

## Mitigation of the Javan Leopard (*Panthera pardus melas* Cuvier, 1809) Conflict in the Communities of Tempur Village, Keling District, Jepara Regency

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### Abstract

A survey has been conducted to identify the conflict of the Javan Leopard (*Panthera pardus melas* – P.p. melas) and its mitigation local wisdom in Tempur village, Keling District, Jepara Regency. The survey was conducted from July to October 2021. The survey was conducted through in-depth interviews with 15 selected respondents and questionnaires to 61 respondents at random in 6 hamlets in Tempur Village. The results of the interviews showed that there had been 17 times the P.p. conflict. melas that befell 2 hamlets from February to July 2021. The results of the questionnaire show that the Tempur Village community has always had a way of avoiding conflict with P.p. wild that is by means of; choosing the right time to go to the garden, not going to the garden/forest alone, doing good to others and the environment, obeying local community norms, always sharing when there is fortune and not disturbing the habitat of P.p. wild. In addition, the respondents also considered that P.p. Melas entering his village is not just a wildlife conflict, but also indirectly shows the victim's social behavior

**Keywords:** Javan leopard; wildlife conflict; tempur; mitigation.

### Introduction

The Javan leopard (*Panthera pardus melas* – P.p. melas) is one of 9 species of leopard in the world. P.p. melas is a protected wild animal and has been designated as a priority endangered animal that is targeted to increase its population by 10% in 2015-2019 based on the Director General of Natural Resources and Ecosystem Conservation Regulation No. SK.180/IV.KKH/2015. Its conservation status is included in protected according to the Regulation of the Minister of Environment and Forestry No. 106/2018, its status in the IUCN is included in the red list or vulnerable (Stein et al., 2016).

Tempur is a village in the Keling sub-district, Jepara Regency. Located at an altitude of 800 meters above sea level and side by side between the Mount Muria Protection Forest which is managed by the Gunung Muria Forest Section, the Pati Forest Management Unit. This geographical location causes community ties to the forest to be so high. Several community traditions in the village of Tempur show how community interactions with the forest have been built for a long time and maintained by the community to this day. The interaction of animals with humans in terms of sharing resources has been going on for a long time. The interaction can take place positively or negatively. Negative interactions occur

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when there is a conflict that affects the survival of wildlife in nature (Kholis et al., 2017).

According to local mass media reports, the village of Tempur almost every year has wildlife conflicts, especially the P.p. melas conflict. In 2011-2013 there have been at least 6 melas entering the village of Tempur with livestock victims, namely chickens, ducks and goats, which reached dozens of heads (Kompas, 2013). The recognition of residents of Tempur Village, Keling sub-district, Jepara Regency, incidents of conflict with javan leopards are almost certain to occur every year with varying numbers and types of victims. In July 2021, there was a complaint from the residents of the Tempur village to the Central Java Natural Resources Conservation Agency (BKSDA Jawa Tengah) regarding the presence of wild animals that eat people's pets.

The objectives of this research to mitigate the wild animal conflict of P.p. melas in Tempur Village, Keling District, Jepara Regency include; (a) identify the local wisdom in mitigating wildlife conflict especially P.p. melas conflict at Tempur Village, Keling Subdistrict, Jepara Regency, (b) identify the perception of the community of Tempur Village, Keling Subdistrict, Jepara Regency regarding the P.p. melas in wildlife conflict and the social factors that surround it.

The results of this study are in the form of data and information regarding the mitigation of conflicts between humans and P.p. melas around the Gunung Muria protected forest area and the social, economic and cultural factors that surround it. This information can be used as a reference for further research and for consideration by forest managers of Mount Muria protected area and their stakeholders

in mitigating the handling of human conflicts with P.p. melas more comprehensively.

## Research Methods

The research was conducted in the village of Tempur, Keling District, Jepara Regency for 4 months, starting from July to October 2021 (figure 1). Data collection is carried out through (1) direct observation in the field to get an accurate description of the types of P.p. melas disorders and the victims they cause. (2) Exploring public information through questionnaires, and (3) in-depth interviews with resource persons to obtain more in-depth information about the research object in accordance with the research objectives.

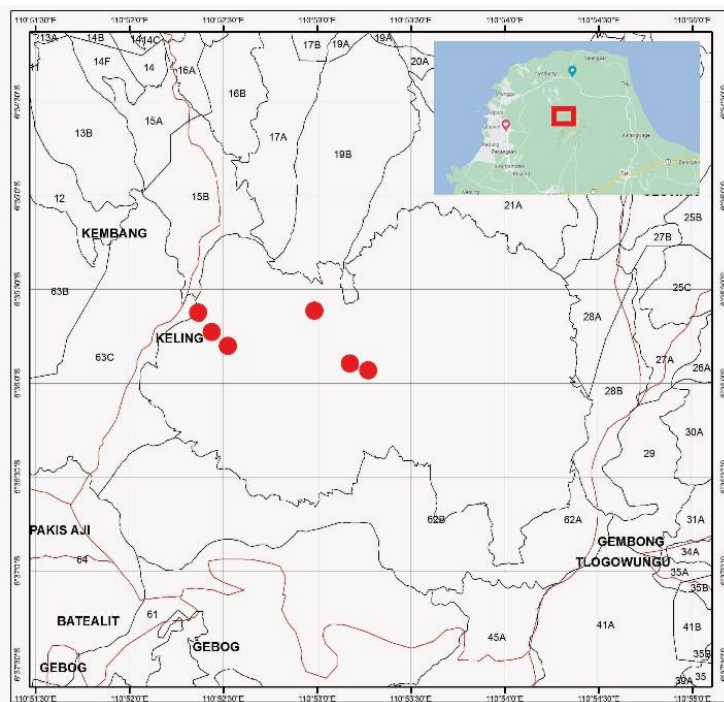
Direct observations were carried out in several hamlets in the Tempur village where in July 2021 there had been a P.p. melas conflict. These observations include identification of the type of victims of P.p. melas, (2) identification of the number of victims, and (3) identification of P.p. melas encounters in conflict locations. These observations were made through interviews with community members who were victims of the P.p. melas conflict.

Meanwhile, the collection of information regarding public knowledge about P.p. melas as well as social and local cultural aspects related to the environment, was carried out through questionnaires. Questionnaires were distributed to 61 respondents from 6 hamlets in Tempur village. Respondents were selected randomly, both those who had been affected by the welding conflict and those who had never been affected. Meanwhile, the victim data were carried out purposively to the people who were directly affected by the welding conflict.

Secondary data was collected to complement the primary data. The data comes from studies on reports of previous research results as well as other information related to the subject of this research.

Meanwhile, the analytical method used is descriptive analytical where the information obtained will be described as it is so that it gets a more specific, comprehensive and in-depth picture of the conditions in the research area.

**Figure 1**  
Research location



**Research Results and Discussion**

The results of interviews with respondents indicate the fact that from February to July 2021 there have been at least 17 violent conflicts with the community that have afflicted 2 hamlets with the victims of 36 pets belonging to 14 residents consisting of 28 chickens, 5 rabbits and 3 ducks ( see table 2). The presence of melas in the village was also corroborated by the results of interviews which showed that 2 people saw *Pardus melas* directly in 4 different places in the Tempur village area.

The location of the encounter with *Pardus melas* can be seen in Figure 2.

From the 4 locations of these encounters, based on the results of interviews, it was shown that there had been *P.p. melas* encounters in the period June – July 2021. The encounters occurred at 3 locations in Tempur village at 4 different times with a total number of encounters of 8 individuals (table 1 ).

**Table 1**

*Location, time and number of P.p. melas encounters in the Tempur village*

No	Time		Encounter location	Description
	date	hour		
1.	June 28, 2021	04.00 pm	Gat Lawang rice fields	2 Adults 1 tiger cub
2	June 30, 2021	04.00 pm	Gedang Kerep hills	1 Adult 1 tiger cub
3	July 2, 2021	11.00 am	Nglebu, Angin Temple	2 tiger cubs
4	July 4, 2021	08.00 am	Trincing Mt	1 Adult

**Table 2**

*Location and number of victims of P.p. melas conflict at Tempur village Keling district, Jepara regency*

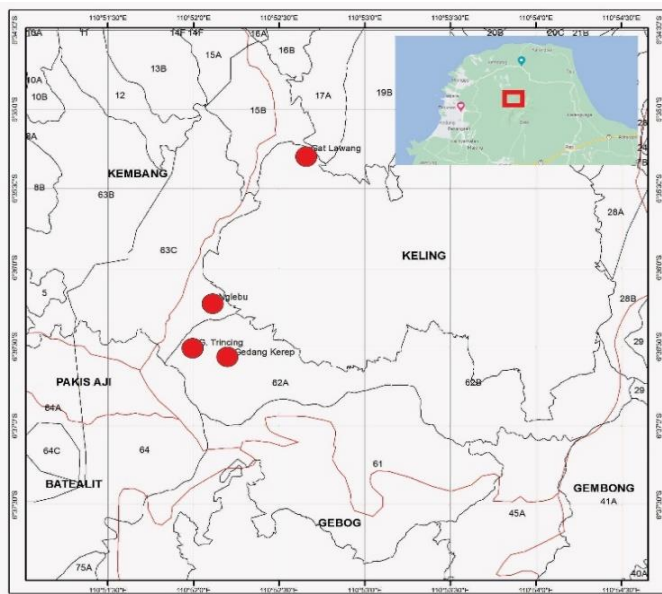
No	Location (hamlet)	Incident date	Time of occurrence	Number of Victims	Description	
1.	Duplak					
	a. Duplak					
		1 RT.2/RW.6	June 30, 2021	01.00 am	4	Chickens
		2 RT.1/RW.6	July 1, 2021	12.00 am	2	Duck
		3 RT.1/RW.6	July 3, 2021	01.00 am	1	Chicken
		4 RT.2/RW.6	July 10, 2021	01.00 am	1	Chicken
		5 RT.2/RW.6	July 12, 2021	10.30 pm	1	Duck
		6 RT.2/RW.6	July 12, 2021	10.30 pm	3	Chickens
		7 RT.2/RW.6	July 13, 2021	01.00 am	1	Chicken
		8 RT.3/RW.6	July 13, 2021	01.30 am	1	Chicken
		9 RT.2/RW.6	July 15, 2021	01.00 am	1	Chicken
2.	Karangrejo					
	a. Godang					
		1 RT.6/RW.5	June 8, 2021	06.00 pm	1	Chicken
		2 RT.6/RW.5	July 1, 2021	11.00 pm	3	Chickens
		3 RT.6/RW.5	July 3, 2021	01.00 am	4	Chickens
	b. Pakelan					
		1 RT.5/RW.5	June 22, 2021	11.00 pm	1	Chicken
		2 RT.5/RW.5	July 1, 2021	10.00 pm	4	Chickens
		3 RT.5/RW.5	February, 2021	01.00 am	5	Rabbits
		4 RT.5/RW.5	July 1, 2021	01.00 am	1	Chicken
		5 RT.5/RW.5	July 2, 2021	09.00 pm	1	Chicken
		6 RT.5/RW.5	July 2, 2021	11.00 pm	1	Chicken

The *P.p. melas* encounter took place in 4 locations including Blocks 17A, 62 A and 63 C. The 4 locations were in the Gunung Muria Protection Forest area which is included in Perhutani management, namely the Pati Forest Management Unit (figure 2). *P.p. melas* cruising range melas depends on the area and habitat conditions as well as gender. Male of *P.p. melas* have a cruising range of 6-63 km<sup>2</sup> and females have a range of 6-13 km<sup>2</sup> (Gunawan & Alikodra, 2013). The data on *P.p. melas* encounters by the community above when compared with (Raharyono, 2021) That the *P.p. melas* track on Muria mountain, shows that it came from 3 different individuals, 2 females and 1 male. The timing of the incident also indicates that the melas are active at night. The victim data shows that the most incidents occurred from 09.00 pm – 01.30 am. Meanwhile, according to (Raharyono, 2021) The male *P.p. melas* of

Muria mountain carried out the most active activity between 06.00-0700 pm, while the female was the most active at 05.00 pm and 17.00 am.

The questionnaire collected from 61 respondents from 6 hamlets in the village of Tempur showed informative results. The composition of respondents based on gender consisted of 31 male respondents and 30 female respondents. The majority of respondents' occupations are farmers, namely 64% or 39 people, followed by housewives at 11% or 7 people. The majority of respondents' education is elementary school as much as 41% or 25 people, junior high school or equivalent by 28% or 17 people, high school or equivalent as much as 18% or 11 people, S1 1 by 11% or 7 people and 1 person does not go to school.

**Figure 2**  
*Encounter location of P.p. melas*



The *P.p. melas* conflict in the village of Tempur has actually been understood by the community. As many as 82% of respondents

or 50 people know that *P.p. melas* have certain times to enter their village (see graph 1). From the 50 people, 4 people or 7% of

them said that *P.p. melas* routinely enter the village every year, 29 people or 47% of them said that *P.p. melas*, 20 people or 33% of them said that *P.p. melas* did not enter settlements every year and the remaining 8 people or 13% of respondents stated that he did not know there were special times for *P.p. melas* to enter the settlement

The entry of *P.p. melas* into community settlements was responded to by various respondents. A total of 40 people or 66% of respondents said that the melas entered the settlement because the melas were looking

for food for their children. Meanwhile, 10 people or 16% of respondents stated that the cause of the entry of *P.p. melas* into settlements was because the habitat that had been the residence of *P.p. melas* had been damaged. The rest, 8% (5 people) of respondents stated that there was local wisdom, 5% (3 people) of respondents stated that because they were asking for food from the community in Tempur village and the remaining 5% (3 people) of respondents said they did not know the cause of *P.p. melas* entering the settlement (chart 2).

**Figure 3**  
Charts of various respondent in chart 1, 2, 3, and 4

Chart 1. Respondent's knowledge about the appearance of *P.p. melas*

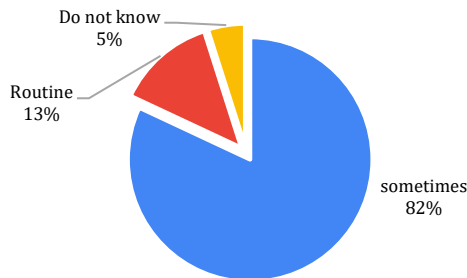


Chart 2. Respondent's knowledge about the cause of *P.p. melas* entering settlements

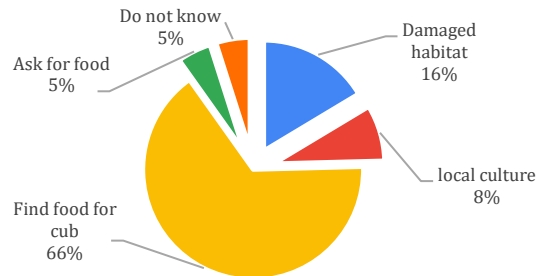


Chart 3. Respondent reaction about *P.p. melas*

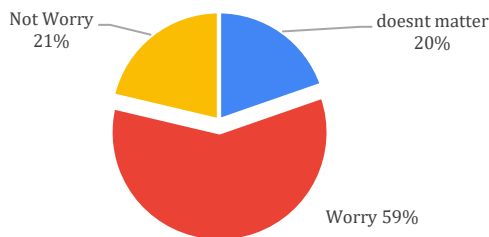
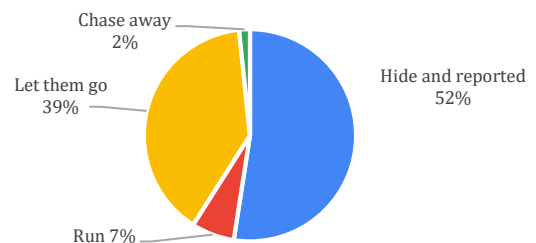


Chart 4. Respondent's response when meeting melas



Regarding the entry of *P.p. melas* into the village, it showed that 59% (36 people) said they were worried, 21% (13 people) said they were not worried and 20% (12 people) said it was normal because it was considered a routine that happens every year (chart 3). Respondents' responses regarding the entry of *P.p. melas* into settlements, respondents stated that they would hide and reported the incident as much as 52% (32 people), 39% (24 people) stated that they would just let *P.p. melas* enter the settlement and the remaining 7% of respondents said they ran away when they found out that *P.p. melas* had entered the settlement and 2% the remaining stated that they would

fight/repel if any *P.p. melas* entered the settlement (chart 4).

In general, 75% or 46 respondents stated that the presence of *P.p. melas* in the settlements did not interfere with their livelihoods and only 25% or 15 people stated that the presence of *P.p. melas* interfered with community activities (chart 5). When further identified the animals that disturb the community, respectively Lutung (21%), Long-tailed Monkey (20%), Javan leopard - *P.p. melas* (24%), wild boar (15%), mongoose (5%), rice field rat (2%), rat snake (2%) and other animals as much as 2%. Meanwhile, the remaining 8% or 8 respondents stated that there were no disturbing animals in their village (chart 6).

**Figure 4**  
Charts of various respondent in chart 5, 6, 7, and 8

Chart 5. Respondent's opinion about the presence of *P.p. melas*

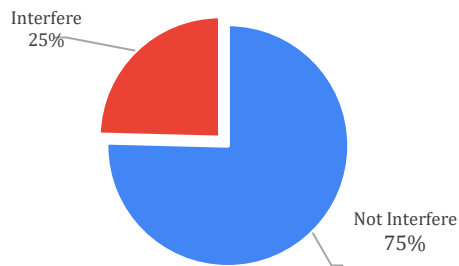


Chart 6. Animals that disturb the community according to respondents

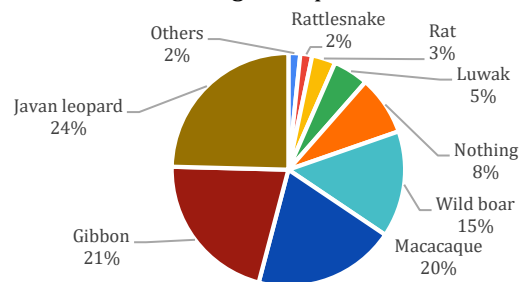


Chart 7. Tips for avoid *P.p. melas*

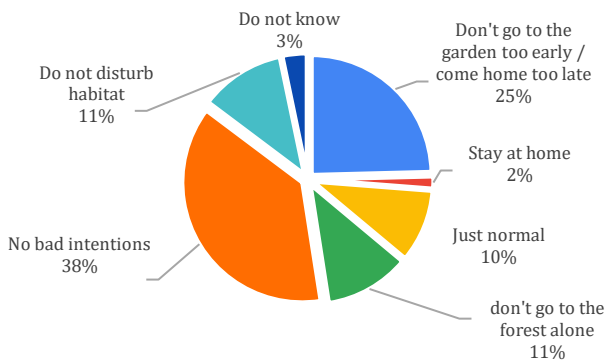
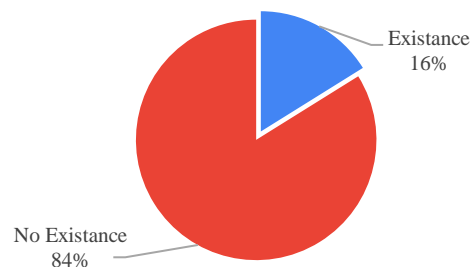


Chart 8. Respondent's knowledge about local culture related to *P.p. melas*

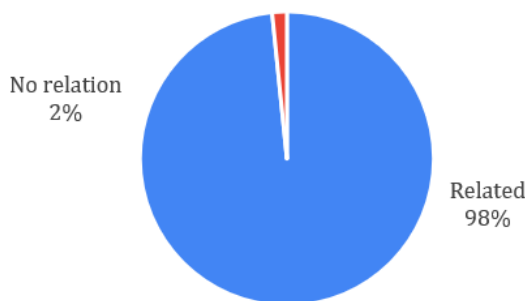


Interestingly, from these results, 75% of respondents thought that the entry of *P.p. melas* into the settlements of the Tempur village community did not interfere with the people's livelihood. The presence of *P.p. melas* in residential areas is considered a consequence of the relationship between the community and its environment. There is a kind of unwritten obligation for the local community towards *P.p. melas* behavior that enters the settlement, so that some local people deny that the incident is called a conflict. The first is because the community feels they have nothing to lose and the second the community does not feel like they

are fighting over resources. This is different from the opinion from (Kholis et al., 2017) that human-wildlife conflict is a negative interaction between humans and wild animals which results not only in the environment and wildlife conservation but also on the social, economic and cultural life of humans. Meanwhile, according to (Dickman, 2010) the struggle for limited resources for humans and wild animals in an area causes harm to wild animals or humans. The presence of *matul* to the settlement is considered a good time for the community to share resources.

**Figure 5**

*The relationship between Sedekah bumi and the preservation of the Tempur village Environment*



However, to reduce community conflicts, the respondents responded wisely. Community activities will be safer from being disturbed if the community has never had malicious intentions as much as 38%, goes to the garden not too early or comes home from the garden not too late (25%), 11% each with advice not to go to the forest alone and not to disturb *P.p. melas*'s habitat. Doing activities as usual as much as 10% and stating that they don't know as much as 3% (chart 7). What the people of Tempur village do is a form of local wisdom on *P.p. melas* behavior. (Mekonen, 2020) said that *Panthera pardus* is a nocturnal animal and usually hunts and eats its prey at night. The

behavior of the Tempur village community is that wherever possible they go to the garden not too early or come home from the garden not too late and try to find friends when they go to the garden. So when meeting with *P.p. melas* not alone, because psychologically this will help fight fear. According to (Gunawan, 2010) *P.p. melas* is a shy animal, he will tend to avoid when he meets humans.

The inner bond between the Tempur Village community and *P.p. melas* has occurred. Ancestral knowledge teaches the community about a safe time for activities, for example if you go to the garden as much as possible not too early and not too late (chart 7). Although 75% of respondents



were not bothered by the presence of *P.p. melas* entering their village (chart 5), there were efforts to avoid meeting them directly.

An interesting respondent's opinion is the effort to avoid *P.p. melas* by not doing evil (chart 7). This attitude is believed by the Tempur village community, that doing evil in the Tempur village environment will definitely get an unfavorable recompense. So often people who are victims of *P.p. melas* conflict are reluctant to report what happened to them. Because by reporting the incident of conflict with the *P.p. melas* that happened to him, the person concerned admits that he has committed an act that is contrary to the norms of the Tempur village community. This is one of the local wisdoms of the Tempur Village community that keeps the local community from doing good. (Maridi, 2015) explained that local wisdom can be interpreted as local (local) ideas that are wisdom, valuable, embedded and followed by community members. Thus, local wisdom includes social norms and values that regulate how the resilience of the natural environment is balanced with lifestyle and human needs. He also explained that traditional knowledge was born from learning through experience, fostered and passed down from generation to generation.

Community knowledge of local culture shows that only 16% of the respondents or 10 people stated that there is a culture in the Tempur village community that is related to *P.p. melas* (chart 8). However, when asked about the implementation of the earth alms ceremony, 98% of respondents or 60 people agreed that the activity was directly related to the environment in Tempur village (chart 9). This fact illustrates that *P.p. melas* has a fairly close bond with the Tempur village community. It has been known for generations by the community that *Mbahe* (*P.p. melas*) is considered to be part of the

family of the Tempur village community who look after their gardens and agricultural cultivation. This belief was then manifested in the form of giving part of his agricultural produce to *Mbahe*. Sedekah bumi is an annual tradition of the people of Tempur village which is held every *Apit* month on Jumat Wage, or every Wage Friday in the month of Dulkangidah (Javanese calendar). The principle of implementing the sedekah bumi is the delivery of gratitude and prayer to God for the blessings that have been given from the environment to the local community. The alms are manifested in the form of thanksgiving with the community, in which the activity is presented with the produce of the earth which is believed to be the favorite of the ancestors of the Tempur village.

The results of the questionnaire which indicated that 13% of respondents knew the routine of matul attendance in their village implied the community's understanding of the interaction of the local community with their environment. Some of the villagers of Tempur understand that the *mbang kopi* season or the season when the coffee trees are in bloom, which falls from May to August is the time when their ancestors (*P.p. melas*) visit their settlements. This is in line with the answer of the next respondent regarding the cause of *P.p.* enter the settlement. Where 66% of respondents said that *P.p. Melas* entered the settlement because he was looking for food for their tiger cubs (chart 2). Menurut (Hunter et al., 2013) *P.p melas* will start the reproductive maturity stage at the age of 24-28 months and enter the best mating period in the rainy season. Whereas (Balme et al., 2013) said that *P.P. melas* will start the first eustrus period at the age of 18-36 months which is characterized by a distinctive odor and roar to attract the opposite sex. (Hunter et al., 2013) states

that the gestation period of melas ranges from 90-106 days. If the best melas mating period is in the rainy season or lasts approximately from August to December, the birth will occur between November and April. According to (Raharyono, 2001) this big kitten will be cared for by its mother for 18-28 months. Thus in that period *P.p. melas* will find prey for himself and his tiger cubs.

The *P.p. melas* reproduction period is known for generations and has become the local wisdom of the Tempur village community. The community said that the entry of *P.p. melas* into their settlements occurred during the *mbang kopi* season or when the coffee trees flowered. The coffee flower season according to the community is the season when their coffee garden begins flowering, which occurs from May to September. The people of the Tempur village have come to understand that this period is the time for *Simbah* (*P.p. melas*) nurturing their tiger cubs. The coffee flower period is in line with the fact that the coffee plant will start flowering every May, and approximately 9 months the coffee flower will slowly form coffee fruit.

*P.P. melas* prefer to hunt in habitats where it is easier to find prey than in habitats with abundant prey. The catchability of prey is not always directly proportional to the density of habitat cover. In habitats with moderate land cover, hunting is preferable compared to dense land cover because it reduces the detection rate of prey which becomes an obstacle to predation. (Rustiadi, 2015). It's like what (Ardiansyah et al., 2020) said that *P.P. melas* is more commonly found in secondary forest cover, because the possibility of catching its prey becomes greater. According to (Banowati, 2009) there has been a shift in land use by the community on the slopes of Mount Muria.

The change in land use is not based on food security orientation, but rather on economic orientation. Changes in land use by the community caused a decrease in the quality of land cover on the slopes of Muria mountain. The village of Tempur is included in the Gelis sub watershed which is currently in the priority or critical category. Critical lands in the Muria mountains area are generally caused by human factors in addition to natural factors. Human factors include human activities or activities such as land use, cultivation patterns that do not heed conservation principles, land conversion, stone and sand mining activities, and so on. (Sridjono & Sudjianto, 2019).

In general, respondents' answers describe that the people of Tempur village are not worried about the presence of *P.p. melas* in their village. They realized that *P.p. melas* has become a part of their life and has existed since their ancestors. The presence of *P.p. melas* becomes the spirit of the community to protect the surrounding environment. *P.P. melas* is a reminder that humans must do good to others and their environment. Due to the presence of *P.p. welding* is believed to be an indication that the victim has carried out activities that violate local norms. Until *P.p. melas* is a reminder that there are norms that become a reference in social life in the community.

The Tempur village community for generations has had a way to reduce the risk of conflict with *P.p. weld*. The following are some of the activities carried out by the community to reduce this risk;

Avoiding the activities when the active time of *P.p. melas*. The respondent stated that in order to avoid meeting with *P.p. melas*, the community had anticipated their activities when they left for the fields/gardens and returned. Respondents

stated that they started their activities to go to the garden not too early and return home not too late . Refer to (Raharyono, 2021) the activity of the male *P.p. melas* peaked at 06.00 pm and the female at 05.00 am.

Do not to the garden nor forest alone. Respondents understand how to avoid direct contact with *P.p. melas*. After arranging the time to go to the garden or return from the garden, the people of the of Tempur village also have local wisdom in case they meet *P.p. melas*. The people of Tempur village always avoid going to the fields/gardens alone. The presence of more than one planter will make noise or break the silence in the garden. This communication between planters can produce voices which are believed to be listened to and become a kind of sign for *P.p. melas*. According to (Gunawan, 2019) *P.P. melas* tend to avoid crowded situations and prefer quiet locations in the trees to observe their prey.

Do good to others and the environment. Respondents strongly believe in the existence of karma. This belief has been passed down from generation to generation to maintain the harmony and peace of the community. People believe that good deeds will definitely bring good results. According to the community, one of the conflicts with *P.p. melas* was caused by bad deeds. Therefore to reduce any conflict, including with *P.p. melas*, society must do good deeds. Just doing good is not enough. According to respondents, the people of Tempur village are required to maintain personal egoism by prioritizing good presumptions. Because even with bad intentions is enough to get his karma.

Obey to local community norms. Traditionally, the Tempur village community has unwritten rules in their social

living. Their obedience to existing norms will lead to goodness. These norms regulate not only the horizontal relationship among community members but also the relationship between the community and the environment. Violation of the norms that exist in the Tempur village will have a bad impact on social life. The community believes that being a victim of *P.p. melas* is a disgrace to the people because in fact this has more or less exposed the fact that there are norms that they have violated.

Always share when there is fortune. Alms according to the people of Desa Tempur do not only apply to fellow humans, but also to nature. No matter how much crops are harvested, it has become a kind of obligation to share with nature. This effort is made with the desire to share the fortune for what is obtained from nature and then returned to nature as a form of community gratitude. This alms activity is manifested in the annual village activity in the form of earth alms. Even though outside these activities, the community has routinely done it.

Does not disturb the habitat. In general, respondents agree that the habitat around their village is very important for the harmony of nature for the community and its surroundings. Respondents believe that if the habitat around the Tempur Village is damaged, it will have implications for the lives. According to (Santoso & Restanto, 2021) *P.P. melas* prefer habitats with medium land cover because it is easier to catch their prey. The community realized that the quality of the environment around the Tempur village was closely related to the presence of *P.p. melas* in their village. Thus, the decline in the quality of the habitat around the Tempur village not only causes conflicts with animals but also concerns

about the availability of water which is a basic need for the Tempur village community.

According to (Mekonen, 2020) the main trigger for wildlife conflict is the increase in agricultural area which changes land cover and this needs to be studied further. (Sridjono & Sudjianto, 2019) said that the village of Tempur is included in the Gelis sub watershed area, which is currently in a priority or critical condition. One of the reasons for this criticality is the conversion of land functions.

The opening of land cover in the habitat of *P.p. melas* will cause the narrowing of the habitat of *P.p. melas*. This condition in the long term will reduce the potential population of *P.p. melas* because of the struggle for homerange. The condition of land cover in Tempur village, where there has been a significant change in the last few years. Protected forest areas and community-owned forests around Tempur village have changed their cover to agricultural land and coffee plantations. This condition is in line with what happened around the Gunung Sawal Wildlife Reserve (Raharyono, 2021). The conflict of *P.p. melas* with the community around Sawal mountain started from the production forest around the Gunung Sawal Wildlife Reserve which is widely cultivated by the community by cutting down natural forest or plantation forest and replacing it mainly with coffee. These activities have reduced the habitat area of *P.p. melas*, because *P.p. melas* live not only in conservation areas, but also in the forest around Sawal mountain in search of food. As a result, there was repeated conflict between humans and *P.p. melas* around Sawal mountain for the past decade (Gunawan, 2019).

## Conclusion

The people of the Tempur village have always had a way of avoiding conflict with *P.p. melas*, namely (1) avoiding activities when *P.p. melas* active, (2) do not go to the garden/forest alone, (2) sharing goodness to the others and the environment, (3) obey the local community norms, (4) always share when there is a fortune and (5) do not disturb the habitat of *P.p. melas*. The Tempur's community also think that the entering of *P.p. Melas* to their village is not just a wildlife conflict, but also indirectly shows the social behavior of victims in the past.

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