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# Hunting in Indonesian New Guinea: dogs, conservation and culture

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## ABSTRACT

Hunting has an ambivalent relationship with conservation: it can deplete and threaten vulnerable wildlife but can also motivate protection and good stewardship. Here we advance the understanding of this relationship by examining the different forms of hunting in one community with a particular focus on the motivations and implications surrounding the use of dogs. We present a case study from Indonesian New Guinea. We use self-reported information concerning the hunting activities and success of thirty-three hunters who frequent the lowland costal forest of Tambrauw in West Papua Province. The hunters identified 301 successful kills in a total of 654 hours of hunting over a 7-month period. Five different prey species were reported. In declining order of kills there were the Timor deer (*Cervus timorensis*), Wild pig (*Sus scrofa*), Common spotted cuscus (*Spilocuscus maculatus*), Dusky pademelon (*Thylogale brunii*) and Grizzled tree kangaroo (*Dendrolagus inustus*). While hunting with guns was the least frequently used method it was the most effective while passive methods (traps and snares) was the least efficient in terms of time (49 hours with 50 kills), but also the most commonly employed (352 hours with 123 kills) Interestingly, active hunting without dogs or guns yielded more kills per hour than hunting with them (0.70 versus 0.38 kills per hour), especially for deer, but hunting with dogs is the only method that seems to favour pigs over deer. Hunting in the daytime was more effective for pigs and less effective for all other species regardless of method. Dogs are also valued for guarding hunters and their families (from animals, enemies and spirits). We find that dogs sometimes provoke conflicts and cause other problems. Hunting method impacts the quantity and composition of the hunt, but as we see for dog ownership and use also relates to other practices. More attention should be given to local hunting and the methods used.

**Keywords:** dog hunting; conservation; cultural roles; Indonesian New Guinea.

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## SIGNIFICANCE STATEMENT

We examine different hunting practices in eleven villages in the lowland costal forest of Tambrauw, in the Bird's Head Peninsula, West Papua Province, Indonesian New Guinea. The different hunting practices—with or without guns and dogs, and using traps and snares-have different impacts and implications. For example, dogs play a range of cultural roles while hunting with dogs in the daytime is the most effective means to capture pigs.

## INTRODUCTION

Current global extinction rates may be three orders of magnitude above those of a pre-human world and unsustainable hunting is among the causes (Dirzo et al. 2014; Pimm et al. 2014). The decline and loss of hunted animals can jeopardise ecological processes that depend on them leading to further species loss and a spiral of decline (Redford 1992; Wilkie et al. 2011). Such declines threaten these hunting impacted ecosystems and the goods and services they provide and indications of this process are already seen in many parts of the world (Newbold et al. 2016). At the same time, over a billion people, including many of our planet's poorest and most vulnerable, rely on functioning forests for their daily needs including animal protein (Nasi et al. 2011). These concerns are relevant in Indonesian New Guinea where many people value and indeed depend on wild caught meat (Pattiselanno et al. 2020, Pattiselanno et al. 2019). While much of the region's forests remain, intact this looks set to change with considerable investments in roads and infrastructure opening up areas that were previously inaccessible to developments and hunting (Gaveau et al. 2021). At the same time there is a need to identify and promote effective conservation approaches that local people are willing to support and enforce (Sheil et al. 2015; Cámara-Leret et al. 2019).

Hunting has a nuanced relationship with conservation: it can deplete and threaten vulnerable wildlife but can also motivate protection and good stewardship (Mainka, 2002; Van Vliet et al. 2015, 2022). Outcomes depend on various factors including the nature of the hunting and any cultural norms, practices and oversight that can moderate offtake and prevent overexploitation.

Hunting can provide valuable food and nutrition, cultural connections and appreciation of nature and can therefore motivate conservation—this is recognised in Europe and North America where hunters played a major role in the establishment and support of many protected areas and other conservation initiatives (Price et al. 2018; Mahoney and Jackson 2013). In the tropics, while sport hunting remains a locally important if contentious element of the tourist industry that supports conservation (Macdonald et al. 2016) other potential synergies appear little recognised. The role of hunting in indigenous conservation appears especially neglected though it clearly can be beneficial—for example, in Kalimantan the Iban maintained forest areas specifically for hunting (see Wadley and Colfer 2004).

Indigenous hunting in Indonesian New Guinea mostly uses traditional hunting techniques such as bow and arrow, spears, traps and snares that are commonly made from natural materials such as wood, bamboo, lianas, palm leaves and plants fibres though guns (typically air rifles), fishing lines and flashlight are also used (Pattiselanno 2006). Some people combine hunting with trained dogs along with the use of machetes and spears as the dogs help in locating and pursuing prey. A more thorough examination of hunting, its context and implications, is therefore useful for conservation in Indonesian New Guinea to better understand it as both a concern and an opportunity. Who is hunting, what is being hunted and what are the consequences and implications?

Previous studies have referenced hunting with dogs in various parts of the world (Zarger 2002; Doherty 2005; Koster 2008; Parsons et al. 2016; Constantino 2018; Allemand et al. 2019; Pacheco-Cobos and Winterhalder 2021). We know from such studies elsewhere that hunting with dogs is sometimes associated with a severe impact on vulnerable species and has been associated with the depletion of several threatened vertebrate species worldwide including 96 mammals, 78 bird, 22 reptile, and three amphibian species (Doherty et al. 2017). Nonetheless, research on hunting methods, especially with dogs, and its impact on wildlife is surprisingly limited (e.g., for North America, Parsons et al. 2016). In Indonesian New Guinea the use of dogs in hunting is widespread though largely undocumented. For example, the Dani in the Baliem Valley (Flannery, 1995), the Napan on the Nabire coast (Pattiselanno 2007), the Karon along the coast of the Bird's Head Peninsula all use dogs in hunting (Pattiselanno and Lubis 2014). Nonetheless, we remain uncertain of the implications.

In this pilot study we examine different forms of hunting, with particular attention to the role of dogs, in West Papua. We were particularly concerned with the increasing use of dogs as such hunting has become a particular concern among conservationists (Doherty et al. 2017; Parsons et al. 2016). Different forms of hunting are likely to impact species differently ac-

cording to their vulnerabilities and the local context though this remains poorly characterised. Our basic hypotheses are that different forms of hunting can benefit people and impact hunted species differently. We were particularly interested in what motivates hunting with dogs and whether they provide a more efficient means of hunting.

## MATERIAL AND METHODS

### Study site and timing of research

We focused our study on the lowland costal forest of Tambrauw in the Bird's Head Peninsula of West Papua Province – Indonesian New Guinea (Figure 1). Located between Manokwari and Sorong, the study site is a a meeting place for hunters who carry out hunting activities along the coast. Both Abun and Amberken areas have long been hunted though access is controlled by traditional claims and rights of the local people. The Karon and Mpur are the major ethnic groups and occupy an area extending from the highlands to the coast (Pattiselanno et al. 2020). Along the coast they have mingled with other Papuan ethnic groups such as the Biak, Serui, Ayamaru, Arfak and non-Papuan peoples such as Makassar, Bugis, Butonese, Javanese and Moluccas. Livelihoods are based on the cultivation of bananas, beans, yams, and vegetables (Pattiselanno and Lubis 2014).

We selected four Villages in Abun District (Waibem, Wau, Warmandi, Saubeba), are linked to Marine Protected Areas because of the importance of nesting beaches for leatherback, olive ridley, green and hawksbill turtles. Karon is the principle ethnic group in these villages. However, seven villages (Arupi, Wekari, Saukorem, Wasarak, Wefiani, Samfarmun, Imbuan) in the Amberbaken District are not associated with specific protected area and are dominated by the Mpur ethnic group.

Socioeconomic surveys by WWF and UNIPA indicate that many improvements have been made in the villages since 2008 (mostly from government) and nearly all respondents feel their economic status is improving. A few households now own "luxury" goods (TVs, telephones, generators, etc.), though most remain at subsistence level (Gjertsen, 2011). Some people live for less than US$ 2 per day. Food is mostly sourced from gardens (not purchased) and almost all families own their own house (WWF 2002). Most households grow coconut, banana and tuber crops, with some products being taken by boat to be sold in markets in Sorong, Sausapor and Manokwari (see Pattiselanno et al. 2020). In addition, in the past year, some households kept and earned money from traditional poultry and pigs farming, and from paid labor as conservation rangers or contract workers in a mining company.

The study area consists of coastline and adjacent rocky hills and interior mountains. It is mostly forest (primary and secondary). The coastal area is dominated by low herbaceous vegetation such as *Ipomoea pes-caprae* (L.) R.Br. and *Scaevola frutescens* (Mill.) K. Krause on the seaward, and on the landward area by trees *Barringtonia asiatica* (L.) Kurz, *Terminalia catappa* L., and *Pandanus* sp. At slightly higher elevations common trees include *Pometia pinnata* J.R.Forst. & G.Forst., *Disoxylum Benth. & Hook.*f., *Canarium decumanum* Gaertn. and *Intsia palembanica* Miq. The Wanameti river drain is associated with small streams and freshwater vegetation types including Metroxylon sago K.D.Koenig, *Pandanus conoideus* Lam. and *Casuarina equisetifolia* L.

### Sampling

The 11 studied villages comprise 2,789 households. The Mpur and Karon people live in nuclear families, with groups of relatives forming small, patrilineal communities. The average household size is 5 people (maximum 12). In each village we approached the village chairman ('kepala desa') for permission and guidance. We asked them to identify, and introduce us to, three active hunters in each village to contribute to our study (Kaltenborn et al., 2005). In total 33 hunters (three from each villages) consented to complete information sheets to record their hunting trip information including methods and time and what species were killed (Table 1).

First, we provided a short training with each hunter. We simulated the situation by assuming the hunter returns from hunting excursions with or without target preys. Identify the prey and fill in the information sheet. They record the time they start (enter the forest) and finish (depart from the forest) on each hunting trip. We tested two of their first hunting trips after the training to follow up what we have done. In this study, all respondents hunting individually. This information included, techniques used, time spent, how many animals per species were killed (after Carpaneto and Fusari 2000; Fusari and Carpaneto 2006). For this pilot study we kept the requirements light to encourage trust and cooperation and did not try to record time of day, number of people in a group (which often varies even during a hunt), or information that might later be used to identify the hunters. Our data comprises records from September 2012 to April 2013. Information was cross-checked ("triangulated") through discussions with each informant and also with eleven additional community members across the studied villages (elders and leaders are readily identified). We would like to ensure we had credible information from each hunter. During these discussions we also

**Tabela 1.** Questions in information sheet to be completed with help of the assistance in each village.

| | |
|---|---|
| 1 | What techniques do you used in hunting? |
| 2 | What animals are hunted, and what for? |
| 3 | How long is the average time in one hunting excursion? |
| 4 | Please record number of catches (common names), also when you don't get |
| 5 | anything (every time you hunt) |
| 6 | How often do you hunt? |

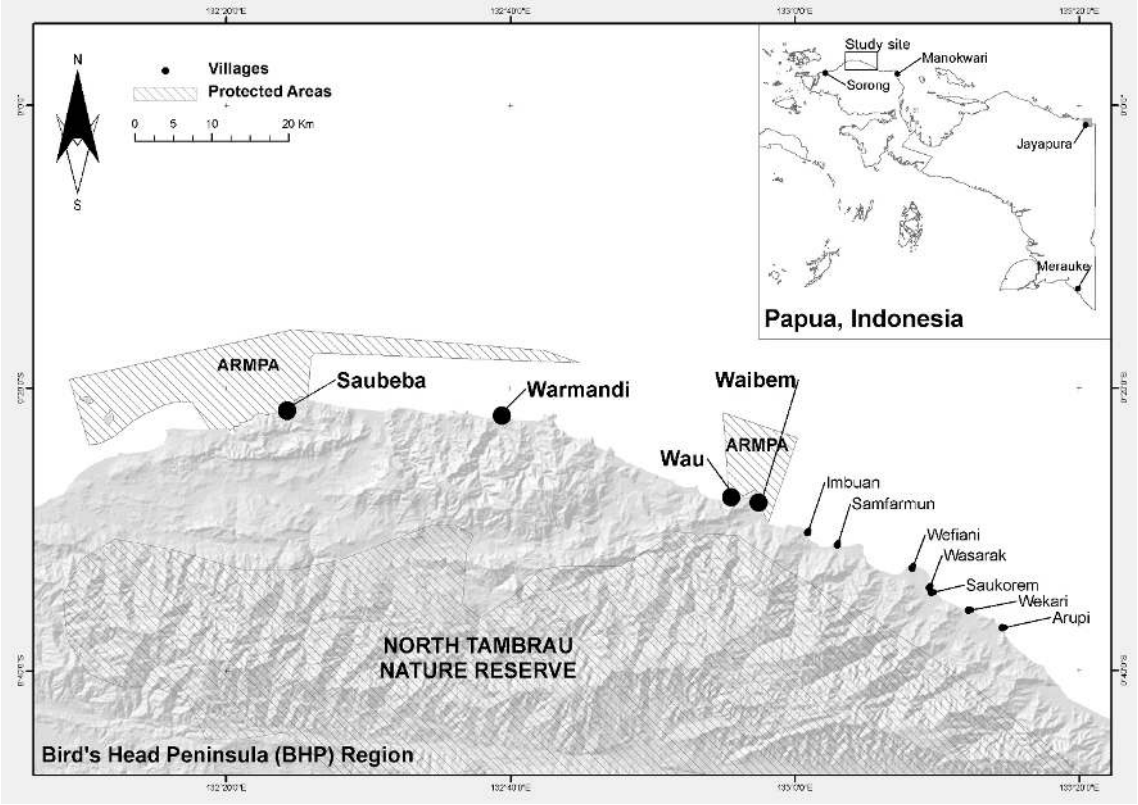


**Figura 1.** Location of the study eleven villages with large dots represented Marine Protected Areas (MPAs) in Abun District. Small dots represented seven villages in Amberbaken District, non-MPAs villages at the Bird's Head Peninsula, West Papua.

gathered wider information on hunting culture and attitudes.

We divided the hunting activities into three active forms: that is pursuit of prey 1) without guns or dogs, 2) with guns or 3) with dogs (note a potential fourth form where dogs and guns were used simultaneously did not occur and is thus omitted); and also, passive methods (setting traps and snares and then checking them and removing prey). In this study, all guns used in hunting are air rifles. Air rifles are common across the study sites (true fire arms are largely illegal and ammunition is hard to purchase). Hunters acknowledged that between three and four days (traps are in the forest without people), prior to hunting excursions traps or snares have to be prepared.

As the start and end of each hunting trip was also recorded, we were able to compare day and night time hunting. If a trip included both day and night animals caught and processed before 6am, are considered night catch, while after 6am they are considered day catch.

The observations were summarised by type and combined in a spreadsheet. We do not record the location and conditions of the hunt or consi-

der the hunters' skills. The conservation status and legal protection of the prey species were cross-referenced with Indonesian laws and the IUCN red list (ttp://www.iucnredlist.org/ date we checked 2022). Given confidentiality concerns we do not identify specific hunters or events. Our summary statistics reflect simple counts and averages.

## RESULTS

The thirty-three hunters reported five different prey species in 654 hours of hunting spread over 7-months (Table 2). Timor deer and wild pig comprise 50 and 42 percent of kills respectively (n = 301). The three native species comprise the remaining eight percent. We learned that deer and wild pigs predominate also in local trade to surrounding settlements. Hunters noted that both deer and pigs were also the easiest to hunt. They were also seen as damaging to gardens and to plantations and thus hunting was seen as a useful service. Discussions revealed that the hunters were unaware of the legal status of the species they hunted and this did not play a role in their selection of prey.

Among the 33 hunters involved in the study 61% averaged at least one or more hunts per week, among the rest 27% hunted at least once every two weeks while 12% hunted less frequently. Two thirds of our hunters considered themselves farmers as they spent most of their time cultivating crops and overseeing their gardens with hunting providing access to meat. While most hunters hunted to provide meat, several also mentioned their wish to control the pigs that damage local crops. The rest considered themselves paid labourers (23%) and hunter-gatherer (15%).

Choice of hunting approach largely reflected practical factors, i.e., the area and the animals sought (active during day or night time) but individual hunters also had preferences that matched their experience and skills. We didn't have accurate data on timing but the discussions showed that both day and night time hunting were common. Passive methods dominated in terms of time with 54% of total time expended on hunting, and yielded 41% of kills (n = 123). The remainder of the kills are divided near evenly among the three active hunting methods: hunting without guns or dogs (n=70) or 23%, hunting with dogs (n=58) or 19% and hunting with guns (n=50) or 17%, despite the variation in relative time allocated (15, 23 and 7%). The hunters reported that while passive methods were simple and convenient other methods were typically more effective and this was borne out by the data. Methods of hunting differed in how many animals they yielded over comparable periods of time. Hunting with guns, was the most efficient averaging just over one animal per hour (Table 2). Next was active hunting without dogs or guns (around 0.7 animals per hour). Hunting with dogs and the passive methods (checking and removing hunting preys), both yielded less than 0.4 animals per hour. Thus, active hunting without dogs appears to achieve a higher yield than hunting with them, especially for deer prompting the question of why people use dog—the principle explanation is that hunting with dogs is the only method that favours the capture of pigs. Discussions with the hunters confirmed this preference for pigs, as the most valued prey. They also highlighted that dogs are helpful in locating cuscus. When a cuscus is located in a tree it is shaken leading the animal to flee or fall to the ground where it is pursued by the dogs (Figure 2a and 2b).

Hunters confirmed that passive hunting has little cost as traps and snares can be built from forest materials and nylon or ropes that can be reused. It also requires less time than the active hunting techniques. It is also flexible and can be combined with farming.

Using the time of the hunts we were also able to estimate how much hunting took place during day and night which were nearly equal (325.2 and 329.3 hours). All hunting methods were used in both day and night though there was a slight tendency for active hunting to favour day, and for passive methods to be used overnight (see extended table, Additional File 1). The counts become quite low for most species when we break down the data by method and day-night but it seems clear that pigs were taken more frequently per unit time in the daytime regardless of methods (with overall 83 versus 42 taken in day versus night), while for all other species yields per hour tended to be higher at night.

Our informants explained that dogs are "trained" to recognise the smell of various animals that might be encountered. These discussions indicated that dogs are considered as family members with whom food is shared enhancing the bond between hunters and dogs. Several informants noted how they valued their dogs outside of hunting. They noted how dogs guarded them and their families from physical and spiritual threats and provided companionship.

## DISCUSSION

Hunting has a complex relationship with conservation which remains largely uncharacterized in many regions, including Indonesian New Guinea. This study provides valuable insights into hunting practices in the region, highlighting the different methods employed by hunters. Each method yields different amounts and proportions of target animals as observed in other regions (Sillitoe 2002). Guns were found to be the most effective in terms of time, followed by active hunting without dogs while hunting with dogs

**Tabela 2.** Number of animal species (n) killed by different hunting approaches and rate of killing ($h^{-1}$) in seven months reported by 33 hunters. Active hunting techniques includes pursuit of prey with no guns or dogs, and with guns and dogs (analysed separately); Passive hunting techniques includes checking or removing prey from traps and snares.

| Prey | IUCN category & Protected status* | Active hunting | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | No guns or dogs | | Guns | | Dogs | | Passive | | Total |
| | | ***n*** | $h^{-1}$ | ***n*** | $h^{-1}$ | **n** | $h^{-1}$ | ***n*** | $h^{-1}$ | **n** |
| *Cervus timorensis* (Timor deer**) | V – P | 41 | 0.410 | 22 | 0.449 | 19 | 0.124 | 68 | 0.193 | 150 |
| *Sus scrofa* (Wild pig**) | L – U | 23 | 0.230 | 17 | 0.347 | 33 | 0.216 | 52 | 0.148 | 125 |
| *Thylogale brunii* (Dusky pademelon) | V – U | 3 | 0.030 | 4 | 0.082 | 0 | 0.000 | 2 | 0.006 | 9 |
| *Spilocuscus maculatus* (Common spotted cuscus) | L – P | 2 | 0.020 | 4 | 0.082 | 4 | 0.026 0 | 0.000 | 10 | |
| *Dendrolagus inustus* (Grizzled tree kangaroo) | V – P | 1 | 0.010 | 3 | 0.061 | 2 | 0.013 | 1 | 0.003 | 7 |
| **Total animals** | | **70** | **0.700** | **50** | **1.020** | **58** | **0.379** | **123** | **0.349** | **301** |
| **Total time (*h*)** | | **100** | | **49** | | **153** | | **352** | | **654** |

*IUCN: *V* = Vulnerable, *L* = Least concern, source http://www.iucnredlist.org. Protected status in Indonesia: *P* = Protected, *U* = Unprotected, source Indonesian Law for Natural Resource and Ecosystem (Government Regulation PP No. 7/1999)
** Not native species (feral).


**Figura 2.** A) A hunter using a combination of different hunting techniques: bow and arrow + nylon for trap and dog in Tanah Rubuh, of West Papua (Picture by Iriansul), B) Dogs locating and chasing down preys during a hunting excursion in Napan, Papua (Picture by Arthur Duwiri).

had the best yield when pigs were sought. Hunting in daytime is generally more productive for pigs too

though, this is untrue for all other prey species which appear to be more vulnerable at night—presumably reflecting the diurnal and nocturnal patterns of behaviour of these animals. These findings contribute to our understanding of these choices.

Hunting for rusa deer and wild pigs in Papua not only protects native species but also reduces crop damage, providing an additional motive for hunting (Pattiselanno et al. 2019; 2020). This pattern aligns with studies across Asia where subsistence hunting also plays a crucial role in providing valued protein and fat (Alvard, 2000; Bennett et al., 2000; Griffin & Griffin, 2000; Luskin et al., 2014).

Passive methods remain common due to their low investment in time and materials, making them flexible and easily combined with other tasks, such as farming. Such methods remain popular in other parts of the tropics for similar reasons e.g. in African moist forest (Fa and Brown 2009) and Southern Africa (Barnett 2002). Air rifles were found to be the most effective despite potential legality issues (Pattiselanno et al. 2016). Similarly, studies in other regions have observed the increased use of guns if they remain available. As seen in various other regions such methods are liable to increase if the guns remain available—again similar trends are seen in Africa, e.g. in Western Tanzania (Carpaneto and Fusari 2000); Equatorial Guinea (Fa and Yuste 2001); and elsewhere (Bennett et al. 2002).

The use of snares and traps, prevalent in certain areas, has proven highly effective, capturing the majority of animals compared to other methods. Simailr results were found in Equatorial Guinea where Fa and Yuste (2001) found that shares accounted for 86.3% of animals caught compared to 7.9% killed by gun and 5.8% by other methods. Similarly, prevalence has been seen in western Tanzania when snares accounted for 54% of all animals taken (Carpaneto & Fusari, 2000). Monitoring wildlife populations and exploring sustainable hunting strategies become crucial in mitigating these threats.

Hunting with dogs is a common practice in many parts of Indonesian New Guinea, contributing to the finding that dogs aid hunters in finding, flushing-out, and killing prey. The presence of free-ranging village dogs near protected areas is also associated with an additional potential biodiversity loss that may be exacerbated by recent road developments and expanding settlements (Ruiz-Izaguirre et al. 2015). In this study, dogs were used in both day and night hunting excursions though we were unable to compare the results. At night dogs can be especially valuable due to their superior vision and olfactory capacities—leading to opportunities that are recognised elsewhere in the region, such as the eastern New Guinea highlands (Dwyer 1974), and further afield, e.g. the Central Kalahari (Ikeya 1994), and North eastern Brazil (Alves et al. 2009,Santos et al. 2023).

Dogs also hold wider cultural and protective roles, serving as companions, guards, and spiritual protectors. The cultural significance of dogs is evident in their treatment as family members, sharing food and providing companionship. Dogs are respected and even attributed sacred values in certain ethnic groups, while their barking is sometimes believed to ward off demons and evil spirits (Pattiselanno 2015, Lekitoo 2012, Maryone 2018).

However, hunting with dogs can create social conflicts and boundary disputes, and may chase prey into neighbouring territories (Constantino 2018). Thus, there is motivation to bring neighbouring groups together to regulate such hunting. Establishing collaborative frameworks among neighboring groups may regulate hunting practices and mitigate conflicts. Indigenous Papuan communities have long-established systems of territorial use rights for land and sea, which are crucial for their societal structure. These traditional tenure systems require careful navigation to balance hunting practices, cultural values, and conservation goals. There are various studies in Papua that have demonstrated how local people can not only guide but implement and police effective control over resource access and use within their territories (Van Heist et al. 2015; Sheil et al. 2015; Sheil and Boissière 2006). Thus, we perceive considerable potential in exploring these issues among the communities themselves to as to build a foundation for sustainable hunting and conservation.

Our pilot study showed that these methods provide useful insights. We see the issues surrounding choice of hunting methods. In particular we observe how hunting with dogs is deeply embedded in the local culture, remaining legal, cheap, and easily accessible. However, the impact of hunting with dogs on the quantity and composition of the hunt calls for careful consideration. If the protection of specific prey species, such as cuscus, is deemed necessary, regulating the frequency of hunting with dogs may be a viable strategy. Additionally, restricting dog movements by their owners within protected areas could help mitigate the impact on biodiversity loss. Further work will be needed to clarify the value of such arrangements along with their wider impacts on wildlife. In particular we are uncertain the degree to which the low rate of capture of native species reflects local abundances of these taxa. In future data collections and cature we wold also hope to better recognise the role of location and conditions as well as the abilities and skills of the hunters.

## CONCLUSION

Our study documented 301 successful kills in 7-months with Timor deer (*Cervus timorensis*) and Wild pig (*Sus scrofa*) being the most common prey. Passive methods (traps and snares) were the least efficient in terms of time, but also the most commonly employed due to the limited investment required. While hunting with guns was uncommon it was the most effective. Hunting without dogs or guns yielded more kills per hour than hunting with dogs, but hunting with dogs is the only method that seems to favour pigs (which are highly sought).

Hunting with dogs remains common practice in many parts of Indonesian New Guinea. Aside from their ability to target specific prey, dogs also hold wider cultural and protective roles, serving as companions, guards, and spiritual protectors with dogs often being viewed and treated as family members. Despite the benefits associated with dogs they are also known to trigger conflicts as when they chase prey into neighbouring territories. Our pilot study provides a first glimpse of the value of exploring the multiple forms and impacts of hunting, in Indonesian New Guinea. Much more remains to be examined.

## ACKNOWLEDGMENT

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## ETHICAL OF INTEREST

All authors involved in this study have abided by the ethical standards of *Animal Conservation*. Aspects of the research carried out involving human subjects was completed in accordance with the ethical guidelines detailed by the Association of Social Anthropologists of the Commonwealth. Prior to fieldwork commencing the study received ethics approval from James Cook University Human Research Ethics Committee H4203.

## CONFLICT OF INTEREST

The authors declare no conflict of interests.

## CONTRIBUTION STATEMENT

FP and DS conceived the main idea; FP, JKFL and AK developed the study; FP and AYSA performed the study; FP, JKFL, DS, AK and AYSA analysed the data and wrote the paper.

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## Additional Files

**Add File 1.** Data divided by day and night hunting.

| **Methods** | **No Guns or dogs** | | **Guns** | | **Dogs** | | **Passive** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Day** | **Night** | **Day** | **Night** | **Day** | **Night** | **Day** | **Night** | **Total** and rate |
| **Total time (*h*)** | 48.6 | 51.4 | 28.4 | 20.6 | 79.2 | 73.9 | 169.1 | 183.4 | 654.5 |
| **Animals (*n*)** | | | | | | | | | |
| **Deer** | 15 | 26 | 12 | 10 | 7 | 12 | 27 | 41 | **150** |
| *Rate* ($h^{-1}$) | 0.309 | 0.506 | 0.422 | 0.486 | 0.88 | 0.162 | 0.160 | 0.224 | 0.229 |
| **Wild pig** | 17 | 6 | 14 | 3 | 22 | 11 | 30 | 22 | **125** |
| *Rate* ($h^{-1}$) | 0350 | 0.117 | 0.492 | 0.146 | 0.278 | 0.149 | 0.177 | 0.120 | 0.191 |
| **Dusky pademelon** | 1 | 2 | 1 | 3 | 0 | 0 | 1 | 1 | **9** |
| *Rate* ($h^{-1}$) | 0.021 | 0.039 | 0.035 | 0.146 | 0.000 | 0.000 | 0.006 | 0.005 | 0.014 |
| **Common spotted cuscus** | 1 | 1 | 1 | 3 | 1 | 3 | 0 | 0 | **10** |
| *Rate* ($h^{-1}$) | 0.021 | 0.019 | 0.035 | 0.146 | 0.013 | 0.041 | 0.000 | 0.000 | 0.015 |
| **Grizzled tree kangaroo** | 0 | 1 | 1 | 2 | 0 | 2 | 1 | 0 | **7** |
| *Rate* ($h^{-1}$) | 0.000 | 0.019 | 0.035 | 0.097 | 0.000 | 0.027 | 0.006 | 0.000 | 0.011 |
| **Total animals** | **34** | **36** | **29** | **21** | **30** | **28** | **59** | **64** | **301** |