

# Ethnoarchaeology of Trap Hunting Among the Matagi and the Udehe, Traditional Hunting Peoples Living Around the Sea of Japan

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## Chapter 2

# **Ethnoarchaeology of Trap Hunting Among the Matagi and the Udehe, Traditional Hunting Peoples Living Around the Sea of Japan**

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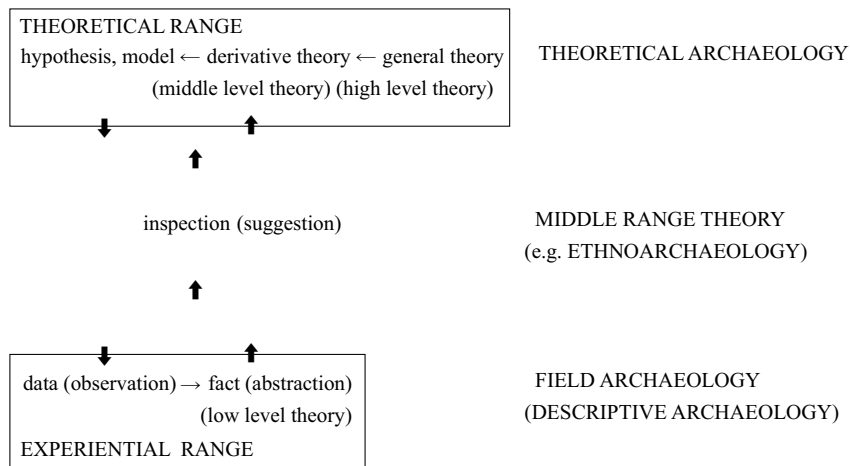
In this paper, I assess the functional interrelationship between the hunting systems, especially trap hunting, of two modern groups, the Matagi and the Udeghe, and identify some functional and technological common features of the hunting systems of the northern forest hunters of the Far East. On the basis of this comparison, I investigate an ethnoarchaeological perspective for hunting systems in prehistoric ages such as the Jomon Period in Japan.

### **1. Ethnoarchaeology as a Radical Innovation of Japanese Archaeology**

In recent years cultural anthropology and ethnology have lost their objects of investigation, simple-primitive hunter-gatherers who were once regarded as peoples who had survived from an earlier stage of human evolution within a closed system that had not undergone any fundamental changes. It is important that the change from this simple evolutionary approach to a historical one that focuses on the historical development of individual ethnological societies be accompanied by a cognitive paradigm shift. We must also note the fact that this theoretical change in ethnology is accomplished as a fruitful result of long-term functional and structural research.

Japanese archaeologists lack sufficient experience of these research methods, however, because until recent years their main purpose has been the restoration of cultural history within Japan. They have tried to explain the spacio-temporal differences between various archaeological patterns in terms of human population dispersal and genealogy. The defect of this traditional method is its lack of the concepts of system and structure in order to interpret and explain the dynamic diversities of culture and society. To put it another way, the middle range theory (Binford 1977, 1980, 1981, 1983) is absent from this traditional method. Consequently, we must put the middle range theory into practice in terms of ethnoarchaeological studies in order to combine the archaeological patterns and the archaeological laws of experiences with hypotheses and models for interpretation of the past (Figure 1). Without the middle range theory, the interpretation of the archaeological distribution and pattern must be at discretion and would be incapable of inspecting.

In order to build these hypotheses and models, as we cannot observe past systems directly we must extract functional and structural systems capable of comparison with the past from present hunter-gatherer cultures. Ethnoarchaeological research is precisely this



**Figure 1** Logical structure of modern archeology (modified from Anzai 1998).

process. Our first step in Japanese archaeology must be the adequate implementation of functional and structural approaches, and cognitive innovation should then be introduced as a second step (Sato 1998a, 1998b, 1998c, 1999, 2000a, 2000b).

## 2. Ethnoarchaeology of Hunting

Prehistoric people are believed to have been hunter-gatherers (Bleed 1993: 26). Prehistoric archaeology has clarified their diet by means of restorations based on analyses of edible materials and research on the fauna and flora of sites. After the “Man the Hunter” conference (Lee and DeVore 1968), the significance with which gathering is regarded in the diet has increased. This is a definite tendency, but from ethnographic observations of modern hunter-gatherers it can be said that hunting is usually a male activity and that the principle of hunting practice influences the social integration of hunter-gatherers significantly, even though the dietary value from hunting is less than that of gathering. Gathering is carried out by women, children, and old persons as individuals and the gathered foods are not distributed between members, whereas hunting is carried out by adult men and the catch is usually distributed according to principles of reciprocity. Unlike gathering, hunting requires high-level technology and systematic knowledge of the ecological environment and animal behavior. Generally speaking, hunting systems are organized on the basis of fundamentally different social aspects such as social organization and cosmology. I believe that the socio-ecological importance of hunting in prehistory was basically similar (Watanabe 1978, 1998).

The consensus in modern prehistoric archaeology is that prehistoric research should be dealt with from the viewpoint of interpreting prehistoric hunter-gatherers’ different adaptations to prehistoric environments and ecosystems. There are two main currents that

differ in their epistemological recognition of history in modern archaeology: processual archaeology, which regards macroevolutionary and general processes of human cultures as important, and postprocessual archaeology, which regards microevolutionary and historical processes of regional and individual cultures as important (Preucel 1991). Both schools, however, recognize the inevitability of archaeological research on modern hunter-gatherers, and practice two methods of ethnoarchaeology. These are the Binfordian approach (Binford 1978, 1983) and Hodder's ethnohistorical approach (Hodder 1982, 1986).

I formerly researched Jomon trap-pit hunting in the western Kanto district of Japan. Archaeological data demonstrate that trap-pit hunting was carried out throughout Japan during the entire Jomon Period. In the early Jomon Period, people hunted a range of game mainly on hills or slopes, using a few trap-pits in pairs. In the later part of the period, people hunted some specific game, probably deer (a conjecture arising from the narrow form of the trap-pits), mainly on terraces using rows of many larger pits. Because this development can basically be seen throughout Japan, irrespective of the local culture area, I regarded this as being due not to cultural progress, but rather to a functional and evolutionary change in the hunting system (Sato 1990, 1998b, 2000b, 2005). However, this hypothesis cannot be tested further by archaeological data alone. I therefore began an ethnoarchaeological investigation of the hunting systems used by the Matagi and the Udeghe, especially trap hunting.

To obtain an outlook for future research in Japanese prehistory, especially of sedentary hunter-gatherers like the Jomon people, I selected the Matagi and Udeghe as ethnoarchaeological fields. The former is a modern hunting group that uses traditional technologies in Japan, whereas the latter is one of the indigenous peoples of the Russian Far East that lives in similar environmental condition to those of eastern Japan. The cultures of the Russian Far East are assumed to have participated in the formation of Japanese prehistoric and historical cultures.

### **3. The Matagi and Their Hunting System**

#### **3.1 Who Are the Matagi?**

The Matagi form one of the traditional hunting groups in Japan. They do not compose an ethnic group, but rather a specialized group that uses traditional hunting techniques and systems. In particular the life and folkways of their northern subgroups in the Tohoku district are well known through numerous documents and records. In this paper I describe these subgroups as representative of the Matagi. It is said that the Matagi were established during the eighteenth to nineteenth centuries (the late Edo Period), when they obtained the ability to supply furs, skins, antlers, flesh of games and gall bladders of bears as merchandise in the process of development of the market economy. The Matagi became active as hunters from the Meiji era to the first half of the Showa era before the Second World War, when the price of furs in particular peaked thanks to the demand from the Japanese army. At the same time, the development of transport networks like trains and roads boosted the circulation of wild animal meat as food and gall bladders for Chinese medicine. The activities of the Matagi corresponded to the modernization of the Japanese

way of life (Taguchi 1987, 1992, 1994).

Their main game species are terrestrial mammals: black bear (Himalayan), Japanese serow, monkey, wild boar, and deer. Their hunting season lasts from the end of autumn to early spring, both because fur and flesh are of good quality for merchandise and because the hunters can move easily and have good visibility in the hunting field when the snow falls and grass dies in this cold season. The Matagi hunt in groups and/or singly, by means of driving, chasing, hiding, baiting and trapping. Trap hunting is one of their characteristic methods. Although the Matagi use several different types of trap hunting, I will here describe the deadfall-type trap (*akibira*) of the Sato-Matagi for the purpose of comparison with the same type of trap used by the Udehe.

The Matagi comprise two groups, the Tabi-Matagi (“wandering hunters”) and Sato-Matagi (“village hunters”). The former are full-time specialist hunters during the cold hunting season and river-fishers, woodcutters, or artisans during other seasons. The latter are part-time hunters during the cold hunting season, which is the slack season for farming, their main form of subsistence. The former have a wider area of activity than the latter. The main game hunted by Tabi-Matagi are bear and Japanese serow, whereas the Sato-Matagi hunt smaller animals such as hare, fox, marten, badger, raccoon dog, and some birds, although the basic trap hunting technique used by both is the same.

### 3.2 Why is Ethnoarchaeological Research of Matagi Trap Hunting Needed?

My research field for the Sato-Matagi was the village of Sawauchi in Iwate Prefecture during the 1992-94 hunting seasons. Methods used were interviews, surveys of the hunting field, and restoration of *akibira* and other traps, of which we studied their usage during the early 1940s (Anzai and Sato 1998). At Sawauchi there are no Tabi-Matagi, but those named Ani-Matagi<sup>1)</sup> from Akita Prefecture, which borders Iwate, often stayed at the houses of influential farmers and taught hunting techniques to villagers (Figure 2). It appears that these villagers became Sato-Matagi.

In the Sato-Matagi of Sawauchi, trap hunting for smaller game in the *satoyama* (“village mountain”) area, which is within an hour’s walk from the village, is more active than the large trap hunting known as *kumaoso* for bear and Japanese serow that takes place in the *okuyama* (“deep mountain”) area, which is further than an hour’s walk and covered with natural forest. This is because the main role of hunting for the Sato-Matagi is to supplement farming. Sato-Matagi traps were mainly made from local plant materials, since their poverty meant they were unable to buy many iron traps for large-scale or group hunting. For this reason the trap hunting of the Sato-Matagi was usually carried out by a single hunter or family who possessed the traditional techniques, making them an effective subject for ethnoarchaeological research as they have not undergone any rapid technological change such as the introduction of guns and high-performance cars for large game hunting.

In both the Ainu and Matagi, methods of hunting large mammals such as bear, Japanese serow, and deer changed rapidly under the influence of modernization after the Meiji Restoration of 1868. This included (1) changes in hunting weapons owing to the spread and adoption of guns and rifles; (2) technological innovation of devices and



**Figure 2** Location of research areas and related villages.

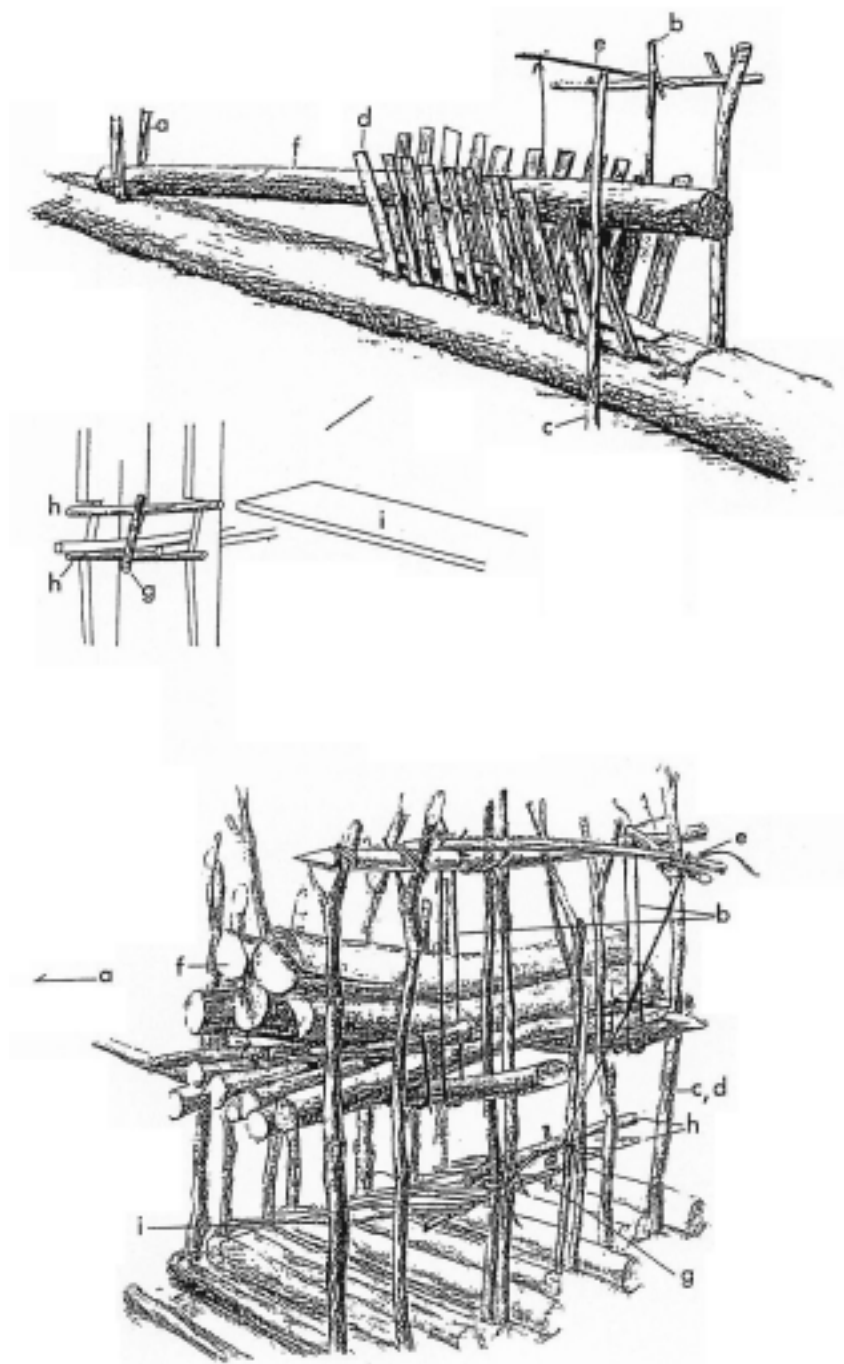


Figure 3 *Dui* (top) and *akibira* (bottom).

equipment in relation to hunting; and (3) changes in the methods, behavior, and objects of hunting in accordance with technological innovation. These changes and innovation made us impossible to speculate previous hunting systems for large mammals<sup>2)</sup>.

In contrast, some aspects of traditional technologies for trap hunting for small game have been handed down from previous generations. However, data concerning traps in world ethnographic observations are limited to the level of descriptions or listing, and do not describe the contexts of their users' trap hunting, hunting systems, and subsistence systems. Consequently, ethnoarchaeological research on trap hunting is required.

### 3.3 Variety of Traps Used by Sato-Matagi at Sawauchi

The best trap hunter among the Sato-Matagi at that time used a range of traps, including those known as *kumabira*, *akibira*, *fuyubira*, and *gomoji*. *Kumabira*, *akibira*, and *fuyubira* are all deadfall types in which a weight crushes the game down into the pit (Figure 3, bottom). These three types have almost the same mechanism, but are of different sizes and used for different animals. The *kumabira*<sup>3)</sup> is a larger trap for bear, whereas the *akibira* and *fuyubira* are used for hunting small and middle-size animals. *The gomoji* is placed between twigs to catch birds.

These traps are also known in other famous Matagi villages such as Ani, Miomote, and Akiyama<sup>1)</sup>, although these also use a snare type trap in addition to the deadfall traps of Sawauchi (Figure 2). Generally speaking, traps for fur animals used by hunter-gatherers worldwide can be basically classified into three functional types: crushing by falling, trapping by snaring, and choking by leaping (Sato 2000b). I believe that trap-pits, automatic spring bows (or spears) and spear-traps were formerly also used, but these types were prohibited at an early stage<sup>4)</sup>, because they were very dangerous for humans and damaged the furs. This makes it very difficult to research the context of the use of these types today (Sato 2000a).

## 4. The Udehe and Their Hunting System

### 4.1 Hunter-gatherer-fishers in the Far East and Fur Animals

In the Russian Far East, which lies across the Sea of Japan from the Tohoku district, there are many indigenous peoples who live in restricted areas and whose fundamental subsistence is or was hunting, fishing, gathering, and herding. One such group is the Udehe, who live in the southern part of the Sikhote-Alin Mountains and have consequently focused on inland hunting. The Udehe's main game species are bear (both brown and Himalayan), elk, deer (red, roe, musk-), wild boar, otter, badger, hare, some types of squirrel, and birds; however, their preferred game is sable. Their main purpose in hunting is to obtain sables by trapping, because historically the indigenous peoples of the Amur area, including the Udehe, were compelled to catch sables by the Chinese and Russian empires<sup>5)</sup>. These two countries obliged the local peoples to provide furs as a tribute or tax.

Trading took place between the ancestors of the peoples of the Lower Amur in the eighteenth and nineteenth centuries from China to Japan through the Amur area, Sakhalin, and the northern parts of the Japanese archipelago. It was referred to as the “*Santan* trade”



by Japanese investigators of the same centuries. Local people functioned as intermediaries between the two areas. The Qing Dynasty obtained fur from them in tribute and granted them silks. Japan bought silks at good prices from them and paid in fur. This spontaneous trade route, in which sables were the prime goods, disappeared during the mid-nineteenth century. This was because (1) in the new Russian territory to the east of the Ussuri River<sup>6</sup>, Russian activity deprived indigenous people of the role of traders; and (2) the border between Russia and Japan was established<sup>7</sup> (Sasaki 1998a).

Regarding sable fur as a strategic material, the Soviet Union encouraged the acquisition of sables. The Udehe continued to hunt fur animals during the twentieth century up to 1990, under rigid governmental control.

#### **4.2 Similarities between Udehe and Matagi Hunting**

Our research on Udehe hunting culture was carried out in and around Krasnyi-yar village, Primorskii Krai (Primor'e Province) during the seasons of 1994-96, and 1999 from the viewpoints of ethnoarchaeology, ethnology, folklore, and linguistics in addition to the same research methods we used to study the Matagi (see Figure 1). The Udehe of Krasnyi-yar have a wide territory covering about 13,520 km<sup>2</sup> for hunting and other activities including forestry and farming along the Bikin River, which is a tributary of the Ussuri River, a tributary of the Amur River. The territory of Krasnyi-yar Udehe consists of fine original forests, which so far have been protected against destructive development and reckless deforestation. The Udehe hunting culture we heard about from some old informants seems mainly to correspond to the period from the 1930s to the 1970s (Sato 1996, 1998a, 1998b, 1998c; Sato and Onuki 2003).

The hunting areas of the Matagi and Udehe have different landscapes. The former live in mountainous areas of northern Japan, in which hunters are always obliged to work on comparatively steep slopes, while the latter reside among river terraces and gently sloping hills which are covered with coniferous forests, taiga, and the mixed latifoliate trees of cold temperate zones. The Matagi hunters often have to climb up to their hunting areas as well as using cars and trucks, whereas for the Udehe hunters the only means of transportation from the village to their hunting areas is by motorboat. Within the area itself they move about by canoes, which were once generally used for traveling by river.

Despite these differences, the traditional hunting methods and seasons of these two peoples are similar. The following reasons may be surmised.

- (1) As it is impossible to have wide visibility or good landmarks for moving about the taiga or forest on the terraces before the leaves fall, it is both dangerous to pursue game under these conditions, and impossible to discover the game before being noticed by the animals.
- (2) Historically, these two peoples were compelled to catch fur animals for merchandise, tribute, or tax, though without any direct historical relationship. Consequently, the main hunting activities of both peoples consist of trap hunting for fur-bearing animals.
- (3) Both the fur and flesh of game are in the best condition during the late autumn and early winter, because the animals eat extra to prepare for overwintering. This inevitably means that the best hunting season for fur-bearing animals is restricted to autumn and winter.

Thus, the reason for the similarities in the principles of hunting behavior and

technology between these two peoples is that they have an analogous functional structure in relation to similar socio-ecological conditions.

#### 4.3 Hunting and Trapping of the Udehe

The Udehe use many traditional hunting methods. For example, they capture musk deer by using snares with a long driving fence (*huka*, Figure 4), hare by using a small snare also called a *huka*, and a range of animals with automatic spring bows. Three types of automatic spring bows were formerly used: the large type called a *pou* for large game like bear, elk, and large deer; the middle one called an *uilu* for middle-sized game like otter, badger, and hare; and the smallest, called a *sengmi*, is used to capture sable and small hare<sup>8)</sup>. These traps have now been replaced by modern iron jaw traps<sup>9)</sup>.

Udeghe hunters also hunt animals in a range of other ways. These include hunting badger and wild boar with dogs in winter, wild boar and deer by driving in winter, deer by hiding in winter, deer with canoes or deer-whistles in summer and autumn, and mountain sheep by driving in early spring. Their traditional hunting weapons were spears and bows and arrows. The former was used for hunting large animals like bear, large deer, and wild boar, and the latter for smaller and swifter-moving animals and birds. Spear hunting for larger animals was formerly extremely dangerous because hunters had to spear them from a close distance<sup>10)</sup>, and consequently it gave them great prestige. In the present day, however, large-mammal hunting is no longer as dangerous as spear hunting used to be, because the

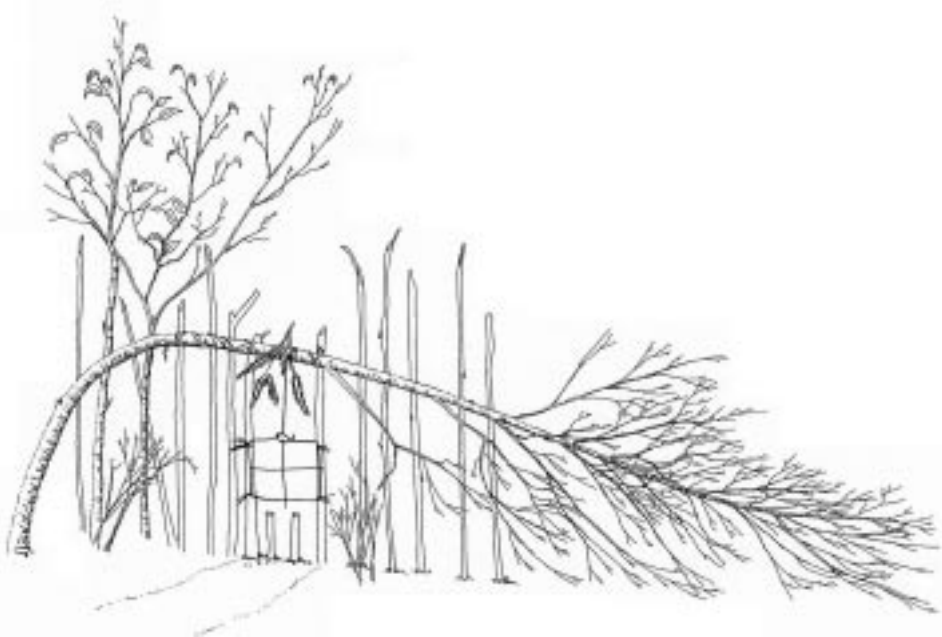


Figure 4 *Fuka* for musk-deer.

hunters can shoot the animals from a distance with a gun or rifle. In this respect, we can recognize a significant change in their behavior during large-game hunting. The qualities formerly required of hunters were the perseverance and skill to approach hunting game within shooting range, while today skill in rifle shooting is most important.

Trap hunting for sable is the most important type of hunting of all for the Udehe. In the cold winter season, from October to February, the Udeghe hunters go to their own hunting huts in individual hunting territories away from their villages and hunt numerous fur-bearing animals, especially sable, by trapping, driving and chasing. Basically, smaller animals are obtained by trapping and larger animals by driving and chasing. This pattern is the same in the hunting system of the Matagi. I regard this as stemming from the fact that large animals demand a wider habitat. As a result, because there are fewer animals inhabiting a given area, the less efficient it becomes to construct large traps at high cost in order to catch them. Moreover, it is not always necessary to use traps devised for the sake of protecting fur from damage when hunting large game for meat.

The Udehe hunters use several kinds of deadfall type traps with logs for hunting sable, such as those known as *dui*, *kafari*, *langi*, *hadana*, the *huka* spring trap with an elastic branch, and a sort of automatic spring bow called *sengmi* (Figure 5, top). The deadfall traps called *kafari* (Figure 5, bottom), *langi* (Figure 6, top) and *hadana* (Figure 6, bottom) are devices to catch game by trapping its neck or head between logs, but the *dui* crushes the body of the game in the same way as the Matagi *akibira* trap (Figure 3). We can note the technological similarities between the *dui* and *akibira*, and should also remark that these two traps are similarly the main means of hunting in each hunting system.

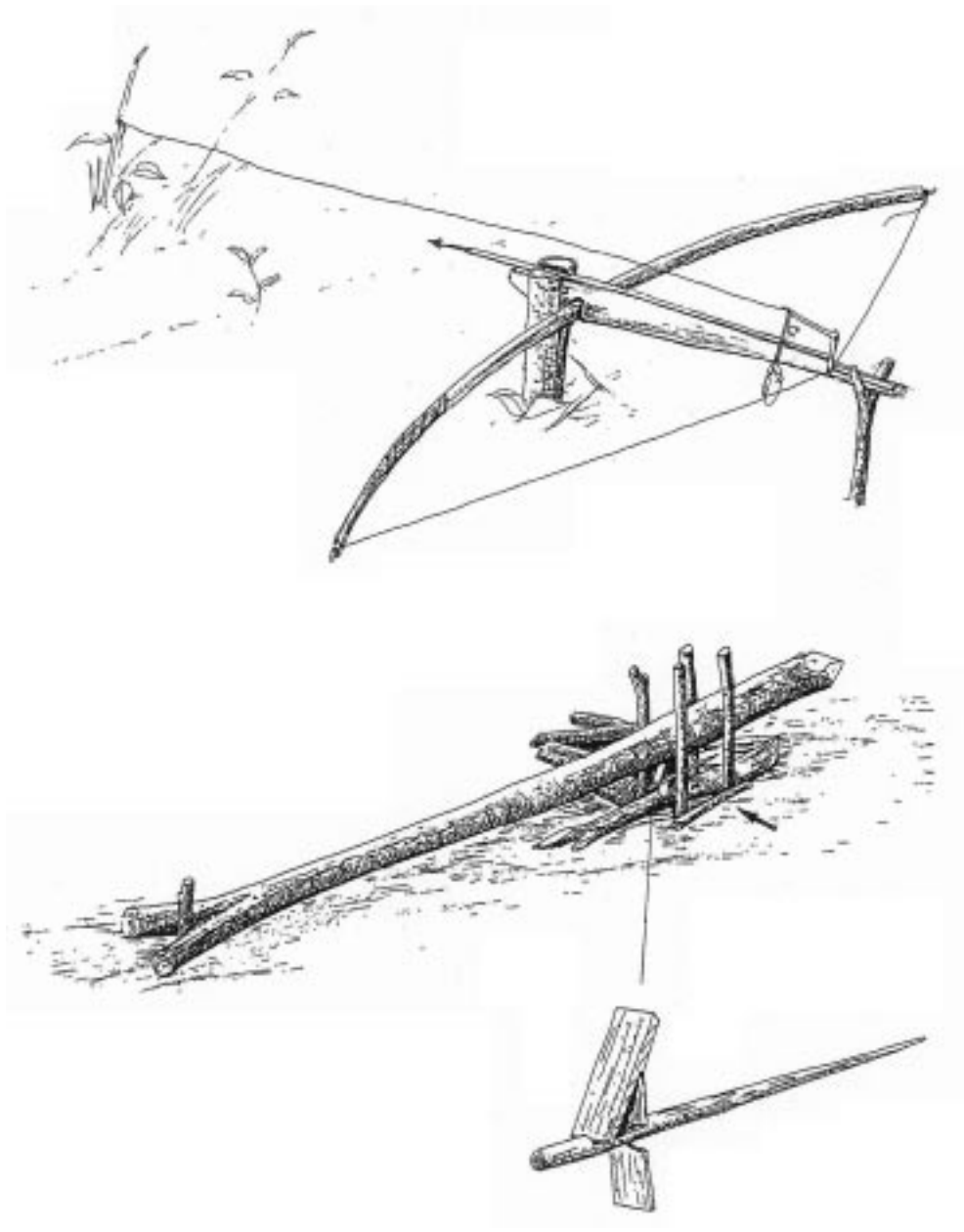
Traps closely comparable to the *dui*, *kafari*, *huka*, *langi* and three types of spring bow used by the Udeghe have also been reported in the Orochi people, who live in the lands adjoining the Udehe's territory to the north (Starzev 1998). The *langi* is widely distributed among the Tungus-speaking peoples. Traps of the same sort as the *kafari*, *dui*, and *hadana* have been reported from northeastern China (Imanishi 1991: 351-352; Li and Liu 1997: 5-9; Sasaki 1998b). We can say that the traps used by the Udehe, including spring bows, are not specific to their ethnic group but are general to northeast Asia (Sato 1993; Utagawa 1996). The types and mechanisms of the traps used by the Udehe are basically consistent with those used by the Matagi, with the exception of automatic spring bows.

## 5. *Dui* and *Akibira*: Two Dead Fall Type Traps in the Russian Far East and Japan

### 5.1 *Dui* Trap Hunting

The *dui* has a mechanism in which when a sable or other game animal steps on the board (i) and off again, the releaser (g, h) which supports the heavy log (f) as a lever releases the log, which crushes its body (Figure. 3 top). In order to prevent animals from escaping and to drop the falling log correctly, a fence (d) is built. At both ends of the fallen tree where this trap is installed, bigger and longer lead fences<sup>11)</sup> are built to guide the game into the trap.

The *akibira* has basically the same mechanism as the *dui*. The high level of similarity between both structures with the step board (i) and the releaser (g, h), which supports the



**Figure 5** *Sengmi*: An automatic spring bow (top), *kafari* (bottom).

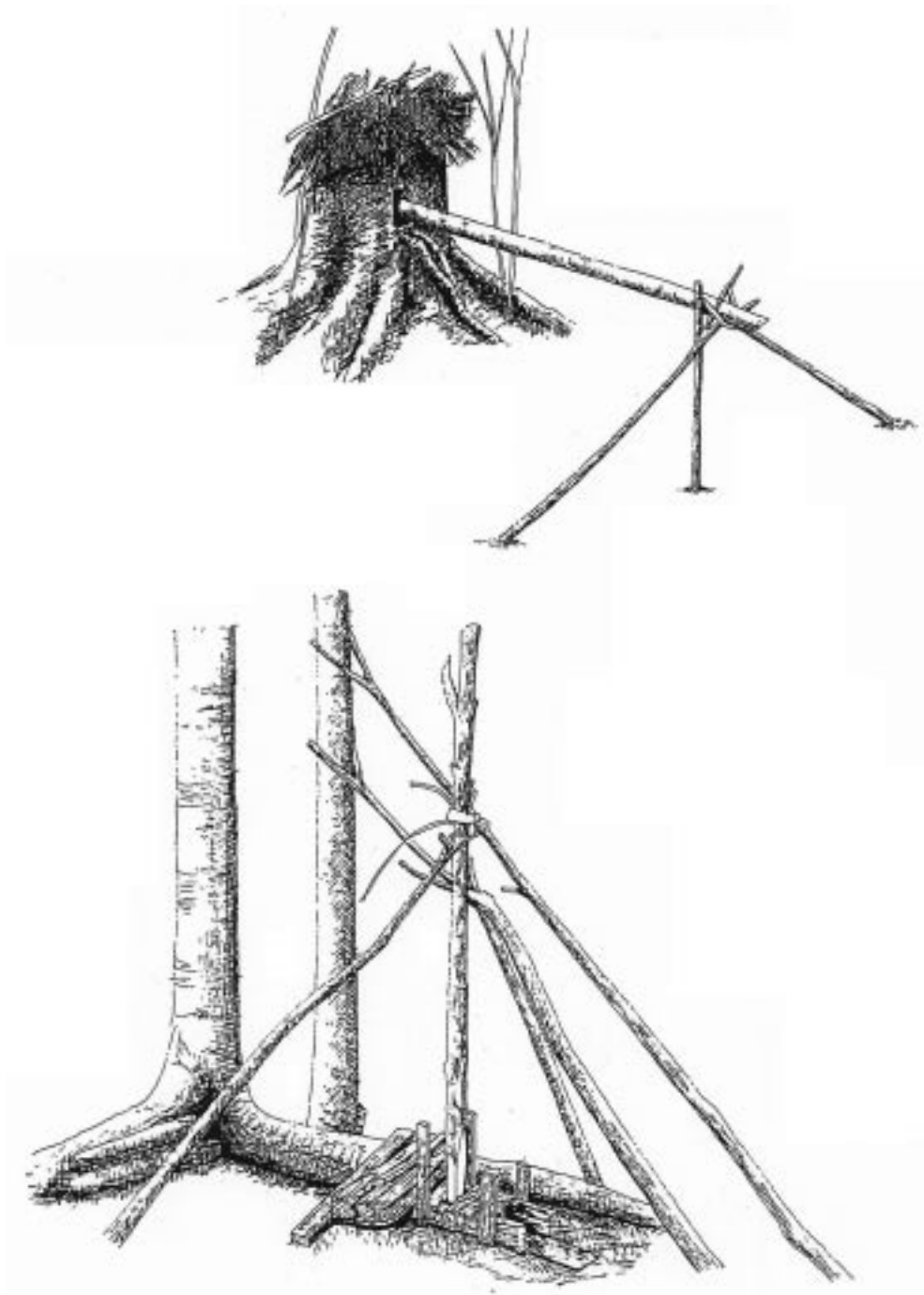
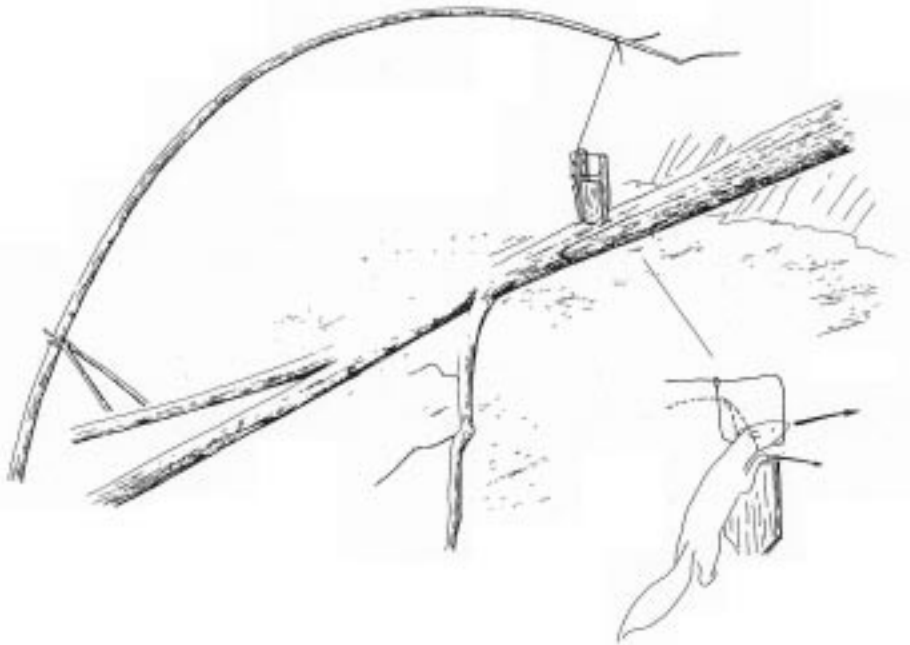


Figure 6 *Rangi* (top), *hadana* (bottom).

heavy log (f) as a lever, is very interesting. There are slight differences in terms of the use of either step boards (*dui* "i") or a row of branches (*akibira* "i"), and whether a single heavy log (*dui* "f") or connected logs like a ceiling (*akibira* "f") is used; however, it seems that such differences only concern the elements used. There is an especially strong similarity in the structure of the releasers of both traps (g,h) (Figure 3).

The *dui* are set on fallen trees, which offer routes for animals to cross rivers and swamps in the terraces and hills, without feeds. These positions limit the range of animal routes, and the game must pass via these trees. If there are no fallen trees in the neighborhood, trees are cut down by the hunters. The trap is built in spring and left until early October, when it begins to function, in order to accustom the game to it. Meanwhile trees and grass grow thick over the field, and the hunters cannot move freely in the hunting areas. The *akibira* are left for the same purpose, too. The *dui* works during only two months, October to November, because in early December sables do not necessarily walk across fallen trees; they can cross anywhere when the water is frozen. After the beginning of this frozen season, hunters switch traps from the *dui* to the *huka*, which is a spring trap with an elastic branch set on the same fallen trees or other spots (Figure 7).

The Udehe hunters of Krasnij-jar have their own hunting territories on the Bikin River basin. These territories consist of terraces and hillsides and are bounded by ridges. A single hunting territory of middle size would be about 200 km<sup>2</sup> in area. These territories include



**Figure 7** *Fuka* for sable with an elastic branch.

some trapping areas along the valleys of tributaries of the Bikin River. Udehe hunters set 10 or more *dui* in a day, and 100 or more in all within a single trapping area. The territory of one hunter is wider than the distance that can be walked in two hours, but actual hunting is carried out within the range of one day's walk from a hunting hut.

Trapping with *dui* is carried out by individual hunters. Previously, before the establishment of the socialist government in Russia, the hunting territory was passed down in hereditary succession from a hunter to the son who was the best hunter in the family.

## 5.2 *Akibira* Trap Hunting

The mechanism of the *akibira* is the same as that described above. The main game caught by *akibira* is hare, but it can also be used to catch fox, marten, badger, raccoon dog, and copper pheasant, because the feeding behavior of copper pheasants resembles that of hares, and because foxes and martens chasing copper pheasants are attracted to this trap by their smell. *Akibira* are set on (1) the sides of brooks between slightly steep hillside slopes; and (2) animal runs in beech forests from mid-October to early December. The reasons for these placements are: (1) in mid-October, when the leaves fall, the feed plants of hares are damaged by frost in the forests near the brooks, and at the same time, the acorns of beech trees fall into the bottom of the ravines, where hares gather for feeding and mating; and (2) topographic conditions and vegetation restrict the movement of game into limited runs on hills. It is therefore not necessary to offer feed at the *akibira*. We must be careful to note, however, that hunters do not put the *akibira* into effect until early November, when the animal fur improves in quality. In short, hunters give animals a period in October during which they can become accustomed to the trap, just as the Udehe do with their *dui* traps. As these cases demonstrate, the practice of trap hunting requires an operational "software" system. An integrated comprehension of both practice and "software" is therefore indispensable for ethnoarchaeological research.

The points at which the *akibira* are set are selected carefully within the places where hares can feed easily and must pass through as a result of the restrictions of regional ecosystems. As these points are limited, they are used repeatedly. In early December when heavy snow begins to fall, the conditions are no longer suitable for the *akibira* and the winter deadfall trap, *fuyubira*, is used instead.

According to our informant, on average two hares and two copper pheasants are caught per day. The total for a single season is unknown, because he has never counted (Table 1) (Anzai and Sato 1998).

## 5.3 *Akibira* Hunting Territory and the Activity Range of Hunters

In the case of the village of Sawauchi, our informant hunter had the trapping territory shown in Figure 8. It is a deformed T-shape area of 1.7 km by 1.1 km, with a total area of about 80 ha. Ridges on the hill behind his house mark the boundaries of the territory (Figure 8). In this territory he sets 30 and more *akibira*, all in fixed positions, during the autumn hunting season. Each *akibira* is set separately, at intervals ranging from 50 to 300 meters. The hunter patrols them every morning, spending about two hours in removing the catch, resetting and repairing them and preparing the ground around them. The total

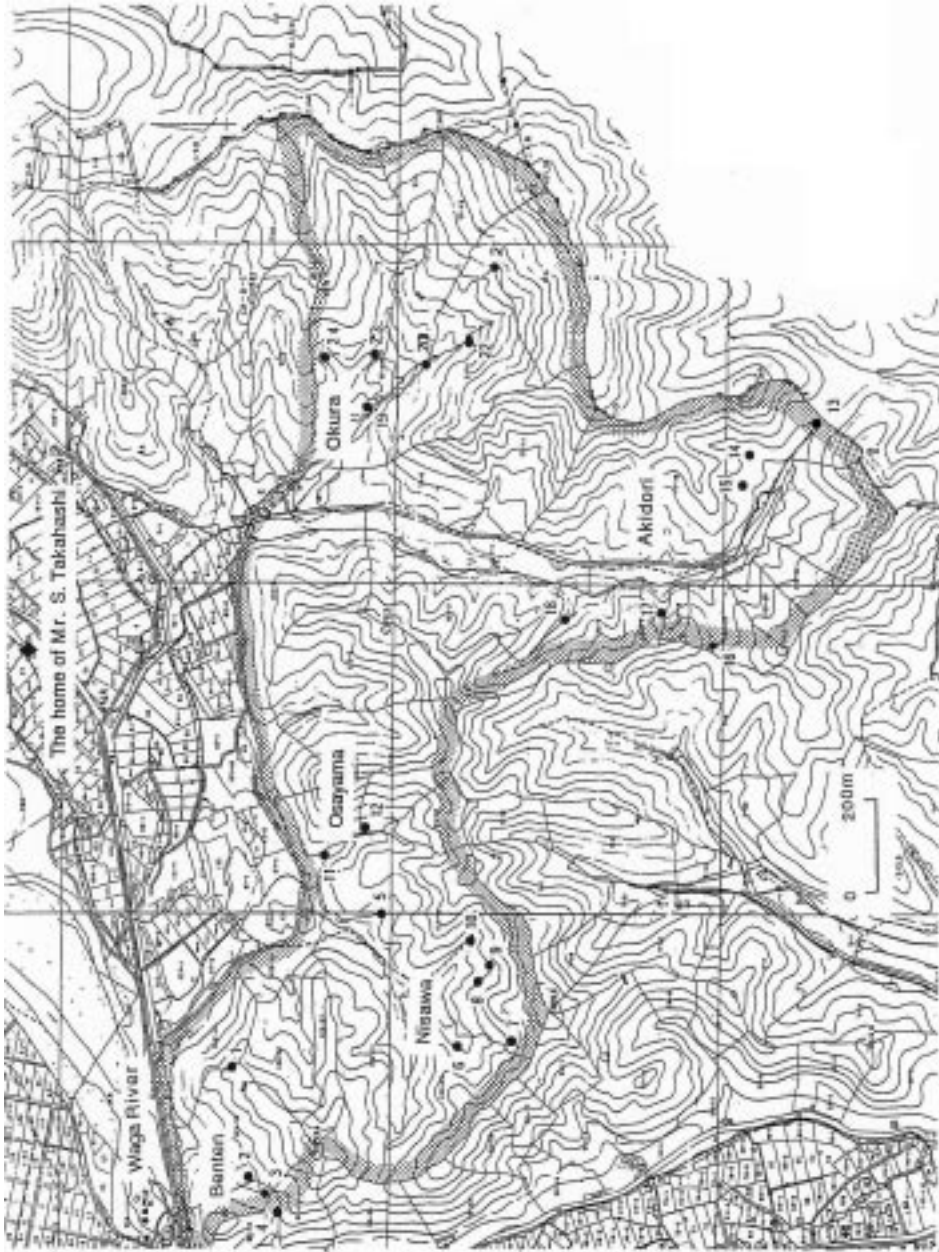


Figure 8 Hunting territory and setting positions of *akibira* by Mr. S. Takahashi in Sawauchi.



**Table 1** *Akibira* hunting in Sawauchi.

Trap no.	Group	Location	Game	Remarks
1	Benten	side of brook	hare	
2	Benten	side of brook	hare	
3	Benten	pass	marten, badger	
4	Benten	side of brook	hare, copper pheasant	
5	Nisawa	side of brook	hare, copper pheasant	5-6 hares per season
6	Nisawa	side of brook	hare (many), copper pheasant, weasel	
7	Nisawa	side of brook	hare, copper pheasant	*another set in the deep pass
8	Nisawa	side of brook	hare, copper pheasant	
9	Nisawa	side of brook	copper pheasant	*total game in Nisawa traps
10	Nisawa	side of brook	copper pheasant	was more than 30 per season
11	Osayama	side of brook	copper pheasant	
12	Osayama	side of brook	copper pheasant	
13	Akidori	pass	hare, marten, badger	*patrolled once every two days
14	Akidori	side of brook	hare, copper pheasant	
15	Akidori	side of brook	fox	
16	Akidori	pass	hare, marten, badger	
17	Akidori	side of brook	hare, racoon dog	
18	Akidori	side of brook	raccoon dog	
19	Okura	side of brook	copper pheasant	
20	Okura	side of brook	copper pheasant	
21	Okura	side of brook	copper pheasant	
22	Okura	side of brook	copper pheasant	
23	Okura	side of brook	badger, marten, copper pheasant	
24	Okura	side of brook	badger, marten, copper pheasant	

\*Personal outcome by Mr. S. Takahashi in 1940s.

\*Trap numbers correspond to those of map (Fig. 8).

distance walked in these patrols is about 8 km (Table 1).

It is well known that the activity range of modern hunter-gatherers consists of double concentric circles, one of which has a radius of 5 km (one hour's walk) and the other of 10 km (two hour's walking) from a campsite (Vita-Finzi 1978). Of course the *akibira* hunting territory is smaller than this range, because such trapping is practiced to supplement the main occupation of farming. In the case of leaping trap hunting for Ryukyu wild boar in the sub-tropical forest of Iriomote island, in Sakishima-gunto, Okinawa Prefecture, hunters who also practice farming have a territory with an average area of about 1 km<sup>2</sup> at the distance of an hour's travel by boat or motorcycle from the village. This leaping trap hunting is carried out from September to March, but the concentrated and best season is from October to November, because in this time period (1) the points at which traps are set can be fixed to aim at boars gathering in specific areas to eat fallen nuts; (2) wild boars put on weight at this time; and (3) hunters are free to hunt as this is the agricultural off-season (Imai 1980). These factors are very similar to those seen in Matagi and Udeghe hunting. As described above, they can also be seen at work in Miomote. The *okuyama* area, more than

an hour's walk away, is recognized by the villagers as the natural world.

It is of great important that measuring distance in terms of an hour's walk is the method of recognition adopted not only by hunter-gatherers as "collectors" (Binford 1980), but also by these modern hunters from the sub-tropical to cold temperate zones. I regard this way of recognition as not caused by cultural and traditional factors, but rather as a functional common feature of hunting systems.

## 6. Conclusions

Why do these two hunting systems, *dui* and *akibira*, share so many common characteristics (as shown in Table 2)? Historically, they have some differences. The Russian Far East and northern Japan have never shared a common cultural area since the Neolithic age according to archaeological data, and the "*Santan* trade" that connected the Amur lands with northern Japan until the early modern age did not include the Tohoku district, since this district is located outside the habitat of the sable. In addition, in modern times until the 1990s there has been a rigid border between Russia and Japan. Consequently, these common systematic characteristics shared by both trap hunting systems should be thought of as technological adaptations to catch game possessing similar behavioral characteristics under similar topographical, environmental, and ecological conditions in order to gain better-quality furs and meat in winter.

**Table 2** The hunting systems of the *dui* and the *akibira*.

	<i>Dui</i>	<i>Akibira</i>
game	sable	hare (copper pheasant, marten)
hunting season	October (leaves falling) to early December (snow falling, freezing)	mid-October (leaves falling) to early December (snow falling)
setting points	on fallen trees across rivers and swamps	on the sides of brooks
trapping territory	area within one day's walk within hunting territory	area bounded by ridges, c. 80 ha.
location of the trapping territory	on terraces and hillsides	on hills
bait	no (on animal routes)	no (on animal routes)
trapping method	crushing with heavy log	crushing with heavy logs
method of preventing escape	construction of fence	construction of fence
parts of the device	3:step board (i), release (g, h), lever (e)	3:step branches (i), release (g, h), lever (e)
trigger for falling log	step on the board	step on the row of branches
principle of weight support	leverage	leverage
release	combine with three branches	combine with three branches

Moreover, the most important point is that this common characteristic is systematic. Until now, traditional Japanese archaeologists have understood this similarity between the two areas as the result of dispersal of a human group, cultural intercourse, or formation of a cultural area in the framework of the diffusion and genealogy theory. As I have already explained, however, it is clear that this understanding cannot be accepted. The efficiency of trap hunting is strongly controlled by animal behavior. I disagree with the discussion that attempts to trace the origin or genealogy of the Matagi and Udeghe traps to some past human group. It is therefore hardly possible that the mechanisms and structures of these traps reflect the cultural history. I believe that there is a specific general functional structure seen in both hunting systems, that is, a functional association between the systems as trap hunting under given conditions. An integrated comprehension of not only the materials (hunting devices) but also the operational “software” systems in terms of the ethnoarchaeological research will result in our making progress in developing a perspective for the interpretation of prehistoric hunter-gatherers.

## Notes

- 1) Ani is a village in Kita-Akita-city, the northern part of Akita Prefecture. The most famous Matagi villages are Akiyama in northern Nagano Prefecture and Miomote in central Niigata Prefecture. The villagers, however, insist that the originators of their hunting system came from Ani as Tabi-Matagi. The activity area of the Tabi-Matagi from Ani was very wide, including the mountainous areas of central and northern Japan. Many legends in Matagi villages describe Tabi-Matagi from Ani who brought not only Matagi hunting techniques but also their culture as a whole to these villages. The process whereby the Ani Matagi hunting group was formed is as yet unknown (Taguchi 1994).
- 2) As the hunters can shoot at game from a long distance as a result of the introduction of new weapons, from spear through musket to rifle, the famous Matagi bear-hunting siege has changed from many hunters driving the game to the nearest side of the shooters to a small group driving the game into the shooting area.
- 3) *Kumabira* traps in Sawauchi were not set near the village but in the *okuyama* area, far from the village, using logs as weights. When the same *kumabira* trap was used in Miomote, hunters used stones instead of heavy logs because of topographical requirements and the inability to obtain suitable wood. There are some well organized studies and records on hunting ways and territories in Miomote (Taguchi 1992, 1998; Toumi 1995). However, bear hunting in prehistoric ages should be interpreted as an activity for ritual and other purposes rather than a subsistence activity. Functional and structural models of small game hunting are therefore more important and appropriate in ethnoarchaeology.
- 4) The automatic spring bows of the Ainu are well known, but this trap was prohibited by the local government during the Meiji era. It was exactly similar to that recorded as used by the Udehe recorded in the late nineteenth to early twentieth centuries (Figure 5, top).
- 5) Russia sold fur such as sable, ermine, and fox at a high price to Europe. In those days a large amount of fur was imported into Europe from all over the world (Ray 1998).
- 6) The Qing Dynasty lost the east bank of the Ussuri River through the Aihun Treaty in 1858 and the

- Peking Treaty in 1860. This area has belonged to Russia since this time.
- 7) By the Treaty of Exchange of Sakhalin for the Kuril Islands in 1875.
  - 8) These three types of trap differ not only in size, but also in setting height and position and in spring force.
  - 9) Trap-pit hunting was carried out until the 1920s in the Bikin River basin. There were two types: one was a pit covered with an iron board with a cross-like slit, and the other was a rectangular pit with spears on the sides of the hole. They were used to catch deer and wild boar. After the residential concentration into specific ethnic villages and compulsory modernization by Stalinism in the 1930s, this type of trap-pit hunting was prohibited because of its danger. The former type of trap may have been reported by V. K. Arsen'ev as trap-pits accompanied by a long fence. He wrote that the fence extended 24 km in length with 74 fall-pits (Arsen'ev 1975: 141). It is said that the former was introduced from China and the latter was used by Russian Old Orthodox believers (*Starovery*), who moved to the Far East in order to avoid the influence of the Russian Revolution. Neither of these traps is traditionally used by the Udehe.
  - 10) The distance from which large deer can be shot by bows and arrows is said to be approximately 20-30 m. Moreover, the deer can only be brought down if it is shot in the heart on the left side.
  - 11) Lead fences are used in conjunction with traps throughout the world (Sato 1993). Although no attention has been paid to this factor in either ethnology or archaeology, it is not too much to say that the success of trap hunting depends on lead fences. (See note 9 concerning long fences for trapping.) I think that the Jomon trap-pits must have been accompanied by lead fences and that trap-pit hunting could not have been successfully carried out without them (Sato 1990, 1998b, 2000b, 2005).

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