusion I came to was that the 20-kilometer zone is just a boundary set by humans. Humans set this up, and thus delineated life. And the animals that were inside this border were not let out, and as a result, starved to death.

We first entered the 20-kilometer zone – we entered through Minamisoma – and went through the check point and saw the tsunami zone like this where we saw a horse stable hit by the tsunami. But the horses were still being properly kept there. According to the owner, he commutes 50 kilometers each way, or a total of 100 kilometers each day to bring food and water he bought. Minamisoma had a horse culture that they have passed on, so he was working to preserve this culture. In reality, this area’s dose was surprisingly low, so Mr. Takamura, myself, and this is Mayor Sakurai of Minamisoma, and this is Dr. Kakizaki, went to discuss if we could let the horses out.

And, I went there, because I was told that if they cannot be taken care of most farm animals would be dead, but the first site that I saw when I entered the exclusion zone was this. This: more than 99% of the cows were alive. It did not feel like it was extremely dangerous. But here, the animal owners and the farm owners commuted to take care of the animals. So, I thought, industrial animals and economic animals, they may have eventually become meat, but the conclusion drawn by the Japanese government was euthanasia. I first wondered if the value of economic animals would be zero without their lives. It is a life we see there. I felt that Japanese people had better thoughts about life. And this is what it looked like in May.

By this time, we’ve already asked Dr. Kakizaki to check the radioactive material in the spring water 14 meters underground and the radiation level in the soil on the farm. We wanted to argue that so long as we control these properly, we could let the cows out.

However, as a result, this farm still – it is currently named “Kibo no Bokujo” – has not been able to move its cattle.

So, these farms have been taken care of by people and have been able to survive, but among the farms there are also places where the cows have come out and have been stuck in ditches.

When volunteers go to these areas they generally feel that they want to do something. A single cow weighs several hundred kilograms, so it is very hard to move them with just human power. There were people who used their creativity to try to help these cows.

There were remains of these people building a ladder like this, making a hill, and luring the cows out. Beyond these stairs, if you look, there are only bones left. Really, the animals that people took care of have been

abandoned by people; this was inside the exclusion zone.

And in this same farm, this is from April when we went in, they were still alive. Some people spent their own money to feed them, and we also gave them water. However, nutrition cannot be maintained if people who have never taken care of cattle give them random food in random quantities, so first we must help the farm owners, and help the hearts of the farm owners, and then we can take care of the cattle – we must receive cooperation like this. We cannot do anything only with the feeling that we want to help. I thought that that would only cause trouble. So in the end what happened? Everybody worked hard; all the volunteers wanted to change something and worked hard. Two months later, this is what it was like.

Nothing left. Nobody alive. I think there was a strong feeling that we wanted to help, but in the end, they all died. When we look at this I feel that no matter how hard we try we cannot get enough manpower, enough money, and if so – if this is the destiny in the end – as many lecturers have mentioned earlier we also need early evacuation for large animals.

Next, about chickens. This is the beginning of April. There are still live ones present. However, there are also hens that have died after laying eggs. Animals that have been kept for people by people, abandoned, and finally killed by people – this is the situation that I witnessed. That's why I thought of what I could do.

When I thought about what I could do, I reached a conclusion that I could not do anything alone. So I thought that I should let everybody know. So, for example you could post these videos or photos on the internet, and in my case, I updated my blog every day.

For me, I still had the time to do this. The people in the actual areas are hit with daily problems that they have to solve and are always busy with such issues.

Here, there were ostriches, but with ostriches, now some have been taken in, but some have also died. Everybody talks about the poor animals, and we feel that we need to somehow save them, but where do you draw the line? I didn't know. I think this is something that can completely vary from individual to individual. However, if you actively take part in what you want to do, this is something that you think will help others and this does not hurt anybody I think you should aggressively do such activity. And if this person is working hard without specifically accusing others, I think everybody can encourage such person. What I am saying is there wasn't enough manpower – the farm owners wanted help, the volunteers wanted help, so I wished everybody came together more. And there were farms that we wanted to somehow help keep alive.

Inside the exclusion zone there were also farms that aspired for a comeback. There was a pig farm where I still connect with the CEO. This farm has changed its location now and has restarted pig farming in Nasu. I still buy meat from here.

This was an asset that we, those men spent 30, 40 years building. Killing all of this so easily – I wonder if this decision was correct. Also, the people who knew about the struggles of this farm, even the city workers, were very cooperative about the revival of this farm. Because I have witnessed that I wondered what I could do and thought I could support them, but I had to think of how to show my support. This will appear in a later slide.

The previous location was relatively far from the nuclear power plant after entering the exclusion zone, but as for a pig farm very close to the nuclear power plant it was already like this in April. The large pig pen had 400 pigs, but here there were only four that were alive. What would you want to do with these four? Helping four of

them and deciding to take care of them alone would be a very difficult task. Your own powerlessness is the only thing you feel. You can see from here, but they have all died piling on top of one another.

This outcome was maybe imaginable at the point there were evacuation instructions or maybe a little bit after evacuating. When they saw people, they ran, fell in the back, and there were weakened pigs and also pigs that are about to die. When we fed them water, they drank it very excitedly. But when we went one month later, that pig had died on that spot in the same position. What was it that I did for them?

I gave them water, but maybe that just extended their life, and if we euthanized all the animals inside the exclusion zone at once, maybe that would have decreased their suffering – I’ve also thought about this. If there were any good answers to this I would like to hear them so please write them on the questions forms.

And when we went in April, there were mummified pigs like this, and a lot of them were dead, and there were some like this that have been chewed on.

And there were still pigs that were in good nutritional state, but other lecturers have been talking about what happens if they were allowed outside, so I will not talk about that. And the actuality of what happens is I think hard to grasp with just words, so please see this. They reproduce at an immense speed. They all run around and are surprisingly cute. This is also three kilometers from the nuclear power plant; this happens three kilometers from the place. Why are they so fat? That’s because the food storage is on this side, and some strong pig must have broken in – they all ate that and were living in very good nutritional condition. But, what will happen to these pigs. Winter will approach after this. The storage was empty.

Thinking that they could return promptly farm owners evacuated as told leaving their animals as they were, and thinking that letting them out would cause trouble to neighbors some owners left them inside. There were some volunteers that said you can no longer return, so at least set them free.

Which one was correct? I think there is no right answer. An outsider saying that the poor animals should be let out and acting without the farm owner’s consent – everybody’s consent – is I think a big problem. So, I think people should have discussed more everybody looking at the future – not just their current sentiments – but looked toward the future when doing things.

Honestly speaking, when I saw that situation I felt that I wanted to open the cages, open the fences, and let them free.

Now, while on the subject, I’ll talk a little bit about the animals that I was able to save.

The previous location in the 20-kilometer zone – I was able to help horses get out of there. The reason why just the horses were able to be saved was, because the horses were not farm animals but were cultural assets (this is written somewhere) and are not eaten, are for the public good, so they could basically be let out of the exclusion zone. This “not eaten”, the idea that animals inside the exclusion zone are okay if not eaten, would have saved more pigs and cows.

In reality, I’ve done a lot of projects, but all of them have ended in failure. So, I am the one who said a lot but in the end could not do anything. That’s why I only have pictures left. It’s as if I just took photos to brag about them. I firmly believe that such behavior is not volunteering. I think the worst thing one can do is to act on behalf of the “poor animals.”

Feelings are not enough. It is important to feel that something must be done. What I am doing now is that upon the request of nearby elementary schools I show similar videos to the elementary school students. After

watching – the parents also come to watch – I have them write their feelings, and the children, honestly, have better things to say than their parents. The parents say things like “What if such videos traumatize the children.” But this was the reality. The farm owners that I showed earlier, upon returning temporarily, find that the cows and pigs that they took care of with much effort have been killed. They have starved. What will showing them this lead to? Mayor Sakurai of Minamisoma said, “Resurrecting the heart is also important; how can we rebuild if we show people traumatizing things?” I felt this strongly. This is definitely true concerning the lives lost inside the exclusion zone, but I think people have not seen this so much, but here is a location where dogs are disposed of in Nara prefecture. When this establishment was made, the veterinary medical association could go in, so I went to take a look inside. This one, I took a photo from the eye level of a dog. After the dogs are forced into the hallway this wall chases behind them, and they are taken to the gas chamber. Lives that have been brought up, then discarded by people.

Being lost here, or being left finally inside the exclusion zone; in terms of life ending they are exactly the same. We need to think more seriously about what we can do when the next disaster happens, and it has already been two years, but there may be things we can still do. Also lending a helping hand to those working hard inside the exclusion zone – this may also be important.

Actually I participated in these eye-catching activities and said what I wanted to say. Concerning what kind of help, what kind of advice I received, I suddenly got a call on my cell phone from a company owner in Mongolia – I have no idea how he got the number – and he said “I can pay the money, so do something about it.” I said that I cannot do anything even with all the money I could get. “Basically I am not taking any donations (I only used my own money to get myself to Fukushima). I’m very sorry, but I do not have any ideas. Actually please tell me if you have any.” This is what I told him. I got an offer from an animal industry related union from the Chubu region saying that they would keep the animals from the exclusion zone until the farmers settle down. We worked with this idea, but in the end the upper management said that they couldn’t, because there could be harmful rumors developing in the area.

Also, there was an idea from one of the remote islands of Tokyo suggesting to move the animals in administrative units. Even just with a little movement for start as long as we make a precedent we would be able to move them. I was taught that that is how politics work, so we decided to make a precedent. Moving just one animal, through the cooperation of a steamship line, to an island; just one is enough, and it can be isolated, so put it on display and let everybody know that so many people worked to extend the life of this cow. We wanted people like elementary school students to see this and feel that this is how life should be, but this plan also failed.

So, it comes back to: what was it that I saw inside the exclusion zone. This is Mr. Takamura and all these people lined up – this person is a civil servant from Minamisoma – are all assembly members of the DPJ. They said that they were the only ones in this situation that could do the feeding, so they fed the cows in an unaccustomed manner, saying things like, “how do I open this?” But this is not going to save the cows. A single professional coming in and doing all the work will cover for multiple hands. Really, the first feeling I got was the importance of evacuating at an early stage. And also, prior planning for evacuation with pets. Deciding on evacuating after the actual disaster will definitely cause panic.

For example, 31 horses have gotten out of the exclusion zone, but in reality, there are a lot of people who had

horses escape prior to this event. There are precedents where several groups let horses evacuate, and also there are incidents where livestock dealers let horses outside. There are cases when they were freed successfully from the exclusion zone. In this way, we cannot go without the cooperation of the locals. Nothing will change even if you go from Nara, like me, and say this and that, making free suggestions. So, if you were to go to volunteer in a far off area you really need to hold down your opinions, listen to what the locals want to do and think should be done, and adjust your actions to those ideas. In reality, how the evacuation should have been done is something that is not discussed in Japan now. I published a research paper with some researchers abroad. This paper talks about a free software where you can, for example, insert your address, number of cattle, and how much transportation capacity you have and it will tell you which evacuation route to take and about how many days it will take. This has been accepted in 2013, or this year.

I think everybody heard lots of stories about dead dogs and cattle inside the exclusion zone, and I think they made phone calls to many government offices.

When I went to a lot of government offices they told me, “We are really busy with phone calls.” Some have told me that their work was paralyzed because of this. People faxed the official residence, faxed the MAFF, or sent it to the MOE – I think there were all kinds of people – but I went to ask the actual person in charge then about how the country was really dealing with it. When I went, I was told that they did not see any faxes that claimed there were animal problems back then. So, even if there were faxes being sent, they did not arrive in a situation like that. If you think about this, it didn’t matter at all no matter how much people came together in appeal and made phone call attacks. That is why prior planning is important. Those who experienced these events, those who are listening today, should join hands and think about what should be done, how should they act if it were to happen in their own area – after this Dr. Masuda will probably talk about the futuristic planning so please listen to what the veterinary medical associations are actually moving, but they are not acting because they are veterinary medical associations. We, the people who can act should cross the borders, like those of veterinarians, and all come together.

Concerning the activities I participated in, when I think about what I can do if I go to the actual location, there is nothing I can do now even if I go there. I will only be in the way if I just say what I think. So, what I am doing now is – I live in Katsuragi City in Nara – that I brought Fukushima beef to the mayor of Katsuragi. And I grilled that meat in the city office. I had them eat it and understand it was good. I told them that this beef wouldn’t sell, and the farmers were in trouble with paying for the feed. This was Tozai Shirakawa Agricultural Cooperative, but I requested that he give the people of this agricultural cooperative the space to sell this meat.

Then the mayor said, “you are about the same age as me, so OK.” It was very easy, and I was surprised. Because Kansai is so far from Fukushima, there is very little feeling of being victimized. In November of 2012, we did a Fukushima Wagyu sales promotion campaign, and the year before we had a sign for a campaign to defeat harmful rumors. Nobody cared – Kansai people are interesting – and wanted more good food and kept eating more and more meat. 80 kilograms of meat was gone in three hours. In this way, we donated all the profit to the agricultural cooperatives and donated the hospital money; this is what I can do. The man who wanted to save animals is selling grilled beef now. Concerning this, I strongly feel the irony, but I do not know what is right. However, there are animals that can no longer be made into meat, and the local people who love them and take

care of them – I want to help them.

This is a big irony in my mind, and I have no idea what the correct answer, the right thing, is. Eating the meat, yet helping the lives of dogs and cats – only dogs and cats?

It constantly made me think about why I feel that I want to help just those animals. Actually, I don't have any good answers today. I am just talking about what I am thinking about and the process of my thinking today.

So, this is my conclusion.

Many people were distressed, and to all those groups still continuing their activities, I would like to express my respect. I do not have the confidence to continue one activity to this degree, and I think my heart could no longer bear it. And to all those who went to the disaster area – to those who went there even once – please recall that feeling you encountered when you went. You must have felt that you wanted to do something. And as you went to the affected area and did many things you must have felt how big the problem was, and you must have been distressed to wonder what happened after you went home. And the first smile from everybody, be it an animal or an owner. Working for that, an activity done for somebody, I think is never wrong. So for example, even if there are radical statements, I wish we could refrain from overly stimulating them or excessively reacting and instead take each other's hand in cooperation. This time, we are talking about the need for early evacuation with pets, but this could not be done. Why? This is because there was a ban in movement earlier. It is okay to make rules. It is not okay to only be able to move within rules. To look for reasons that you cannot do something – you cannot just excel in this. Instead of looking for negative reasons, I think that we must look for new ways together. That is the most important thing now. If we were to prepare for the next time, I think we need prior planning – for example, there was the pamphlet from Takamatsu City earlier – and widely proliferating it, and each municipality must implement simulations. This kind of idea, right now being heard by 100 people, will spread to 1,200 if each person tells 10 people. If this spreads another round, it will make 10,000. If it spread that much, I feel that anything is possible.

As for myself, I cannot speak English. However, there was an opportunity for me to speak at an academic conference, like this one, in the US, so I went. For 45 minutes, I spoke in broken English, staring down at my notes. People there were talking about how Fukushima is no longer inhabitable and that people were dying there. I felt frustrated. Japan, where I live, was talked about in such a way. So, I went and clearly stated. "Everybody is mistaken, you are only thinking negatively, and there are people working hard in the affected areas. So please know this, and Japan will still need time to recover, but we would appreciate foreign aid."

This is something I appealed at a large conference, but also in Lexington, Kentucky, and in Los Angeles and San Francisco, California there were Japanese groups that orchestrated similar things. We got a lot of "donations". I want to make a difference by donating this money to various organizations. However, monetary donations may also be important, but as Dr. Kawamata mentioned in the slide earlier, I feel that we need to go to the actual area and work our hands, see the reality, and make allies even for just a little bit of time. In this way, I think that the problem may move forward a bit.

Lastly, I must say that when I saw the Fukushima civil servants and the locals working hard I felt that I was not a local of the disaster zone. In this end I have a home to return to. But the locals only have that area to work hard on. So with me, I inevitably lacked the desperation. Desperate people do not say they are desperate. I

constantly had the air of “working hard”, and I regret this; when you go to volunteer you cannot show desperation. I feel this strongly. Updating my blog every day and looking for work to be done I was one of the spectators. I even feel that I was demonstrating the worst example as a volunteer.

I think that by saying “this could have been done,” or “we could still do this” from the outside my own statements must have hurt the situation. In order to go in the right direction comments from the outside are unnecessary. A more cooperative approach is important for recovery and for any activity. Animal activities, activities for animal welfare – these are all done by people. But the targets are animals. We cannot target each other and fight. If you want to save animals be nice to people as the activities are done by people.

I hope that this will also be done.

It’s almost time, so I will finish here.

Thank you.

5. Animals that were Left Behind in the Exclusion Zone

Akiko Kawasaki (Japan Animal Welfare Society)

Hello everybody. My name is Akiko Kawasaki. With my presentation time I would like to talk about what happened and what I experienced within the area 20 kilometers from the nuclear accident. There will be images that may cause distress, but this is the truth that I saw, so I would appreciate it if all of you here could see them and face the truth. I would be happy if you can bring back things from my presentation and apply them to future planning in your local authorities. I think that the lives victimized during this disaster and the hardships will not be wasted this way. I hope that you could all think about how to plan for the future by learning the lessons from what happened in the 20-km zone which experienced a man-made disaster following a natural disaster.

First, I would like everybody to know where and under what kinds of conditions the rescue activities were implemented, so I would like to show you how the townships looked like after the disaster. This is the situation in the beginning of April. This is how Route 6, the artery for transportation in Fukushima Prefecture, looked like. The area between Naraha and Tomioka has collapsed completely like this. The situation of the roads, such as collapse and liquefaction, was something that we were worried about more than the radiation. Also, with liquefaction of the road the lifelines which were underground such as water pipelines were damaged. Also, we had no connection on our cell phones. In addition to the conditions of the roads the buildings were collapsing because of the earthquake, and we had to be careful with the conditions of the building. Especially in March and in April there were many aftershocks, and the towns were changing their appearance over time. We knew that there were many buildings built before the new quake-resistant standards that were damaged.

This is the situation of Naraha-machi initially after the earthquake. This is a car that had apparently been in an accident because of the earthquake. The roads were in such conditions, so we had to take many detours. This is Futaba-machi. The buildings have collapsed. This is also Futaba-machi, and the time on the clock is stopped at the time that the disaster struck. This is in Tomioka-machi and is probably the end of where the tsunami reached. This is a location only a couple of hundred meters away from where a dog had starved to death, a case that I will later touch on. It is a residential area that does not look like it is anywhere near the ocean. This is a research institution owned by the prefecture located in Okuma-machi. This place is very close to the nuclear power plant, but there were employees of this institution who died because of the tsunami. This place is not populated by anybody anymore, but there was evidence of looting in this shopping district. This is Namie-machi. This photograph was taken on April 2nd or the 3rd, but it was a time when not even searches of people victims were conducted, and you can see that nothing is cleaned up. This is the situation of Route 6 after the tsunami had passed. About a half of the lane had been cleaned up, but after the exclusion zone was designated this car on the railings was left for quite a while.

This is the situation of the animals immediately after the disaster. This is a residential building in Naraha-machi, but there was a dog that was left behind. The dog noticed that people were approaching, and it came out and started barking. The dog was very thin, so we fed it some pet food that we brought and gave it water. We had the support of the Headquarters for the Relief of Animals in Emergencies, and we also brought pet food that was donated by the public. So we fed and gave water to the dog like this, but when a different team visited after

5 days, the dog had died. When we came on another round just in case, the body of the dog was no longer there, and I think that the owner who returned realized that his/her dog was dead and probably buried it. It is a heart-wrenching location.

This is Tomioka-machi along Route 6. This is a dog that had been chained to the house. We fed it food and water. As you can see, the entire place is a wreck because of the earthquake. This is a dog that was not chained but had remained around its house. There was nothing in its bowl. It was thin and it seemed hungry. So we also fed and gave water. This is a cat that had died in front of its house. When I touched it, I can feel that the cat was just skin and bones and emaciated. It seemed like the cat had starved to death.

This is the location a couple of hundred meters away from the place where the tsunami ended up in Tomioka-machi. A dog was chained and had starved to death. This is what I feared, but I could tell that the dog seems to have been alive and chained for one to two weeks looking at the excrements and the condition of the body. This is how the scene looks from the streets. Another dog was chained at the same house but at a location facing the street. There were buckets and bags of pet food in the area, so the dog ripped open the bag of pet food and managed to stay alive. After the area was designated as the exclusion zone, that same dog was on a TV program that Dr. Imamoto was in, and I figured out that the dog was released and was alive. I was surprised.

This is also a dog that was left behind, and the owner was no longer home. I think that it was a sheltie, but its coat was in a horrible condition. This is also a dog that has been released. I later figured out on the internet, but this dog had been rescued by another organization, and it was returned to a family member of the owner.

There was no sign that official government rescue was going to start, and we were concerned that if we leave the animals any longer, there would be more animals that would starve to death. Thus, we established a volunteer team including veterinarians from Tochigi Prefecture, and we accepted rescue requests via the internet and did some rescue work. We used the internet, took in requests, visited the sites every couple of days, and did rescue work as we exchanged information. This is a photograph that we received from an owner. This is a female called Riki. Unfortunately, this is a case where we couldn't save the actual animal. The owner was an elderly, and the request was relayed from the person's grandchild, so the address of the house was wrong. Thus, we finally got to the house approximately a month after the disaster. We were crossing our fingers that somebody would have fed her or would have released her, but unfortunately, we did not make it in time. The house next to this one owned a hunting dog and a hunting rifle, so the person came back to his/her house every day. We met the person coincidentally, but the person did not know that the next door neighbor had a dog. Through this case, I thought that like humans maybe the communication among neighbors becomes a key point in saving lives.

This is a house of an owner of a farm. The person was a livestock farmer, and we rescued two cats from this house including the cat shown in the photograph. We contacted the headquarters, and we were able to get in touch with the owner immediately. However, the owner said that they can no longer keep the cat with them but was not going to surrender the animals. We decided to board the cats temporarily with us. When we spoke to the owner the owner said that there should have been other cats. When we went we could not find them. When the temporary return home began much later and animals were rescued we had convinced the owner so that they would temporarily board the remaining cats in the shelter of the prefecture. At this point, the owner had some work to do within the exclusion zone, and the person was able to stop by at his/her house. However, the owner was sometimes unavailable for long periods of time, and the health condition of the cats were poor. It was for

this reason that the owner decided on having the cats rescued. The cats that we had been keeping were spayed/neutered with the permission of the owner, and we were monitoring their health. After approximately a half a year the cats were returned to the owner who had moved into a temporary housing community in Iwaki.

We found two dogs here, but there was an organization that released and took the dogs without permission. The organization charged the owner unsubstantiated money, and this became a troublesome case.

This was in the beginning of April. As far as we can see in most places in which animals were not fed and given water the animals had starved to death. Miraculously, there was a dog that was alive. Its food bowl was empty and did not have any food or water, and the dog was very thin and could not stand up. You can see that the ribs of the dog are visible. The dog was emaciated, and I was worried about leaving the dog knowing that the dog will not likely be treated. When I returned I consulted a lawyer, because this dog was chained in a private property. I returned the next day and rescued the dog as an emergency situation. We screened the dog for external exposure, and we took the dog to an animal hospital for it to be hospitalized. We posted a note on the entrance of the house where the dog was rescued which notified the owner that the dog was rescued and left our contact information. We knew the name and the address of the owner so we contacted the Headquarters, and on the next day the owner immediately called us. The owner had moved to a public housing for job development in Yamagata from the evacuation center in Big Palette. The person was in a great confusion, because until about one month after the disaster the person could not figure out the whereabouts of his/her mother who was hospitalized.

When we asked about what happened upon evacuation, the person told us that the lifelines were all damaged and they opened their precious bottled drinking water and left them – because they had no running water – and left as much water and pet food as they can. This decision of the owner saved the dog's life as a result. The tsunami was approaching and it was difficult just taking care of themselves, and in a situation like this, the owner was worried about the dog and did as much as possible.

The owner had heard that the evacuation was only going to last a couple of days. The owner thought about releasing the dog, but the dog was 17 years old and had symptoms of dementia. So, the owner thought that it may get run over by cars and left the dog chained. During the initial evacuation, the pet owners were instructed to not let their pets onto the bus. It was difficult to evacuate on cars, because some did not have enough gasoline, and the town was in a panic with overflowing cars on the streets.

When we were able to get in touch with the owner, the person immediately came from Yamagata to Tochigi Prefecture where the dog was hospitalized. They were reunited at the animal hospital. This is the photograph and a newspaper article about the reunion. You can see that Hanako seems really happy, and the owner was repeatedly apologizing to the dog saying "I'm sorry, I'm sorry." The owner was relieved, but I heard that the owner kept on apologizing to the dog. The owner wanted to take the dog home immediately, but the public housing in Yamagata that the person lived in would not immediately accept animals. And so, the owner could not take the dog home. It was decided that Hanako, the dog, would be boarded at the animal hospital until the owner was able to take her home since she was old and she had been in a starved condition for a long period of time. This case gave me an opportunity to think deeply about evacuation with pets and coexisting with animals in housing conditions after the evacuation.

Summarizing the period of time until the designation of the exclusion zone we can see that the private

organizations moved feeling a sense of crisis, because the public agencies did not implement animal rescue. Some lives were saved because of the decisions of these private organizations, but on the other hand, some organizations took or released the animals without any permission and have caused money troubles when returning the animals. Such issues also continued to arise after the designation of the exclusion zone.

Also, animal rescue activities were implemented without enough information regarding the conditions of the disaster affected areas and the situation of radiation contamination. We were trying very hard to collect information on the road conditions, because during the initial phase, there was no information on the condition of the roads.

There were cases where the internet was used, and rescue activities were implemented effectively with the transmission of information from disaster impacted individuals to animal rescuers. Such environment enabled the animal rescuers to easily retrieve addresses and photographs or characteristics of their animals from the owners or their family members. However, if the actual owner was an elderly or is in a generation that is not accustomed to PCs or cell phones family members of these individuals had to relay the information which became tricky.

This is the situation of the exclusion zone. This is a dog that was starved to death. It is not buried and the body is decomposing. This is the cat that was at the aforementioned farm in Naraha-machi. We were already in touch with the family of the owner, so when we visited the town we stopped by at the farm to feed the cat. This is Futaba-machi. There was a bone of a cat, but we heard a loud meowing of a cat in the area, and an emaciated cat approached us. We found bones in this area, and this was an adult cat, but the cat was only about 2 kilograms. So, the veterinarian decided to rescue the cat and took it. The cat is still at my house.

This is the tsunami area close to Tomioka Station in Tomioka-machi. The cats that have survived are eating food. This photograph was taken around October, but this is the same place. It is a different cat from the one in the previous photograph, but the cat has a collar on. It may be a pet cat. These are cows in the residential areas of Tomioka-machi. The cows were freely roaming around in the yards owned privately by individuals.

This is a cattle barn in Minamisoma. It is a bit difficult to see, but the dairy cows that have survived were in a bad condition and some of them had diarrhea. Most of the cows that were in the cattle barn were starved to death, and they were just bones and skin. There was lime scattered on them, and parts of the body were melting away into liquid form. There was a thin cat that was hobbling across the area. We tried to rescue the cat, but the cat would hobble away to where we cannot reach it, and we were unable to rescue it in the end.

This is Ookuma-machi. I don't know why, but there was just one skull of a dog that was rolling on the ground. After the exclusion zone was designated, although this should have never happened, I believe that there were many reasons why stakeholders were unable to move to address the issue. However, the initial response of public agencies related to animal rescue efforts was slow, and this should be reflected on. I hope that this does not happen the next time.

In addition to this, the animal rescue efforts that were implemented were done under severely restricted conditions and were very inefficient. There was the issue of radiation contamination, and we were unable to go into private property. In such situations there were widespread animal rescue activities of private organizations that were illegally implementing their activities, and I believe that this created a lot of confusion on site. However, we should not forget that there are cases where these animal rescue activities saved lives of animals.

Also, both public and private organizations had the issue of not having space to board animals. As mentioned in the cases that I have talked about the fact that not very many evacuation centers allowed animals was also a big issue.

Next, I would like to talk about the animals that were forgotten about. Among these animals were pets kept at schools and animals used for exhibitions.

Regarding school pets, I checked a couple of times when I went into the exclusion zone, but I carried out a focused investigation when I went in as a part of the VAFFA, Veterinary Association for Fukushima Animals, which I will introduce later. This is a rabbit that was kept at an elementary school in Tomioka-machi. I have taken away the fence when I took the photograph, but the rabbit is dead. This is a photograph of an elementary school in Futaba-machi. This is a hen house. This is also a rabbit that was left. The body of the animal is rotten, and its stomach is opened.

This is a hen. This hen was kept at an elementary school in Naraha-machi, but there were places where the door of the hen house was opened or the fence was ripped open to release the animals. We do not know what happened to the animals that have escaped. We looked around, but we could not find evidence that the animals were around in that vicinity. I believe that it would have been difficult for the animals to survive even if they were released.

This is the situation of an elementary school left as is from when the disaster struck. You can see from the photograph that everybody must have been in a panic and that people evacuated with little more than the clothes on their back. Bags, shoes, and pouches are scattered all over the place.

We were not even aware of the issue of school pets before we went into the exclusion zone. Most people were fully occupied with what was in front of them, and human safety was prioritized. Under such circumstances school pets were forgotten about. With the exception of areas with evidence that the animals were released most of these animals died. It is hard to think that those that escaped survived.

It would be great if places to board these pets could be secured with local veterinary associations. However, this would be very difficult. School pets have caused a variety of issues such as inappropriate management and unclearness of responsibilities. For such reasons, there are many local authorities that are working toward abolishing this system, but I also believe that this system should be abolished.

Hens and rabbits are also animals that need to be rescued, but under circumstances where the children must be evacuated I would find it awkward if there were employees who are trying to save these animals. So, if one cannot hold responsibilities for these animals or cannot address these animals in the case of emergencies I strongly believe that they should not be kept. I have separately submitted materials regarding school pets, so I am hoping that it would be released sometime.

Next, I would like to give an example of an ostrich farm to talk about the situation of animals used for exhibition. The animals were dead inside the fences. This photograph also shows this situation. There were ostriches that survived, because they were released. These are ostriches that we found away from the farm in a residential area near the nuclear power plant. They were used to people, and some of them approached us for food, which was very scary.

For animals used for exhibitions, zoos, aquarium, and private businesses that handle animals, the main issue is whether they are able to evacuate the animals in cases of emergencies – that is, whether it is possible for them to

secure the safety of humans to do this, and whether they can recruit experts who can handle these animals. I also believe that it is important to have supplies that are necessary to manage the animals in cases of emergencies and also to be able to secure water and electricity when lifelines stop in cases of emergencies. I believe that laws should clearly state the responsibilities of zoos, aquariums, and private businesses that handle animals and to make it mandatory for them to do what they should be doing such as submitting evacuation plans and to holding evacuation drills.

I am using a photograph provided by Dr. Natsuhori here, but I would like to introduce something that may become a model case for animal rescues during emergencies and disasters. This is VAFFA, Veterinary Association for Fukushima Animals, which consists of voluntary veterinarians, Headquarters for the Relief of Animals in Emergencies, and volunteers. I believe that this is the first animal rescue effort implemented in the exclusion zone that was in collaboration of public and private sectors. Because there was also the radiation disaster Dr. Natsuhori here, who is an expert on this topic, served as the central figure of the team. The rescued animals were boarded in the shelter of the Headquarters. Because of the Headquarters who cared for these animals in various ways we were able to return many animals to their original owners.

There were animals that were reunited with their owners more than a half a year after the disaster struck. This was a coincidence, but there was a case where the cat that I had rescued was a cat owned by the family of a fellow member of the Japan Junior Chamber where I am also a member of. They were really happy that the cat was found, and I was also glad.

Also, Dr. Funatsu of Fukuoka Veterinary Medical Association who had participated in the VAFF brought back the knowhow of the team to his local community, shared the information, planned, and developed a team, VMAT, within the veterinary medical association. I think that Dr. Masuda will be providing an outline of this team in the section of efforts made by veterinary medical associations, but this is a new form of animal rescue initiated by veterinarians who are experts on animals. The team already trains and has developed a time table in case of emergencies and disasters. I believe that preparation from ordinary times like this becomes the key. I hope that these efforts spread to different prefectures in the future.

So, I have touched on many issues, but the Ministry of the Environment has already developed guidelines and legal systems to resolve some of these issues. I think that the legal basis for animal rescue is very important.

Also, we need to clarify the roles and the timetables in case of disasters and include them in disaster prevention plans. We also need to develop teams for animal rescue and train them. In addition, we need to create systems of support during different stages of animal rescue – system for evacuation with pets, places for evacuation, creating environments where people can live with their animals in temporary housing communities, provision of food and drinking water, and basics such as veterinary care. In addition to these things issues, such as the problem with relief money and inappropriate management of shelters, were also brought up. This would be the privately run shelters. I think that in order to make sure that the animals inside shelters are cared for appropriately and that the shelters are run properly stakeholders such as veterinarians should conduct unannounced inspections when distributing relief money to various organizations. Looking at the fact that class two animal handling businesses were newly defined in the law I think that inspections by veterinarians are absolutely necessary.

I hope that there is no “next time,” but I think that we have to develop sound measures so that this type of

tragedy never happens.

Lastly, this is a photograph of Hanako, that came out in previous slides, and her family. Hanako passed away this year at Iwaki, where her family had evacuated, with her family members at her bedside. She lived to be 19 years old. For a short time, her family had to nurse her because of old age, but I still remember that Mr. and Mrs. Tanaka had told me in a cheerful voice that the nursing part was also a healing experience for them.

We not only saved the dog's life but also the bond of this family. I am happy that we were able to do away with some of the guilt of the family that they had left the dog behind. I feel that we were able to save lives and touch on the compassion of many different people through connections with many people, and such things helped as a part of the recovery process.

I think that disasters will strike again. However, we can prepare from now to alleviate the damage as much as possible. I would like to express my appreciation to the Headquarters for the Relief of Animals in Emergencies and experts and other stakeholders who have supported our activities.

Thank you for your attention.

6. Changes in the Awareness of Veterinary Associations in Areas with Risks of Earthquakes and Nuclear Accidents

Kunimitsu Masuda (Masuda Animal Clinic)

My name is Masuda, and I run a private practice in Shizuoka.

I am not related in any way to Fukushima but through the animal rescue efforts of the Ministry of the Environment during the temporary return home for the residents I began to think of ways that I can provide feedback for this issue. I considered ways in which the lessons learned can be applied to my local community, and so, I would like to provide an outline of cases in my prefecture.

Disaster prevention plans have been reviewed after natural disasters such as the Hanshin Earthquake, eruptions of volcanoes, and the earthquake in Niigata Prefecture. In Shizuoka Prefecture measures against disasters have already been taken. As written on the slide Shizuoka Prefecture developed the first edition of its manual for measures against pets in evacuation centers in 1996, and this has been revised in 2008. The prefectural veterinary medical association has also developed an Animal Rescue Plan for the prefecture in 2006. The content of this Plan includes the establishment and the operation of the headquarters for animal rescue, the selection and operation of shelters, and activities such as veterinary care and volunteer activities. During the East Japan Great Earthquake and the nuclear accident many things occurred that existing disaster prevention plans had not anticipated. The area impacted by the disaster was vast, the damage done by the tsunami was great, and radioactive materials were dispersed – something that was not anticipated at all – and entry into the disaster impacted area was prohibited. I believe that veterinary medical associations or governments need to review and consider whether they are addressing these issues appropriately with existing measures.

Shizuoka Prefecture is an area where earthquakes may occur at any point of time in the future. In addition, there is a power plant of Chubu Electric Power Company in the center of the prefecture in Omaezaki City. There are approximately 200,000 people living in Omaezaki City and Makinohara City, the area around this power plant. I am speaking under the premise that the conditions would be the same as the accident in Fukushima, but this is how the area would look with a 20-km radius evacuation zone. The evacuation zone will include parts of the main life-lines: Tokaido Shinkansen, Tomei Expressway, and Route 1. These are the main transportation arteries of Japan. This should never be allowed to happen, but if the same thing happened in Shizuoka Prefecture the magnitude of damage may further expand. In addition, the UPZ set in Shizuoka is 31 km. If this is applied, there will be 700,000 residents, and there will be many more people living within the evacuation zone compared to an evacuation zone with a 20 kilometer radius. With the increase of people, of course, the number of dogs and cats kept by these people will increase. With this UPZ, the number will be over 100,000.

Now, I would like to introduce the measures of Shizuoka Veterinary Medical Association after the East Japan Great Earthquake. In November 2011, a conference to report the animal rescue activities of East Japan Great Earthquake was held. We considered the issues related to animals in Shizuoka Prefecture. Among such issues we discussed reviewing and revising the animal rescue plan of the prefectural veterinary medical association focusing on what we should do when there is a nuclear accident. In Shizuoka Prefecture there is a subordinate body of the Shizuoka Veterinary Medical Association called the “local branches.” There is an increased

movement for these branches to conclude memorandums and agreements related to animal rescue with individual townships. The detailed examples are written within the brackets, but Shizuoka City, Hamamatsu City, government-ordinance-designated cities, and Shimada City, where my hospital is located, are such townships. In addition, there have been discussions for local authorities and the veterinary medical association to share and confirm their awareness and the issues in order to resolve them. I would like to introduce what the Shimada Branch has been engaged in, the branch that I belong to. A year after the disaster we concluded a memorandum regarding veterinary care and animal rescue during disasters. This is the first case in Shizuoka Prefecture where a branch of the veterinary medical association – not the veterinary medical association itself but a subordinate body – and a local authority concluded any agreements. So, the Shimada Branch concluded an agreement with Shimada City. In the case of Shimada City it says the request for animal rescue activities, securement of a base for such activities, and other support as necessary. We have figured out that the selection of location to do all of the animal rescue work is a very difficult task. In Shimada City, we were able to secure a fairly spacious area where there are no resident buildings in the surrounding area, so the agreement includes the provision of this place in order to implement animal rescue activities or veterinary care. Of course, the veterinary medical association will be engaging in such activities upon such requests, but the agreement is written in a way so that the veterinary association would be able to implement animal rescue activities even without any requests. In reality, it is difficult for the government to make orders related to animal issues during times of disasters. So, even if this happens we developed the wording of the agreement so that it allows for our independent actions in case of emergencies so that there is no delay in the initial response. Also, this relates to evacuation with pets, but there are cases where it is difficult to evacuate with pets or to live with pets within temporary housing communities. We believe that we may be able to clear this problem if the city can make something in the place provided through the agreement in which pet owners can evacuate and live with pets, so we would like to address this issue as well. In this way, we can initiate a quick response for animal rescue when there is a disaster. If we concentrate all activities in one place, we can use this as the base for the boarding of injured animals and for the collection of information. We are also thinking that we can share the living spaces for evacuees with pets. If there is an earthquake in Shizuoka Prefecture, a vast area would be damaged, so we also believe that such bases can also be used for rescue efforts offered from adjacent townships, and local authorities can cooperate with each other.

Next, I would like to introduce a similar movement of Shida Branch, adjacent to Shimada City. This started after the Great Earthquake, but they wanted to raise the awareness of the public regarding disaster preparedness, and they hold a seminar for their citizens once every two years. During such occasions, they educate the public on disaster preparedness, and they create an opportunity where the public is able to discuss these issues with the prefecture and the city. Fujieda City, where Shida Branch is located, holds training sessions for establishing and managing animal rescue centers and holds simulations of evacuation with pets. A general disaster drill will be held this September as well, so we are planning to do something similar again. There would also be cases where rescued animals have to be boarded, so in the training session we include simulations of a couple of different such cases. When there is a large disaster the identification of animals becomes an important issue. Many animals do not have collars or identification tags on them, so we also train so that stakeholders would be able to read microchips implanted in animals. The slides show how we actually did the training at the disaster drill in

Fujieda City. We set up the headquarters for rescue by establishing facilities for the headquarters and setting up tents and cages. I will give you a couple of examples on how the intake of the impacted animals takes place. There are cases when owners have evacuated with their pets to the rescue headquarters, there are cases where people other than the animals' owners have rescued animals and brought them over, and there are also cases where the owner of the animal is unknown, and the chained animal was rescued. The training includes how to identify the animals by reading the microchips and how to prepare and use the stocked medication and pet food to rescue and care for these animals.

The results of the surveys of participants who participated with their pets at the disaster drill in 2011 say that there were 77% who had vaccinated their dogs against rabies. There were a little less than 30% who responded that they would take their animals to evacuation centers upon evacuating, and there were approximately 50% who responded that they would care for the animals in their homes or in places other than the evacuation center. We also asked if the animals would be able to live with other animals and people in the evacuation centers. There were 20% who answered that their animals would be able to do this, and there were 66% who responded that this would be an issue or would be difficult. The pet owners themselves usually want to evacuate with their pets, but when they are placed in an extreme state, also mentally, by the stress of evacuation the data reflects the mentality that these pet owners are worried to do anything that makes anybody or themselves more anxious.

This was introduced earlier in the day, but Fukuoka Veterinary Medical Association also has the VMAT (Veterinary Medical Assistance Team), so I would like to briefly touch on this. Fukuoka Prefecture also has the Genkai Nuclear Power Plant, so they implemented an evacuation drill to practice evacuating with pets at the Fukuoka Prefecture Disaster Drill in 2012 assuming an onset of an earthquake, tsunami, and nuclear accident. They also developed a guideline for animal rescue during times of disasters, and this guideline also outlines the operation of the VMAT. This is probably the first example in Japan. I apologize that the slide is difficult to see, but this is a schematic view drawn from the guideline. Several teams consisting of several stakeholders, such as veterinarians with specialist education and veterinary technicians, will be operated. The team will always be maintaining a system in which they can swiftly respond and will be prepared for emergencies. Shizuoka Prefecture does not have this system so we would like to draw from the activities of Fukuoka Veterinary Medical Association.

Because of the East Japan Great Earthquake many veterinary associations initiated different actions. We are all sharing our knowledge so that such actions would have a positive impact. From these actions, we can anticipate the increase of disaster preparedness awareness related to animals, the increase in the importance of collaboration between the government and veterinary associations, and the improvements of the efficacy of disaster prevention plans and training. During East Japan Great Earthquake there were many things that happened beyond the scope of our assumption. So, it will be important to engage in urban development applying the lessons learned so that we do not waste the lost lives. Creating opportunities to exchange opinions related to the practice of animal issues is mentioned here, and I think that the most important thing is to have opinions and voices heard. I believe that it is important to collect different ways of thinking and to have different people interested in this issue, and I also believe that it is our role to educate citizens regarding this issue.

So I would like to touch on future challenges. The Ministry of the Environment issued a guideline for animal rescue this March. We must further consider the issue including how the local authorities, veterinarians, and

citizens should be collaborating. Our prefecture is located in an area where the chances of earthquakes are high, and I believe that our disaster prevention awareness is higher compared to other parts of Japan. However, even so, the levels of disaster prevention awareness differ among different local areas within the prefecture. There is a need to make good use of the disaster prevention plan, we need to do planning so that the plan is actually feasible for implementation, and we also need to simulate some of the concrete plans. Also, we need to address those who do not necessarily like animals. It is important to exchange opinions with stakeholders in a variety of positions in reviewing the disaster prevention plan. The guideline publicized by the Ministry of the Environment in August 20th provides that as a general principle owners must evacuate with pets. In addition, the guideline also makes mentions of disaster preparation of owners, preventive care of pets, and measures against displaced pets. With such a guideline, we may move forward, but I would like to keep a close watch on how things move forward.

Until now, local veterinary medical associations and local authorities have continued to update their disaster prevention plan as necessary. However, with the disaster two years ago, stakeholders have been pressed into reconsidering measures against nuclear accidents. There has especially been a focus on the importance of evacuation plans and rescue of animals within disaster prevention plans and drills. Regarding animals, the collaboration between veterinary professionals, governments, volunteers, and citizens is absolutely necessary. We would like to take into consideration the opinions of stakeholders who do not like animals so that measures can be developed in order to rescue and evacuate animals smoothly during emergencies. September 1st, the day that the Kanto Great Earthquake struck, is designated as the Disaster Prevention Day. Disasters which jeopardize our lives may strike any time, and it will strike sometime. The situation may be unimaginable, so we should be preparing as necessary including preparation regarding animals.

I would like to thank everybody for cooperating with the appropriate management of animals. I would like to continue to make use of everybody's opinions and requests, and I would like to ask for your continued support to develop disaster prevention measures that maintain the positive relationship between humans and animals. Lastly, I would like to thank Fukuoka Veterinary Medical Association, Dr. Toshihiro Funatsu of Harley Animal Hospital, Dr. Masahiro Hashimoto of Takakusayama Animal Hospital of Shida Branch in Shizuoka, Dr. Kimiaki Doi of Doi Pet Clinic, Dr. Takashi Ogawa of Ogawa Animal Hospital of Shimada Branch in Shizuoka, and other stakeholders who have generously provided materials for this presentation.

7. Conclusion

Nobuhiko Ito (Kitasato University)

I know that you may be tired after listening to lectures for a long period of time, but I would like to summarize the lectures of all of the speakers today. And the speakers did not report in detail the internal exposure and issues as such regarding animals, so I would also like to touch on that.

So, I would like to start.

So, everything happened after the great tsunami. The damage was huge just with the earthquake and the tsunami, but if it was just the earthquake and the tsunami, people could have returned to the impacted areas to help the animals. Two years have passed but we have not gotten to recovering, and I am sure that all of you are aware that in many places we are still trying to restore things to what it was before the earthquake.

One of the causes for this is the nuclear disaster, and we have prolonged in various ways the issues that surfaced. There were probably many people, especially older people, who would have continued to live in their homes if the nuclear accident did not take place. Because people evacuated, many people died of various stresses and poor health after the evacuation. I believe that a politician has commented that nobody died from the radiation. Even if there was nobody who died of radiation per se I believe that there were many people who died due to issues that stemmed from the nuclear disaster.

Many lives were lost during the disaster. Things have settled down a bit, but some of the initial situation was unavoidable. The lives of people were prioritized, and it was inevitable that animals were left until later. However, at the point that things began to settle down I believe that we have to face and reflect on the lessons learned regarding animals. This is why we had all of the speakers talk today.

We have learned from this experience that nuclear accidents also greatly impact the lives of animals. As Dr. Masuda mentioned we need to prepare for such accidents from now on, and this is not only an issue in Japan. It would cause complex issues in any country. So, as I mentioned in the very beginning of the day, we received many support including the funding from HSI, and we wanted to release a report written in English. I believe that this is something very meaningful. This is a cover with a nice photograph that was done by the Headquarters office. The report is about 60 pages and is in English.

I believe that a couple of the speakers today and Dr. Natsuhori, one of the chairmen, were involved, but immediately after the disaster, IFAW (International Fund for Animal Welfare) released a report as of May at a symposium that they hosted. However, this was a simple report that covered only a short term. There was nothing more related to the topic, and at first HSI requested us to investigate literature related to Chernobyl. In addition to the materials I had already I tried to investigate further. There is quite a lot out related to food products. Regarding animals, there are records on what happened to industrial animals, but there is nothing at all especially on companion animals. I will talk about this later on, but I visited Ukraine last summer to interview as best as I can what happened in impacted areas after the accident. We were able to document what happened to apply to future disasters, because HSI gave us this opportunity. We would like to show our

appreciation to HSI.

This is a list of today's speakers, and this is in the order that they spoke, so that you can tell who spoke about which topic. Many people in addition to these speakers have been involved. Dr. Imamoto is a veterinarian, and he conducted the investigation as a volunteer. Dr. Sato was working for the dairy cooperative at the time so this was a part of his work. Dr. Kawamata is one of the major members of the Fukushima Prefecture Veterinary Medical Association. The chairman of the Fukushima Prefecture Veterinary Medical Association is here today, but I believe Dr. Kawamata has been involved in the investigation as a mission from the veterinary association. Ms. Kawasaki has been active as a volunteer herself, and Dr. Kakizaki is a faculty of the university but wanted to contribute as a researcher and has been involved since the initial stages. Dr. Masuda has been involved in the investigations and I believe will be continuing to put efforts in preventative measures so that such tragedy does not happen again. At the bottom of the list I have included Dr. Sakiko Yamazaki's name. She was the one who contacted me with the request. We have been involved in this project for a little over a year, but this is the first time we have met in person. We have been corresponding via e-mail, but she has provided a lot of support including mental support. We were able to release the report because of such support. I would like to show my sincere appreciation to these members.

Regarding the designation of the exclusion zone I believe that, as Dr. Imamoto mentioned, the lives of the animals were delineated at the 20-kilometer border. What is this delineation? I go into the former exclusion zone for other work even now, but in terms of the level of contamination there are areas within the zone that have low levels of contamination and high levels of contamination. So there are areas with various levels of contamination, and I have doubts about whether the zoning was appropriate, but I believe that there was also the sense of urgency on the part of the national government that a line had to be drawn. So, they drew a line at 20 kilometers, and we later figured out that there were areas with even higher levels of contamination. Thus, the current zone with restrictions on access has a complex shape, and recently, there is a separate zoning such as the residence restricted zone and the preparation-for-lifting-evacuation zone.

The exclusion zone was designated on April 21st, so there was a little over a month before the zone was designated. There was a lot of confusion during this time, and I believe that in a way, the designation of the exclusion zone further increased the confusion in terms of the lives of animals.

Later on, I read the Disaster Basic Act, because I wanted to know the legal grounds. There was the phrase, beyond the assumption, used on many television programs and newspapers. I do not know whether the stakeholders did not want to make the assumption in the first place or was unable to make the assumption, but I guess that this point is something that would be difficult to clarify.

At any rate, because this was beyond assumption, there was no preparation. Similarly, the stakeholders of the government and the veterinary medical association also did not assume this. I think that the conclusion of today is that from now on it is important to prepare by thinking of the worst situation that could occur.

Regarding industrial animals, I do not mean to defend the national government, but I believe that the Ministry of Agriculture, Forestry, and Fisheries were responsible for animals used for food, and the stakeholders went to places such as Ukraine approximately a week after the disaster.

There were records that a lot of the industrial animals, such as cows and pigs, were transported out from the

exclusion zone using military vehicles. Not all of these animals were consumed as food, but stakeholders heard about the lessons learned. For example, during the initial phase – this was not only in the exclusion zone – there were cases where citizens consumed contaminated food and drank contaminated milk, and things like that led to diseases. In addition, stakeholders were afraid of harmful rumors. So, stakeholders wanted to address everything in a uniform manner. This resulted in the delineation of the exclusion zone, and they decided to euthanize all of the animals within the 20 kilometer zone. People would be mad at me if I mention that the national government has a character where it is difficult to take back anything that they say, but this is a characteristic of the national government, and there are still many difficult issues remaining.

Well, in any way, there was probably the fear of causing negative impact on human health, so it was difficult for the stakeholders to move these animals. There were cases where animals such as horses were moved out from the exclusion zone under the premise that they would not be used for food. During the initial phase we were carrying out activities in the exclusion zone, and there were cases where some animals were not euthanized although they were ultimately anaesthetized and dissected.

Most of the chickens died, and the case was similar for cows and pigs. I am not going to repeat what happened, because the other speakers spoke about this in detail. There were those that starved – the ostriches also died – but a part of the animals survived. So, the order issued by the national government was to euthanize all the animals, but there were special cases.

A part of the horses kept were for food, but the rest were used for the festival. As mentioned, Minamisoma held the Nomaioi festival, and the stakeholders probably thought that they wanted to save these horses since they were used in festivals and had historical significance.

In Minamisoma City there is an elaborate facility called Bajikoen. I went there immediately after the earthquake, and the stakeholder seemed to be having a lot of difficulties. The facility is located immediately outside of the exclusion zone, and the place was also slightly contaminated. Horses have to be exercised every day. The stakeholders led the horses while they exercised them so that they do not eat the grass. Even so, there were probably instances where the horses ate the grass, because when I visited the stakeholders were having difficulties decreasing the level of internal exposure of these horses.

I have heard that the industrial animals outside of the 20 kilometer zone were transported to different places at an early stage. During the initial phase it was difficult to check whether industrial animals were contaminated or not. So, the animals that were outside of the 20 kilometer zone could be transported and kept at a different place. We could not do this for the animals within the exclusion zone, so the 20 kilometer delineation became the borders.

And we have the issue of pigs for breeding which are very precious for producers. Dr. Imamoto did not go over in detail, but Dr. Imamoto took me to a pig farm. And I actually saw that their fortune is not just the part of the pigs that is shipped as meat, but rather the value of the pigs for breeding and the breeding techniques. The farmers have the techniques to cross different types of pigs to produce healthy, good-tasting pork. Thus, the pigs used for breeding becomes their resource, and this is something that they developed for over a period of decades. So, the farmers wanted to keep these pigs not for meet but for breeding, and the employees of the city wanted to help them. But they were saying that they were having difficulties, because everything was dealt with under the uniform standards, and they could not bring out any animals. A part of the pigs were brought out from

the exclusion zone to the farm of the University of Tokyo to be used for research purposes, but I believe that there were many unresolved issues.

Regarding companion animals, as a couple of speakers mentioned, the evacuation directives were issued by the prime minister the day after the disaster on the 12th. And there were people who evacuated with their pets, but I believe that the understanding of many people were that they would be able to return very soon. Of course, the stakeholders who issued the directives also thought so, but those who actually evacuated especially believed that they would be able to return soon – within one week. So, you could say that this was the beginning of a series of unfortunate circumstances.

The Headquarters for the Relief of Animals in Emergencies was set up on March 14th by private organizations and they started their activities. It was mentioned that veterinarians in Fukushima Prefecture worked together with the Headquarters and began their animal rescue activities. So, the Headquarters was established on March 14th. It was fairly soon after the disaster struck. I know that there are stakeholders from the government present today, so I do not want to criticize, but it took a little more time for the government to actually start moving on a full scale. The government officially started moving in collaboration with the private sector about one month after this.

In Japan, veterinarians are trained under the jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology and are certified under the jurisdiction of the Ministry of Agriculture, Forestry, and Fisheries. Depending on the types of animals and their purpose some parts of the work of veterinarians fall under the Ministry of Agriculture, Forestry, and Fisheries, others related to food safety and human health fall under the Ministry of Health, Welfare, and Labour, and those related to pets and wildlife fall under the Ministry of the Environment. This is an issue unique to Japan. So, depending on the purpose and types of animals, the three ministries have their own roles. There are probably parts that overlap, but if the work is divided and addressed skillfully there are usually no issues – I guess this is unique to Japan and is rare in other countries – and if there are no problems the system functions well. However, this time, this was a cause of the delay of the initial response. The stakeholders in charge were different depending on the type of animal, and I believe that this is partly what led to the delay in the initial response.

If how to address all of these issues is reflected on I suppose that the next time the initial response will be faster. At least, I believe that the greatest issue was that the entire country did not assume anything like a nuclear accident.

The pets in the exclusion zone were rescued during intensive rescue efforts. This was when the Ministry of the Environment officially started moving, and from this point on the volunteers were able to officially implement their rescue efforts instead of doing it in an underground manner.

The animals targeted were dogs and cats. The Headquarters for Animal Rescue established a shelter, and later on the Ministry of the Environment also opened up a shelter although parts of the shelter were managed jointly. The stakeholders aimed to implement animal rescue efforts that were considerate of the quality of life of the animals, and the activities still continue today.

The dogs are very friendly, and even if there are not so many of them who had been kept by people with a little bit of training chances are high that they would find new homes. However, for cats the situation is much more difficult.

Also, it is difficult for second-generation animals that have been born without human contact to get used to people. I have visited the shelter a couple of times, but I felt that it is difficult to put up some of the cats for adoption. I felt that it would be difficult unless new owners can interact with these cats with an open mind.

Regarding school pets and animals used for exhibition, Ms. Kawasaki gave a broad view of the situation. She mentioned that the person responsible for managing school pets were unclear. There are probably parts that students engaged in, parts that homeroom teachers manage, and these stakeholders are probably unaware of exactly what their responsibilities are. Ultimately, I guess that it would be the headmaster of the school who has the responsibility, but I believe that the locus of responsibilities of the stakeholders who are actually involved is rather unclear.

Ms. Kawasaki commented that they should stop the system of school pets for these reasons. There would be arguments both for and against doing so. I believe that there is a significant, beneficial impact from keeping pets at schools. In the future, we have to reflect on the lessons learned and appropriately prepare for future disasters – we have to avoid the tragic results like this time.

There was a mention on ostriches previously, but depending on places there are possibilities that facilities keep lions or other predatory animals or birds of prey. So we have to think of what to do when this is the case. We need to simulate thinking of the worst situation, and we need to be ready with measures. I believe that this is a topic that leaves us with many issues to think about in the future.

Regarding wild animals I believe that this may be close to a perpetual problem. As it came out in Dr. Kakizaki's slide, due to the structure, mountains and forests easily acquire radioactive materials. The leaves on the tree crown acquire substances that get carried by the air, and these substances stay on the leaves. When the leaves die, they shed. The leaves that fall do not go deep underground. The leaves stay around the shallow areas, but the substances of the leaves that find its way underground will be absorbed from the roots of the trees and will go back into leaves. The leaves will fall again, and the substance will circulate within the forest. The half-life of cesium 134 is two years, so its level will decrease rapidly. But even if the level of cesium 134 decreases to an extent the half-life of cesium 137 is 30 years, so cesium 137 only decreases by 50% in 30 years.

And, in 60 years, the level will decrease to 1/4 the original level. In 10 half-lives, the level decreases to 1/1000. However, even if the level is decreased to 1/1000 there would still be a considerable amount of radioactive material – cesium – left. Ten half-lives would be 10 half-lives of 30 years, so it would be 300 years. So, the level would be decreased to 1/1000 after 300 years. The level would only be decreased to 1/1000, and we would not be alive by then, so we would not be able to see this happen.

300 years is a long period of time. The Edo Period was long, but this regime lasted for 300 years which was quite a long period of time. We have to be aware that the radioactive materials do not go away even after 300 years, and we need to monitor the wild animals and collect information on the situation of mountains whenever we go in to check.

There are also places that are contaminated really badly that people cannot go in and survey with measuring instruments. So, there are attempts made to have wild animals teach us about the situation in such places. Currently, Fukushima has concluded agreements with IAEA, the International Atomic Energy Agency. They currently started a study on wild animals where they temporarily capture wild boars to put on sensors, and they collect location information and other information with radio waves. They just started the investigations.

From now on, we also need to collect various information such as dose distribution. It is arrogant to use the expression, coexisting with wild animals, but we need to look for a path to coexist with these animals. We need to find ways to address the contaminated mountains, and I think that parts of the locations near village forests may be decontaminated. Two thirds of Fukushima Prefecture consists of mountain forests. People live in only one third of the land – only a part – so two thirds are mountain forests. So, we need to recover these areas. This is not only because these areas are our spiritual homes. Considering that we are going to use these lands for a variety of purposes we need to treasure wildlife, mountain forests, and the natural environment, and we need to collect information carefully and continuously.

Here, I have listed just the problematic points. There are now wild animals that are not afraid of humans. These animals are second- and third-generation animals, and there is also an increasing number of cases of bird and animal damage. This has also been covered in television programs, and there has been fear that there would be direct damages inflicted on humans.

Also, there is the issue of rodents – Muridae. There are a lot of types of rodents, and they are increasing rapidly because people have left. The media has covered the fact that the rodents inflict physical damage by chewing. There is also the aspect that the increase in the number of rodents leads to transmission of infectious diseases, so we have to be careful. In Japan currently there is no plague, and I do not think that everybody here would imagine anything like the plague. However, long ago there was a plague epidemic abroad. I was in Europe very recently, and I heard in a town that I visited that there were communities where half of the population died from the plague. This reminded me about the plague. I am sure that everybody knows that the plague is transmitted by flea on mice. It is okay when there is nothing, but when transmission begins it is difficult to stop it. Thus, I believe that we need to observe the situation and to collect a variety of information to prevent such outbreaks.

This is not too related to radiation, but as it came out in Dr. Kakizaki's lecture, wild animals can now freely move around, because areas uninhabited by people increased. So, there was a decrease in the friction between wild animals and humans, and the wild animals can reproduce freely. The wild animals are not aware of prefectural borders or borders of towns, so their territory is expanding.

Cows and pigs that have become feral have also made the issue more complex. There are parts of the problem that are being resolved, but I believe that this is going to take a while to resolve.

Lastly, I would like to make mentions of measures of animal rescue during disasters. As mentioned previously, the animal related authorities in Japan are divided into three sectors depending on the types of animals and their purposes. The government of the local authorities is also based on this division, so I think that I would have to admit that this was one of the causes that delayed the initial response.

The veterinary medical associations and the government had experiences of animal rescue during disasters other than nuclear accidents. However, they did not anticipate a nuclear accident so they had difficulties.

As Dr. Masuda discussed in the end veterinary medical associations in areas that have risks of nuclear accidents have reflected on the experiences of this accident and are considering how to respond in cases of emergencies. I believe that VMATs are based on policies similar to those of DMAT for humans. The human DMAT is in each prefecture, and in heavily populated areas each hospital has a team. These teams gather about once a year to train. In the future when there are many VMATs, they must train during ordinary times in order to respond

during actual emergencies. I am hoping that we would advance to such levels.

Regarding volunteers they were the swiftest to respond, and they made a lot of progress during the initial phase. However, the activities were fragmented, and there were problematic behaviors. Thus, it is difficult to bracket all of these rescuers as volunteers. So, currently, I believe that there are discussions going on, including this symposium. This includes how to systematize volunteers and how to address such situations in the future.

There have not been a lot of talks on the internal exposure of animals, so I would like to touch on this. For cows that have eaten grass contaminated with radioactive materials the animals have been internally exposed, because they have been living outdoors or have eaten fodder that can be easily contaminated. There are still quite a lot of cows left within the former exclusion zone, but these cows have high levels of internal exposure.

My impression is that the dogs and cats left within the exclusion zone have surprisingly not been contaminated as badly. This is probably because of what they eat compared to the cows.

During the initial phase the veterinary medical association requested Dr. Natsuhori to develop standards for contamination, and a standard was developed based on the human standards. Stakeholders decided to measure contamination from the outside of the animals and to decontaminate if they are contaminated. During the initial phase external contamination was important, and we developed standards assuming to decontaminate the external part of the body. We developed standards so that if the survey meter yields a certain level of cpm we could wash the animals.

But radioactive materials enter the body as time passes. Humans eat clean food, but this is not necessarily the case for animals. So, the radioactive materials enter the body, and because of this, dogs and cats also get slight internal exposure.

However, we need to properly grasp the situation, so we have placed a whole body counter – it sounds elaborate compared to devices used for humans – at Shelter No. 2 in Miharu. The structure of the device is actually simpler compared to those for humans, and we are using this to measure the levels.

There is very little radioactive materials inside the body that we cannot measure, and the outside of the body is not contaminated either. Most of the animals have low levels of exposure that we cannot actually measure. However, there were some animals for which we could measure the levels of exposure although the measures were low. These were animals that were recently brought from highly contaminated areas. I will later show a graph that shows the decay of the measured level in these animals.

For all animals the conclusion is that with clean feeding – that is, by feeding the animals clean water and food – the radioactive materials inside the body will be gradually eliminated from the body. So, the radioactive material is mostly radioactive cesium, but if it is not contained in the food and water the radioactive materials will continue to be eliminated from the body. I think that everybody should be aware of this fact.

This varies depending on the types of animal and the age. I am already 66 years old. If somebody were to measure my levels, I would think that the rate of elimination would be very slow. This is because my muscles are not moving as much.

In humans it has been examined extensively that younger humans eliminate radioactive materials at a faster rate, but for animals there are no data.

I want to collect such data and release it as a paper, which I am preparing now, so that people would be able to know about this.

This is just one example of cows. Multiple cows were dissected to examine this, so the data should be fairly accurate.

We have investigated up to 80 days. This is a type of muscle called the major psoas muscle which is what we call the fillet for meats. You can see that the levels are clearly decreasing.

The animal examined here was Japanese Black Cattle (Kuroge Wagyu), but the results would probably be different if the cows were kept so that they do not exercise versus if they were exercised. We have not examined this far.

We have kept the animals inside an enclosure of a certain size, and we do not have these cows exercise extensively. There have been slight differences depending on the types of muscles, and I think we have to investigate further including why these differences occur.

This shows a large muscle called the quadriceps muscles. The speed is different from other data. If you note the half-life it is not that this radioactive material takes months to decrease by 50%. For even cows, the radioactive material decreases by 50% in less than a month.

For dogs, I believe that there was a photograph in Dr. Kawamata's presentation that had a lot of plastic tanks. The device shields using water, has lead on the front and the sides of the device, and shuts out the radiation from outside. However, lead is very expensive.

To be blunt, the veterinary medical association is not too rich. We do not have a lot of money, so we cannot use thick lead on all sides to shield securely. This is not oil but water, but our idea was to shield using water in plastic tanks. So, we designed the device by lining up the tanks around it to shield the surrounding radiation so that we can measure the animal inside more accurately. So, it does not look nice, but when you open the door of the device this is what you see. I told them that plastic is better than stone blocks although air is the best. So they bought something like this and as shown in Dr. Kawamata's photograph you put in the cage in the center and close the door. It becomes dark inside, so the animals become quiet. It takes about one hour to measure, but the animals are quiet during this time.

I do not know why the animals become quiet, but it seems like the animals become calm when they are put in a small space that is dimly lit. So, the data is collected while the animals quietly stay in this area for about an hour.

We already know that this is fairly accurately reproducible from investigations. This is from the same dog. We do not dissect to get these data, because we cannot do that. The data on this graph was collected by tracking the same dog chronologically.

So when we collect data in this way, this only indicates that it was a dog, but it indicates that the half-life is about 40 days, and the cesium is eliminated at this speed. Since this was 40 days, it may have been an older dog. For cats, I think that their speed is a little faster than those for dogs. However, there are not enough data. So, we need to accumulate such data, and we are going to examine and publicize what the trends are. I believe that there are no such data worldwide.

So, there was the accident in Chernobyl, but during this accident we were able to collect data that could not be collected during Chernobyl, and we were able to develop this into a report to be submitted. We are going to continue to collect and to publicize the data so that we can leave a record of what happened.

If we can continue, I think that we can dispel the fears that radioactive materials stay there once it is inside the

body or that people will also be contaminated if they stay near animals that have been contaminated once. So, I think that if we make sure that we can no longer measure the levels – that is, check that they are no longer contaminated – before we hand the animals to new homes this would lead to adoptions where new homes would feel safe about these animals.

In any way, the speed of elimination is different depending on age and other conditions, but it would be great if you can make note that the radioactive materials go away at some point if the animals are alive. If the animals are alive the level continues to decrease.

Regarding radiation diseases of animals the topic is often talked about. There is a variety of information out in public that radiation had effects on animals in a variety of ways. I only have experiences with heavily exposed cows, and dogs and cats, so this is what I can say through my experiences. The most often mentioned symptoms of acute radiation disease are radiation burn and hair loss. I am sure that you are all familiar with these. When the level of exposure is higher you get hemorrhagic diarrhea – this is damage to the intestinal tract. At least, such cases have not been seen with cows, dogs, and cats. However, among acute disorders we do not know if there are any impacts such as the decrease in immunity due to hematopoietic disorders or the decrease in white blood cells unless we collect more data.

Actually, this is the difficult part. It is simple if the increase or decrease is specifically due to radiation. However, of course, they also vary depending on diseases or if the animal is in a poor nutritional state. So, we really need to appropriately accumulate data.

In addition, in order to examine this we should be able to create a system where we can calculate how much the animals were exposed, so we need to develop such a system to collect data similar to those on humans.

Also, animals – for example, dogs – have shorter lives compared to humans. Of course, we know that if the animals develop cancer the speed at which it develops is faster. Taking this into account there are some people who say that the animals may develop cancer at an earlier stage. So far, this still has not been seen, so this would be an issue in the future.

I think I am running a little over time. So, this is the conclusion.

Regarding the lives of animals, as I have mentioned before, I visited Ukraine last year. Immediately after the accident at Chernobyl many of the animals used for food were transported out of the zone. I think that this became a lesson for the Ministry of Agriculture, Forestry, and Fisheries, and this is why they have decided not to let any animals out of the exclusion zone and to euthanize all of them.

There are records regarding animals used for food, but there were no records of what happened to pets such as dogs and cats. So, I visited the site to interview people. I went inside Chernobyl, and people showed me the actual place. It seemed like a lot of people evacuated to Kiev, but it seemed like it was prohibited to take your dogs to Kiev, because they believed that humans would be exposed if the dogs were brought out. So, dogs were freed, and they were left in the area. A little before the accident, they were in the process of making a new town in Chernobyl. They were making a large, elaborate town with department stores and hotels, so the military personnel all stayed in these buildings. They were feeding the dogs their leftovers, and then the dogs gradually began to gather in this area.

So the dogs began to gather, but when they gathered people began to lose enthusiasm to tend to these dogs. The dogs also became feral, and people felt that this was becoming a dangerous situation. So, orders were given to

kill these dogs, so they shot all the dogs that they could. It was perhaps because such things happened that they did not leave any records. When I heard what had happened, I thought that it was a very cruel thing to do, but in Japan although it was not all of the animals some had starved to death. I don't know which is crueler – starving to death or being shot to death – and I had mixed feelings. At least, a fair amount of animals in Japan were rescued, and I felt that I had to find solace in that fact.

Lastly, I believe that it is important for animal protection organizations, professional organizations such as the veterinary medical associations, and the government to think of measures in cases of a variety of disasters, including nuclear accidents, from ordinary times. I also believe that it is very important to record and pass down the experiences from the East Japan Great Earthquake. So, I believe that it is very important that this symposium and the report are going to remain as records.

Many people and animals died from the East Japan Great Earthquake. I would like to express my heartfelt condolences for these lives lost, and would like to end my lecture here.

Thank you.

The Situation of and Support for Disaster Affected Pets in Iwate and Fukushima Prefectures: Results from a Survey of Disaster Affected Pet Owners

Sakiko Yamazaki (Humane Society International)

I am Sakiko Yamazaki, the Japan Specialist Consultant of Humane Society International. My presentation will not have any images and photographs with impact and will be nothing fancy. I will be reporting the results of a survey. This was a survey on the situation of pet-keeping and support administered on disaster impacted pet owners in Iwate and Fukushima Prefectures. As a consultant of HSI, I was responsible for the administration of the survey, but HSI headquarters funded this project.

So, here is the introduction. As you all know, with the East Japan Great Earthquake that struck on March 11th, 2011, many pets and their owners were heavily impacted just as other humans were. There are no detailed records regarding the numbers of animals that were impacted, so the best we can do is to make estimates. However, for dogs, the registration system for dogs serves as an index, so we are able to make some estimates on how many were impacted.

These are the numbers of dogs registered in the end of fiscal year 2009 – in March 2010 – in Iwate and Fukushima Prefectures. In Iwate, 81,022 dogs were registered versus the media coverage which reported that approximately 4,000 dogs were victimized from the estimation made by registration numbers, death registrations, and the issuance of vaccination certificates. In Fukushima, records say that there were 118,072 dogs registered during the end of fiscal year 2009 versus the media coverage at that time that reported that there were approximately 5,800 dogs registered within the exclusion zone prior to the disaster. Thus, just looking at dogs, there were almost 10,000 of them that were impacted by the disaster in Iwate and Fukushima together.

In addition to this, of course, cats, small animals, and other types of pets were also impacted by the disaster. In reality, there are not many records left of such pets, and we must rely on estimates to grasp the numbers of animals impacted. I was wondering, for example, how many cats may have been impacted by the disaster, and I attempted to make an estimate. The National Police Agency has kept a tabulation of residential buildings damaged by the disaster. According to this, initially, there were approximately 400,000 residential buildings that were damaged by the disaster. And the pet-keeping survey of Japan Pet Food Association for fiscal year 2010 says that the national average for cat ownership rate is approximately 10% in fiscal year 2010. When using these figures and estimating under the premise that the cat ownership rates do not differ greatly depending on the prefectures, there would be approximately 40,000 cats throughout Japan that were impacted by the disaster. The actual numbers probably exceed this estimate, and when pets such as reptiles, amphibians, and small animals are added to this sum, one can presume that there were a considerable number of companion animals that were impacted by the disaster. The number of cats that I just mentioned is an estimate that I personally made. It is a very rough estimate, and it is nothing official, but I made mentions, because I wanted to make a rough estimate on the magnitude of the numbers that we are talking about.

In this way, many animals were impacted by the disaster, but of course, the disaster stricken pets and their owners would need support just as they need support for other aspects of daily living. For example, if the

owners and their pets were parted by the tsunami or if the owners could not evacuate with their pets from the nuclear accident, then the owners would need to rely on search & rescue of animals. If residential buildings are damaged to the extent that one cannot live in them or if pet owners had to evacuate from the nuclear accident and could not live with their pets, then pet owners would need to look for places to board their pets. For owners who have lost their assets because of the disaster it is a great burden to pay for expenses for services to keep up the quality of life of their pets, such as veterinary care and other materials such as pet food and supplies. Even if pet owners are not directly impacted by the disaster the economy in disaster impacted communities tend to slow down. In such cases, providing aid supplies or offering financial support, such as subsidies for veterinary care, may be necessary.

These types of support have been offered during past disasters and during this disaster as well by different organizations and agencies. However, the support provided is not necessarily systematic. In addition, the support is provided in a patch-work manner, and it is difficult to grasp how they are provided, what types of support are utilized by disaster impacted pet owners, and the demand of the support. But I believe that it is very important to examine and grasp the situation of the utilization of and needs for support of impacted pet owners, because if we know the situation of the utilization of and needs for support we can apply such knowledge to future emergencies and disasters. If we know what types of support are utilized by impacted pet owners and what the needs of these pet owners are we would have an idea on the situation in which these owners are placed and what they would be needing in future disasters. And this would be a great clue as to what types of support should be provided during cases of emergencies.

So, the survey was administered with such background.

This is going to take some time, but I would like to explain the purpose of the survey before we go onto the results. As shown on the slides there were five main purposes in administering the survey.

The first purpose was to grasp the overall situation of pets and their owners. For example, the types of pets, where the pets are kept, spaying/neutering for dogs and cats, and registrations and vaccinations for dogs were included.

Another purpose of the survey was to explicate how owners prepared for disasters. The survey was administered to investigate how much owners were prepared and in what ways they prepared. So, the survey looked at what kinds of preparation owners engaged in as well as what kinds of preparations were useful. In addition, the examination of associations between preparation for disaster and use of/needs for support was also included.

The third purpose was to explicate the situation of support for impacted pets and their owners. This included the three points on the slide – what types of support were used, what types of support were useful, and what the association between the use of and needs for support was.

The fourth purpose was to examine the needs for support immediately after the disaster and during the current phase. Of course, it was hypothesized that there would be differences in needs for support depending on the timing – immediately after the disaster and during the current phase. Thus, the survey was designed so that it could capture the changes in the needs as time passes – during the initial phase immediately after the disaster and the current phase. The three points here were included in the examination of the situation on needs for support. First, what types of support are/were needed, second, what are the differences between the needs for support during the initial and current phases, and third, what factors hinder the use of support.

Lastly, the fifth purpose of the survey was to examine the association between preparation for disaster, evacuation with pets, and the use of/needs for support, and attachment to pets. The behaviors of owners and pet attachment have already been addressed in empirical studies conducted outside of Japan. However, there are no data in Japan, and it has been pointed out that there are cultural difference in ways we relate to animals in past human-animal interaction studies, so this survey may serve as a preliminary investigation in Japan regarding this topic.

Now I would like to explain the procedures taken to administer the survey. The survey was administered on disaster impacted owners in Iwate and Fukushima Prefectures. How severely these owners were impacted was not taken into account.

These are the procedures. Basically, the survey was a self-administered survey. In Iwate Prefecture with the full cooperation of Save Animals in Iwate, the organization that presented yesterday, a collective survey was administered in these two scenes – during events hosted by SAI and to clients who applied to subsidies provided by SAI since they are an organization that provide subsidies for veterinary care as explained yesterday by Dr. Yoetsu Tada. In Fukushima Prefecture the actual administration of the survey was outsourced to CHEERS, Co. Ltd., represented by Mrs. Misako Oho, who is here with us today. The survey in Fukushima was a door-to-door survey in temporary housing communities. To summarize, the door-to-door surveys were administered by posting the surveys at houses of the respondents, having them self-administered, and having the staff visit door-to-door and collecting the surveys that were filled in. When the survey was filled in incorrectly, the staff would re-visit and ask the respondents to fill out the surveys again. Lastly, the surveys were administered from June 2012 to May 2013, unfortunately a little after the onset of the disaster.

I apologize for the long explanation, but I would like to explain the items included in the survey so that you can gain a deeper understanding of the results.

The survey used was the “Survey on Pets and Disasters,” a survey that was developed for this project. It included the following items.

First, items regarding general pet-keeping situations were included, such as the types of pets, where the pets are kept, spaying/neutering for dogs and cats, and registration and vaccination for dogs.

And it also included a set of items to measure pet attachment as I mentioned previously. There are many different scales that measure pet attachment. For practical reasons, an 8-item scale used by Sugita was used for this survey. The higher the score the stronger the attachment, and the maximum score was 32 points.

Other than this, the survey included an item on evacuation with pets. For the surveys in both Iwate and Fukushima an item regarding evacuation with pets from the earthquake/tsunami was included, and for Fukushima an item regarding evacuation with pets from the nuclear accident was also included.

Also, the survey included items regarding preparation for disasters. Eight items were extracted from materials such as brochures for pet owner education. For all items, respondents were also asked to rate the usefulness of the preparation. This was rated on a scale from one to four with a score of four being the most useful. In addition to this, one point was allotted to each of the eight items if the respondents actually engaged in that type of preparation and a scale serving as an index for disaster preparedness was created. I called this the disaster preparedness scale.

In addition, the survey included items on support used or being used after the disaster. Seven items were

extracted from records of past disasters. Similar to the items on preparation for disasters, respondents were asked to rate the usefulness of the support they used. The maximum score was four, and this signifies that the support was most useful. And similarly, one point was allotted to each item to develop an index to measure how much support was used, and I called this the scale for the utilization of support.

Lastly, the survey included items on needs for support. There were 14 items, and the items asked for support that respondents requested/request but could not/cannot use. And respondents were also asked to choose the reason why they could not/cannot use the support if they could not/cannot. The items asked, “Were there any types of support that you wanted to use but could not use?” Thus, strictly speaking, the survey gathered data on unmet needs, but for this presentation the data will be reported as needs. For the needs the items that pet owners could not use were allotted one point, and a scale of needs for support was developed. The maximum score for this scale was 14 points, and higher scores indicate more needs.

The scales that I have been mentioning serve as indices for each variable, and at the same time, they were used for analyses when examining the associations between different variables. For example, when examining the association between pet attachment and disaster preparedness, the disaster preparedness scale was used for the analysis.

I apologize that the explanation took a while, but now I will move onto the results. These are the results for demographic information of the respondents. There were a total of 289 valid responses for Iwate and Fukushima together. 65.4% were females, 21.5% were in their 40’s, and 59.9% were in their 50’s or over. Unfortunately, there were significant differences between Iwate and Fukushima in terms of the gender and age ratios. In both Iwate and Fukushima, the majority of the respondents were females, but in Iwate there were more female respondents compared with Fukushima, and over 70% were females. Regarding the age groups, both Iwate and Fukushima had many respondents who were in their 40’s and 50’s or over; however, Iwate had more respondents who were younger, and respondents were distributed more evenly across age groups compared with Fukushima.

The collection rate of the entire survey was 73.2%. The valid-response rate for the entire survey was approximately 70%, so the numbers were pretty good. However, the collection rate was significantly different between Iwate and Fukushima. This was a flaw in the design of the survey – that is, in Fukushima the collection was more thorough, because it was a door-to-door survey where the staff visited the houses of the respondents. For this reason, the collection rate was high. In contrast, in Iwate a conventional collective survey was administered where surveys were simply distributed, so the collection rate was not as good. So, the difference in procedures is probably a large factor creating the difference. However, generally surveys are valid when the collection rate is over 50%, so the current survey has good enough rates.

These are the results related to general pet-keeping situations. As for the types of pets, the ownership rate for cats and dogs were high. 66% of all respondents, 51% of respondents in Fukushima, and 81% in Iwate kept dogs. The second most popular type of pets was cats. One third of all respondents, approximately 40% of respondents in Fukushima, and 27% of respondents in Iwate kept cats. There were respondents who kept small animals, birds, reptiles, amphibians, and fish, but ownership rates for pets other than dogs and cats were low.

Regarding the places where pets were kept, more than half of the respondents kept their pets indoors. 68% of all respondents, approximately 50% of respondents in Fukushima, and over 80% of respondents in Iwate kept

their pets indoors. Only those who actually lived with their pets at the time of the administration of the survey responded to the item regarding places where pets were kept.

These are the results related to spaying/neutering of pets. Only dog and cat owners responded to this. Generally, there were approximately 40% to 50% of respondents who responded that all of their dogs/cats were not spayed/neutered. 46% of all respondents, approximately 40% of respondents in Fukushima, and 50% of respondents in Iwate responded that all of their animals were not spayed/neutered.

Lastly, this is the result of registration of dog owners. Most dog-owning respondents have registered their dogs. Over 80% of dog owners responded that they have registered all of their dogs. And the rate of issuance of vaccination certificates was also high, and 80% to 90% of the dog-owning respondents responded that they had vaccination certificates issued for all of the dogs they own.

The results from here are directly related to disasters. The graph shown here is the rate of evacuation with pets from the earthquake and the tsunami for all respondents, and those in Iwate and Fukushima separately. In addition, this graph is the rate of evacuation with pets from the nuclear accident for respondents in Fukushima. The dark blue represents Iwate, the medium tone represents Fukushima, and the light blue represents all of the respondents. In Iwate, there were quite a few respondents who responded that they were able to evacuate with their pets, and over 60% responded that they were able to evacuate with all of their pets. On the other hand, in Fukushima, there were less than 20% of respondents who responded that they were able to evacuate with all of their pets from both the earthquake/tsunami and the nuclear accident. Overall, there were approximately 40% who responded that they were able to evacuate with all of their pets. This figure was cited yesterday as well, but according to the materials from the Ministry of the Environment, it is reported that in Fukushima approximately 300 pets were initially able to evacuate with their owners to evacuation centers. So, even if all of these 300 pets were dogs, if the estimate of dog numbers mentioned in the beginning of the presentation is used to calculate, approximately 5% were able to evacuate with their pets. The 300 pets were probably not all dogs, so the percentage of pets that were able to evacuate with their owners would probably be lower – probably about a few percent. This survey may have been biased, because owners who were cooperative may have been those who have higher levels of awareness. But even so, looking at the results my impressions are that there are more pet owners who were actually able to evacuate with their pets compared to the numbers that were reported and that perhaps there were about 10% who were actually successful.

Among the items on preparation for disaster there was an item that asked whether owners had ever participated in evacuation drills. So, I examined whether participation at evacuation drills and the success of evacuating with pets had any associations. This table summarizes the results. As the chart says, approximately 70% of those who participated in evacuation drills responded that they were able to evacuate with their pets. On the other hand, only one third of those who did not participate in evacuation drills were able to evacuate with all of their pets. So there was a difference between these two groups.

So, these are more results for preparation for disasters. This slide outlines the types of preparation that owners engaged in and shows the results of each type of preparation on a graph. As with the previous graph, the dark blue represents Iwate, the medium tone represents Fukushima, and the light blue represents all of the respondents. Generally, results show that there were many people who stocked extra supplies, such as extra pet food and extra supplies for their pets. Other than that, the graph shows that generally other types of preparation

such as putting IDs on pets, preparing photographs for pets in case they get lost, preparing health records for pets, socializing/obedience training pets, securing places to temporarily board pets, and participating in evacuation drills were not very common. As seen on the graph, for all types of preparation, there were higher percentages of respondents who prepared in Iwate compared to those in Fukushima. The differences were all statistically significant.

This graph shows what types of preparation were most useful. The graph shows the mean scores for the rated usefulness of each type of preparation. As mentioned in the explanation of procedures, the maximum score of the rating was four points, and four points means that the preparation was most useful. As a general trend, it seems like the most useful types of preparation were socialization/obedience training of pets, securing places to board pets temporarily, and although there were very few respondents who did this, participation at evacuation drills. Respondents in Iwate were more likely to rate the helpfulness of all types of preparation higher than those in Fukushima as shown by the graph. The differences between Iwate and Fukushima were significant for all types of preparation except for preparation of photographs, socialization/obedience training, and participation at evacuation drills.

This is the last part that is related to preparation for disasters. This is the result on whether preparations and use of and needs for support were associated. First, before the analysis, these are the results of the disaster preparedness scale which serves as an index on how prepared the respondents were. The scores ranged from zero to eight, and the mean score for all of the respondents were 2.32, and for this survey, there was a significant difference between Iwate and Fukushima. The mean score for Iwate was 3.06, and the mean score for Fukushima was 1.62. The results reflect those on the graph – that is, there was a difference between Iwate and Fukushima on the percentage of respondents who engaged in each type of preparation. The result of the actual association is as shown here. The disaster preparedness scale and the scale for the utilization of support were positively correlated. This means that respondents who were more prepared used more support. There were no associations between the disaster preparedness scale and the scale for the needs for support.

These are the results on the use of support. The data shown here is on what types of support were used by the respondents. The graph actually shows what types of support were used by what percentage of the respondents. As a general trend, it seems like there were many respondents who used types of support related to provision of supplies, and in Iwate many used support related to veterinary care. As I mentioned when I explained the procedures in Iwate the respondents were recruited with the cooperation of an organization that provides subsidies for veterinary care, and chances are high that there is a selection bias – that is, many people who use this type of support may have been recruited for the survey. So, the possibilities of such selection bias should be taken into consideration. Also, as a general trend the graph shows that a higher percentage of people used each type of support in Iwate compared to Fukushima, but the percentage of people who used temporary boarding of pets and search and rescue of pets is higher in Fukushima than in Iwate. Statistical analysis was conducted for the differences between Iwate and Fukushima, and the differences were significant between all types of support except for temporary boarding. Thus, one characteristic of this result is that temporary boarding of pets was used without difference between these localities.

This is a graph showing what types of support was actually useful. As with the preparation for disaster the respondents were asked to rate the usefulness, so this shows the mean scores of usefulness for each type of

support. As you can see, all of the types of support have high mean scores; the maximum score was four points. So, for the types of support that were actually utilized, it can be said that respondents were satisfied.

And, this is the results of the analysis to examine the association between the use of and the needs for support. First, this is the scale for the utilization of support, the index for how much support was used, which was used for the analysis. For all respondents, the mean score was 1.64, and there was a significant difference between Iwate and Fukushima. This result reflects the previous results shown on the graph in which a higher percentage of respondents in Iwate used each type of support. This is the actual association between the use of and needs for support. The scale for the utilization of support and the scale for the needs for support were positively correlated. So, this means that respondents who used more support had more needs for support.

Now, I would like to go onto explaining the results on the needs for support. First, what were the needs during the initial phase and what are the needs currently – I would like to look at the differences between the needs during the initial and the current phases. This graph here is the data for all respondents put together, and it compares the needs during the initial and current phases. The dark blue represents the phase immediately after the disaster, and the light blue represents the current phase. During the initial phase immediately after the disaster, for most types of support there were approximately 30-40% of the respondents who needed the support. During the current phase, this decreased to approximately 20-30% as seen in the graph. Generally, the needs during the initial phase are higher compared with the needs during the current phase for all types of support. Also, during the initial phase needs for support related to the provision of relief supplies, such as the provision of pet food and other supplies, were high.

This is the graph of the reasons for why respondents could not/cannot use the support that they wanted/want to use, that is, the factors that hindered the use of support. Such reasons were collected for each type of support, so this is just one example of the reasons given for not being able to use the support, the provision of pet food. The majority of the people gave the reason, the support that they wanted to use was not provided. There were only 10% of respondents giving other reasons. The distribution was like this for all of the types of support. I would like to point out that these reasons are given by the respondents themselves, so the reason that the support was not given was the outlook of the respondents, and it does not mean that the support in question was truly not provided. There were approximately 5% of the respondents who wrote in the margins of the survey sheets that there was no information regarding the support or that they did not know. So, among the respondents who responded that the support was not provided there may have been people who simply did not know that the support was provided and responded thinking that they were not provided.

This is the needs for support for just the respondents in Iwate. During the initial phase for all types of support the level of needs was approximately 30-40%. During the current phase it was a little less than 20% to 30% for all types of support. As with the previous graph needs were higher during the initial phase. Also, there were higher needs during the initial phase for relief supplies. Regarding the reason why respondents could not/cannot use the support that they wanted/want to use the reason, the support was not provided, was the most often given reason, and for all types of support there were approximately 50-60% who gave this reason. The support, provision of pet food, is shown here as an example. Less than 10% of the respondents gave reasons other than this.

Similarly, this is the result for Fukushima. This is a graph that shows the needs for support. During the initial

phases for all types of support the level of needs was approximately 30-40%. During the current phase the level of needs was approximately 20-30%. This graph also shows the tendencies shown in the graphs for the results of all respondents and those for Iwate – for all types of support, the needs are higher during the initial phase. However, the differences between the initial and current phases are not as stark as the difference seen in the results for all respondents and those in Fukushima. Only the differences in provision of pet food and temporary boarding were statistically significant. The factors that hindered the use of support – that is, the reason for not being able to use the support that they needed – also reveals tendencies similar to the graphs for all respondents and those for Iwate. The majority of the respondents responded that the support they wanted to use was not provided, and for other reasons, there were only this many percentage of respondents who gave other reasons. This tendency was present for all types of support.

This is the last part of the results related to needs for support. These are the results related to the scale for the needs for support. The scores ranged from 0 to 14 points, and the mean score for all respondents was 4.20. There was no significant difference between Iwate and Fukushima for the mean scores.

This is the last part of the results. This is the association between pet attachment and other variables. So, this result shows whether preparation for disasters, use of and needs for support, and evacuation with pets, were associated with pet attachment.

First, this is the result related to the pet attachment scores. The mean score was 27.8; the maximum score was 32, so the scores were pretty high. Unfortunately, for this survey there was a significant difference between the mean scores in Iwate and Fukushima. For some reason, the respondents in Iwate had higher pet attachment scores for this survey.

So, this table shows the association between preparation for disasters, use of and needs for support, and evacuation with pets, and pet attachment. When looking at the general picture you can see that pet attachment was related to evacuation with pets, preparation for disaster, and needs for support. So, the results imply that people who are more attached to pets were more likely to be able to evacuate with their pets, more prepared for the disaster, and had more needs for pet-related support after the disaster. However, when looking at the results in detail by different areas – Iwate and Fukushima – you can see that only the disaster preparedness scale was correlated with pet attachment for both areas. So, pet attachment was only related to how prepared pet owners were for disasters.

This is all for the results, and now I would like to go onto discussing what the results may imply. First, this is the discussion regarding evacuation with pets. In this survey, over 60% of the respondents in Iwate were able to evacuate with pets, and less than 20% of respondents in Fukushima were able to evacuate with their pets, both from the earthquake/tsunami and the nuclear accident. In all, only 40% were able to evacuate with their pets. This seems like a very low rate, but I believe that as a percentage, it is not too bad. My impression is that the success rate of evacuation with pets has steadily increased from past disasters. However, as an absolute number 40% is definitely not enough, so the results suggest that continued pet owner education is needed on this matter. I would like to note that the actual behavior of evacuating with pets and the awareness or the desire to evacuate with pets may be something quite different. Regarding evacuation behaviors, there have been surveys of pet owners administered in places other than Japan. For example, a large-scale survey of pet owners administered in Latin America reports that 74% of the surveyed pet owners responded that they wanted to take their pets with

them if they had to evacuate. However, when asking those who had actually experienced a disaster among these surveyed pet owners, there were less than 20% of them who were actually able to evacuate with their pets.

In Dr. Masuda's presentation yesterday, I recall that similar results were reported with pet owners who have participated in disaster drills. Wanting to evacuate with pets and having that awareness is something different from the actual behavior, and it is difficult to actually evacuate with pets unless there is a system where owners are able to take their pets with them. The current survey asks if the respondents were actually able to evacuate with their pets – that is, it asks whether that action was taken – so although we would definitely like the rates to be higher, the results do not look too bad.

Regarding evacuation with pets, respondents who had participated in evacuation drills were more likely to have successfully evacuated with their pets. Such result suggests that perhaps, evacuation drills may help with promoting evacuation with pets. The results become a clue – that is, perhaps, promoting the implementation of evacuation drills so that people know what to do in cases of emergencies may lead to people actually evacuating with pets.

This is the discussion for preparation for disasters. First, the results of the survey indicated that the most often used preparation was related to preparing extra supplies, and generally there were less than 50% of respondents who engaged in other types of preparation. And in general, respondents in Iwate were more prepared compared to those in Fukushima. As a whole, of course, these results suggest that more pet owner education is necessary. Regarding the result that respondents in Iwate were more prepared since the respondents were recruited with the cooperation of an organization that provides support there may be a selection bias that pet owners with more awareness were recruited. In addition to this, I have heard that the Sanriku area is an area where lots of tsunamis have struck in the past and that the awareness on disaster preparedness is relatively high. Thus, because the awareness on disaster preparedness is high, this may also have been reflected in pet-related disaster prevention measures although this is just one possibility.

Regarding the usefulness of the different types of preparation the most highly rated among all respondents were socialization/obedience training of pets, temporary boarding of pets, and participation at evacuation drills. Generally, the theory would be to emphasize the types of preparation that were most useful in owner education. However, because in this study respondents in Iwate rated the various preparations for disaster as more useful compared to those in Fukushima perhaps the results also imply that traditional types of preparation for disaster may not be as useful during unprecedented disasters, such as nuclear accidents, where there are no sufficient manuals for measures. But, I would like to mention again that the difference between Iwate and Fukushima Prefectures may be biased, so this is only one interpretation of the result.

Lastly, respondents who were more prepared were likely to use more support. For this survey, only the correlation between preparation and the use of support was examined, so we can't tell the causal association or the underlying factors of the association with just these results. Perhaps, as a possible explanation, those who are sensitive to the needs of their pets would prepare more thoroughly and would also proactively look for support should something happen. However, this is just a personal interpretation and not something that can be derived from the result.

This is the discussion for the use of support. The results of this survey indicated that generally, less than 50% of respondents used each type of support. This suggests that there were not so many people who actually used

these supports. For this survey, in Iwate provision of supplies and veterinary care had high utilization rates, and in Fukushima temporary boarding of pets and search and rescue of pets had high utilization rates. It makes sense that different types of support have high utilization rates in different areas. In Iwate, for example, I believe that there may have been possibilities of supplies and assets being swept away by the tsunami. In such cases, material support such as provision of pet food and supplies or in financial hardships, expensive services such as subsidization of veterinary care may have higher demands. And these may be the support that pet owners actually have used.

For Fukushima, because of the designation of the evacuation zone there were many people who had to evacuate for a long period of time, and there were many people who could not evacuate with their pets, so the aforementioned support may have been used more often. However, as I repeat, the respondents in Iwate were recruited with the cooperation of an organization that provides subsidies for veterinary care, so naturally there may have been more respondents who have used support related to veterinary care. Thus, there is a high possibility that the results are biased, so I wanted to mention that again.

Also, generally, Iwate had higher rates of utilization of support. Perhaps, in Iwate the needs for support and the supply may have been better matched leading to a higher rate of utilization for support, but please keep in mind the bias that I have repeatedly mentioned.

The rated usefulness of the different types of support were generally very high, and such results suggest that from the perspective of the users of the support the support provided was all in all helpful.

Lastly, regarding the association between the use of and needs for support results show that respondents who used more support had more needs for support. The contributing factor and the causal association were not analyzed, but one interpretation may be that people who used more support may have had higher perceived needs – that is, people who believe that they have more needs would use more support and demand more support. This is just one way of looking at it.

This is the discussion related to needs for support. The results of this survey indicate that the needs for support during the initial phase immediately after the disaster was higher compared to the needs during the current phase. There were high needs especially for support related to the provision of supplies, so we may need to consider strategies to distribute such supplies immediately after the disaster without delay.

In addition, in Iwate needs for the provision of supplies were high during the initial phase, and the needs for all types of support decreased significantly from the initial phase to the current phase. In Fukushima there were similar tendencies, but one difference is that the types of support in which the needs decreased from the initial to the current phase were only the provision of pet food and temporary boarding of pets. Another characteristic that distinguishes Fukushima from Iwate is that the needs for the search and rescue of pets were high. As I mentioned previously, in Iwate people lost many things, because things were swept away by the tsunami, so the needs for provision of materials or supplies may have been high during the initial phase. In Iwate, the communities are well on its way to recovery, and there are some residents who have their lives relatively sorted out. Thus, my interpretation is that for this reason the needs have decreased significantly from the initial to the current phase.

On the other hand, in Fukushima needs for only these types of support decreased largely from the initial phase to the current phase. One way to interpret is that many pet owners still have difficulties and thus still have

higher needs for support. It is no surprise that there are such differences between different areas, because the situation of the disaster is different. The results also suggest that the level of needs among different types of support may also vary depending on the area.

Regarding the reasons for not using needs that respondents wanted/want to use for all phases and areas the reason given most often was that the support was/is not provided. The fact that many respondents responded that the support was not provided may mean that of course more support should be provided. As mentioned previously, among those who responded that the support was not provided there may have been respondents who simply thought that the support was not provided despite that fact that they actually were, because they did not have any information on them. This is a shortcoming of the design of the survey, and the survey sheet should be redeveloped to take tabs of how many respondents did not have any information on the provision of support. But taking this possibility into consideration there may be a need for appropriate outreach to people who need the support or even if outreach is not implemented we may need to strategically provide information regarding what kinds of support are provided.

This is the discussion on the results related to pet attachment. First, the results of the survey indicate that for Iwate, Fukushima, and all respondents, those with higher attachment scores were more prepared for disasters. Again, the causal associations and the contributing factors have not been indicated through this analysis, but one way of looking at the results is that people who are attached and treasure their pets are more prepared just in case. This is just an interpretation, so we do not truly know the background behind the association, and in the future, the causal associations and the contributing factors need to be considered. As a tendency seen in Iwate, Fukushima, and for all respondents, those who were more attached used more support, had higher needs, and were more successful in evacuation with pets. However, these tendencies varied between the areas, and for this survey all of the tendencies were not necessarily significant throughout the two areas.

In reality, when looking at past studies of disasters results somewhat vary. For example a study conducted abroad looks at pet attachment and evacuation behaviors and reports that the success of the evacuation of households with pets was not associated with pet attachment. On the other hand, similar to the results of this study there has been a report that owners with lower pet attachment scores were more likely to fail evacuating with their pets. So, the results on association between various evacuation behaviors and pet attachment vary depending on the study.

In reality, when looking at cases of various disasters throughout the world the behaviors and the situations of pet owners during disasters are not only decided by the aspects of human-animal bond such as pet attachment. For example, there may be many other factors. Even if the owners have the awareness and really want to evacuate with their pets the policies of the government, the availability of resources after evacuation, and the amount of support that they can get may affect the owner's decision, and owners may not be able to take their pets with them even if they want to. So, the data perhaps may have indicated that the behaviors of pet owners during emergencies may not necessarily be decided just by the magnitude of the human-animal bond

One limitation is that for this survey only correlations between two variables were analyzed. How multiple variables intertwine with each other and are associated has not been analyzed, and only bivariate analysis was conducted. In the future if the associations of multiple variables are examined and if multivariate analysis is conducted, the association between pet attachment and behaviors during disasters in Japan may become clearer.

Lastly, to summarize the results, obviously, the points listed here are the points indicated by the results of this survey. First, regarding preparations for disaster and evacuation with pets, the rate of implementation is still low, and there is still room for improvement. Regarding the use of support, the data of this survey indicated that the rate of utilization was less than 50%. Also, the rate of utilization and the types of support used seemed to depend largely on the situation. The needs for support also differed depending on the situation. Furthermore, the level of needs and the types of support needed were also different between the initial phase immediately after the disaster and the current phase.

Regarding pet attachment, possibilities that this is associated with a variety of behaviors during disasters were suggested. However, at the same time, there were discrepancies between the results implying that it is not only pet attachment that influences such behaviors. For the results of this survey, the only variable consistently correlated with pet attachment throughout the two areas was preparation for disaster. Thus, it can be said that pet attachment was correlated with the disaster preparedness scale and that people who are more attached to pets were more prepared.

Lastly, this is the implications of the results. Before I end, I would like to touch on how the results may be applied and the future challenges. First, when looking at the results, there were differences in the use of and the needs for support depending on the situation and the area. So, pet owner education during ordinary times regarding preparation and evacuation with pets must cater to disasters and emergencies that may strike that particular area. In addition, I would like to propose that the system for support should a disaster strike should be matching the local community and the disaster that the particular community may be prone to, and such support should be provided strategically.

So, the strategization of the provision of support is necessary. Needs for support was also different between the initial phase immediately after the disaster and the current phase, so in providing support such situations also need to be considered.

And I also believe that the results suggested that outreach to those who have the needs is necessary. For this survey, results indicated that all types of support had needs ranging from approximately 30% to 40% but the rate of utilization of support was less than 50%, and it can be said that such results show that the support was not delivered appropriately to those in need. So, in the future we need to establish a system that matches those in need with appropriate support.

Also, as mentioned with the results related to the needs even if the support is being provided there may have been a lot of people who thought that there was no support provided. So, for this, we need proper outreach – that is, the providers should go out and scoop up those who have needs in order to provide support – so that those in need can use the existing support efficiently. But at the same time I believe that pet owners also have to bear some responsibilities. I believe that pet owners should know where support would be provided in case of emergencies and where such information may be available. So, there needs to be pet owner education from ordinary times on where they can collect this type of information.

Finally, I would like to extend my appreciation to Save Animals in Iwate and CHEERS Co. Ltd. who have cooperated with the administration of the survey. And I would also like to thank the respondents who have participated.

I am praying so that the disaster affected owners and their pets would be able to restore peace in their lives soon.

It is a bit early, but I would like to end my presentation here. Thank you very much for your attention.

What is Animal Welfare?

Securing Animal Welfare during Times of Emergencies and Disasters

Chizuko Yamaguchi (Japan Animal Welfare Society)

Hello everybody. I am Yamaguchi from the Japan Animal Welfare Society.

I've been working for the Japan Animal Welfare Society for over 30 years now which just reveals how old I am.

Today, I would like to talk about ensuring the welfare of the animals in times of disasters and emergencies.

In times of disasters and emergencies, people lose their homes, their loved ones, food is scarce, and both humans and animals are forced into a very tough situation.

I would like to talk about how, in that situation, to ensure the welfare of the animals, whether they are rescued or they are evacuating with their owners.

Many people have shown slides of the disaster stricken area since yesterday, so I'm going to recall them and talk about them while pointing out some cases that were very well thought out.

What we went through this time was a terrible disaster which was caused not only by the earthquake, but also by fire, tsunami, and even radiation.

I think it was 1986, when the volcanic eruption occurred at Oshima Island, that's when I started getting involved with what I am into now, but back then, no one was able to imagine a disaster so huge could ever happen.

Before 3.11, disaster areas remained within one or two prefectures, or maybe one prefecture was heavily hit and the surrounding prefectures were damaged in a minor way. After all, Oshima Island and Miyakejima Island are both parts of Tokyo Metropolis, so it only counts as one prefecture. However, the damage with 3.11 was so huge which extended among many prefectures, so I would say that the situation caused panic even to people who had experienced the disasters in the past.

I think all of you have seen enough of this picture since yesterday. At the places that were hit heavily by the tsunami it is a fact that there was no time to evacuate with pets. In many cases, people died, and the animals died as well.

At Miyako City, I've heard of many cases where the animals were concerned as a member of the family, and this owner put the cat in its cage so they could evacuate together, and barely escaped from waves chasing them...this was the case in which both human and animal were saved. But in another case, the owner went back to his house to get the cat, believing it was safe now since the tsunami had drawn back twice, but the next tsunami came...he wasn't able to make it.

I have heard that there were situations where evacuation with pets was just not possible.

As for Fukushima Prefecture, it was hit by the earthquake and the tsunami, and the biggest pain in the neck was the radiation which is still causing damage to the area. The government set this 20-kilometer zone and did not let anyone in. Owners were not allowed to go and get their own animals from that area, and that is what put the human-animal-bond and the welfare of animals into a really tough situation.

Either way, humans need to evacuate. So, each municipality assigned evacuation shelters and many owners evacuated with their animals, because they are considered as a part of the family. At some evacuation shelters, which used to be a school, classrooms were divided into animal-allowed classrooms and animal-non-allowed

classrooms. When we consider the welfare of the animals, there is no doubt that the animals should be allowed to evacuate with their owners and should be allowed to be with their owners at all times, but the situation varied depending on the decision of the school principle.

There were also cases where people took their animals and tied them outside the evacuation shelters. Things didn't work out exactly the same way as it did with the previous case, and letting the animals sleep in the same room with the owners wasn't allowed. But still, people did whatever was possible, whatever worked. When food for people is scarce, situation is even harder for the animals. In Sendai City, a man who worked as the head of the animal rescue center delivered pet food stocks they had to various evacuation shelters.

So, many people did take their animals to the evacuation shelter with them, and many of them were provided with pet foods and pet sheets out from the stock. However, as Ms. Kawasaki told us yesterday, showing us the slide, various rescue groups were formed and started taking actions. Many people felt the need to go in and help the animals. Amongst those rescue groups, there were groups that almost tried to take the animals away from the owners, even though it was against the owners' wills. The owners are doing their best at taking care of their animals, taking them for walks, and they are so bonded to each other, but those rescue people were so focused on saving the animals, they said it's just awful that the animals are tied outside therefore they are taking them to their places.

Animals were taken good care of by the kids at that evacuation shelter. Kids went to see the animals often and played with them and took them for walks. People at that shelter said "we are taking very good care of the animals, so don't take them away from us." That's what it was all about with the kids' handwriting which read "Do not untie their leashes. Please don't take them away to a different place."

So, in many cases at the evacuation shelters animals were allowed there but not in the sleeping areas. Animals were only allowed to be tied outside the building. However, there were many owners who wished to cuddle with their animals when they went to sleep, or stay within the same area, and that's how people started living in the vehicles. This was one of the biggest evacuation shelters in Fukushima Prefecture where many people tried to live in the car so they can be with their animals. However, it's not always easy for a person to really stretch out when you try sleeping inside a vehicle. It's good if you're lucky enough to have a camping car or a big van, but when you curl yourself up really tight and try sleeping in a small vehicle with an animal, the outcome can be lethal. A woman lost her life from Economy Class Syndrome after the Niigata Earthquake.

The news didn't spread, but I've heard there was a person who got sick after 3.11, from living inside a vehicle. So, it can be quite harmful living inside a small vehicle, and there also is a possibility of getting a heatstroke as well. It can be quite warm inside the car in May. When it comes to animal welfare, we always say that animals do get stressed when they're confined in a cage for too long, but these are emergency cases we're talking here.

Therefore, we recommend this place to the owners where the animals are confined in cages, for the time being, but the owner can take care of the animals on their own. But still, there are many owners who choose to live inside a vehicle so they can sleep with their animals.

This is another shelter in Fukushima Prefecture. They remodeled where it used to be a bicycle parking space located alongside the evacuation shelter. They put air conditioners in so it's a little more comfortable, and I think it shows how people, little by little, started to give some thoughts to the animals as time passed.

In this one you can see some creativity, where they put cages on top of each other. Considering the fact that cats

prefer to be on upper levels or to hide somewhere if allowed, it could be stressful for them that they have to be crouching inside a cage on the floor. So, people did their best in making the place less stressful for even just a bit and even if it's just a temporary shelter.

Speaking of a hiding place, when the blanket on the very top is pulled down, it then seemed to give the cats some security. From the cats' point of view, when you can't see from the inside, it means you're not being seen from the outside either.

Many of the evacuees were from Fukushima Prefecture, and some evacuated to Niigata Prefecture and also to Tokyo Metropolis. Four evacuation shelters were prepared within the Tokyo Metropolitan area, and this is one of them. This used to be the Akasaka Prince Hotel, and they made it an evacuation shelter, because the hotel was going to be shut down. Tokyo Metropolis has been declaring evacuation with pets as a basic rule in times of disasters and emergencies, so the room for the animals was located at the semi basement of this hotel. This place used to be a restaurant and is open to sunlight. They put cages there, so the owners can go in and take care of their own animals.

All these cages, pet foods, and pet sheets were provided by the Tokyo Metropolis and by many other organizations. As Dr. Sakiko Yamazaki has told us a while ago, supplies like pet foods, pet sheets, and cages are quite easy for people to come up with as immediate requirements, so those things were provided in fair amounts. This is in Niigata. Here, they built a prefabricated house right outside the evacuation shelter and made it a shelter for the animals. This picture is extended sideways making it look like there's not enough height, but the animals are crated inside this house...confined because they could cause problems if they're allowed to roam freely.

What these slides are telling us is that all of the creativeness comes from experience. Niigata and Tokyo were not damaged severely by 3.11 but were both struck by disasters in the past. From that experience, those two prefectures knew what needed to be done and were capable of coming up with ideas to make things better for the rescued animals. It will be a problem, though, that you have to always start everything from scratch if you have never suffered from disasters. That is why the Ministry of the Environment developed a guideline on evacuation with pets, gathering all the facts and ideas from 3.11.

I am assuming that this will be provided to everybody who's going to need it, like the local authorities, so please make good use of it. It's still not "the best" of what we can do for the animals in times of disasters. It's just a list of what people tried, so I believe we can keep improving it as we keep in our minds what would make it less stressful for the animals even under circumstances where supplies are so short.

On the other hand, there are evacuation shelters that certainly will not allow animals, so there's going to be a need for boarding facilities for the animals such as animal rescue centers or animal shelters.

Ishinomaki was the first city to build a facility in Miyagi Prefecture, and since a veterinarian was taking a leading part I'm suspecting something like a mailing list went around amongst the veterinarians here today as well. I did receive those mails as well...mails titled something like "help"... and since it's an emergency, they pitched a tent as a start. I was surprised they were able to save a spot. I mean, you won't be able to build a facility, no matter how badly you want it, if you don't have the space for it. Therefore, it is inevitable for local authorities to secure enough land to be used in case of an emergency.

There's no sufficient time for building even a prefabricated house in such cases, so the first option would be a

tent that can be pitched right away.

Animals are confined in cages in every single evacuation shelter in the beginning. Temperature's still low, and everyone's using blankets to keep themselves warm. This one is showing where they had the animals in a tent in the beginning, but they had to move to a different location afterwards. They had more time they could use by then, so they built a prefabricated house for the animals on the new location.

They had more space at the new location, so they asked the volunteers to let the animals exercise and go for walks which made the animals have more time outside their cages. I think that when what's best may not be possible it's important to keep believing that there's a way to make things just a little bit better.

You probably will not be provided with "the best way" especially right after the disaster, so we would have to make do with whatever we can at that time in that situation.

Now, I would like to talk about the animal shelters. In Miyagi Prefecture, the Miyagi Veterinary Medical Association took a leading part and built a rescue center for the animal victims within the Miyagi Prefectural Animal Rescue Center.

During summer time, they intended on keeping the animals cool even just a bit by letting them sleep inside their cages at night, but they let them out in the shade and played with them or walked them during daytime so they get a chance to move around.

At the Animal Control Center in Sendai City they had no need to build a prefabricated house. Because the number of animals boarded had dropped sharply compared to the time it was established they were able to use the Center's facility as an evacuation shelter. Here, they made a list of the rescued animals' special features along with the photo of them, so the citizens can see whenever they came.

I was alarmed by the numbers of the animals separated from their owners when I saw these scribbles which read "Shisso-ken (missing dogs)". Because they are handwritten, you can almost visualize the situations they were put in at the time.

I'm assuming that those who lost their homes by the tsunami or those who returned to their homes to search for their missing animals left these notes so the facility staff would know where to contact if they happen to hear about their animals. Such information unification is so important where you gather all the information in one place and be ready to give them out when necessary. When it's not clear where or how to get the information you need, people go hither and thither in confusion. I'm pretty sure there were cases where the owner went to the rescue center to get information in vain.

Animals are rescued not only at the rescue center but also at animal hospitals or private homes, so it's best to gather all rescued-animal-information of the entire Sendai City in one place and clarify its location to everybody who needs it.

There were owners who gave up their ownership, because their homes were washed away and were no longer able to keep their animals. Also, there were animals which their owners were never found even after public notice.

The Animal Control Center in Sendai City started re-homing those animals at a fairly early stage of post quake, setting a condition that the animals would be returned to the former owner when they are found and if it is possible for them to take the animal back.

These were the sad situations that were also shown in Ms. Kawasaki's slide during her lecture from yesterday.

There were quite a few owners from within the 20-kilometer zone who were able to evacuate with their pets. However, the pets that evacuated with their owners were not allowed on the evacuation bus. Owners were told to tie them outside the government official building, and they had no other choices but to follow their instruction. Another thing is that because they were able to return home in a day or so after the disasters in the past, they just assumed it would be the same and left the animals there after providing plenty of water and food. Since they evacuated saying “I’ll see you tomorrow” to their animals and were not allowed to return there for such a long time some told us they “feel like being abducted.” I’ve heard that those who thought they would be able to “return home” left most of their belongings behind, even valuables like their bank books.

And as you all know, they were not allowed to return home for such a long time. We had talks with the personnel of the Ministry of the Environment over and over, because we understood deeply that those owners were craving to get their animals out of there. I mean, those animals are their family after all. I think the personnel of the Ministry of the Environment really strived for it.

When the owners were finally allowed to return to their homes within the 20-kilometer zone, we made a strong request so that the animals would get rescued. Again, I think that the personnel of the Ministry of the Environment really tried hard and made it through, because the Atomic Energy Commission was “so dominant” and there was this mood like “who cares about the animals?”

We were helping out at a relay point handing out pet foods and carrier bags. We told the owners to put the animals in the carrier bags, if found, and leave them where it’s safe from direct sunlight and rain. We informed them that the personnel from the local authorities will go in later on, circulate the area by car, and collect all the carrier bags. Teams that went in and circulated within the zone were staffs from the local authorities of Fukushima Prefecture and also from all over the country.

Staffs from the Tokyo Metropolis went in to help by car and also on foot. We were working at the registration desk making ourselves super small in a very small area in the beginning. The owners were supposed to register themselves prior to the registration of their animals, but they started coming to us first, saying “I can’t find my pet.” Those who went into the zone started making phone calls to the staffs of the Atomic Energy Commission as well, saying “I saw a dog that looks like so and so. It’s not my dog, but I thought I should inform you guys.” In this way, as time went by people started to understand the situation and change their minds from “who cares about the animals” to “so they really are a member of the family.” We, then, were able to expand our working areas little by little.

Those who went into the zone were also working in jumpsuits, but this shows the workers during the hot seasons when people were already wearing separate tops and pants. This person here is taking some leashes as he goes in. As for cats, we provided them with cages and cat foods. Hoping for a possibility that the cats would return sometime later we asked them to leave the food there if the cats were not to be found. We also provided them with water.

Here you see a car from Fukushima Prefecture behind the car from Tokyo Metropolis. Everyone is going in, and on the right you can see the animals that were rescued.

For those animals whose owners were capable of having them back right away we measured the radiation dose from the outside. When decontamination was unnecessary, they were handed to their owners.

As for owners who decided that it’s just not possible to take the animals with them right away the animals were

taken to a place like a big warehouse that Fukushima Prefecture rented. The animals were confined in cages for the time being, but it must have been really stressful for them. Not like many animals that live in condominiums in the Tokyo Metropolitan area, most of these animals were living in detached houses. They are used to having a lot of space around them, so being confined in a cage with so many strange dogs around them must have been a stressful situation.

Some started to refuse food, get diarrhea, and so on. Many volunteer staffs came and helped out by bathing those that would allow to be touched or by taking them for walks.

In a situation like this, it is impossible to raise the QOL of the animals without the help of the volunteers. Some may say that volunteer staffs are enough to run these shelters. However, the animals are there 365 days of the year. Volunteers are volunteers, and all they have to do is ask for a sick leave when they're not able to come to work.

That's why there's a need to hire enough number of staffs so the animals will be taken care of at least to a minimum level even when the volunteers are not able to come.

Additional help from the volunteers is what makes it possible for the animals to be walked enough, or be brushed enough.

What you see here is the situation during Obon season (August) at the shelter in Miharu, Fukushima Prefecture. At the time, there were cats that were brought in from the 20-kilometer zone. They still weren't very friendly to people and were confined in cages like this. If you look closely, even inside the cage...is it too dark to see? They have shelves inside their cages. Cats prefer the upper shelves.

Shelves were put in so the cats can do what they naturally do, even just a little bit, and even in such a small space. The cat in the previous slide, the one that wasn't quite friendly, was in Cat Room 2. Cat Room 1 started out just the same as Cat Room 2 where the cats were confined in cages, but they changed the name to "Neko (cat) Salon" as the cats got friendlier with people. They remodeled the room so the cats can exhibit their natural behavior as much as possible letting them roam freely.

Now it's possible for the candidate owners to go in and interact with them. Then, there's a possibility that someone would think, "I see, this one and that one are really bonded with each other. I'll take both of them." Actually, two cats from this room were adopted by the same person when I was there to help out.

Seeing this, I would say that it's best to focus on socializing them in the beginning. In a way, you really don't have any other choices. You could cause another disaster by letting all those hissing cats roam freely in the same room, saying "cats are better off when they're allowed more freedom." Actually, they're much better off when they're taken care of in an environment where they can exhibit their natural behavior, after they're used to the place and everything.

There were quite a few who evacuated to the Tokyo Metropolis, those who evacuated with their animals. The earthquake and the tsunami happened on 3.11, and on March 14th we had someone contacting us saying "we evacuated with our dog and we tried to rent an apartment but got refused because dogs weren't allowed. Can you recommend anywhere I can board my dog?"

The Tokyo Veterinary Medical Association, the rescue groups, and the Tokyo Metropolis got together after the disaster at Miyakejima Island to build a rescue center which saved many lives. I was so glad that I maintained a good relationship with them. I decided to ask the veterinary medical association for help, saying "We'll probably

keep getting more of these. Do you know any places for them? Can your practice take them in, even for the time being?” I could never be more thankful that there were so many veterinarians from the Tokyo Veterinary Medical Association who accepted many of these animals.

Thus, it was settled for the time being, but we were still concerned that we won't be able to keep the animals confined in cages if the same situation were to go on for a long period of time. There were areas within the Tokyo Metropolis where they had soil liquefaction caused by the earthquake, but because what happened in the North-Eastern area was so huge I don't think we should consider the Tokyo Metropolis as a disaster impacted area. However, a rescue center was decided to be built, because it is stated in the Tokyo Metropolis Regional Plan for Disaster Prevention that measures will be taken in correspondence with other support groups in times of disasters and emergencies. Also, the decision was made upon agreement that there is a need for a boarding facility since there are many who evacuated to this area with their animals.

It's the start, so we make do with a prefabricated house. But we decided to build a kennel in there, so we can release the animals from being confined in cages. They've already spent enough time in cages at the veterinary clinics.

We put exercise pens for the small dogs inside the prefabricated house. But for bigger dogs we made a DIY double door using parts of the exercise pen so the dogs won't spring out when someone opens the door. One dog, or two dogs from the same household at a time were allowed to roam freely in that space.

The Tokyo Metropolis even made a paddock, so the animals can run around loose. This is the Cat Room, where it's a no shoes area. The floors are mopped and sterilized every day, so it doesn't smell. You can even lie down on the floor. The cats are confined in a three tower cage during night time so we can check their litter box in the morning, but they walk around freely during day time like this one on the cat tower.

A volunteer staff made this one so the cats can go through or hide in the cardboard box behind their cages. A student volunteer did a bit of a remodeling here, so the cats can look out the window from the top.

As I've mentioned before, there's a lot of stress for the cats at the shelter. There are many strange animals around, you're not with your owner, you hear lots of strange noises, and people come and go...they are truly dedicated volunteers, but the cats don't know that. We tried many different things to reduce their stress even just a little bit.

Some of the things seemed to work and they started to relax as you can see here. When we had visitors from abroad one of the cats jumped onto one person's lap which made her say "I want to take her home with me." Those visitors were quite impressed that our place was very clean for an emergency shelter. There's no bad smell, and the floor is cleaned and sterilized so those visitors, too, were able to sit on the floor. We were told that there are a wide variety of shelters in other countries. There are awful ones, and also shelters that are so clean they look like a hotel.

This is an emergency shelter, and we were fully aware that we had to make do with the prefabricated house, but things weren't easy when you get affected by the heat, the coldness, and so many other things as well. But still, we really worked hard on coming up with ideas to make the place less stressful as possible and to meet animals' need as much as possible.

Dr. Sakiko Yamazaki also mentioned quite a lot about the concept of "needs" in her speech. I think the basis of animal welfare is not about how or what we feel. It's not about feeling sorry for them or thinking they're cute.

It's about meeting the needs of the animals – it's about how and what we do in order to meet their needs.

Therefore I would say that animal welfare is a standard of conduct.

I may be going into a different kind of welfare, but here's a poster that says "lost" and there's another poster that says "rescued/ found." Sometimes it turns out that these two parties can't seem to find each other.

I have already mentioned about the list of all the rescued animals with full details. Yesterday there was a talk about people getting in confusion because of the lack of information. It is helpful that the animals get rescued one after another, but because there was no record that shows the location of the animal or the contact information of the owners looking for their pets, we got calls like "Oh no, my dog is gone! Did you do this? Did you take my dog away?" At the Headquarters for the Relief of Animals in Emergencies, we created a sheet that clearly shows "Rescued," "This is the location of the shelter that is looking after your animal," and "Please contact this number when you return." We asked the rescue groups to download and use this sheet upon rescues, because otherwise, we will keep producing rescued but sad animals and owners that are unable to reunite with each other. There had been many of those cases, and I believe there still are.

We created a search engine called "MS Pet Search" but paper medium was necessary as well, because not everyone was able to access the internet in the beginning. One of the volunteer groups made a file which includes all the names, contact numbers, and also photos of the animals indicating which rescue group they are staying with.

When I was helping out during the evacuees' temporary return to the restricted area, I had people come to me saying, "We couldn't find our animal anywhere." I told them as I handed the file, "They may already have been rescued by rescue groups. Would you like to check on this file?" As a matter of fact, there were quite a few animals that were able to find their owners thanks to this file. Those who are focused on rescuing and taking care of the animals may not always come up with the idea of creating a file like this, but I think it's important as well when you think it as a tool to bring back the bond between those who are separated from their owners.

Yesterday, Dr. Yamazaki told us what kind of things go short in times of disasters: water, pet food, evacuation areas, understandings towards pet-symbiosis, acceptance from the non-animal lovers, veterinary medical care, and so on. Amongst all, I think that veterinary medical service is vital for the animals that are under treatment or those diagnosed as chronic diseases because stress can worsen their symptoms. That's exactly why I think there's no way to ensure animal welfare without the cooperation of the veterinarians.

Another thing I learned from experience is that it's best to deliver support exactly to the person(s) and places where it's needed. When you go into an evacuation shelter and shout out "I am here to rescue the animals! Does anyone here need pet foods," it can annoy especially those who don't like animals. They might think "We're the ones in need not the animals." I've heard about cases that made me think of the possibility of making the non-animal lovers turn steely-eyes towards the animals in need.

We also need to think about providing support equally to everyone who needs it. Evacuation shelters that were noted by the mass media received more than enough supplies and there were Onigiri (rice-balls) leftovers there, but food was scarce at small shelters where the mass media didn't even notice. This is a human case, but the same things were happening for the animals as well. We need to understand this and try to find a way to gather information regarding animals in shelters that aren't getting enough support. Support should be provided equally to all those in need.

I would like to talk about the role of the animal shelters. After the disaster, many new animal shelters were built; within Fukushima Prefecture, in surrounding prefectures, and also in faraway places like the Kyushu area. Animals were also taken into already existing facilities. The role of the animal shelter is to care, based on the Five Freedoms which is an international concept, for the animals that were released from the hands of their owners and to hand the animals over to a new, responsible, and qualified owner. So I would say that all the works at the animal shelters should be focused on handing the animals over to the new owners, and this is not limited to disaster/emergency cases.

Along with that, I believe animal shelters have a very important role of providing proper animal care education for the general pet owners. It's the education that increases the numbers of the citizens who would attend their animal's deathbed, instead of "let's take our animal to the shelter because there's a nice one close by." Civic education, that doesn't allow the animals to be brought into animal shelters, is also considered as one of the important tasks of the animal shelters.

I think all of you here are familiar with the Five Freedoms: freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury and disease, freedom to express normal behavior, and freedom from fear and distress. The task of the animal shelters should be based on these freedoms so that the needs of the animals will be met.

So, how do we provide those freedoms for the animals? When you hear the word "care," most people think of physical care. In order to maintain the animals' QOL food and water is vital. But we also need to think about the animals' mental health as well in order to maintain their QOL, so we need to consider about proper environment, exercise, and play. For dogs socialization training also becomes necessary.

Also, we need to think about group management and individual management at the same time since there are many animals in the shelter. There was a local authority where parvovirus spread so quickly and killed all of the animals there. When you have a number of animals together, you need to consider them as a "group." Of course, you need to take care of them individually, but you need to be really strict about disinfection when it comes to group management. If all of the animals die by infectious disease after you rescue them, can you really call it a rescue?

The checkpoint is the number of animals. If the shelter is overcrowded, you can't provide proper care. Hygiene management will be impossible. Therefore, you need to maintain a reasonable number so you can fully take care of them. Washing and disinfecting is also important as well as the vaccination of the animals, nutritional administration, parasite control, screening, medical examination, isolation for the animals with infectious diseases, and so on. Even if it is an emergency shelter we need to think about the importance of environmental enrichment. The animals need a place where they can mentally relax.

You also need to check the state of the facility. Maybe there's a need of a special treatment for a specific disease. The number of the animals...I've been talking about this for a while now...it can cause infectious diseases as well as stress induced diseases, because it will be a stressful situation where there's a huge number of animals.

Let's talk about cleaning and sterilizing the facility. There is a proper way and order of cleaning and sterilizing to prevent infectious disease from spreading. All of the staffs need to know this and keep it that way. As for nutritional management, you need to provide the right kind of food for the individuals and to make sure the animals are eating well. Management and control of the animals' feces and urine as well as their food leads to

early detection of diseases, so I would say they are quite important.

Even in emergency shelters, there will be many animals with different problems. Some may be of old age, another may have kidney problems. You need to check, when the animal is brought in, for details including their health conditions. Without this inquiring survey, you will not be able to provide them proper nutritional management and that animals' condition can advance in severity. If that's the case, is there a meaning in rescuing these animals in the first place?

Needless to say, the animals with infectious diseases need to be isolated, but small dogs sometimes need to be isolated as well if it's stressed out by a lot of barking going on around the dog. Here is another reason why we need to consider environmental enrichment. It can be a lot of stress for some animals if the dogs are barking all at once, and the volunteers are banging the door and making all kinds of noises. In that case, you would have to make an improvement to make it a better environment for the animals. Also, you need to think about the interaction with the animals. There were some volunteers who stuck their hands in the cage inconsiderably and got bitten. The animals may have been showing signs to tell them "please don't come any closer than that," so it is very important to try to understand the animals' state of mind when you interact with them. With the cats, many of them would try to bolt if you approach without care, saying "Oh, I love cats!" Sometimes you just have to wait for them to approach you.

Animals will get used to the place sooner if they can feel some security. As with the dogs, they can learn that his new environment is safe by taking them for walks, but it is very important to choose what type of training method to be used. At the Animal Rescue Center in the Tokyo Metropolis, we asked four people to work as staff. We asked for people who knew what to do around animals. Three of them were dog trainers, and they were very helpful in training the dogs in a dog-friendly manner to make the dogs feel it's safe to be around them. If you train the dogs by jerking them around or forcing them to obey you, it can be really frightening for the animals that are already in great fear.

Like I said before, it can add more stress to the animals if there's too much noise or if ventilation is not enough. We need to think of a way to improve the facility so it is as less stressful as possible.

When the animals come to the shelter, they are already under stress – that is, stress from: being apart from their owner, being in a new and unfamiliar environment, overcrowded, getting a medical check and being vaccinated by a stranger, food that is different, strangers coming close by, lack of places to hide even though you want to hide, etc.

If you don't step in and do something about this, the animals' stress can increase, they can get sick, and they can even die from it.

I think it's exactly the same with us humans – that for animals' stress emotional pain is greater than physical pain. And that's why it is so important to handle stress at the shelter. You need to find out what is causing the stress and try to get rid of it. Maybe you can separate the dogs and the cats into different houses. It usually is stressful for the cats when they can hear the dogs. If they are in a different building, the cats won't have to listen to the dogs barking. There should be a way to take their minds off from the stressor, even though you can't get rid of it right away. Maybe you need to come up with an idea to, at least, alleviate it.

If you don't do anything to relieve the animals' stress, you can't help going into a negative spiral where it's no longer possible to enrich the overcrowded environment, and because of that the animals will start showing

undesirable behaviors which make the rates of re-homing go down. It's pretty much the same thing for any animal shelters, but especially with these shelters for emergency/disaster case, you really need to work on re-homing the animals, because not all of the animals are able to go back to their original homes. Quite a few of them go to new homes. In order to make re-homing easy as possible you need to break off this negative spiral somewhere and turn everything around so it becomes a positive spiral.

Some people who run their shelters take pride in the number of the animals they have in their facility. I feel awkward every time I hear these kinds of statements.

As far as I'm concerned shelters should be proud about the number of the animals "that are living happy lives now."

No matter how much effort we put into trying to relieve the stress of the animals shelters still are a stressful place for the animals. We have to admit that it's different from homes. Animal shelters are merely a temporary care center, a step before they move onto the next step. When you think about what animal welfare really is it's best for the animals to go back to their original homes. If that's not possible, the next best thing for them is to be re-homed to a responsible owner. I don't think it's right for the animals to remain in the shelter for so many years. The best thing for the shelter animals is to be re-homed to a loving home.

After 3.11, we took in many animals of old age that had no other place to go. There was this 15 year old dog which his owner said, "It's just impossible for us to get him back for the time being, but we want to keep him. Our house is within the 20-kilometer zone, but it's unharmed by the earthquake. When we're allowed to return to our home, we will be able to get him back." The dog is 15 years old. If they can't return to their home for another 5 or 6 years, it is quite probable that this dog had already ended his life at the shelter. There are very caring volunteer staffs at the shelter, but so are many other dogs and cats. I think there is a big difference between parting this world at a shelter and parting this world at a home in the arms of his owner, whether a new one or the original one.

Many volunteer staffs came and helped us at the care center in the Tokyo Metropolis. There were things that many would have never known if they hadn't worked as a volunteer staff. There was this dog that got adopted from our center to a home close by. Every once in a while, his new owner brings this dog to the center. His new home is not in a walking distance, but I think the owner wanted to show us that the dog is happy now. The dog remembers the staffs so he says hi to everyone, but then, he turns to his new owner as if he is saying, "OK Dad, let's go home now." The volunteer staffs said, "This hurts a bit, but this is how it should be." The volunteers were taught right there that it's a home, after all, that the animals are craving for. Even when the animals are provided with so much love and care at the shelter, homes are where they really belong to.

It is also on the newspaper, but the Ministry of Environment clearly stated that evacuation with pets is a fundamental rule in times of emergencies and disasters. The Basic Disaster Prevention Plan, based on the Disaster Countermeasure Basic Act, also made a statement about the animals and it is also stated on the guideline the Ministry of Environment created a while ago.

Section 5, 2-2 of the Emergency Response Measures states that the facility manager(s) of the evacuation shelter should endeavor to secure the spaces for pet animals within the evacuation area according to the need. It is also stated that the acceptance of pet animals at the temporary houses should be taken into consideration according to the need.

Chapter 2, Section2-2 of the Nuclear Emergency Response edition now states that facility manager(s) of the evacuation shelter etc. should endeavor to secure the spaces for pet animals within the evacuation area.

Though not satisfactorily, statements like these started to appear on legal documents. Along with that, the same type of provisions appeared on the Operation Regional Plan for Disaster Prevention and Operational Plan for Disaster Prevention in the sections of Disaster Responses, where it states about the care, food demand and supply planning for animals during disasters and emergencies.

We first organized the headquarters for the relief of animals in emergencies after the Great Hanshin Earthquake where the local authorities and veterinary medical associations worked together. We have worked together since then in times of emergencies and it is the accumulation of those works that allowed the statements about welfare and care about the animals to appear on legal documents. We gradually made our ways into changing the laws. Now there's a statement in the Act of Welfare and Management of Animals that advises to include, in the emergency plans, a policy to ensure proper care and management of the animals in times of disaster. Animal welfare promoters are also requested under the law to cooperate to carry out the policy for evacuation and rescues during disasters and emergencies.

The Basic Policy now states about the measures to be taken in times of disasters and emergencies. The laws are changing in this way. This is the Regional Plan for Disaster Prevention for the Tokyo Metropolis. The Tokyo Metropolis has included a statement about the animals in times of emergency quite some time ago, and the local authorities are providing pamphlets like this...this is a pamphlet that Shinjuku Ward published a while ago...in March 2010. The local authorities or the country are changing the laws for the better for the animals and are starting to prepare for emergencies, but the pet owners need to prepare themselves above all. The basic idea of disaster prevention is to be always ready. If you have more than two animals in the household, it may be a good idea to have a good relationship with your neighbors so they may come to help you in times of emergencies. It is important to check the route to the evacuation area in your community otherwise you may be going into the opposite direction, or your dog may refuse to walk with you because he's too frightened. Role sharing also is important so you know which member of the household takes which animal, or who is going to carry their food, and so on. I'm always on the side of taking in the animals, but we really do see animals that were never vaccinated or dewormed. Health care is very important, especially in times of emergencies. If the owners have a copy of the animals' medical history in hand, we will be able to provide proper care and treatment according to the animals' needs. Providing proper care and management that meets the animals' needs and practicing some kind of animal identification system are also included in the owners' preparations.

Now, let's talk about the number and the kind of animals that is reasonable in terms of evacuation with pets. If a couple owns 10 dogs or cats, it's probably very difficult to take them all upon evacuation.

So, I would like for all people who own any animals to keep in mind about the disasters and emergencies. You need to limit the number of animals so you can actually evacuate with them. You won't be able to carry your crocodile to an evacuation shelter. Personally, I don't want anyone to keep a specified animal in a general household. I would like everyone to always consider if your animal can be taken to a shelter with yourself as you take care of them.

I also would like all pet owners to prepare an evacuation bag for the humans and for the animal as well. You should always have stocks of pet food that will last at least for a week. After 3.11, relief supplies just stopped

coming in due to gasoline shortage. For animals eating prescribed pet food owners would need to stock amounts that would last a lot longer period of time, because there may be cases where the relief supplies don't come in too soon. So, please prepare an evacuation bag for your pet that has pet food, pet sheets, water, and so on in it.

At the booth of the Japan Animal Welfare Society in the hall, we have a checklist that tells you what would be good to put into an evacuation bag, and what kind of preparation you need. It even has a pocket where you can put in a photo of your animal. Please feel free to take one with you.

This is the checklist. You can write in all the details about the animal's medical history, the kind of pet food he's eating, the name of the vet, and you can also put a photo of the animal. I'm sure this will make it easier for the person(s) who look(s) after the animal as a substitute to his owner.

Please make good use of it by checking all the items on the list and writing down the health information, microchip number, date of vaccination, and so on.

Now that the owners, the country, and the local authorities are working towards preparation, there has to be a good system construction. It won't do any good if each of the groups starts moving in different directions. The law has been modified, a plan has been made. The country can make its move, but along with that, the prefecture, the veterinary medical associations, and the animal rescue groups in that area need to start up the headquarters for the relief of the animals within the prefecture. It's best if the headquarters can control the relief supplies and act as a receptacle for the donation and distribute them to the volunteers so they can go to where the animals are and do the actual work to meet the animals' need.

However, there may be a problem with the stockpiling of the relief supplies. After 3.11, traffic was cut off, and there were no gas for the cars. In a situation like that it may be better to decentralize the supplies in several different places where you can go on foot or by bicycle. If all the supplies are kept in one place there may not be a way to go there and get them.

I've been talking all this time about the animals, but when an elderly person or a physically disabled person is living with an animal, personnel from the welfare and service division for the humans will make contact with them. It may be easier to find out what kind of help or supply needs to go where when all the parties concerned get together and work as a team. The department of the medical care, veterinary medical care, public health, both human and animal welfare and service, and prevention of epidemics can make a team and work with the fire department, police, and the Self Defense Force.

I have heard of terrible cases. After the Niigata Earthquake animals weren't allowed in the evacuation shelters, but the Self Defense Force offered one of their tents so people can live there with their animals. However, after 3.11, there was a person who was rescued after the tsunami from the roof top by a helicopter of the Self Defense Force. He was holding a dog in his arm when he was being lifted up with a rope, but was told to drop the dog, because dogs aren't allowed to go on board. He was also told, "If you can't let go of the dog, we can't take you." I felt that the correspondence is very different even though they both were personnel of the Self Defense Force.

Now that the correspondence for animals in times of emergencies is stated in a legal document I would hope that the police department, the fire department, the Self Defense Force would be sharing such information. No more of "We weren't aware of it, because we're not the ones that corresponded." I would like for all departments to share the plans, practice the law, and work as a team so that the same issue will be handled in the same way in

all of the places.

Manuals are indispensable in times of emergencies. Registration, education, and training of the volunteers who would work accordingly to the manual are also important. Many people came in saying “I want to help. It seems it’s a real disaster,” but the first-time volunteers don’t know what to do. When there are many of those first-timers, they just go hither and thither. The place is full with people, but there’s no actual work getting done. This is why I feel it’s important to educate the people who would give instructions to the first-time volunteers.

So, we need to educate the people and to plan and prepare for a lot of things that may happen in times of emergencies. This is going to be my last slide...I’m exceeding my given time...but we really need to ensure the welfare for the animals even in such emergency situations. In times of emergencies, both people and animals are in a different state from the usual, difficult situation. Whether or not you can ensure the welfare of the animals, in spite of that, depends on the preparation for evacuation with pets. You need to know how exactly you are going to evacuate. Shelter workers need to know exactly how to control, care, and treat the animals while ensuring their welfare. We also need to consider the rescue and care about the animals being left behind. Even though evacuation with pets is the basic rule, owners could be away from home, at work, depending on when the disaster occurs. Those animals could be injured, so we also need to consider their treatment and care.

For those animals that can’t stay with their owners in any ways an animal rescue facility needs to be built. As I kept saying today I would hope the animals there would be provided with care and treatment based on the stance of animal welfare. It may not be the best care and treatment possible, but I would want the facility staff to work out the second best plan.

We also should do our best to return the animals to the owner or to find a new home for them. Dr Tada talked about temporary houses in his presentation. Many kinds of support are still needed there, and I believe we still should be providing care and support for the animals living in temporary houses.

There were some cases where the owners, concerned too much about the neighbors, kept their dogs in a cage for such a long time. They were able to move into a temporary house from the evacuation shelter and now they’re living with their dogs, but that’s not really a good situation. With these people, they were gradually provided with volunteer support, training seminars were held, and things started to get better. Some say there are no longer any problems, so care and support for those at temporary houses are necessary.

The next step from the lives at temporary houses is a step toward independence. However, there are problems we need to start working on with the restoration housings. Restoration housings need to be built so it’s possible for people to be able to care for and live with their animals there. Here again, I would hope that the discussions would be based upon ensuring of the animal welfare. All this time, I’ve been talking about animal welfare, but I think it links with the well being of the owners. As things get easier for the owners, things also get easier for the animals. Animals and their owners are strongly bonded with each other, so therefore, the well being of the animals is linked with their owners overcoming this difficult time in a relaxed state as possible.

After all, I think you can say that helping animals is the same as helping people.

Please excuse me for exceeding my given time. I would like to conclude my presentation.

Disasters & Animals: An International Report

Andrew Rowan (Humane Society International)

I'd like to take just a few minutes to give you some idea of what the Humane Society International is. We were started about 20 years ago as the international arm of the Humane Society of the United States. The Humane Society of the United States is a comprehensive animal protection organization in the USA. Our current budget for all of the affiliates and the main humane society is about 170 million dollars a year. So we are a substantial organization. We have 600 employees, and HSI has around 50 employees and consultants in the United States and around the world carrying out our activities.

HSI itself has a set of programs where we are looking at animal testing issues. We are promoting National Academy of Science's report that has suggested that we could end the use of animals in safety testing by adopting new high-tech technologies. We are dealing with farm animal welfare issues around the world. We are pushing for the ending of battery cages, for example, in India. These are the cages in which hens lay their eggs. We are involved in a variety of wildlife protection activities. We are campaigning against the Canadian seal hunt. We are trying to eliminate the demand for ivory to protect the African elephants. Population is now down to 450,000 or 400,000 so far this year, because they are being poached at a rate about twice as fast as they are breeding. So, within 20 years we could have no more elephants in Africa if the current poaching crisis continues. We are dealing with vanishing sharks in the ocean. We are campaigning against shark fin soup. We deal with a variety of cruelty issues like dog fighting and bullfighting. And we are also addressing street dogs around the world. We have a campaign to make the world a better place for the approximately 300 million street dogs around the world.

So, we've got a very comprehensive set of activities, and one of those involves disaster relief programs. Our disaster relief activities tend to be based upon opportunity – where there are major disasters we tend to get involved. So, people get very exercised when the media draws attention to disasters such as the Great Japanese Earthquake. Or in Haiti, for example – we've got a program in Haiti at the moment, also an earthquake. We have been involved with a variety of disaster programs over the years. So, basically these programs are initiated when a disaster occurs, and mostly US supporters send money into help with those disasters. So, we then establish a program, and generally what we try and do is establish a program of some time, because initially, the initial problem is generally taken care of by the local authorities and local organizations. But the long-term challenge in following a disaster tends to be sort of not so glamorous. So we tend to do that. We have been in Haiti for almost 5 years. And we'll be ending that program within the next 12 months or so. And this conference in Japan is our sort of swansong in terms of the Great Japanese Earthquake.

We were able, fortunately, to provide significant amounts of money to various relief efforts in Japan, but one of the things that we were really interested in was the fact that after the Daiichi Reactor accident we looked around for information and what to do with animals exposed to radiation – and Professor Ito commented in what he found outside of Chernobyl – but I was unable to find any evidence whatsoever of any written material telling what to do with animals after a radiation accident which is surprising especially given the Chernobyl accident in Ukraine that there was nothing out there that was available. I have good contacts within the US military and

among the US disaster response community. But nobody was able to provide any written report on what to do under these circumstances. I know that the International Fund for Animal Welfare held a workshop in Tokyo shortly after the disaster also looking at what might be done under these circumstances, and they found little or nothing themselves. So, those of us who looked around for materials on this issue were unable to find anything. So, that was one of the reasons we funded the project that Kitasato University, Professor Ito, took on. I would say that there was a question about how much money it was and how it was spent. It was 25,000 dollars, and we had a team of about 6 professionals looking into the project. In the United States, 25,000 dollars may get you a graduate student. So Professor Ito and his team were very good value for money as far as we were concerned, and the report they produced was excellent. And as I said, this would be the first published written report on what to do with animals under these circumstances.

So this is some of the background of Humane Society International and the Humane Society of the United States.

Let me now move onto my actual presentation and talk about some of the disaster issues. Over the past 10 years I've had experience in managing or overseeing responses to a number of different disasters or have been associated with colleagues who have had to deal with this issue. And the first one that really opened our eyes to what we might or might not be able to do is the 2004 Asian tsunami. We happened to have a staff member in Bali at the time that the tsunami hit, so she was already in Indonesia and was able to get to Thailand and help with the response in Phuket and Thailand. She went to Sri Lanka, did some assessment in Sri Lanka, and saw what happened on the east coast of Sri Lanka. And finally she went to Banda Aceh on the northern point of Indonesia and saw the devastation there. I don't know if anybody has seen the photographs – they are just extraordinary. I know that the tsunami in Japan was extraordinary too, but what happened to Banda Aceh was really quite extraordinary. I mean, the whole town was just wiped off the face of the earth.

So, we had to respond to that. It hit in the end of December in 2004, and we presumed that there were animals in need of rescue. But in actual fact what we found is that there were very few that needed rescue. Those that survived were fine. Those that didn't survive didn't need rescue – they were somewhere in the ocean. There was a great concern in Sri Lanka about rabies spread in the towns along the east coast of Sri Lanka. There wasn't much evidence that there was a problem with rabies, but people were displaced, there were dogs that had lived around their homes that had followed them to the tent cities, and there was concern that they might end up spreading rabies. And so the military was asked to go and kill the dogs. We were able to persuade the military that we would sterilize and vaccinate the dogs, and we put collars on them to identify the dogs that had been treated. And that helped to stop that process. One of the other things that we were told in Sri Lanka was that the population was largely Muslim and that people didn't really care about their dogs. I mean, the first patient who came into the field clinic was a woman carrying a dog. She had lost her two sons and her husband, and the dog was the last member of her family, and she wanted it taken care of.

So, here is a picture of the tent city on the east coast and a picture of our mobile veterinary clinic that we worked in Sri Lanka. Banda Aceh – there was a major loss of farm animals and livestock – but the animals, once again, died or survived with a few injuries.

One of the things that we learned from our response in these situations was that you must have proper incident

command structure, and this tends to create problems, because who is going to be the instant command? The payer takes on the role of the head of the instant command is generally what happens, but there are political issues that get involved there. The responses tended to be relatively rudimentary. We needed to develop a much better preparedness-system. We needed to develop much better analyses and a wider array of response teams. The animals played different roles in these different locations, and they held very different values as a result. As I mentioned, in the Asian tsunami animals were in some cases the only surviving family member.

So, the tsunami brought us into this field in a number of ways and made us aware of what we needed to do and that we needed to attend to it. After the tsunami there was a conference in Japan that was the first international disaster conference at which animals were raised as an issue. It was I think the 10th anniversary of the Kobe Earthquake, and this conference had a session on animals and disasters – the first time ever. Generally speaking, people tend to think of the animal problems as minor and that they don't need to worry about animals in disasters – they need to worry about people. But for many communities the animals are their life blood, and if people have pets the animals are important in their lives too. And so, you find that there is great appreciation – once the human needs are taken care of – for us to then step in and help with the animal issues.

Our second major issue for disaster was Hurricane Katrina.

I would mention that Hurricane Katrina was not in fact the first disaster in which animal issues became the front and foremost in America. The first time it happened was Hurricane Andrew in 1992 which devastated areas of South Miami in Florida, and after that there were animals all over the place including wildlife that were in zoos and in captive situations – they escaped – and the various animal protection organizations all roared off down to Florida to help. And there was no structure, no organization, nothing. And after Hurricane Andrew the US Department of Agriculture decided that they needed to set up some sort of system so that the chaos of Andrew didn't occur again. So they established a disaster preparedness program and the HSUS was a part of that – that is our parent affiliate. The HSUS was a part of that preparedness approach after 1992. So we were engaged in especially planning for hurricanes, because hurricanes hit every year in the southern regions of the United States, and so, this was the obvious problem that would be faced by Florida, South Carolina, Georgia, Mississippi, Alabama, and Texas.

So the Florida program – people developed a variety of activities to prepare for dealing with a hurricane. Hurricane Katrina was way beyond what they were prepared to deal with. It hit New Orleans as a category 4 hurricane and also devastated the coast of Mississippi which is just up the coast from New Orleans. And in August 29th, the New Orleans levees began to break. Much of New Orleans is below sea level, and the city is maintained in a dry state by large pumps. The levees overwhelmed the pumping stations, and a lot of the city flooded. The official death toll was about 1,200 people, but the damage was enormous. It was the most costly disaster in US history. And in the end, over a million people were displaced, and our estimate is that there were about 50,000 dogs and cats left behind in the city of New Orleans.

There was a very interesting difference in terms of the response between the state of Mississippi and the state of Louisiana. Mississippi didn't have the problem of dealing with New Orleans, but its coastal communities were wiped out essentially. So it had a major issue of what to do with coastal communities, and then there were a variety of other challenges further inland. But the Mississippi Board of Health acted decisively, established an instant command structure, set up a special shelter system in Hattiesburg which is about 100 miles inland from

the coast, and required that animals that were roaming or rescued or whatever should be brought to that shelter. And the shelter was run professionally with the support of the state, and we were able to rescue several thousand animals and eventually reunite most of them with their owners or get them adopted.

Louisiana was in a very different situation. We were invited by the Louisiana SPCA, the big shelter operation in New Orleans whose facilities were flooded, so they were without any actual buildings. We were invited to assist them with animal sheltering and field rescue. So that was our entrée into the situation. The Louisiana SPCA set up an emergency shelter between New Orleans and Baton Rouge, about 50-60 miles north of New Orleans, at the Lamar Dixon Expo Center. This is a big arena for horses and facilities for cows and farm animals outside. There was a huge concrete slab with various holding systems available on that slab. Louisiana Department for Agriculture was involved and was certainly negotiating with everybody, but they did not take sort of the decisive action that the state of Mississippi did. And so, there was a lot of confusion about what was and what was not allowed or permitted. There were directives from the state saying that you can't have more than 1,000 animals in Lamar Dixon. One day we took 1,000 animals out of New Orleans. So what do you do now? We were already over the limit, and so people were talking about moving the animals out of the state. The Department of Agriculture said you can't, nobody really knew what was going to happen next, and finally they said, "okay, you can send animals out, but it had to be done under a certain circumstance." All this was very much ad-hoc and done on the spur of the moment. And we assisted in that particular facility with the evacuation of about 6,000 animals from the New Orleans area.

Some of the pictures from New Orleans – there were parts of the city under 15-18 feet of water, and many animals were left behind. But a fair number of owners refused to leave, because they did not want to leave their animals behind. We had the same problems in this situation that you have here in Japan. Emergency rescue centers did not allow people to bring their pets with them. There was one particularly tragic story in this whole situation. The television cameras recorded it – of a young boy being put on a bus in the city of New Orleans to be evacuated to Houston, and he had a white dog called Snowball. Snowball was not allowed on the bus, so somebody took it out of his arms, put it down on the ground, and he was led into the bus sobbing. Snowball ran off, and nobody ever saw Snowball again. So this is one of those poignant moments that people have come to identify with the whole Katrina disaster and with a fact that there is this huge challenge about what to do. When people can't evacuate with their pets they'll tend to stay behind, and that definitely happened here in New Orleans, and that put people at risk. And so, the emergency management authorities felt that something needed to be done as a result of that.

Lamar Dixon was described by the media as the largest animal shelter in the world. These are the pictures of the barns. It was just basically concrete pens underneath these structures that kept the sun and the rain off. There were three barns for companion animals, two barns for livestock and equine, and 180 box stalls per barn. And dogs and cats were kept in cages in those stalls.

The situation was chaotic. There were perhaps 1,000-2,000 volunteers who turned up – needed to be managed, needed to be housed. There was no housing, because people in New Orleans had evacuated taking all the hotel rooms and spare space. And the management of the animals was particularly chaotic. We gradually got it under control, and things began to become a bit more organized.

Lots of things went wrong. There were big communication problems as the same thing that happened here with

the earthquake. It was difficult to get in touch with people down there. We had a daily telephone conference between people in Lamar Dixon and our headquarters up in Washington. Everyday there would be somebody different on the call from Lamar Dixon. We would get different feedback from different people. The communication at Lamar Dixon was spotty. People had to walk across a half a mile of bare concrete in the heat and sun in order to get to the command vehicle. There was no actual telephone or radio communication between the entry, the intake tables, and the command vehicle. The shelter management, the Lamar Dixon authorities, was particularly hostile to this whole process. At one point, there was threat that a new hurricane came through, and the rescue people at Lamar Dixon had to shelter in the toilets, because the Lamar Dixon authorities wouldn't let them go into the main arena. So, there was a lot of confrontation and conflict between them – enormous problems in terms of rescue. We had a lot of willing rescuers, not as many people who were willing to take care of the animals once they were rescued. Rescue mapping was a big challenge. We were able to get some GPS systems, but they weren't in the end used by our rescuers. Just getting everybody in the same wavelength and sort of interacting in a clear and direct fashion was a challenge. There were all sorts of different organizations that turned up at Lamar Dixon, and some management was needed, and the HSUS ended up as the instant command primarily because we were paying the rent on the building, stalls, and the facilities.

I will say that the public support here was just extraordinary. HSUS raised 34 million dollars in about three weeks. I know that after the earthquake here a lot of money poured in as well, but we haven't seen anything like the Katrina response before or since. One of the reasons why we raised the money was because we had just frankly set up a donation system, and it was in place and ready to go just in time for Katrina. So 20 million came in without us asking – people just went online and donated. It was quite extraordinary. So, because of the money we ended up paying for most of the operations down there.

Managing the volunteers was a challenge. Many of them were very independent minded – wanted to do what they wanted to do – didn't want to be managed. There was lack of clear roles at the state oversight in Louisiana. There was lack of clear roles in federal oversight in Louisiana. And a lot of conflict between the federal government and the state government and then the city mayor and his people. There were all sorts of shifting mandates from the state. “You can't take animals out of the state, yes you can, no you can't. You can only do this, you can only do that.” Huge uncertainty about what we could do or what we could not do. In the end we couldn't take any more animals out of New Orleans, and we started feeding the animals in the street. People put food out on the street for animals.

And then, information management and technology was not used in an optimum fashion. We have much better IT systems, and this is something that I would strongly urge that Japanese authorities and animal groups start looking into – how to develop a system to track animals following a disaster of this sort. Now with cell phones and photographs and the cloud, it's relatively simple to be able to provide people with access to information and to get people to respond and then to connect with one another. But you have to have a system set up to do that. So, following Katrina there was a national group of animal protection organizations that was established. Working with the US Department of Agriculture the states began to include animals in their planning. We began to improve government planning for evacuation and rescue that supported the animals as well as the people. We've got better systems for communication in the field, and there is a lot of opportunity for improving high-tech solutions for communication and information sharing issues. We need especially improved record-keeping

and sharing on the rescued animals so that people can find them. Following Katrina we moved a lot of the animals out of State – as I said, Lamar Dixon had about 6,000 animals go through it. A lot of those animals were moved to shelters in other parts of the country, and then we had to connect them with their owners. So there were photographs of the animals. People called up and said, “that’s my animal.” And then, we had to try and find out where it was, and some of the animals got mislaid in that process. At the end of the day I think there were four or five lawsuits between people who said it was their animal and the new owners who adopted the animal. So, this was a part of the problem of documenting the animal rescues and getting everything in place at the time.

It was not all bad. We rescued 10,000 animals. Remember, I said the estimate was there were 50,000 animals in New Orleans. There were thousands of volunteers recruited and organized. Over 2,500 people got back together with their animals. We raised more than 50 million dollars as an animal protection community to distribute to disaster relief and recovery. The Louisiana SPCA which lost its building was rebuilt and is in fact even wealthier than before the disaster. Their asset base grew by a factor of five from before the disaster to afterwards. So, they certainly benefited from the massive outpouring of public support. The Mississippi State and the Louisiana State veterinary schools both launched spay/neuter programs to begin to deal with the dogs and cats that were unwanted. One of the things we discovered in New Orleans was that many of the dogs had heartworm which is a potentially fatal disease if not treated, and treatment is expensive. So, we ended up using some of our disaster money to treat the dogs, but both veterinary schools are paying much closer attention to what one might do with pets for people at the lower income levels.

And finally, we got federal legislation to require pet evacuation planning. So the PETS Act requires that states establish planning procedures for disasters that include animal issues as part of their planning. So, every state now is meant to have a state animal rescue group established that will now play a much more significant role in terms of response and rescue and so on. So this “no pet left behind” idea is something that we were able to push, and the US Congress eventually passed.

There are some interesting parallels between the United States and Japan. As I said, we had these two main disasters, Hurricane Andrew in 1992 and Hurricane Katrina in 2005, separated by about 13 years. In Japan, you had the Kobe Earthquake in 1995 and then the Great Earthquake in 2011. The Kobe Earthquake drew attention to the need to do something about the animals. There were big shelters set up after Kobe, and there were incidents with rogue rescuers taking animals and people not being able to find them and so on. And there were a number of lessons learned after Kobe, and there will be a number of lessons learned after the Fukushima issue as well. So, in both cases, we started discussing animals as a result of these two major disasters, and then we had the second major disaster that is beginning to refine what we are doing.

The Fukushima disaster is unique or unprecedented as has been mentioned on several occasions on the last day or two, and that is because of the nuclear disaster. The radiation plume that was released from the Daiichi Reactors has created an additional component that makes life much tougher. The good news from the report from Kitasato University is that we in fact didn’t have a great deal of contamination and that few of the companion animals needed much more than being washed in order to decontaminate them. But what it did leave was the sort of strange, no-man’s land zone around the reactors where the animals were left to fend for themselves. I am curious, by the way, looking at some of the slides that show the radiation plume noticing how

that radiation plume does not match the exclusion zone in any real way. The plume goes up to the northwest, and the zone is a nice symmetrical semi-circle around the reactor site. The plume doesn't look nice or organized or semi-circular in any way whatsoever, so I mean, I'm surprised that there hasn't been a bit more discussion about that.

But you had the same situation that we had in Katrina. Owners were reluctant to leave without their pets. You also have a situation that is unique, as far as I can tell, to Japan and that is the concern that people have about interfering with somebody else's property. In America, the animal will take precedent. If an animal is suffering or appearing to be at a loss, people will rescue it and worry about whose it is later. In Japan it appears as though there's much more concern over who owns the animal and permission to do something with it. And so, this I think is something that needs to be addressed as just a part of the response to the disaster.

We've heard all of the presentations from Dr. Ito's team, and I think that the written report is going to prove to be very helpful when the next disaster occurs. And I am afraid to say, there will be another disaster. We've had Three Mile Island which is a reminder of the disaster, we've had Chernobyl, we've now had Daiichi, and there will be another disaster sooner or later. It may not be in Japan, we don't know where it will be, but we are going to need to know what to do or some guidance as to what to do. So, these written materials will prove to be very valuable in that next disaster.

I believe that we need to have new legislation in Japan to address some of these issues that have arisen as a result of the disaster. Some of my recommendations would be that there should be an enhanced government plan for pet evacuation and animal rescue management during disasters. Clearly, there is a real issue as to what to do with animals left behind – we saw that with the farm animals. In the United States there is a lot of debate and discussion about how to do mass culling humanely. When there is a shed or a barn with 2,000 pigs or 800,000 chickens individual injection is probably not an option. And under those circumstances, I would argue strongly that some sort of humane killing process – whether it's euthanasia or not – is what we should be doing as a society.

There needs to be provisions for emergency shelters, and when you have an area the size of the evacuation zone with at least 10,000 animals – I think everybody basically believes that there is probably more than that – sheltering 6,000 animals is a lot of animals. It requires a lot of manpower and resources and a general management competence. The Fukushima No. 2 Shelter was developed and worked its way through a number of problems over the time of its existence and is now winding back down again. What we've argued for after Katrina is that we need emergency shelter operations that are available when the emergency hits – not that you have to build something new each time. You will inevitably need space. That will be required. And one of the things we did with some of the Katrina money was we supported a correctional institute in Louisiana to establish a shelter. The correctional institute has individuals that are being trained now in animal management and shelter management. These are prisoners, but in a time of a disaster, they can then be pressed into service and we can shelter 1,000-2,000 animals under emergency circumstances, because they have the manpower to take care of them. So this is one of the options that we have. It is to have some of these facilities that can be pressed rapidly into becoming an emergency shelter.

We are also doing a lot of training on what is required for emergency sheltering, and I would argue that in Japan as pet population increases, you are going to need to have more of that type of thing to deal with the disaster that

will occur. I mean, you know that from the earthquake plates you live on. There will sooner or later be yet another one of these.

And then, finally, as I mentioned before I think you need to address the property right issues. The animals cannot be left behind or by rescuers. There needs to be some considered attempt to take them and put them into shelters and not just simply leave them chained up outside somebody's abandoned home. If the home is abandoned there should be some legal opportunities for people to remove the animals, photograph it, keep a record of it, and identify where it came from. As I say, with new information technology it is simple to do this, and it is simple to communicate that to the general public. Petfinder is this operation in the United States. It makes photographs of pets for adoption available to anybody with a computer. And that certainly would be more than feasible in a disaster situation. I know that communication goes down, but 2-3 weeks later we generally have communication back up again, and that I would argue would be the time to spend more effort on getting people back together again and helping people identify where there are. After Katrina we had a hotline that we operated, and I think we had about 1,000 or 2,000 calls that came into the hotline from people who had left their animals behind at New Orleans for various reasons. Same sort of thing in New Orleans as in Fukushima – people thought that they would be going back in three days, and they didn't get back for four weeks or five weeks by which time, of course, it was too late. So, there were a number of dogs that died of starvation and a number of cats that died of starvation in New Orleans just as they did in Fukushima. They didn't need to. We needed a more considered, more effective response to these sorts of situations.

So, this is always a somber topic. We do the best we can. At the end of the day, it probably wasn't as much as we could've done. And the way we make these things work is that we take our lessons from what happened and then make modifications and move forward. So, the next time something like this happens we can make things a bit better.

Thank you very much for your attention.