

Varanus Species at The Arfak Strict Nature Reserve

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ABSTRACT

The varanid fauna on West Papua particularly have not been well documented, and are poorly known. Survey was conducted in the Arfak Strict Nature Reserve (ASNR) from March to May 2001. During the survey, specimen collected from the field consisted of *Varanus indicus* (Daudin 1802), *Varanus prasinus* (Schlegel 1839) and *Varanus salvadorii* (Peters and Doria 1878). Among three species encountered skin was not utilized, and only *Varanus prasinus* (Schlegel 1839) meat was not consumed yet.

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Key words: *Varanus*, Arfak Strict Nature Reserve

INTRODUCTION

Biawak (*Varanus* spp.) was one of fauna species utilized by the native Papuan as animal protein source of their food, while its skin was an important material used as ornament and *tifa* traditional music instrument that commonly performed in the ritual ceremony. Study conducted by Philip (1999) indicated that varanus species was hunted by local hunters for sale to local reptile dealers.

Arfak Strict Nature Reserve (ASNR) located in the bird head region of Papua with 68.325 ha, was one of protected areas that consisted of various endemic species of Papua. Preliminary observation and informal interview conducted to local people occupied ANSR pointed out that baiawak – varanid have distribution area in the protected site, and commonly utilized in many forms by local people.

Anonimus (1989) cited that approximately 25 species varanid has been identified, and according to de Roij (1915) in Indonesia 14 species varanid has found, six among them were Papuan endemic. However, the varanid fauna on West Papua particularly in ASNR have not been well documented, and are poorly known. In fact, the possibility of utilization is high (either as animal protein source or ornament material). Focused on the scientific information required, this study aims to document the distribution of varanid species in areas of West Papua and possibly compare to other areas in the New Guinea islands.

MATERIAL AND METHODS

Place and Time

Survey was conducted in the Arfak Strict Nature Reserve 01° 00' – 01° 29' S and 133° 53' – 134° 15' E,

focused on the central observation point in the eastern part of the site particularly in three villages that comprehensively chosen (Mupi, Acemo and Warkapi). Filed survey was occurred from March to May 2001.

Methods

Descriptive methods with observation technique was designed and used in this study. Observation was carried out daily with the assistance of 3 (three) local guide by walking along the transect line (08.00 – 11.00 am) and continued (15.00 – 17.00 pm). In the location where varanid is found, animal was caught, identified referred to de Roij (1915) and de Lisle (1996) as guideline of identification, weighed and measured to obtain the morphometric measurement and statistical data of the catch varanid. Picture taking was also done to complete the information above, and the specimen was released in the site where it found.

Colorful flag type was stick in the site the species found for further identification on vegetation, site condition and information on microclimate (temperature, relative humidity). Flag tape was also stick in several locations identified as varanid habitat or hunting site based on the information obtained from local people aimed to set traditional trap from wood, rattan and bamboo.

Food inventory was performed around the location to identify the food consumed by the varanus species and to analysis stomach content collected from hunted varanus by local hunter.

Description of the study site

The vegetation types found in the survey areas: mangrove forest, mixed alluvium forest, mixed hill forest and primary rain forest. The characteristic plants of each vegetation types are described in the result section.

Temperatures are uniformly high in the lowlands, which range from about 23°C to 30°C, decreasing with elevation to a mean daily temperature of about 16°C and 2000 m. Relative humidity is also uniformly high, ranging from 80 to 100 percent.

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As cited by World Wildlife Fund Bioregion Sahul, (2003) the Schmidt and Ferguson classification categorized climate in ANSR into type A (very wet). The average temperature is 26.68°C, average humidity is 82.97%, and the average sun light intensity is 64.87 lux. Moreover, based on Koppen classification, the study site falls under rainfall type Af, due to the driest rainfall of more than 60mm and with total annual rainfall of more than 1,500mm.

The Meteorology and Geophysics Station of Manokwari Regency recorded that temperature was ranged from-26.580C – 27.150C, average of relative humidity was around 82 – 85 % and average of light intensity was about 51 – 73.3 %.

The Strict Nature Reserve of Arfak Mountain located from the coastal site to the upland site ranging from 20-2.800m above sea level. The highest peak was Humeibou Pass, found as the source of Mupi, Warmare and Prafi Rivers. Topographically, the area was described as hilly with the moderate slope up to the stiff position.

RESULTS AND DISCUSSIONS

Information obtained from local people around ANSR recognized that only three species of varanus were found in the study site, and it was proofed during the field work was carried out. Varanus species encountered during the field work is shown in Table 1.

During the survey, specimen collected from the field consisted of three specimens of *Varanus indicus* (Daudin 1802), five specimens of *Varanus prasinus* (Schlegel 1839) and one specimen of *Varanus salvadorii* (Peters and Doria 1878). Two among three species recorded during the survey *Varanus prasinus* (Schlegel 1839) *Varanus salvadorii* (Peters and Doria 1878) were endemic to New Guinea (de Lisle, 1996).

Varanus indicus (Daudin 1802)

Habitat

During the field work specimen was collected in the mangrove area at 0-5m above sea level as well as the forest stream site at the 40m above sea level. The

temperature recorded in mangrove site was around 28-29°C on 09.30am. Commonly, this species was occupied the mangrove site approximately 20m from the main road of Warkapi village.

Philip (1999) indicated that *V. indicus* was occupied various habitat of different forest types: beach woodland, mixed littoral forest, mangrove forest, mixed alluvium forest and mixed hill forest. The high adaptability of *V. indicus* is shown by the excellent ability in climbing, swimming and diving. At mangrove vegetation characterized by *Rhizophora* spp, *Bruguiera* sp. with *Acrostichum* sp. *V. indicus* was most frequently observed. Iyai and Pattiselanno (2006) suggested that in Pepaya Island of the Cenderawasih Bay National Marine Park, *V. indicus* was employed the littoral forest that dominated by *Cocos nucifera*, *Ficus* sp., *Calophyllum inophyllum* and *Pandanus* sp. An average temperature and relative humidity at the surveyed area was noted at 23.9°C and 78.6% (12 plots were set up during the study

Conversely, close to water bodies, this species was observed on 11.00am along the watershed catchment in the forest, the temperature recorded around 28 – 30°C. The surrounding was relatively dense, and the sunlight was directly passed through the canopy. Plants characteristic was relatively similar as the survey location in Sorong and Fakfak as it was indicated by Philip (1999) *Pometia pinnata*, *Ficus* spp., *Terminalia* spp., *Intsia* spp dan *Camnosperma* spp. Similarly, in Sop Island, Sorong, most of the specimen was found around the plantation area of *C. nucifera* (86%) and the rest 14% was observed in bush dominated by *Cyperus rotundus*, *Eleucine indica*, *Lantana camara* and *Imperata cylindrica* around 13.00 – 15.00 pm and at that time temperature was recorded at 30-32°C with 67-70% of relatively humidity (Faidiban, et al., 2003).

Ecologically, de Lisle (1996) described *V. indicus* as arboreal and aquatic species inhabiting rain forest and coastal mangroves, and had their nests in rotting woods. It was also observed from the hoof mark recognized by our guide around the thick ground cover in the forest floor the presence of *V. indicus* burrows. According to Philip (1999) *V. indicus* took shelter by hiding in thick shrubs where they probably have their burrows.

Food items

V. indicus feeding was small animals found surrounding

Tabel 1. Varanus species found in the survey areas

Moile dialect	Papuan dialect	Vernacular name	Scientific name
Phot Syei	Soa Soa Tanah	Mangrove monitor	<i>Varanus indicus</i> (Daudin 1802)
Phot Dry	Soa Soa Hijau	Green tree monitor	<i>Varanus prasinus</i> (Schlegel 1839)
Phot Mingras	Soa Soa Bintang	Papua monitor	<i>Varanus salvadorii</i> (Peters and Doria 1878)

Table 2. Niche partitioning of varanid species in Arfak Nature Strict Reserve

Vegetation type	Character plants	Observed varanid species
Mangrove forest	<i>Terminalia cattapa</i> , <i>Pandanus</i> spp., <i>Rhizophora</i> spp	<i>Varanus indicus</i>
Mixed alluvium forest	<i>Intsia bijuga</i> , <i>Spondias dulcis</i> , <i>Pandanus</i> spp., <i>Bambosa</i> spp, <i>Pometia</i> spp., <i>Palaquium amboinensis</i> and <i>Macaranga mappa</i> .	<i>Varanus indicus</i>
Mixed hill forest	<i>Intsia</i> spp., <i>Gnetum gnemo</i>), sirih hutan, <i>Alstonia scholaris</i> , <i>Canarium</i> spp., <i>Vatica pauana</i> and <i>Pometia</i> spp.	<i>Varanus prasinus</i>
Mountainous primary rain forest	<i>Intsia</i> spp.), <i>Pometia</i> spp., <i>Ficus</i> spp., pulai, <i>Alstonia</i> spp., <i>Canarium</i> spp., <i>Syzgium</i> spp., <i>Araucaria</i> spp., and <i>Myristica</i> spp.	<i>Varanus salvadorii</i>

their habitat, either in water, ground and above the tree. Fish was also predicted as their food items, because snare/trap baited by fish has been succeed caught this *V. indicus* according to local hunters. Stomach content identified from this species killed by local hunter was consisted of frog and crab. It was hard to describe the detailed description of the stomach content because it was already shattered into small pieces.

De Lisle (1996) characterized *V. indicus* as swimmer and climber animals forage for insects, crabs, fish, reptiles and their eggs, bird and their eggs and other small mammals in and near forest streams and tidal mangrove areas. While Iyai and Pattiselanno (2006) encountered *V. indicus* was active during the day around the coconut plantation areas because they were easily found their food – coconut bees. On the other hand in Sop Island, Sorong according to Faidiban, *et al.* (2003), coconut bee, bird eggs and various kind of insects identified as food items of *V. indicus*.

Utilization

The most important part of varanus is their meat as one of the animal protein source for the native Papuans. Their meat was preferred by people therefore it was commonly hunted using snare or dog, because this species was widely distributed, and was not aggressive that is why dog was easily attacked and caught them. The native from three observed villages (Mupi, Acemo and Warkapi), were not utilizing the varanus skin, because they skill to process the skin was not owned by local communities.

Traditional description

Local people commonly described the varanid species by distinguished its body color and habitat. *V. indicus* was recognized through its black and yellowish spot color. Description of this species indicated by Philip (1999) was dark purplish brown to black above, with numerous spots of cream, yellow or yellow green and whitish below. Related to the name of *V. indicus* people recognized them from their habitat near the stream and some were found on the mangrove areas. This species was a common arboreal species, but usually climbing trees when it was disturbed.

Varanus prasinus (Schlegel 1839)

Habitat

During the survey, this species was commonly observed basking on the tree, and sometimes going down to the ground layer of the forest to scavenge for food. Specimen was observed and caught at 12.15pm when the temperature was about 30-31^o C on the ground in the mountainous at 220m above sea level, more or less 2km western part of Warkapi village. De Lisle (1996) explained that *V. prasinus* was found in monsoon, rain and palm forests, and in coastal mangroves, described as arboreal species. The location was open area and sunny was directly reach the ground.

Food items

V. prasimus recognized as insectivorous species, because it was noticed that small insect found either on the forest floor and above the trees consumed by this species. The stomach content analysis from specimen hunted by local people was consisted of wood caterpillar and

grasshopper. Identification of the stomach content was not clearly described the species because we have lack of information on the food items of this species, and the stomach content item was already shattered therefore it was difficult to identify the species as well. De Lisle (1996) insisted that *V. prasinus* mainly feed on insects, especially orthopterans (tree crickets) also centipedes and rodents.

Utilization

Local people acknowledged that this species was rarely utilized by people neither meat nor skin, because the biomass was too small.

Traditional description

Similar to *V. indicus* *V. prasimus* was also identified from its skin color: light green with black line across the top and always active above the tree. De Lisle (1996) described *V. prasinus* as follows: dark jade to lime green above, generally with narrow black transverse cross-bands, and ventral surface pale green.

Varanus salvadorii (Peters and Doria 1878)

Habitat

V. salvadorii was commonly employed mountainous forest site usually rarely visited by human. Specimen of this species was found around \pm 3 km at the western part of Warkapi village at the 650m above sea level, was actively moving around forest floor. It was found during the day on 14.00pm, and the temperature was recorded around 29-31^o C. The situation was bright because more sunny were passed through the canopy of huge tree, at the very dense location. According to De Lisle (1996) *V. salvadorii* was mostly arboreal, but recent study in the southern New Guinea showed that species to have considerable terrestrial activity as well.

Food items

It was indicated that *V. salvadori* usually consumed small animals. The important prey animal of this species was bird. De Lisle (1996) explained that this species feeding chiefly on birds. According to the villagers eggs of cacatua bird and other active ground species such as maleo were recognized as food items of this species. Anonymous (1989), indicated that varanus was a predator of the animal that attacked by this species. Smaller species usually insect, small mammal and bird were recognized as food items of *V. salvadori*.

Due to its preferred food (bird egg), during the laying season of particular bird, *V. salvadori* could be easily observed usually after harvesting period of Kacang Panjang (*Vigna sinensis*) as the most preferred food of bird.

Utilization

Like other two varanid species, *V. indicus* meat's was commonly consumed, but not the skin. Sometimes this species was trapped undeliberately by traps for other animals. *V. salvadori* known as aggressive species that actively attacked other animals or human that disturbed them so in this case, people must be careful to face them. It was therefore acknowledged that this species was rarely hunted for the safety purposes, and it was hard to find them freely as well.

Traditional description

This species was easily recognized from its color (mostly black with yellowish circular spot), occupied dry habitat not swamp, and its aggressive behavior particularly when disturbed by other animals particularly hunting dog using its claws, canine and tail to protect themselves from predators.

CONCLUSIONS

Three varanid species was occupied Arfak Strict Nature Reserve: *Varanus indicus* (Daudin 1802), *Varanus prasinus* (Schlegel 1839) and *Varanus salvadorii* (Peters and Doria 1878). Among three species encountered during the survey, skin was not utilized, however, only *Varanus prasinus* (Schlegel 1839) meat was not consumed yet.

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