

Perception Coastal Community on Environmental Pollution in Poka Village Ambon City

Lolita Tuhumena^{1*}, Basa T. Rumahorbo², Sara Umbekna¹, Friyuanita Lubis³, Muhammad Zia Ulhaq Payapo⁴, Pirhel⁴, Felycitae Ekalaya Appa⁵, Nicea Roona Paranoan⁶, Winda Ade Fitriya . B.⁷

¹Fisheries Science Study Program, Faculty of Mathematics and Natural Sciences, Cenderawasih University, Jayapura, Indonesia
*email: lolituhumena@gmail.com

² Marine Science Study Program, Faculty of Mathematics and Natural Sciences, Cenderawasih University, Jayapura, Indonesia

³ Aquatic Resources Study Program, Faculty of Fisheries and Marine Sciences, Teuku Umar University

⁴ Fishing Technology Study Program, Fisheries Business Expert Polytechnic, Maluku, Indonesia

⁵Program Studi Farmasi, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Cenderawasih, Jayapura, Indonesia

⁶ Statistics Study Program, Faculty of Mathematics and Natural Sciences, Cenderawasih University, Jayapura, Indonesia

⁷Mathematics Study Program, Faculty of Mathematics and Natural Sciences, Cenderawasih University, Jayapura, Indonesia

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Abstract. Poka Village, Ambon Bay Distric experiencing significant damage to mangrove ecosystems. There is garbage disposal around the beach of Poka Village. There is garbage disposal around the beach of Poka Village, this has an impact on the ecological and economic functions around the area. Therefore, it is necessary to assess the perception of the behavior of the people around the area and utilize the area. The researcher used 20 respondents as samples and conducted in October to November 2024 on Poka Beach using Random Sampling and using the Likert Scale. Respondents were dominated by women, productive age 45 years, predominantly bachelor degree, with income of IDR 3,000,000 – 4,000,000. Socio-economic characteristics illustrate that respondents live, sell and travel around the area. Respondent characteristics are seen from community perceptions of knowledge of the function of the mangrove ecosystem (3.58) including the strongly agree category, community perceptions of environmental conditions for the growth of the mangrove ecosystem (3.56) including the strongly agree category, community perceptions of the utilization of the mangrove ecosystem (3.35) including the agree. The development of science about public perception that results in environmental pollution to the mangrove ecosystem on Poka beach needs to be known in early countermeasures.

Keywords: Coastal Community; Mangrove Ecosystem; Poka Village.

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INTRODUCTION

Mangrove forests are communities of tropical coastal vegetation, consisting of several species of mangrove trees that can grow and thrive in tidal areas of muddy beaches (Sairmorsa et al., 2024). There are 36 types of mangroves in the waters of Maluku Island in the coastal area of Ambon Bay, Mangrove ecosystems can be found in Waiheru, Negeri Lama, Passo, Nania and Poka. The most frequent and dominant types found are *Rhizophora* sp (Rahman et al., 2024). Poka Village, located in Ambon Bay of District, experiencing significant damage to mangrove ecosystems. Environmental damage around mangrove ecosystems which is caused by many factors of human behavior, on the coast is one of them because of tourist activities that throw garbage so that it becomes dirty and natural beauty is damaged (Serkadifat et al., 2024). Waste hot water and oil from PLTD that are dumped into the coastal environment resulting in the destruction of part of the mangrove ecosystem in a number of areas along the coast of Poka Village (Taluke et al., 2019).

Meanwhile, there is garbage disposal around the coast of Poka Village, this has an impact on the ecological and economic functions around the area. There is scattered garbage, oil spills, and metal spills because there

are rusty ships around the mangrove forest area (Figure 1). The main sources of heavy metal pollution in the sea are power plants, sewage treatment facilities, port facilities, agricultural activities, coastal construction, mining and quarrying activities. Heavy metals have the potential to accumulate in water and marine sediments, negatively impacting the health of marine organisms (Tuahatu et al., 2023). Heavy metal pollution from industrial activities in coastal areas can result in pollution of mangrove ecosystems. Mangroves produce antioxidant compounds to counteract the effects of free radicals. (Rozirwan et al., 2025). In fact, mangrove plants are an important resource in maintaining the sustainability of coastal ecosystems which function as a space for fish resources to breed and at the same time resist abrasion.



Figure 1. Garbage Around the Mangrove Ecosystem Area on the Coast of Poka Village

The conversion and loss of mangrove forest ecosystems does not seem to be something new in the last decade. Meanwhile, mangrove forest ecosystems as human targets to be used as objects both directly and indirectly. Excessive exploitation of mangrove forests for firewood needs, paper, charcoal as well as as agricultural land, aquaculture, mining land, and settlements (Saidah et al., 2024). Human and natural factors that cause coastal damage in the Poka Village Mangrove Ecosystem Area. The problem of environmental pollution is a problem for all living things on earth, along with the increase in human population and the development of science and technology with the establishment of industries to meet the needs of human life (Kurniawan, 2019). Industrial activities that are increasingly developing will cause the amount and type of industrial waste to be dumped into the environment (Sompotan & Sinaga, 2022).

Pollution problems due to garbage and others in coastal areas are most often found in environmental problems. Increased waste production certainly has an impact on the health of the environment, humans and other living things. Waste that cannot be tackled by various sectors such as the government in providing waste disposal facilities that are still very lacking in coastal areas causes waste to be thrown carelessly. The waste problem has not been completely overcome effectively if the management is not carried out properly, which then becomes a serious threat to the sustainability of the mangrove ecosystem area near Poka Village which is used as a place to cultivate floating net cages that raise seawater fish for the demersal group and freshwater fish specifically for the type of saline fish. Indeed, previously there was no policy that specifically regulated the handling of marine debris. Therefore, the government issued a policy that regulates the handling of marine debris, namely Presidential Regulation of the Republic of Indonesia Number 83 in 2018 about marine debris handling. This regulation came into force on September 21, 2018 published by the President Joko Widodo and

Minister of Human Rights Law Minister of Human Rights Law Regarding the handling of marine debris, a strategy must be set, programs, and synergistic, measurable, and targeted activities.

Based on Presidential Regulation Number 83 in 2018 state that the Action Plan is a planning document that provides strategic direction for ministries or institutions and a reference for the community and business actors in the context of accelerating the handling of marine debris for a period of 8 years, from 2018 to 2025 (Riksfardini, 2023). Therefore, it is necessary to study the behavior of people living around the area and utilize the area for floating net keamba business and BAST training around the mangrove ecosystem area of Poka Village.

MATERIALS AND METHODS

Research location around the mangrove ecosystem of Poka Village in Inner Ambon Bay of ambon City and research time for 2 (two) months starting from October to November 2024 (Figure 2). This study uses a descriptive quantitative method where data collected based on the results of questionnaires and interviews amounted to 20 respondents (Yusri, 2020). The technique of using data in this study is Simple Random Sampling, which is carried out randomly from population members without paying attention to the level of the population (Firmansyah & Dede, 2022). Primary data collection by conducting interviews with resource persons (community, business actors and visitors/tourists) and observation directly and documentation, while secondary data is collected through literature studies in the form of journals, books, theses, the internet and data from relevant agencies and institutions, namely from the Marine and Fisheries Service Maluku Province and Maluku Provincial Environment Agency.

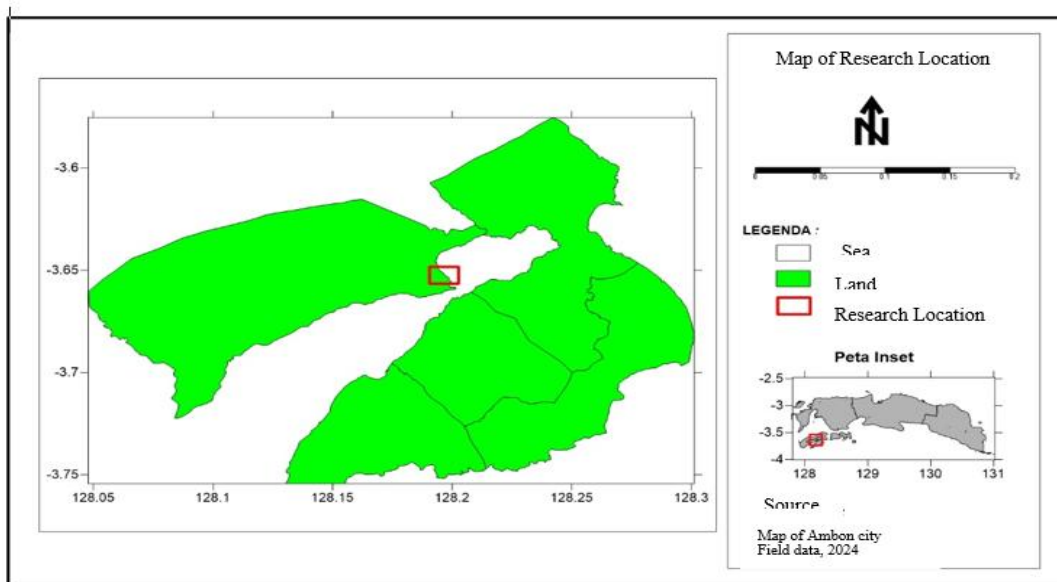


Figure 2. Research Location

Data collected from all respondents or other data sources collected will then be analyzed using qualitative and quantitative descriptive analysis (Sopian & Suwartika, 2019). The likert scale is used to measure the attitudes, opinions, and perceptions of a person or a group of people about social phenomena (research variables) (Olivia & Nurfebiaraning, 2019; Bahtera & Jaya, 2024). Intervals and criteria for the index value of the instrument indicator question (Taluke et al., 2019), with formula:

$$INI = ST - SRBS$$

Information:

INI = Index value interval

ST = Highest score

SR = Lowest score

BS = A lot of scores

So that criteria for the index value are: strongly disagree = 1.00 – 1.80; disagree = 1.81 – 2.60; agree = 2.61 – 3.40; strongly agree = 3.41 - 4.20.

RESULTS AND DISCUSSION

Respondent Characteristics

Respondent characteristics are socio-economic characteristics represented by the community (Andrian et al., 2019), who sell or visit around the mangrove ecosystem area of Poka Village which totals 20 respondents. Table 1 shows that the respondents are dominated by women, aged > 46 years, predominantly educated bachelor degrees, IDR 3.000.000 - IDR 4.000.000. Socioeconomic characteristics illustrate that respondents who live, sell, and work around the area.

Table 1. Respondent Characteristics

Characteristics and Criteria	Number of Respondents	Present (%)
Gender		
a. Female	12	60
b. Man	8	40
Age		
15-25	3	15
26-35	4	20
36-45	5	25
>46	8	40
Education		
a.SD	1	5
b.SMP	2	10
c.SMA	5	25
d.Diploma	4	20
e. Strata 1	8	40
Work		
a. Students	5	25
b. Teacher	1	5
c. Motorcycle Taxi Driver	2	10
d. Warung Trader	2	10
e. Fisherman	2	10
f. ASN	3	15
g. Lecturer	4	20
h. Entrepreneur	1	5
Income		
a. IDR 1.000.000 - IDR 2.000.000	5	25
b. IDR 3.000.000- IDR 4.000.000	8	40
c. > IDR 4.000.000,-	7	35

Coastal Community Perceptions That Result in Environmental Pollution of Mangrove Ecosystems

A description of the perception or response of coastal communities who live, sell, work or often pass through the coast of Poka Village about environmental pollution of the mangrove ecosystem preceded by an elaboration of the perception of coastal communities about the existence of mangroves and the functions and benefits of mangroves.

(1) Public Perception of Knowledge of Mangrove Ecosystem Functions

The instrument to measure coastal communities' perception of mangrove ecosystem function knowledge consists of 5 statements. Figure 3 shows that;

- Mangrove ecosystems can help protect coastlines (15 respondents strongly agree and 5 respondents agree).

- Mangrove ecosystems are part of the seawater wave barrier (16 respondents strongly agree and 14 respondents agree).
- Mangrove ecosystems are able to manage waste materials well (12 respondents strongly agree, 5 agree, 2 respondents disagree and 1 strongly disagree).
- Mangrove ecosystems can provide protection against marine wind (8 respondents strongly agree, 6 respondents agree, 5 respondents disagree and 1 respondent strongly disagree).
- Mangrove ecosystems prevent seawater intrusion (13 respondents strongly agree, 5 respondents agree and 2 respondents disagree).

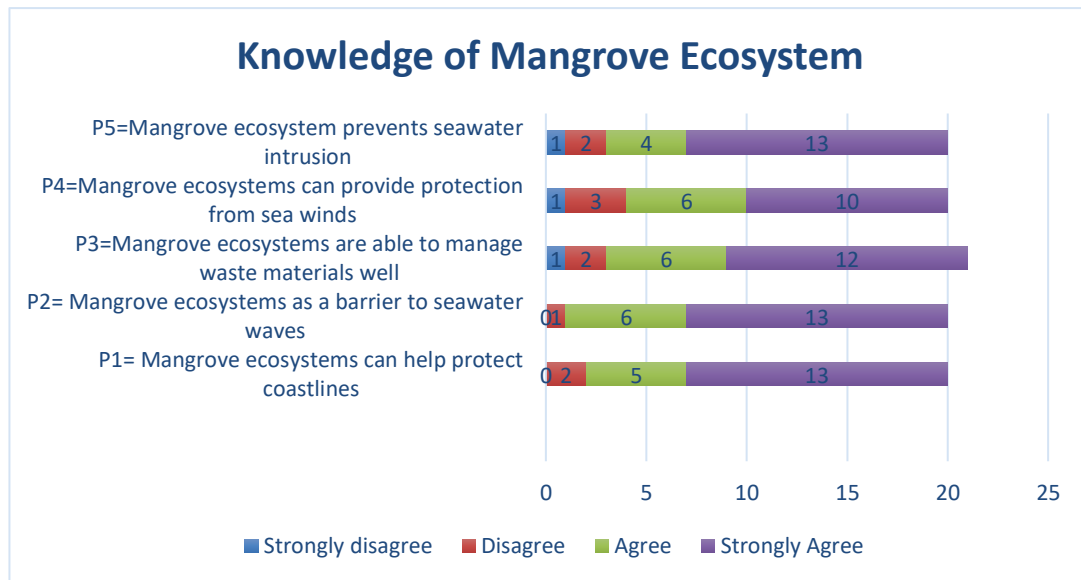


Figure 3. Knowledge of Mangrove Ecosystem Functions

Table 2. Public Perception of Mangrove Ecosystem Function Knowledge

P	STS		TS		S		SS		Sum		Average
	f	%	f	%	f	%	f	%	f	%	
P1	0	0	0	0	0	0	20	100	20	100	4
P2	0	0	0	0	0	0	22	100	20	100	4
P3	1	3.33	4	13.3	5	26	10	50	10	92.66	3.2
P4	0	0.00	1	3.33	12	60	9	35	7	98.33	3.3
P5	0	0	0	0	12	60	16	40	8	100	3.4
											3.58

Information :

- P1= Mangrove ecosystems can help protect coastlines
- P2= Mangrove ecosystems as a barrier to seawater waves
- P3= Mangrove ecosystems are able to manage waste materials well
- P4= Mangrove ecosystems can provide protection from sea winds
- P5= Mangrove ecosystem prevents seawater intrusion

The positive perception is possessed by respondents who always use the mangrove ecosystem area to find catches, sell around the mangrove ecosystem area, work and pass through the roads around the mangrove ecosystem area in Poka Village. All respondents mostly agreed with the function of the mangrove ecosystem in helping to maintain the coastline, as a barrier to seawater waves, able to manage waste materials properly, can provide protection from seawater and prevent seawater intrusion.

(2) Public Perception of Environmental Conditions for Mangrove Ecosystem Growth

The instrument to measure coastal communities' perception of environmental conditions for the growth of mangrove ecosystems consists of 5 statements. Figure 4 shows that ;

- Mangrove ecosystems are damaged if the speed of seawater is high (15 respondents strongly agree, 5 respondents agree).
- Mangrove ecosystems are damaged if there is a lot of garbage on the coast (14 respondents strongly agree and 6 respondents agree).
- The mangrove ecosystem is damaged if there is an expansion of ponds (logging) (12 respondents strongly agree, 5 respondents agree, 2 disagree and 1 strongly disagree).
- Mangrove ecosystems are damaged if there is oil pollution (8 respondents strongly agree, 6 respondents agree, 5 disagree and 1 strongly disagree).
- Mangrove ecosystems are damaged if there is a lot of liquid waste disposal (13 respondents strongly agree, 5 respondents agree, and 2 disagree)

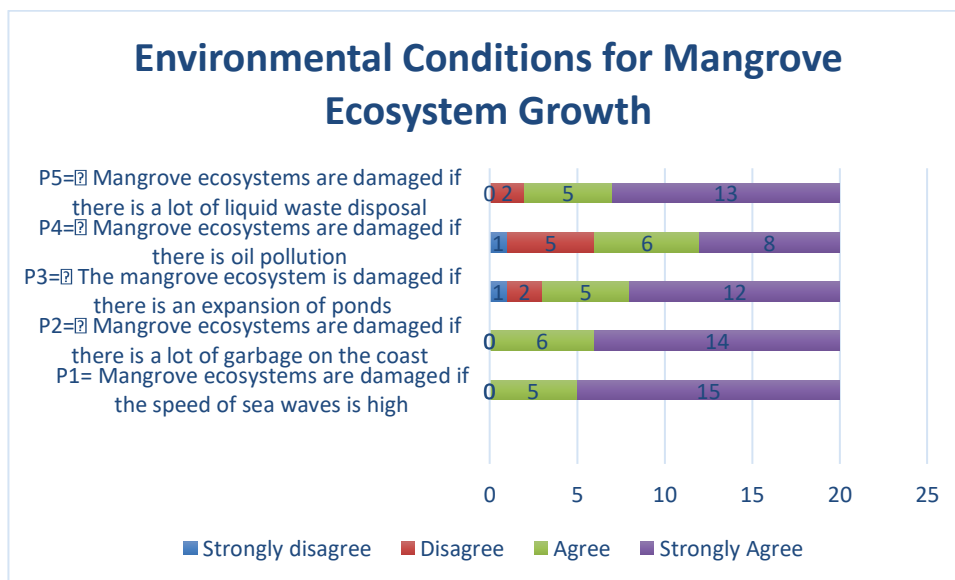


Figure 4. Environmental conditions for the growth of mangrove ecosystems

Table 3. Public Perception of Environmental Conditions for Mangrove Ecosystem Growth

P	STS		TS		S		SS		Sum		Average
	f	%	f	%	f	%	f	%	f	%	
P1	0	0	0	0	0	0	20	100	20	100	4
P2	0	0	0	0	0	0	22	100	20	100	4
P3	1	3.33	4	13.33	5	26	10	50	10	92.66	3.2
P4	0	0.00	1	3.33	12	60	9	35	7	98.33	3.3
P5	0	0	0	0	12	60	16	40	8	100	3.3
											3.56

Information

P1= Mangrove ecosystems are damaged if the speed of sea waves is high

P2= Mangrove ecosystems are damaged if there is a lot of garbage on the coast

P3= Mangrove ecosystems are damaged if there is an expansion of ponds (logging)

P4= Mangrove ecosystems are damaged if there is oil pollution

P5= Mangrove ecosystems are damaged if there is a lot of liquid waste disposal along the river

The positive perception is possessed by respondents who always use the mangrove ecosystem area to find catches, sell around the mangrove ecosystem area, work around the mangrove ecosystem area and pass through the roads around the mangrove ecosystem area in Poka Village. Overall, respondents mostly strongly agree with the environmental conditions for the growth of mangrove ecosystems, where the mangrove ecosystem is

damaged if the speed of sea waves is high, there is a lot of garbage on the coast, there is an expansion of ponds (logging), there is oil pollution and a lot of liquid waste disposal along the river.

(3) Public Perception of Mangrove Utilization

The instrument to measure coastal communities' perception of the use of mangrove ecosystems consists of 5 statements. Figure 5 shows that;

- Mangrove ecosystems can be used for medicinal purposes (14 respondents strongly agree, 4 agree, 1 disagree and 1 respondent strongly disagree).
- The mangrove ecosystem can be used for clothing dyeing/textile production (15 respondents strongly agreed, 4 agreed, and 1 respondent disagreed).
- Mangrove ecosystems can be used for animal feed (13 respondents strongly agree, 5 agreed, 1 disagreed and 1 strongly disagreed).
- The mangrove ecosystem can be used as a pollution biofilter on the coast of Poka Village (10 respondents strongly agree, 7 agree, 2 disagree and respondents strongly disagree).
- Mangrove ecosystems are used for fish habitats (13 respondents strongly agree, 4 agree and 3 disagree)

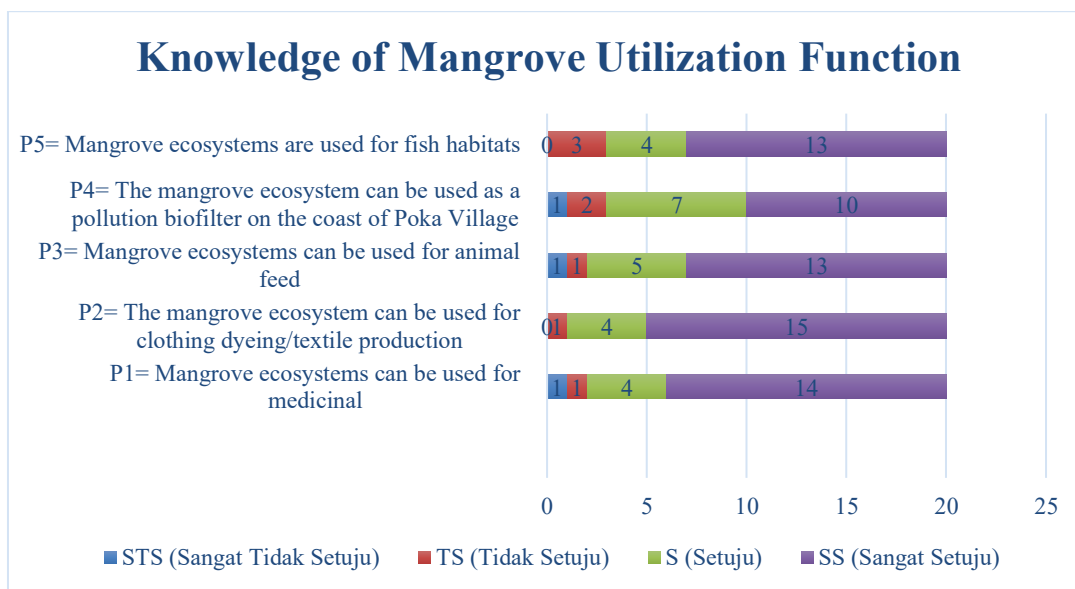


Figure 5. Knowledge of Mangrove Utilization Function

Table 4. Public Perception of Mangrove Utilization

P	STS		TS		S		SS		Sum		Average
	f	%	f	%	f	%	f	%	f	%	
P1	0	0	0	0	0	0	20	100	20	100	4
P2	0	0	0	0	0	0	22	100	20	100	4
P3	1	3.33	4	13.33	5	26	10	50	10	92.66	3.2
P4	0	0.00	1	3.33	12	60	9	35	7	98.33	3.3
P5	0	0	0	0	12	60	16	40	8	100	3.4
											3.35

- P1= Mangrove ecosystems can be used for medicinal purposes
- P2= Mangrove ecosystems can be used for clothing dyeing/textile production
- P3= Mangrove ecosystems can be used for animal feed
- P4 = Mangrove ecosystems can be used as pollution biofilters on the Poka coast
- P 5 = Mangrove ecosystems are used for fish habitat

The positive perception is possessed by respondents who always use the mangrove ecosystem area to find catches, sell around the mangrove ecosystem area, work around the mangrove ecosystem area and pass through the roads around the mangrove ecosystem area in Poka Village. All respondents mostly agreed with the use of mangroves, where the mangrove ecosystem can be used for medicine, can be used for dyeing materials for clothing/textile production, can be used for animal feed, can be used as a biofilter for pollution on the coast of

Poka Village and can be used for fish habitat.

CONCLUSION

The respondent was a female, aged > 46 years, educated in bachelor degree, IDR 3.000.000- IDR 4.000.000. Socioeconomic characteristics illustrate that respondents who live, sell and travel around the area. The characteristics of the respondents are seen from the public's perception of the knowledge of the function of the mangrove ecosystem (3,58) Included in the category of strongly agree, public perception of environmental conditions for the growth of mangrove ecosystems (3,56) Included in the category of strongly agree, public perception of the use of mangrove ecosystems (3,35) Including the category agree.

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