Biota Vol. 16 (2): 278–286, Juni 2011 ISSN 0853-8670

Hunting and Ethnozoology Systems of Monitor Lizards (Fam. Varanidae) Utilized by Yaur Tribe at National Park of Cenderawasih Gulf

Sistim Perburuan dan Etnozoologi Biawak (Famili Varanidae) oleh Suku Yaur pada Taman Nasional Laut Teluk Cenderawasih

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Abstract

One of the recognised and seashore ethnics is Yaur tribe who lives at Yaur village and in National Park of Cenderawasih Gulf. Many wild animal are utilised by Yaur people, the one frequently used is monitor lizards (*Varanus spp.*). How they hunt and its utilization activities were being studied. The fifteen respondents out of 50 household were participated in this study. Interview and observation were done to justify between information and objects, i.e. the monitor lizard and hunting activities. The findings of this study were that the hunting type is traditionally done. Individual and group are the typical hunting members. Traps, chopping knife, snare and bow and dodeso ripe were still used. Traps used vary consisted of three types, i.e. pig traps, mice trap and circle trap. Skin is of the most used body parts. Gall, teeth and fat are also used. Healthy and squeeze oil are the objective of utilization. Tifa and offset are the two skin products. Meat was processed by smoked, boiled and fried. Economically skin has prospect.

Key words: Hunting, ethnozoology, monitor lizard, Varanus spp., Yaur tribe, Papua

Abstrak

Salah satu suku yang dikenal dan merupakan etnis pesisir adalah suku Yaur yang hidup di dalam dan sekitar wilayah Taman Nasional Laut Teluk Cenderawasih. Beberapa satwaliar sering dimanfaatkan oleh etnis Yaur, salah satunya adalah biawak (*Varanus spp.*). Bagaimana berburu dan pemanfaatannya merupakan tujuan penelitian ini dilakukan. Sebanyak 15 responden dari 50 kepala keluarga telah berpartisipasi. Interview dan observasi dilakukan untuk justifikasi antara informasi dan obyek meliputi jenis biawak dan aktifitas perburuan. Hasil penelitian dinyatakan bahwa perburuan masih dilakukan secara tradisional. Sistim perburuan individu dan kelompok merupakan pola yang masih berlangsung. Jerat, parang, panah dan tombak serta tali dodeso digunakan dalam berburu. Terdapat 3 jenis jerat yaitu jerat babi, jeat tikus dan jerat melingkar. Sementara kulit adalah bagian tubuh yang sering digunakan. Hati, gigi dan lemak biawak juga digunakan. Tujuan pemanfaatan untuk kesehatan dan minyak pijat. Tifa dan opset adalah dua produk dari kulit. Daging diproses dengan pengasapan. Secara ekonomi kulit memiliki pasar yang prospektif.

Kata kunci: Perburuan, etnozoologi, biawak, Varanus spp., etnis Yaur, Papua

Diterima: 08 April 2011, disetujui: 23 Mei 2011

Introduction

Monitor lizard, the so called "biawak", "soa-soa" and biaok (*Varanus* spp.), is one of the monitor lizard species easily found around community settlement. Monitor lizard is one of the reptilian species from ordo of Sauria and family of Varanidae (de Rooij, 1915; Sprakland, 1991). This species is diversely spread over the archipelago of Indonesia and particularly in Papua. There are more or less six species in Papua, i.e. *Varanus prasinus, V. indicus, V. salvadorii, V. kordensis, V. doreanus, V. gouldii* (Petocz, 1987; de Lisle, 1996) and in New Guinea including its sattelite islands are nine species (Allison, 1996).

Due to its presences around community settlement, the monitor lizard is frequently hunted (Faidiban et al., 2002; Homer, 2004; Pattiselanno et al., 2007). Its meat is delicious, white-meat group and chicken-like taste. Nutrient content studied by Bugis (2004) stated that its meat consists of 67.42% protein, 0.24% carbohydrate, 16.37% fat, higher than that of cattle. However, almost every community group in Papua uses its body parts for several important activities such as reported by Iyai and Faidiban (2003) in Mansinam island, Manokwari and Rahavu (2001) in Arfak tribe at Arfak nature reserve and Homer (2004) in Warkapi village district of Manokwari. Besides for consuming, another fact was reported by Iyai and Faidiban (2003) at some Byak tribe people who do not consume the monitor lizard meat due to the myth. Therefore each of Papuan tribes has its value, perception and experiences in using wild animal for providing their primary and secondary basic needs, such as magic, traditional rituals etc. This interelation, between animals and human, is called ethnozoology (Jamir and Lal, 2005).

One of the well-known and seashore ethnic is Yaur tribe living at Yaur village and in Cenderawasih Gulf National Park (Watofa, 1997). The Yaur width is 2700 Ha and closely bordered with some villages such as Goni, Akudiomi, Bawei, Sima and Yeretuar. Several tribes live at and around Yaur village exist. However, one interesting ethnic being studied was Yaur tribe. This is because Yaur tribe live inside the national park. Many wild animals such as deer (Pattiselanno et al., 1999), pigs, megapods, bandicoot, river crocodile and dendrolagus, are hunted and utilised by Yaur people. They catch wild animal using traditional tools and use its body parts for certain uses. In ecological meaning as reported by the latter author, the trapped wild animal are frequently preyed by this species as monitor lizard is beast predator in Papua and meat consumers. They said that monitor lizards were found frequently at the traps in Warormi valley, the places where hunting activities are visited. It seems that this monitor lizard has food web relationship with grasser and browser in this habitat, such as deer, pigs, dendrolagus, respectively. Economically, the skin was reported has good

prices in the local market such as Nabire. Therefore, although the monitor lizards was not the primary hunted animals, its presences can be one alternative for hunter in Yaur village. How Yaur people hunt, monitor lizard product processing and its utilisation were then becoming the objectives.

Materials and Methods

A one month field research was placed at Yaur village, District of Yaur the regency of Nabire (see Figure 1) started from 1st of December 2001 to 1st of January 2002. Yaur village is located in Cenderawasih National Gulf Park and geographically at South Latitude 1°.43'.3" and 134°.06'-135°.10' Meredian (Watofa, 1997). The rain volume is 1200-3700 mm/year. Average humidity is 82-83% per year. Respondents were participated in this research were 15 households out of 50 households. Interview and observation were made during collecting data. Weighing and measuring monitor lizard body weight and length were made using hanging balances and roll meter. Identification was made by using key identification book described by Nelly de Rooij (1915) and Allison (1996). Variables measured were comprised of number of hunting member, hunting tools, combination of hunting tools, number of trabs, frequency of hunting, locations, hunting results comprised of number of species, number of hunting results, utilizing comprised of skinned technique, skinned processing technique, time for skinned processing, meat processing, time for meat processing, uses of several body parts, and the objectives of monitor lizard use. All data were stored in Excell 2003 and descriptive statistical analyses, such as average, standard deviation, minimum and range. maximum, and percentages, were made. Comparison made was based on similar studies in Papua, such as Homer (2004), and Faidiban and Iyai (2003).

Results and Discusions

Due to its location in Cenderawasih National Gulf Park, several conservation organsations have introduced programmes to empowering local community for reducing high numbers of hunting activities. A program induced by WWF was by keeping goat at village. However due to lack of experience, farmers could not succeed. Livestock feed and diseases are the two constraints faced by goat farmers. The prices of skin and other hunted animal were still the primary choices for increasing household net income. Therefore, farmers, Yaur tribe, have been still going into forests for extracting all forest products.

The Objective of Hunting

The findings of this research were that selling, pest and consumption were the three objective of hunting monitor lizard. Net income generation was the first reason in hunting the monitor lizard. For sufficient household consumption, hunting is the first livelihood activity, where number of household members was within a range of 5 to 13 persons (Table 1). Local market of meat and skin demand was the objective and reasons why monitor lizards become one of the targeted wild animal. Monitor lizard is usually found around hunting sites. Traps set up by a number of hunters were destroyed by species of monitor lizards, i.e. V. salvadorii and V. indicus. Reason stated the onitor lizard as the pest was told by three respondents (20%). The hunted and traped animals are eaten by the monitor lizards. Therefore, they called as pest. Another finding was consumption of meat. Only one respondent, age of 56 years old (6%), found able to consume the meat. Comparation was made for the young age (teenager) and confirm that due to their settlement with other community group in Nabire, they could consume the meat of monitor lizards. However, they were not included in this study. This meant that the meat consumption habit and tradition changeable and determined by their interaction with other tribes. However, this also need further study. One severe reason was related with the myth told that Yaur tribe was origined of the monitor lizard. Similar information exist informed by one tribe in Fak, province of Papua Barat. Therefore, there is a similar perception of the origin of several tribes in Papua around the neck-side of Papua island. However, no further detail study reported concening this phenomenon.



Figure 1. Map of Yaur village, Nabire regency-Province of Papua Indonesia.

Hunting Activity

Hunting Members

Ages of respondents were vary ranged from 25 to 56 years old (Table 1). This range is the productive old. Younger ages show that hunting activity has been known and practiced by Yaur tribe. Hunting members could reach 12 persons for each hunting activity. However, 2–6 persons (53%) were found dominantly in Yaur tribe, followed by 7–11 persons (33%). The dynamics of hunting members were depended on family members. Some family member names are Wojeri, Wami, Abowi and Homba. No hunting seasons were made.

However, it was stated by the respondent that hunting season could be done when fruit season is coming. At this season many monitor lizards are seeking their preys at fruit trees, such as birds, mammals and other herpethofauna. Similar finding was reported by Mayes *et al.*, (2005). The relation between the existances of wild animal and its habitat is explained by Morrison *et al.*, (2006).

The average of traps set by the hunters was 103±129 tail (range of 10-500 tail). Number of traps set by Warkapi ethnic was slightly less than that of Iyai (2002), i.e. >15 tail (1-15 tail). The reason was that hunting was not the primary livelihood of Warkapi people.Warkapi's people hunting activity per week was in average of 6 times. Similar results were reported by Homer (2004) done by Warkapi ethnic, i.e. 1-2 times/week, 3-4 times, 5-7 times and 7-8 times/week. Iyai (2002) result was slightly higher than Homer (2004). While in hunting location the hunters went to location of traps and set the trap and they could spend in average of 3±0.97 hours (range 2–5 hours).

Hunting Location

Average distance of hunting sites was 14.6 ± 8.4 km (2–25 km). The primary hunting location was Waroromi valley, i.e. 20 km from the Yaur village. Besides walking, boat is frequently used. The more numbers of family members are, the more the number of hunting members are found. It was found that head of family or household usually hunted accompany by other relatives or family. Another reason

was about landright (Hak Ulayat). From this finding it was seen that there are two types of hunting pattern, i.e. individual and group hunting systems as well.

Hunting Tools

Trap was the common hunting tool beside the other four hunting tools, i.e. choppingknife, snare, bow and dodeso ripe (Figure 2). The most utilised hunting tools were the combination between trap, chopping-knife, snare and bow and dodeso ripe, i.e. 10 respondents (67%). Other combinations were using trap, chopping-knife and dodeso ripe (2 respondents, 13%). Similar finding was also reported by Homer (2004). However, there were two types of traps used by Warkapi ethnic, i.e. pig trap and mice trap.

Trap constitutes a combination of several materials used to tie between ripe and stick. Trap is a tool that is frequently used by local hunters in Yaur. The finding of trap types are mice trap, pig trap and circle trap. Mice trap is made by bending a piece of chopped tree until reaching a stick stand, consisted of a bending stick put on the grown. On the top of standing stick a knot ripe is tied with a piece of tree tied on the stand tree. The knot ripe is made to trap the body of monitor lizards. Pig trap is made by digging the hole with depth of 30 cm, on the top of grown, a rack is made for putting the food. Then a piece bending chopped tree is put on the grown. On the top of standing stick a knot ripe is tied with a piece of tree tied on the stand tree and bending it on the lure with food. Circle trap is made by circling the rattan on the stand tree. On the circle rattan, several tied knots are made as traps. The interviewed hunters said that circle trap is more effective to catch the monitor lizard compared to the other two traps.

Chopping-knife is used to clean the bush. Sometimes it is used to chop the monitor lizard while they are aggresive. Snare and bow is brougth during hunting activities such as festivities, religious day, family ceremonies, etc. Sometimes it is used to shot the monitor lizard while staying on the high trees. Dodeso ripe is used while catching the monitor lizard on the middle trees or it is caught on the trees. Therefore, hunting tools belong to Yaur tribe are vary and unique. No correlation of hunting tools with number of hunted animals was made. This needs further study.

Number of Trap Set by The Respondent

Traps that were set by almost all respondents were vary. Traps used were statistically ranged between 10 to 500 pieces $(104\pm129 \text{ pieces})$. Number of traps used by the hunters was less than 100 pieces (10 respondents or 66%) per hunting. Besides in capturing the monitor lizard, traps also are use to catch other wild animal such as deer (*Cervus timorensis*), wild pigs (*Sus scrofa*), bandicoot (*Echimipera spp.*), casuary (*Casuary casuary*), and mambruk (*Gaura spp.*). The finding of this study was higher than that of Warkapi people, i.e. <10 traps per hunter (Homer, 2004).

No correlation was made to parameterise trend of hunting tools used by the hunters towards the number of hunted animals, in particular the monitor lizards. Therefore, this needs further study.

Monitor Lizard Utilization Hunting Yield

Some statistic vital of monitor lizards found at hunting sites were Varanus salvadorii and Varanus indicus. Its body length and body weight average were 99.2±10.76 cm, 2.02±0.73 kg, 91.84±9.13cm and 1.42±0.53 kg (Table 2). Karubaba (2004) found body length of Varanus indicus was 67.84 cm (range 50-92.3 cm) and body weight was 661 g (range 150-1360 kg). The size of Varanus salvadorii can achive more body size than what was found during this study. Varanus salvadorii is a Papuan endemic monitor lizard. This species can have a wide area distribution until Papua New Guinea (Whitaker et al., 1982). This species is dispersed at primary forest, while Varanus *indicus* spread at wet areas (Iyai and Pattiselanno, 2005; Bennet, 2004), islands (McCoy, 1980; Faidiban and Iyai, 2003; Iyai and Pattiselanno, 2005) and secondary forest (Rahayu, 2001). As such was reported by de Lisle (2007) in the North Sulawesi.

In Warkapi, number of monitor lizard trapped was less than 3 pieces. Almost all respondents had one tail per week and 2 tail (31.25%) per week.

Body weight of monitor lizard was in the range of 700–2000 gram. Species of monitor lizard found by the Warkapi's was *Varanus salvadorii* and *Varanus indicus* (Mangrove monitor lizard).

Skin Technique

Some techniques used to skinning the monitor lizard are on the belly part (ventral), dorsal, combination between dorsal and ventral, were done by 5 (33%), 2 (13%) and 8 (53%) respondents, respectively. These parts where the monitor lizard skinned depend on what kinds of product is made, i.e. between "offset" (for wall furniture) and "tifa". The belly part (ventral) is made when there is ordered by consumers for "tifa" product, and likewise. The way how people skined is by taking out all inner parts of monitor lizard on the belly, front feed, back feed, skeleton part, and tail. Similar finding was also reported by Hasriani (2004) at Soop island, Sorong. However, Soop island people did not make offset

Skin Product Technique

The Yaur tribe at Yaur village recognice two products' techniques, i.e. making "tifa" and wall furniture (offset).The finding of this study was that two respondents (13%) were creating tifa, one respondent (6%) was able to make wall furniture, while10 respondents (66%) were able to create tifa and offset. Only two respondents (13%) could not create arts. Similar finding also reported by Hasibuan *et al.*, (2009) at Batak tribe, North Sumatera. The Batak tribe use monitor lizard for income generation, comsumption and handycraft.

Tifa is made by separating skin from meat and inner parts as explained in the previouse subchapter. Skin of front hand and back feet are released. Skin taken is only on the dorsal belly part. Then skin is dried and set on the top of tifa. Sometimes, skin used is the ventral belly part. No distinguised results are made yet either dorsal or ventral is better to produce good sound of tifa. Offset made is by cutting the ventral part and taking out all inner parts, including meat. During that time, alcohol or spirtus is injected to protect the product from putrid. Injections are made on the several parts

Iyai et al.,

of monior lizard body, i.e. skeleton, front and back hands, and tail. Then, plastic is used for packaging the product so that alcohol and grain alcohol can penetrate into the body. A day is needed at this skin processing. Then wire is put inside the body to make the position that are needed.Then cotton is putting into the empty body. Final process is done by sewing the opened body part.

Skin processing time that is needed to make tifa is vary. Several respondents, i.e.

seven (46%) were needing 3 days in average, four respondents (26%) were 2 days, and 1 respondent (6%) needed 4 days. The variation of time depends on different allocated time. Skin processing time for making offset is vary as well. The finding of interview found that as much as seven respondents (46%) were allocating 3 to 5 days, three respondents were needed 6 days and one respondent (6%) was 1 day.

Table 1. (Characteristics	of hunting	systems of	f monitor	lizard	(n=15	head	of hou	seholds)	•
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Variables	Mean	Std.Dev	Min	Max
Age (yr)	35.6	8.3	25	56
Household (person)	7	2.5	5	13
Number of hunters (person)	5	3.7	1	12
Number of traps (times/week)	103	129	10	500
Time for hunting (hr/day)	3	0.97	2	5
Frequency of Hunting (times/week)	6.5	2.6	3	12
Distance to hunting sites (km)	14.6	8.4	2	25
Number of monitor lizard yield (n/week)	3.2	2.2	1	10

Table 2. Morfometric of	Varanus	salvadorii and	1 Varanus	indicus.
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	Monitor lizard					
Morfometric	Varanus sal	vadorii (n=5)	Varanus indicus (n=5)			
	Mean	Std.Dev	Mean	Std.Dev.		
Body length (cm)	99.2	10.76	91.84	9.13		
Body weight (kg)	2.02	0.73	1.42	0.53		



Figure 2. Combination of hunting tools.

Meat and Processing Time

The finding of this research was that from 15 respondents, almost all respondents, i.e. 13 (86%) were selling its meat. Followed by 2 respondents hunted varanid as pest and consumption. In order to obtaining net family income, selling wild animal products were done by Yaur tribe. Selling was done at Nabire market, beside ordered of middle man come across the Yaur village. Meat processing is relatively vary. Smoked meat was done by 14 respondents (93%) and smoked, boiled and fried meat is done by one respondent. The second meat processing was done due to the fact that they could consume the meat. Smoked processing was made in order to sell the product as local markets such as in Nabire and Wasior. Slightly similar finding was reported by Homer (2004), where burned monitor lizard was done by 13 farmers and the combination of the three means were bioled, burned and fried (18.75%). Of meat processing such as smoked, protein and energy content may be oxydated and therefore declining. Futher study then need to know how much perotein and energy losses due to smoked processing. In Soop island as reported by Hasriani (2004), there were three types of processing meat, i.e. bamboo meat using bamboo where meat and its ingrediens are entered into bamboo hole and burned or smoked until ripe, then the second was fried and boiled. Warkapi ethnic consumed the meat of monitor lizard as amuch as 15.73 gr/person/ week (Homer, 2004). In one hand, the Tionghoa ethnic is preferencing the monitor lizard for their daily meal (Hasibuan et al., 2009).

Time needed to process the meat is vary. Most respondents, i.e. 13 (86%) were able to process the meat in the range 24 to 36 hours. Then one respondent (6%) was more than that 36 hours and one (6%) was less than that of 8 hours.

Body Part Utilisation and Its Objectives

Skin was the most utilised product that can be made by almost all respondents. In one hand, tail, teeth, gall and fat (Figure 3) also were also used by Yaur tribe. Beside skin, tail and teeth were used to magic need. The belief of teeth, gall and skin was used by teenagers, who are able to hunt and gatherin the forest. Gall and fat are used as healthy and squeeze oil. This is called by Eraldo and Costa-Neta (2005), Kakati *et al.*, (2006) as zootherapy (zootherapeutic), which is used by "Ao" tribe of Nagaland district, India.

Magical need was used by five respondents (33%), healthy product was used by one respondents (6%) and nine respondents (60%) were not use (Figure 4). The teeth belived has several functions, i.e. in pointing the direstion when the hunters are lost on the jungle. It can be used to as protector and supranatural spirit. Besides, it has also a function on fishing. Teeth is made from adult monitor lizards. Big teeth can be made a hole and weared as a neckle.

Not many studies in Papua were made yet to explore the utilisation of wild animal of the native tribe. Every tribe has its own typical means in utilising wild animals. There needs to be proved and explained in the logical thinking.

Some Prices of Monitor Lizard Products

The hunted yields were frequently sold at local market, i.e. regency city, Nabire. Some were sold at Wasior, Teluk Wondama, part of province of Papua Barat. Live monitor lizard can be priced within the range of IDR 30.000-100.000 rupiahs. Fumigated meat was 30.000-50.000 rupiahs per product. Wall furniture can be sold by IDR 50.000-100.000rupiahs. Tifa can be sold by IDR 200.000-500.000. The wide skin area of one monitor lizard could reach 80×40 cm. Total width area obtained is 3.200 cm^2 , so that the price could reach IDR 3.200.000,-. Although in fact the prices were rely on demand and consumers.

Similar finding was reported by Faidiban and Iyai (2004) stated that Mansinam island tribe, who is Byak tribe, did not use monitor lizards. They hunt the monitor where there is a prior demand from consumers concerning skins. They said that demand of skin in Manokwari was exist. Skin is used for making "tifa", which is related to art and culture activities in Manokwari. According to Byak language, the monitor lizard is called by "rowe rok" which means things that are producing sound. They called as such because when the monitor lizard on the tress they can sing.





Figure 3. Bodypart utilization of monitor lizard.



Figure 4. The utilisation objective of bodypart.

Conclusions

The hunting type is done traditionally. Traps, chopping knife, snare and bow and dodeso ripe are still used. Traps used vary consisted of three types, i.e. pig traps, mice trap and circle trap. Skin is of the most used body parts. Gall, teeth and fat are also used. Healthy and squeeze oil are the objective of utilization. Tifa and offset are the two skin products. Economically skin has prospect. Final remarks is that it needs to explore the utilisation of monitor lizard from other native tribes in Papua.

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