

# THE POLARIZATION OF ORIENTATION AMONG STAKEHOLDERS ON INTERPRETATION SUBJECTS AT GUNUNG GEDE PANGRANGO NATIONAL PARK

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THE POLARIZATION OF ORIENTATION AMONG STAKEHOLDERS ON INTERPRETATION SUBJECTS AT GUNUNG GEDE PANGRANGO NATIONAL PARK. Interpretation subject is a novel approach to observing resources in the interpretation program. Interpretation programs refer to the efforts to develop an individual's ability to deeply interpret the value of nature for humans through meaningful and pleasant experiences, impressions, and feelings to achieve management goals. The viewpoint of interpretation subject considers the intrinsic value of each resource. These polarization studies provide valuable information on critical issues concerning stakeholder perception and their implications for managing interpretations. The purpose of this study is to analyze and evaluate the characteristics of the interpretation subject that stakeholders thought were crucial in Gunung Gede Pangrango National Park management. The survey was done by distributing questionnaires to related stakeholders (tourists, communities, and area managers/tour operators) and evaluated by cluster analysis, Kruskal-Wallis, and Mann-Whitney test. Although the stakeholder considered flora, language, and abiotic components essential in interpretation, tourists' perception tended to focus on abiotic components and the built natural environment. The research showed that abiotic and cultural component-based-ecotourism-programs shall be developed to ensure sustainable management, increase community participation, and introduce the biological wealth in the national park area.

Keywords: Polarization of orientation; interpretation subject; ecotourism; Gunung Gede Pangrango National Park

*POLARISASI ORIENTASI DIANTARA PEMANGKU KEPENTINGAN TERHADAP SUBJEK INTERPRETASI DI TAMAN NASIONAL GUNUNG GEDE PANGRANGO. Subjek interpretasi merupakan pendekatan baru dalam memandang sumber daya dalam program interpretasi. Program interpretasi merujuk pada upaya pengembangan kemampuan individu dalam memaknai secara mendalam nilai alam bagi manusia melalui pengalaman yang bermakna dan menyenangkan, kesan, dan perasaan untuk mencapai tujuan pengelolaan kawasan. Cara pandang dari sisi subjek interpretasi ini memberikan penghormatan terhadap nilai intrinsik yang dimiliki oleh setiap komponen di lingkungannya. Studi polarisasi ini memberikan informasi berharga tentang isu-isu kritis mengenai persepsi pemangku kepentingan dan implikasinya untuk mengelola interpretasi. Penelitian bertujuan untuk menganalisis dan mengevaluasi karakteristik subjek interpretasi yang dipandang penting oleh stakeholder dalam kaitan pengelolaan Taman Nasional Gunung Gede Pangrango. Penelitian dilakukan dengan menyebarkan kuisioner kepada para stakeholder (wisatawan, masyarakat, dan pengelola kawasan/operator wisata), dan dianalisis dengan menggunakan analisis cluster, uji Kruskal Wallis dan Mann Whitney. Meskipun flora, bahasa, dan komponen abiotik merupakan subjek interpretasi yang dianggap penting oleh stakeholder, namun kecenderungan persepsi wisatawan terletak pada komponen abiotik dan suasana alami yang terbangun. Penelitian ini menunjukkan bahwa pengembangan program ekowisata berbasis komponen abiotik dan budaya perlu dilakukan, untuk memastikan pengelolaan yang lestari, juga untuk meningkatkan partisipasi masyarakat dan memberikan pengenalan terhadap kekayaan hayati di kawasan taman nasional.*

*Kata kunci: Polarisasi orientasi, subjek interpretasi, ekowisata, Taman Nasional Gunung Gede Pangrango*

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## I. INTRODUCTION

Interpretation subject is highly essential in the interpretation program. The definition of interpretation programs from various sources refers to the efforts to develop an individual's ability to deeply interpret the value of nature for humans through meaningful and pleasant experiences, impressions, and feelings to achieve management goals (Orams, 1996; Sharpe, 1982; Packer, Ballantyne & Hughes, 2014; Sim, Kim, Lee, & Pong-Sik, 2018). In an interpretation program, the area manager displays things and natural and cultural phenomena to tell stories and convey messages about the uniqueness characteristics (Moscardo, 2017). Objects such as natural and cultural phenomena commonly known by various types of resources, including flora and fauna, mountains, rivers, limestone, waterfalls, caves, traditional houses, rice fields, music, language or commonly referred to as the object of interpretation (Jupendri, Amri & Effendi, 2020; Lonardi, Martini & Hull, 2020; Tang, Erawati, Nur, & Thosibo, 2020).

In viewing and communicating objects and phenomena in the natural and cultural environments, the terms subject and object of interpretation have different meanings (Ursini & Acquaviva, 2019). The lexical meaning can be used to understand the meaning of the word "subject". Lexical meaning demonstrates that a subject refers to what he does to the object, whereas the object is subject that works or receives treatment from the subject. In the interpretation program, an object will be perceived and interpreted based on a person's perception and goal. Placing something as an object is similar to understanding anthropocentrism (Hausmann et al., 2020), which considers humans as the main subject whose interests must be satisfied. Everything in nature has value as it supports and benefits humans, and humans are the focal point of all-natural life (Gao, Zhang, & Huang, 2018; Indrawan, Primack, & Supriatna, 2007).

Furthermore, caring for nature is solely done to meet human needs, not because nature

has value in and of itself; thus, it deserves to be protected (Keraf, 2002). Consequently, interpretive thinking in the context of placing something as an object means interpreting something based on one's interests (interpreter/audience). Waterfalls, for example, become the main attraction because it provides several tourist activity alternative and pleasure, or tourists can feel the coolness when they are nearby. It's different when looking at a frog or aquatic plant around the waterfall. It is not discussed as it is not interesting and unrelated to satisfy the audience's recreational needs (Moscardo, 2017; Tatarusanu, Butnaru, Nita, Neculaesei, & Ciortescu, 2021).

On the other hand, in the context of interpretation subject, everything in the natural and cultural environment is seen as having an intrinsic value, regardless of human interests (Keraf, 2002; Girard & Vecco, 2021). The intrinsic value is the natural and innate nature of the ecosystem and implies the holism of the ecosystem, with its integrative relationships, interactions and networks (Sheng, Xu, Zhang, & Chen, 2019). This intrinsic value stems from its unique evolutionary history and the ecological role and its existence (Indrawan et al., 2007; Woźniak, Kulzyck, & Derek, 2018). Essentially, all elements in the environment (both living things and abiotic components) play roles in life. All living things have their own dignified lives and complex interdependencies and interactions (Begon, Townsend, & Harper, 2006).

The concept of interpretive thinking that places something as a subject will pay attention to all the components that exist in nature and pay respect to the intrinsic value of each element. If the waterfall is viewed from the subject's point of view, it provides only one aspect of its role. The interpreter can still provide additional information such as water source, how waterfall phenomena occur and its ecological role (Hudson, 2016). All things that exist in the natural environment and culture will be "interesting" from the standpoint of

the subject of interpretation, in the sense that interpretation can be made by providing specific information related to the values that each subject has (Kim & Coghlan, 2018).

The preceding description also demonstrates that, in conservation area management, treating everything in the area as an object of interpretation has at least two problems. The first is that understanding the object of interpretation leads to selecting specific objects or phenomena as the focus of interpretation. The selected focus is the one with the greatest attraction for tourists. Related to this, there are many examples of resources that are major attractions for tourist attractions, such as certain charismatic animal species (Marschall, Granquist, & Burns, 2017), natural and cultural attractions of lakes and rivers (Bricker & Kerstetter, 2002), caves and hot springs (Jupendri et al., 2020; Tang et al., 2020), and landscape views (Qi, Zhang, Wang, Liu, & Li, 2017).

These conditions raise concerns about the impact of tourists' interactions with nature and the potential disruption of natural processes (Cornelisse, 2020). As a result, other resources become less well known, if not ignored entirely. The area will be recognised as a tourist destination (with certain/spectacular objects), while the management objective of the conservation area will be difficult to understand. The second disadvantage is that the wider community is unaware of natural or cultural resources. The important role of every resource is not communicated to the wider community. As a result, many people do not realize how critical it is to protect the region's resources. Because of the confusion of the subject/object position, various interpretation programs are highly subjective, especially depending on the interpreter's motives and preferences; as a result, the expected output in the audience is not optimal.

A study on interpretation, which relates resources to their intrinsic value, needs to be done. Interpretation management needs to

consider the motivations and preferences of stakeholders for various resources and environmental interpretation activities (Gao et al., 2018). Management of conservation areas involve lots of stakeholder interests; hence, the incorrect response will harm area management. For managing interpretations in the area, area managers must understand the issue of polarization related to perceptions, motivations, and stakeholder preferences (Dileep, Kumar, Govindarajo, & Khen, 2020). The first reason is that the interpreter program manager must continue minimising the negative impact of management errors (Kim & Coghlan, 2018). Polarization studies provide valuable information on critical issues concerning stakeholder needs and their implications for managing interpretations (Mocior & Kruse, 2016).

The second reason is that managers need to improve existing programs (Elwell, López-Carr, Gelcich & Gaines, 2020). When interpretation management fails to consider the stakeholder interests, the program design becomes incompatible with the needs of users or other stakeholders, and the messages in the interpretation are not conveyed properly. The third reason is that polarization studies provide information about the diversity of tourist segments (Kim & Coghlan, 2018; Mutanga, Vengesayi, Chikuta, Muboko & Gandiwa, 2017) and their interest in resources and interpretation activities (López-Guzmán, Torres Naranjo, Pérez Gálvez & Carvache Franco, 2019). Therefore, managers can explore the various potentials of the existing program designs that are more varied and unique for each tourist segment based on available visit time. The purpose of this study is to analyze and evaluate the characteristics of the interpretation subject that stakeholders consider and the polarization of perceptions of the interpretation subject among stakeholders concerning the management of Gunung Gede Pangrango National Park.

## II. MATERIAL AND METHOD

### A. Study Site

This study was conducted in Gunung Gede Pangrango National Park (GGPNP) from September 2019 – May 2020. The GGPNP area is a catchment area and maintains an important life support system for the surrounding major cities (Bogor, Sukabumi, and Cianjur). Geographically, the national park area is located at 06°41' South Latitude - 06°51' South Latitude and 106°51' East Longitude - 107°02' East Longitude. Data were collected around Cibodas, Mandalawangi, Sarongge Village, Situ Gunung, and Selabintana. GGPNP is one of the oldest conservation areas in Indonesia. Although it has organized natural interpretation programs, GGPNP does not yet have a solid foundation regarding the design of interpretation programs, and still adheres to the requests of program users. Therefore, the study of the interpretation subject of interpretation can fill this gap.

### B. Methods

The data used were collected from primary and secondary data. Primary data were obtained by distributing questionnaires to relevant stakeholders. This study collected the data from 425 respondents, containing 381 tourists, 25 area managers/tour operators, and 19 community members. The questionnaires were designed to refer to one criterion one indicator scoring system method (Avenzora, 2008), made as closed-ended questions. Each answer to the question was given a score of 1 to 7 to obtain qualitative data, besides simplifying the appropriate assessment collected from respondents. A score of 1 to 7 was according to the Indonesian characteristics which represented: 1) very unattractive, 2) unattractive, 3) quite unattractive, 4) moderate, 5) moderately attractive, 6) attractive, and 7) very attractive. In the study, the subjects of interpretation were classified into 12 groups, which resulted in 396 subjects of interpretation being evaluated by the respondents if described in greater detail (232 natural subjects and 164 cultural subjects).

Validity and reliability tests were conducted to assess the questionnaire feasibility as the study instrument to obtain respondents' assessments in the study. Secondary data were obtained by reviewing area management documents and literature studies.

### C. Analysis

The cluster analysis identified the stakeholders' perceptions, namely the multiple variable analysis that can classify complex variables into several groups (clusters) based on their similarity level. Cluster analysis was carried out on each respondent category (tourists, area managers/tour operators and community members). The clustering technique used was hierarchical clustering, which is a multiple variable analysis that can group/classify complex variables into several groups based on their level of similarity. A descriptive analysis on each cluster member element was carried out based on the cluster formed to understand the information cluster and basis (Dwyer, Gill & Seetaram, 2012). The difference test between stakeholders was carried out with the Kruskal-Wallis and Mann-Whitney tests. The Kruskal-Wallis test compared two variables measured from the independent samples in more than two compared groups, while the Mann-Whitney compared each stakeholder regarding their perceptions of the interpreted subject. IBM SPSS ver. 25 software was used to analyze the data.

## III. RESULT AND DISCUSSION

### A. Diversity of Interpretation Subjects for Gunung Gede Pangrango National Park

The subject of interpretation is very diverse, but in this study, it is grouped into the subject of interpretation of nature and culture. Information on the subject of interpretation obtained in the research area was from literary sources, especially from the Long-Term National Park Management Plan document owned by the area manager (BBTNGGP, 2018). The description of the grouping of

interpretation subjects is as follows.

1. Subjects of natural interpretation. The subject of natural interpretation primarily consists of biological and non-biological elements as a result of nature's creation, natural formations, natural interactions, and natural phenomena. The subject of interpretation of nature consists described as follows:
  - a. **Flora** includes various plant species with different characteristics. The national park has a high diversity of flora species. There are 925 species that grow in GGPNP, of which 412 are tree species, and 199 of them are orchid species. It was reported there was 349 floras native to the area. Interpretation subjects of flora include various species and plant habitus (trees, shrubs, vines and lianas, herbs, epiphytes, ferns, mosses, mushrooms, grasses, and bamboo), body parts of the plant (roots, stems, bark, branches and twigs, leaves, flowers, fruits, and crowns), the shape of body parts (form roots, stems, leaves, flowers, fruit, crown, and architecture) (Bell, 1991), colour (colour on the roots, stems, leaves, flowers, fruits), and substances secreted by plant organs (oils, essential oils, nectar, latex, allelopathy, and aroma).
  - b. **Fauna** includes a wide range of animals with different characteristics. In the GGPNP, there are more than 300 insects, 250 birds, 75 reptiles, 20 amphibians and 110 mammal. There are 5 primates (Javanese gibbon, surili, Javan langur, long-tailed monkey, and slow loris), large carnivores (leopards/panthers), and molluscs. The interpretation subjects of fauna includes the body parts (such as the head, body, skin, limbs, and tail), form diversity (body shape, head, mouth and beak, limbs, and tail), colour diversity (colour on body parts, head, limbs, and tail), the diversity of substances released from the animal body (scent, pheromones, honey, eggs, feces, chicks), and behaviour (social behaviour such as gathering behaviour, family group, solitary, nesting behaviour, child-rearing, mating, territorial and home range; physiological behaviour such as laying eggs, wallowing, and grooming).
  - c. **Abiotic**/non-biological. It is distinguished based on the physical form of objects, namely solid, liquid, and gas. Abiotic components consist of various types of abiotic/non-biological components that make up land (Motiejūnaitė et al. 2019), water, and air with various characteristics. The area's topography ranges from sloping to mountainous with an altitude of 700-3,019 m above sea level (asl). Mount Gede (2,958 m asl) and Mount Pangrango (3,019 m asl) are in this area, as well as 20 waterfalls, hot springs, caves, camping grounds, lake, and beautiful landscape. Abiotic components include the variety of landscapes including mountain, valleys, hills, soil, and rocks; water forms such as rivers, lakes, and waterfalls; air formations such as various forms of wind, colour diversity (soil colour, rocks, waters), properties and substances diversity contained in abiotic components (aroma, texture, temperature, humidity, light intensity, acidity).
  - d. **Ecological** phenomena that includes different types of interaction that occur in ecosystems including interactions between plants and animals, interactions between biotic and abiotic components, and human interactions with the environment. Ecosystems in the GGPNP consist of types of ecosystems based on their altitude, namely: lower mountain forest (1,000 to 1,500 m asl), upper mountain forest (altitude of 1,500 – 2,400 m asl), and subalpine ecosystems (2,400-3,019 m asl). In addition to the three ecosystems, other types of ecosystems are not affected by altitudes, such as lake ecosystems, swamps, and plantation forest ecosystems (pine, resin, eucalyptus, and calliandra). Another form of the ecological phenomenon is the rarity and

endemicity of species. The national park is a vital habitat for various endangered species such as the Javan leopard (*Panthera pardus melas*), jungle cat (*Felis bengalensis*), root cat (*Mustela flavigula*), Javan gibbon (*Hylobates moloch*), surili (*Presbytis comata*), Javan langur (*Trachypithecus auratus*), ajag or coyote (*Cuon alpinus javanicus*), deer (*Muntiacus muntjak*), mouse deer (*Tragulus javanicus*), and skunk (*Mydaus javanensis*). The diversity of bird species is known to be quite high, consisting of more than 50% of bird species that live in Java. Still, there are rare species, namely 19 endemic bird species to Java Island, 58 protected bird species, 2 rare species of birds, 34 species of birds rarely found, and one extremely rare species (*Nisaetus bartelsi*). Three species of birds that have an endemic status as well as are rarely found and protected, namely: the Javan eagle (*Nisaetus bartelsi*), the mountain celepuk (*Otus angelinae*), and the cerecet (*Psaltria exilis*).

- e. **Natural phenomena;** Events that occur in nature due to certain conditions, the magnitude of which varies depending on the circumstances of the causative factors. Even if the conditions are similar, natural phenomena may not occur in every location. In the national park, fog characterizes and frequently covers the mountainous area. The top of the exploded mountain forms a crater. Four active craters on the island are Ratu Crater, Lanang Crater, Wadon Crater, and Baru Crater. A stretch of meadow and edelweiss flowers also formed the square (Suryakencana Square and Mandalawangi Square).
2. Subjects of cultural interpretation. It encompasses all human creations, tastes, and intentions manifested in various ideas and concepts, objects, and works of art. The classification of the subject of cultural interpretation refers to the cultural elements

proposed by Koentjaraningrat (2009) described as follows:

a. **Language**

It is a set of arbitrary spoken symbols that community use to communicate and interact with one another in the context of a shared culture. Language is generally divided into spoken and written language. There are three kinds of languages spoken in the national park area. The area manager uses Indonesian as the official language, carrying out daily tasks, making reports and correspondence, and delivering information to visitors. Sundanese is a widely spoken language in the surrounding area and is still the primary language used in everyday interactions. Foreign languages are used for specific purposes, such as communicating with foreign tourists.

b. **Living equipment and technology**

Houses and shelters, clothing and jewellery, cooking and eating utensils, work equipment, and modes of transportation are all examples of human-made equipment. Community houses come in various typologies, most of which are similar to the shape of houses in other places. Sundanese house architecture is scarce.

c. **Livelihood system**

It is related to human activities to meet their daily needs. Livelihood systems are classified as agriculture, plantation, fishing, and trading systems. The main livelihoods of the surrounding population are farmers and farm labourers. Other types of livelihoods are self-employed, private employees/factory workers, traders, and some work as civil servants/TNI. Some residents hunt wild animals (sonari worms) in the area.

d. **Art**

It is the result of human creation and is expressed through movement, sound, composition, layout, or objects. Typically, art is performed during ceremonies or traditional events such as weddings and circumcisions.

*Jipeng*, one of the traditional arts in West Java Province, was created by combining three elements of art, namely *tanji* or *tanjidor*, *tapak tilu* or *kliningan*, and masks (Sundanese plays). *Jipeng* performances can take place indoors and in open spaces. *Angklung dog-dog lojor* is a musical instrument made of large diameter bamboo sticks wrapped in goat skin. This musical instrument comprises five *angklungs* with various tone marks and one *dog-dog* (percussion instrument). Another art is *wayang golek*, a puppet show that tells the story of Ramayana and Mahabharata using wooden puppets and accompanied by *gamelan* strains.

e. **Religion and belief system**

The religion and belief system is a form and mechanism of a belief that leads to power beyond human strength. The system of belief and religion includes religion, ceremonies, and forms of community belief in an event or supernatural thing. Islam is the dominant religion. The most common types of celebrations are religious holidays and national holidays.

f. **Knowledge system**

Many human knowledge systems are founded on nature, experience, or studies. The knowledge system is divided into

two sections: knowledge about humans and nature and its surroundings. For centuries, communities around the forest have interacted with forest resources. The community also knows using plants and animals as medicine. There are 300 medicinal plants species commonly used for medicine. Necklace worms and sonari worms are extremely beneficial for curing various diseases.

g. **Social organizations and social systems**

The social system is a concrete patterned action consisting of human activities in society (Koentjaraningrat, 2009). The social system consists of the social structure, kinship and marriage relations, social organizations, rules, and norms that govern society. Sundanese people make up most of the existing local communities. The national park is surrounded by 65 villages. Mutual cooperation activities such as building houses, cleaning religious facilities, weddings, maintaining waterways, and mourning events are common in the community.

**B. Stakeholders Perception of Interpretation Subjects**

Stakeholders gave relatively equal ratings for each subject of interpretation (Figure 1).

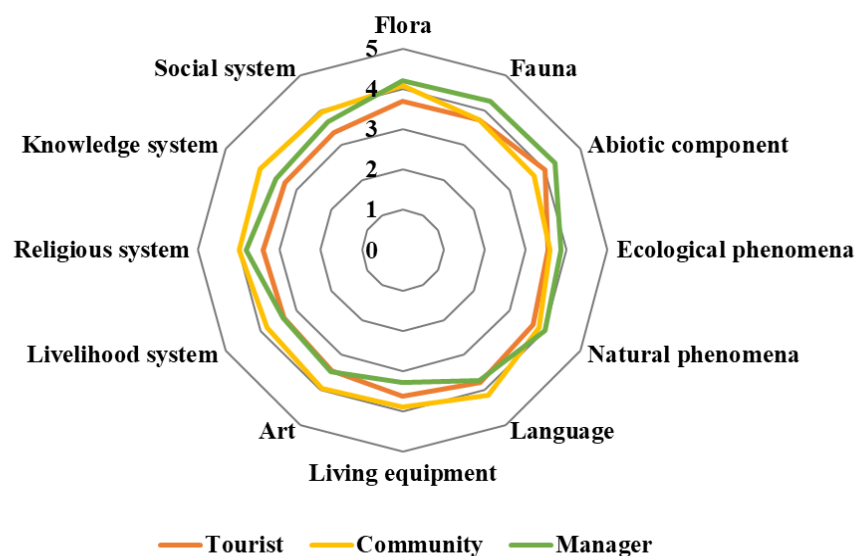


Figure 1. Orientation of stakeholders' perception to natural and cultural subjects at GGPNP area

The average score ranges from 3 (somewhat unattractive) to 4 (moderate). The tourists gave a higher average score (score 4 = moderate) on the abiotic components than other subjects. The communities gave higher average scores on the subjects of flora, language, and knowledge systems (score 4 = moderate). The managers gave a higher average score on the subjects of flora, fauna, and abiotic components (score 4 = moderate).

Cluster analysis of interpretation subjects at the GGPNP area took place in 3 tourist clusters, 2 community clusters, and 2 manager clusters (Table 1). The formed cluster consists of respondents who provide a similar composition of assessments (subject choice and the score given). Clusters with a high proportion of respondents also contributed to a widespread perception of stakeholders' proclivity towards interpretation subjects. The interpretation subjects with the highest average score in each cluster are shown in Table 1.

In general, tourists' perception of interpretation subjects is divided into three categories i.e.: perceptions of natural subjects, natural-cultural subjects, and cultural subjects (Table 1). Perceptions of natural subjects were demonstrated in the second cluster, with the highest scores on abiotic, flora, and fauna components. Perceptions of natural-cultural

subjects were shown in the first cluster, with the highest scores on language, abiotic components, and natural phenomena. Perceptions of cultural subjects are expressed in the third cluster, with the highest scores on social systems, knowledge systems, religious systems, and life equipment. Overall, most tourists have a natural-cultural perception of the subject. Only a small number of tourists demonstrate a pure perception of cultural subjects.

The perception of community in the national park areas is categorized into two groups: perception for cultural aspects (second cluster of the community) and perception for nature-culture (the first cluster of the community). Living equipment had the highest average score in the second cluster, while social systems and abiotic components obtained the highest average score in the first cluster. Judging from the number of respondents who were members of the cluster formed, the perception of community respondents is more likely to choose the natural-cultural aspect.

The perception of GGPNP area managers/ tour operators is also classified into two sections: perception for nature-culture (the first cluster of managers) and perception for natural aspects (the second cluster of managers). Religious systems, fauna, and abiotic components got the highest average

Table 1. Selected interpretation subject by stakeholder groups

Subject	Clusters formed in each category of stakeholder						
	Tourist 1 (n=246)	Tourist 2 (n=129)	Tourist 3 (n=6)	Com 1 (n=11)	Com2 (n=8)	Man 1 (n=16)	Man 2 (n=9)
Flora	5.06	<b>1.18</b>	1.92	5.35	1.62	5.22	<b>2.39</b>
Fauna	5.28	<b>0.92</b>	1.17	5.25	1.12	<b>5.33</b>	<b>2.36</b>
Abiotic components	<b>5.35</b>	<b>1.53</b>	1.77	<b>5.51</b>	1.35	<b>5.32</b>	<b>2.47</b>
Ecological phenomena	5.29	0.32	1.72	5.31	0.94	5.12	1.61
Natural Phenomena	<b>5.34</b>	0.64	1.05	4.94	0.89	5.18	1.92
Language	<b>5.46</b>	0.64	2.43	5.40	1.45	5.15	1.25
Living equipment	5.18	0.66	<b>4.04</b>	5.32	<b>2.12</b>	4.55	1.04
Art	5.04	0.43	2.55	5.28	1.13	4.98	0.85
Livelihood system	4.95	0.28	3.43	5.24	0.96	4.71	1.03
Religious system	5.03	0.31	<b>4.40</b>	5.25	1.21	<b>5.37</b>	1.08
Knowledge system	4.97	0.12	<b>4.46</b>	5.42	1.14	5.06	0.90
Social system	4.97	0.24	<b>4.63</b>	<b>5.80</b>	1.25	5.04	1.24

Remarks: Data obtained from the results of cluster analysis. Score is the average value in the cluster that is formed. The number written in bold is the highest value in the cluster.



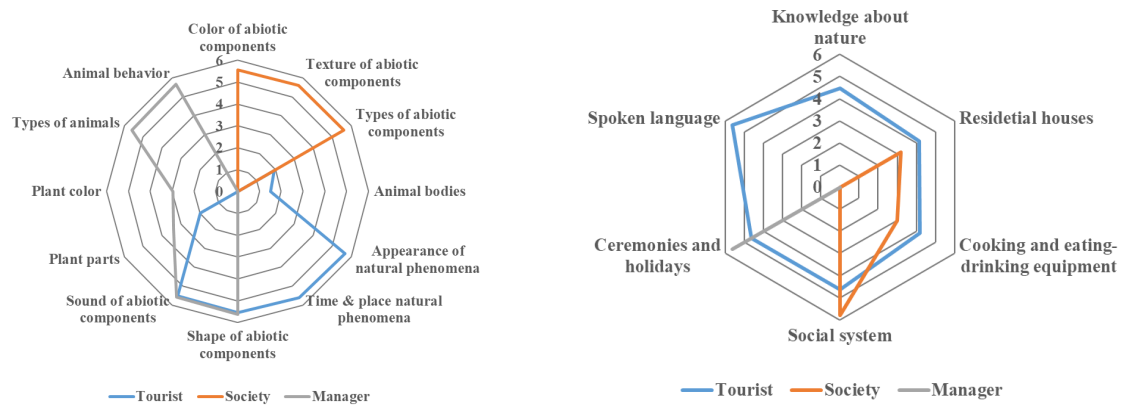


Figure 2. Stakeholder's perception to interpretation subject; (a) natural subjects; (b) cultural subjects

score in the first cluster. Whereas in the second cluster, the abiotic components, flora and fauna acquired the highest average score. Based on the number of respondents who are members of the clusters, the manager's perception for the natural-cultural aspect achieved the highest score. This is presumably due to the difference in vision among the managers/tour operators (Cochrane, 2000) and their understanding that the subject of interpretation is considered to be interesting if it can provide enthusiasm for visitors and has uniqueness hence it can attract tourists. If this assumption is correct, then the subject of interpretation of nature, with its uniqueness and value, has failed to communicate the management message to the larger community.

The abiotic component is the subject of interpretation, identified as the stakeholders' perception in GGPNP (Table 1). Knowledge systems, language, and natural phenomena are some of the subjects specifically identified in the tourist groups. Livelihood systems, arts, and ecological phenomena are not subjects of interpretation identified as respondents' perception.:

Tourist perception for natural subjects in the area is depicted in Figure 2a. Flora, abiotic components, natural phenomena, and fauna were identified as attractive, but fauna subjects received the lowest score by tourists. In abiotic components, tourists concern more about

sound, shape, and types of abiotic components. The sound of abiotic components received a higher average score than the type and form of abiotic components. Natural phenomena were also among the natural subjects with a high average score of tourist interest. The aspects that drew attention were the time and place of natural phenomena occurrence and the appearance of natural phenomena. Natural subjects of flora and fauna got a low score from tourists. These results indicated that the scenery and the unity of the natural components in the national park created a different natural atmosphere for most tourists. Many visitors may simply want to enjoy scenery and have little interest in studying plants and ecosystems (Ballantyne, Packer, & Hughes, 2008).

A small number of tourists' perceptions of cultural subjects were identified (Table 1) and certain cultural subjects, such as language, social systems, knowledge systems, religious systems, and living equipment, can attract tourists. Spoken language has the highest average score. A house, as well as cooking and eating utensils, attracts tourists' attention, while ceremonies and holidays are two religious subjects that also attract tourists' attention. Furthermore, knowledge of natural and social systems can be an attraction in the GGPNP area.

Many villages border the GGPNP area. The villages located around the national park can attract tourists (Djatmiko, Syarifuddin, Raharja

& Fitriani, 2021), where the language and daily life of the community serve a different atmosphere for tourists. The lack of interest in the cultural subject is most likely because the entrances to the national park point to natural destinations as is the main attraction. White, Buultjens and Shoebridge (2013) stated that the lack of tourists' awareness, the lack of products available to tourists, and limited partnerships between local product suppliers and tour operators caused the low interest of domestic tourists in some countries to the culture of local communities.

Our study found that stakeholder perception in the national park is converging on the subject of nature (in this case, the abiotic component), and the atmosphere built by natural elements. This result is in line with Sunarminto, Alikodra and Avenzora (2014) who found that in Cibodas tourist area the tourists' recreational or tourism motivation is for recreation, picnics, photographs, playing and social contact, (Farkic, Isailovic, & Taylor, 2021) as well as cool air to relax, remove boredom from everyday life. Similar findings by Cochrane (2000) found that domestic tourists from Indonesia and Asia tended to enjoy (national) parks as a pleasant place to relax with friends and family, rather than appreciate the wilderness and protected biodiversity.

Community favoured natural-cultural subjects, but there was a stronger perception for the subject of cultural interpretation (Table 1). The subject of abiotic components (types, colour, and texture) was identified as the characteristics of natural subjects of interest for the GGPNP area (Figure 2a). The social system is a prominent perception in the GGPNP area from a cultural aspect and received the highest score from the community. The social system concerning the structure of society, kinship, marriage, rules and norms, and social organization is regarded as attractive (Djarmiko et al., 2021). These findings indicate that the cultural aspects inherent in everyday life are attractive to tourists. Community culture also provides educational value for tourists (Mocior

& Kruse, 2016).

The managers valued three crucial natural subjects: flora, fauna, and abiotic components. Animal behaviour, animal species, plant colour, plant parts, the sound and the shape of abiotic components were natural subjects that obtained higher scores. Figure 2a showed that managers were more likely to choose the subject of fauna and abiotic components, while flora (colour of plants and plant parts) did not receive a high score from the respondents. Ceremonies and holidays had higher scores in the cultural subject. It is presumed that this result is related to the image of the area that is identical as a natural area and its main potential is in a natural setting can improve welfare through tourist experiences, and the motives of tourist visits (Mutanga et al., 2017; Farkic et al., 2021; Tauro et al., 2021).

From all stakeholders perspective, four natural subjects (flora, fauna, abiotic components, and natural phenomena) in GGPNP including 1) characteristics of flora consist of plant parts (leaves, flowers, crowns), and plant colour (leaf colour), 2) characteristics of fauna consist of types of animals (primates, birds, and large mammals), animal bodies (body parts), and animal behaviour (nesting behaviour and parenting behaviour), 3) characteristics of abiotic components consist of types (water, air temperature, air humidity), shape (waterfalls, water flows), colour (watercolour), sound (sound of waterfalls, river sound), and textures (soil texture), and 4) characteristics of natural phenomena, namely its colour and scarcity .

National park areas with diverse plant species have a lot of opportunities for interpretation of tree species. Some species are well-known to the public, but many more are not. Several factors that affect the introduction of species such as the ability to recognize morphology, interest in nature, the duration of appearance and observation of species, and the size of species (Ishibashi, Akasaka, Koyanagi, Yoshida & Soga, 2020). The introduction of flora types focuses on morphological characteristics that distinguish species (De Bastiani, Nervo, Singer

& Buzatto, 2020). The number of species used for people's daily life and the species that are often found are still too few compared to the number of species richness found in the national park area. Some of the data collected in the field included pine (*Pinus merkusii*), areca nut (*Arenga* sp.), rasamala (*Altingia excelsa*), ki hujan (*Samanea saman*), puspa (*Schimma wallichii*), kiriung anak (*Castanopsis acuminatissima*), and pasang (*Quercus gamelliflora*). In addition, human knowledge is still limited regarding the use of various types of flora hence people tend to leave species that are considered useless. Therefore, the introduction of various species is necessary to increase public awareness of nature conservation.

Primates, birds, and large mammals are the three groups of fauna that are the main attraction in the national park area. Several groups of primates can be found in several locations, either because they have a settled territory in certain areas or because they get used to the presence of humans. Primates are interesting because of their human-like characteristics both in its anatomical structure and social behaviour. Citing Hughes and Ballantyne (2013), some animals are inherently more attractive and evoke more positive emotional responses than others.

The creatures that display human-like characteristics are most likely to have the most impact on people's emotional responses (Hughes & Ballantyne, 2013). Types of primates that tourists have known include the long-tailed monkey (*Macaca fascicularis*), the javan langur (*Trachypithecus auratus*), and the javan gibbon (*Hylobates moloch*). The diversity of bird species in the area has also attracted the attention of tourists. Eagles (such as *Nisaetus bartelsi*) and finches (*Pycnonotus* sp.) are widely known to tourists. The shape and size of the body, feather colour, sound, and behaviour of bird species are interesting. The shape of the beak is related to the type of feed, while the type of bird feed varies such as seeds, fruit, insects, nectar, or meat. The diversity of bird species and their food types illustrate the complex interactions in the ecosystem. Another interesting aspect from

the wild life is its behaviour that is different from other elements of the nature. Physiological and social needs drive behaviour in wildlife that is often used to monitor the population. Nests of the Javan eagle (*Nisaetus bartelsi*) for example are used to track the population of this endemic animal to Java Island.

Wild animals are common in the area. Primates, birds, reptiles, amphibians, and insects can be found along the tourist trail. Furthermore, the manager has created a specific path for bird watching in areas with high bird species diversity. Body size and colour affect the ease of viewing in the wild (Ishibashi et al. 2020). Small body size and body colour that blends with nature become a strategy for wildlife to avoid predators.

Meet with wildlife in their natural habitat can have a significant impact on tourists (Cornelisse, 2020; Dell'Eva, Nava & Osti, 2020; Hughes & Ballantyne, 2013). This activity will encourage physiological and psychological connections with the natural environment (Cooley, Jones, Kurtz & Robertson, 2020; Moscardo, 2017; Servidio & Ruffolo, 2016). This is generally done in wildlife tourism environments, where animals are used to evoke feelings of wonder, empathy, and concern, and it requires specially designed tools and methods (Ballantyne, Hughes, Lee, Packer & Sneddon, 2021; Flower, Burns & Jones, 2021; Lück, 2016). Hughes and Ballantyne (2013) found a correlation between feelings of wonder and respect for the animals seen and the desire to save these animals.

The characteristics of the national park area as a mountain forest ecosystem with many rivers and waterfalls, with atmosphere (the effect of vitality, richness of colour, sensation of joy, beauty), and sounds heard in nature (Qi et al., 2017), seem to make the subjects related to this get more attention from tourists. There is a relationship between the character of the physical environment and the activities undertaken (Lane & Stoltman, 2017). Many respondents said that the purpose of tourists coming to the national park is to enjoy the waterfalls and the natural atmosphere. The

peace and serenity of park spaces and their spiritual and restorative benefits have also been characteristics that attract people (Ballantyne et al. 2008).

In GGPNP, five cultural subjects (language, living equipment, religious systems, knowledge systems, and social systems) have been identified from all stakeholders: 1) language characteristics consist of spoken language (regional language), 2) characteristics of living equipment consist of residential houses (architecture, direction towards the house, decoration), cooking and eating-drinking equipment (material storage equipment, material preparation equipment, food processing equipment, burning equipment, food serving equipment, eating-drinking equipment, and shape, motifs, and colour cooking and eating-drinking utensils), 3) characteristics of a religious system consist of ceremonies and holidays (time of worship, celebration of holidays, thanksgiving/salvation ceremonies), 4) characteristics of the knowledge system consist of knowledge about nature (knowledge about natural objects/the surrounding environment), and 5) the characteristics of the social system consist of youth organizations.

The languages (especially the local language) instigate pride in their cultural identity. In addition studies have shown that minority cultures and languages create unique travel experiences for guests (Lonardi et al., 2020). Language is strongly related to a particular culture. Learning a language for tourists will open up a better understanding of a new place (Martin & Woodside, 2011). The rules of social life bind the overall behaviour in social interactions. These rules of life are usually specific to a particular society following the philosophy of life they hold (Mavhura & Mushure, 2019). The principle of harmony with nature still becomes the national park area's people's philosophy of life and serves as an example for tourists with different cultural backgrounds (Djatomiko et al., 2021; Gunara, Sutanto & Cipta, 2019).

The house's architecture is physical evidence of the culture uniqueness in the community. In general, the shape of the house in the countryside around the national park is not much different from other areas. Houses with its characteristics (architecture, decoration, and direction of building), as identified from the research results, cannot be separated from the life principles in society, and describes the hope for the welfare of its inhabitants.

### **C. Polarization of Stakeholders' Perception of Interpretation Subjects**

Stakeholders have different motivations and perceptions of various subjects found in one region (Villamediana-Pedrosa, Vila-López & Küster-Boluda, 2020). However, it is necessary to identify whether the subjects are considered important to meet the needs and satisfaction of the visits made or which subjects need more attention to support the achievement of management objectives.

In the GGPNP area, there was a weak polarization of stakeholders; perceptions to the attractiveness of natural and cultural subjects. Kruskal-Wallis test also showed that there were no significant differences between respondents (Asymp. sig. > 0.05) (Table 2). Table 2 demonstrates that stakeholders have stronger polarization, as shown by the highest Kruskal-Wallis test, on the subject of abiotic components, fauna, flora, and knowledge systems. High polarization of abiotic components occurs in tourists-community and community-managers with lower significance values (Table 3). As mentioned before, there are differences in perceptions of abiotic components among stakeholders (Figure 2a).

Based on the previous description, tourists' preference for natural-cultural subjects is stronger, with the highest score for natural subjects (abiotic components) in the second cluster of tourists. Flora, fauna, and abiotic components are the main interpretation subjects for managers. The gap in this case, is that the subject of abiotic components is still rarely

Table 2. The test results of differences in stakeholders perceptions regarding the attractiveness of the interpretation subject

Subject	Mean	Test Statistics <sup>a,b</sup>		
		Kruskal-Wallis H	df	Asymp. Sig.
Flora	3.76	1.624	2	0.444
Fauna	3.77	1.953	2	0.377
Abiotic components	3.99	3.921	2	0.141
Ecological phenomena	3.57	1.345	2	0.511
Natural Phenomena	3.71	0.591	2	0.744
Language	3.81	0.062	2	0.97
Living equipment	3.64	0.396	2	0.82
Art	3.49	0.05	2	0.975
Livelihood system	3.39	0.739	2	0.691
Religious system	3.49	1.226	2	0.542
Knowledge system	3.40	1.543	2	0.462
Social system	3.43	0.375	2	0.829

Remarks: a. Kruskal Wallis Test, b. Grouping Variable: Stakeholder

Table 3. The results of the pairwise difference test among stakeholders related to the attractiveness of the subject of interpretation

Subject	Asymp.sig Value Test Statistics <sup>a</sup>		
	Tourist-Community	Tourist-Manager	Community-Manager
Flora	0.390	0.323	0.536
Fauna	0.327	0.386	0.112
Abiotic components	0.060	0.672	0.093
Ecological phenomena	0.291	0.753	0.231
Natural phenomena	0.586	0.584	0.582
Language	0.950	0.796	0.940
Living equipment	0.934	0.554	0.445
Art	0.894	0.854	0.880
Livelihood system	0.411	0.986	0.371
Religious system	0.414	0.421	0.804
Knowledge system	0.260	0.563	0.508
Social system	0.623	0.698	0.526

Remarks: Mann Whitney Test, a. Grouping variable: Stakeholder

raised in the delivery of interpretation. The biodiversity of flora and fauna is more regularly appointed by the manager for interpretation in the area, while the motive of tourists coming to this national park is to enjoy the waterfalls and rivers. Furthermore, the knowledge system appears as tourist’s perception. As the owner of this subject, the community group does not make its knowledge system available to tourists.

Stakeholders showed the weakest polarization on the subject of living equipment, social

systems, language, and the arts. Stakeholders had a perception of the natural-cultural subject (Table 3). In general, cultural subjects had not been seen as the main perception of stakeholders in the GGPNP area. Great interest in cultural subjects appeared in a small number of tourists. Nevertheless, several subjects had potential attractiveness for tourists, namely language, living equipment, social systems, knowledge systems, and religious systems. Table 3 shows that the subjects with weakest polarization

among stakeholders are language and living equipment that have a high significance value among stakeholders. In general, stakeholders gave language subjects high scores. However, they solely appeared as the main subject in the tourist cluster, while living equipment appeared as the main subject in a small group of tourists and the community (Table 1).

Perceptions among stakeholders also showed a negative direction of polarization (mean value <4) on each subject of the interpretation assessed. The abiotic component got a score close to 4. This shows that the abiotic component is considered more important by stakeholders. Observations at the study site showed that the abiotic component provided considerable motivation for tourist arrivals. Waterfalls, rivers, cool air, and landscape views are natural attractions that tourists want to enjoy. The motivation to study flora and fauna is owned by a smaller group of students or researchers. The negative polarization of all subjects indicates that the subjects have not received much attention from stakeholders. The components of the ecosystem do not receive individual attention, but natural nuances formed from the unity of the ecosystem are what they want. So far, the interpretation in the region is primarily focused on the subject of flora and fauna. The findings of this study recommend greater attention to the interpretation of abiotic components. Various studies in the ecology field show that abiotic components are crucial components for living things (as a habitat for flora and fauna and provide environmental service) and a foundation for ecosystem balance (Motiejūnaitė et al., 2019; Vanermen et al., 2020).

#### **D. Implications for Ecotourism Management in National Park**

Conservation and natural tourism should be able to run simultaneously in the national park management. Therefore, decision-makers need to understand and incorporate tourists' perception of nature appreciation, infrastructure development, usage restrictions, and other

attributes of national parks. Tourist perception on interpretation subjects is considered to increase the sense of connectedness with the area (Bricker & Kerstetter, 2002; Dileep Kumar et al. 2020; López-Guzmán et al. 2019; Rivera, Fa & Villar, 2019; Zhu, Davis & Carr, 2021).

The mission of preserving the area must be interpreted to ensure the sustainability of this life. People understand this as much as possible in an acceptable way (Ababneh, 2018). The increased support for conservation efforts from the larger community will have an impact on the area (Stoffle, Seowtewa, Kays & Van Vlack, 2020). All-natural and cultural components in and around the national park area have intrinsic value that must be recognized as much as possible for their role in life. The larger community must continuously improve its capacity to realize its participation and behaviour in environmental ethics (Alikodra, 2012; Dileep Kumar et al. 2020; Djatmiko et al. 2021; Meilani, Andayani, Faida & Maryudi, 2019; Murti, 2019).

GGPNP has a long history of protecting nature. Currently, the national park areas raise three main species as superior species, namely the Javan tiger (*Panthera pardus*), Javan eagle (*Nisaetus bartelsi*), and Javan gibbon (*Hylobates moloch*) (BBTNGPP, 2018). Superior species refers to those that are unique and get a lot of attention (Root-Bernstein & Bennett, 2017; Radomskaya & Pearce, 2021). It is intended to attract and maintain public commitment to play a thorough role in the required conservation measures (Qian et al. 2020) and attract large number of visitors with a positive impact on the destination (Weidenfeld, 2010). Our study found that, abiotic components (waterfalls and bodies of water, air temperature and air humidity) tended to be accepted as subjects that provide the main perception for tourists to come to the GGPNP. Therefore, these subjects will further introduce the values and role of the ecosystem to tourists (Bricker & Kerstetter, 2002; Elwell et al., 2020; Hudson, 2016).

Interpretation can be done with various methods (Ababneh, 2018; Beattie & Schneider,

2018; Lane & Stoltman, 2017; Martin & Woodside, 2011; Muneenam, Suwannattachote & Mustikasari 2017; Tatarusanu et al., 2021; Tan & Choy, 2020; Zhu et al., 2021), but considering that tourist arrivals are more due to the attractiveness of outdoor space, the interpretation for the use of outdoor space must be strengthened (Cooley et al., 2020; Moscardo, 2017; Mutiara, Rachmawati & Sunkar, 2021; Tarver, Cohen, Klyve, & Liseki, 2019). Interpretation methods in outdoor spaces that can be applied in the GGPNP area are: traveling around, interpretation paths, and on-site panels (Fang, Yamanaka, & Trencher, 2021; Marschall et al., 2017). Traveling around are allowed to enjoy more of the elements in outdoor spaces. One of the challenges in its implementation is tourists' willingness to accept the presence of a guide/interpreter on their tour since some tourists consider it as private activities. There are several interesting routes for visitors. Hiking trails in the national park area serve the primary route for visitors. There are also bird-watching paths and a canopy trail. Interpretation along the path is accomplished by strategically placing important information about natural subjects.

The visitor center can also explain information during direct observation. Nature's mechanisms, such as the hydrological cycle, can be explained through the process flow in the form of images. Likewise, visitors to the national park can see samples of soil (soil type and texture) and rocks collected from difficult-to-reach locations. Waterfalls and rivers are subjects that receive great attention from stakeholders. Water bodies and waterfalls need to be managed carefully, as they are vulnerable to overuse and environmental mismanagement (Hudson, 2016). Management needs to be done by developing a water component-based interpretation program. In addition to ensuring that these natural resources are managed sustainably, it aims that ecotourism development can reach further areas outside the national park (Muzambiq, Walid, Ganie & Hermawan, 2021) and connected to the flow of water from waterfalls. This development

will ultimately increase the participation of the community around the national park area in tourism activities (Bushell & Bricker, 2017; Mayaka, Croy & Cox, 2018; Sinaga, Ginting & Marpaung, 2020).

Regarding the cultural aspect, local wisdom still needs attention from conservation area managers (Vitasurya, 2016). The local community already knows natural resource management through observation and factual experience, application of management practices, social institutions, and the knowledge of nature (Joa, Winkel, & Primmer, 2018). The knowledge possessed by the community can be transmitted to tourists through interpretation programs that raise natural and cultural subjects (Gunara et al., 2019; Kausar & Gunawan, 2018; Mavhura & Mushure, 2019). At the same time, this will help introduce the biological richness found in the national park area, which is not widely known by the public.

#### IV. CONCLUSION

Interpretation subject is a novel approach to observing resources in the interpretation program. This viewpoint considers the intrinsic value of each component of the environment. Research results show that perceptions among stakeholders against the subject of interpretation in Gunung Gede Pangrango National Park indicate weak polarization and a relatively uniform perception of the subjects of interpretation in the region. Natural and cultural subjects have not received high interest as interpretation subjects, in the sense that their attraction is still used to the extent of fulfilling tourist desires. In general, stakeholders prefer natural and cultural subjects. However, abiotic components should get greater attention in the management of GGPNP interpretation. This knowledge is essential for the role of abiotic components in the ecosystem and considering stakeholders' perceptions that place a higher value on this subject.

This research provides recommendations for the development of interpretation programs by increasing the attractiveness of various

interpretation subjects in the national park area, paying attention to tourists' preferences as the main stakeholders of the interpretation program targets, and developing cultural interpretations based on local wisdom of the communities related to natural management. This is also an effort to increase public participation in the management of interpretation in GGPNP. Considering the importance of tourist experience and satisfaction for the success of interpretation goals in the national park area, a more in-depth research on tourist motivations on various interpretation subjects is needed so that managers can design appropriate programs for various tourist segments. In addition, looking at the diversity of natural and cultural characteristics of national parks in Indonesia, similar research can be conducted on different national parks characteristic..

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