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RABIES CONTROL IN UNGASAN VILLAGE, BALI, INDONESIA 2008-2025: A HISTORICAL PERSPECTIVE

Penanggulangan Penyakit Rabies di Desa Ungasan, Bali, Indonesia Tahun 2008-2025: Perspektif Sejarah

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Abstract

Rabies is a zoonotic disease that continues to pose a significant public health challenge in Indonesia, including Bali since its emergence in 2008. While most previous studies have focused on the epidemiology and control of rabies, historical studies examining rabies control remain relatively limited. This study aimed to analyze rabies control in Ungasan Village, South Kuta District, Badung Regency, Bali, Indonesia during the period 2008-2025 from a historical perspective. The research employed health history and oral history approaches using the historical method, which consists of heuristics, source criticism, interpretation, and historiography. Data were collected through archival research, document analysis, literature review, and interviews with informants involved in rabies control efforts in Ungasan Village. The findings indicate that the spread of rabies was influenced by biological factors, the socio-cultural practice of dog ownership, and institutional limitations during the early stage of the outbreak. Rabies control strategies gradually evolved from dog culling to preventive approaches through mass vaccination, public education, sterilization, and the establishment of dog shelters involving government agencies, customary villages, non-governmental organizations, and local communities. The study concludes that rabies control was shaped not only by the biological characteristics of the virus but also by broader social and institutional conditions, including healthcare accessibility and institutional capacity. Therefore, strengthening the healthcare system, promoting sustained behavioral change, and fostering long-term collaboration among relevant stakeholders are recommended to support more effective and sustainable rabies control.

Keywords: history, rabies control, ungasan village

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Abstrak

Rabies merupakan penyakit zoonosis yang masih menjadi tantangan kesehatan masyarakat di Indonesia, termasuk di Bali sejak kemunculannya pada tahun 2008. Sebagian besar penelitian mengenai rabies di Bali berfokus pada aspek epidemiologi dan pengendalian penyakit, sedangkan kajian yang menempatkan penanggulangan rabies dalam perspektif sejarah masih relatif terbatas. Penelitian ini bertujuan menganalisis penanggulangan penyakit rabies di Desa Ungasan, Kecamatan Kuta Selatan, Kabupaten Badung, Bali, Indonesia selama periode 2008–2025 dalam perspektif sejarah. Penelitian menggunakan pendekatan sejarah kesehatan dan sejarah lisan dengan metode sejarah yang meliputi heuristik, kritik sumber, interpretasi, dan historiografi. Data diperoleh melalui studi arsip, dokumen, literatur, serta wawancara dengan informan yang terlibat dalam penanggulangan rabies di Desa Ungasan. Hasil penelitian menunjukkan bahwa penyebaran rabies dipengaruhi oleh faktor biologis, praktik sosial budaya masyarakat dalam memelihara anjing, serta keterbatasan kelembagaan pada masa awal wabah. Praktik penanggulangan berkembang dari eliminasi anjing menuju pendekatan yang lebih preventif melalui vaksinasi, edukasi masyarakat, sterilisasi, dan penyediaan penampungan anjing dengan melibatkan pemerintah, desa adat, organisasi non-pemerintah, dan masyarakat. Penelitian ini menyimpulkan bahwa penanggulangan rabies tidak hanya ditentukan oleh karakteristik biologis virus, tetapi juga oleh kondisi sosial dan kapasitas kelembagaan yang memengaruhi kerentanan masyarakat terhadap penyakit. Oleh karena itu, penguatan sistem pelayanan kesehatan, perubahan perilaku masyarakat secara berkelanjutan, serta kolaborasi antarlembaga perlu terus ditingkatkan untuk mendukung penanggulangan rabies yang lebih efektif dan berkelanjutan.

Kata kunci: desa ungasan, penanggulangan rabies, sejarah

INTRODUCTION

Rabies is a zoonotic disease with an extremely high case fatality rate once clinical symptoms appear, making it a major public health concern (WHO, 2018). Although Indonesia has implemented various rabies control strategies for many years, Bali did not experience a rabies outbreak until 2008, when the disease first emerged in Ungasan Village, South Kuta District, Badung Regency. The outbreak not only resulted in human fatalities but also exposed a range of challenges related to early detection, vaccination, dog culling, institutional preparedness, and community participation in disease control. These circumstances demonstrate that the spread and control of rabies are influenced not only by biological factors but also by the social, institutional, and policy dynamics that develop throughout the course of an outbreak.

Previous studies have examined rabies in Bali from epidemiological, public health, and veterinary perspectives. Putra *et al.* (2013) described the early dynamics of rabies transmission in Bali, including the implementation of mass vaccination and dog culling, while Besung *et al.* (2011) emphasized the importance of vaccination, public education, and the elimination of stray dogs as disease control strategies. Widyastuti *et al.* (2015) examined the relationship between social practices associated with dog ownership among Balinese communities and rabies control, whereas Ward (2014) demonstrated that the spread of rabies in Indonesia since the Dutch colonial period had been influenced by human mobility, trade, and the movement of dogs between islands. Nevertheless, these studies have not specifically examined rabies control in Ungasan Village, the initial site of the outbreak in Bali, from a historical perspective that situates events, policies, and community experiences within an interconnected historical process.

Ungasan Village occupies an important place in the history of rabies in Bali because it was the site where the first cases were identified in 2008 and where various control measures were

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initially implemented. These measures included dog culling, mass vaccination, public education, sterilization programs, and the establishment of dog shelters. Such interventions not only influenced efforts to control the disease but also brought changes to community life, relationships between the government and local residents, and long-standing practices of dog ownership. Therefore, rabies control in Ungasan Village warrants examination as part of a historical process that reveals changes in policies, health practices, and community responses over time.

Based on this background, this study aims to analyze the factors contributing to the spread of rabies in Ungasan Village, examine the various rabies control measures implemented between 2008 and 2025, and explain the implications of the rabies outbreak for the local community from a historical perspective.

RESEARCH METHODS

Ethical Considerations

This study did not involve experimental animals or any intervention involving live animals and therefore did not require animal ethics approval. Interviews were conducted with the consent of the informants, and the information obtained was used solely for academic purposes. The confidentiality of informants' identities was maintained whenever necessary.

Study Design

This study employed a qualitative research design using a health history and oral history approach, with the historical method applied to examine rabies control in Ungasan Village between 2008 and 2025. This approach was selected because the study sought to reconstruct the development of rabies control through an examination of historical events, policies, and community experiences over time rather than to measure causal relationships or test hypotheses statistically.

Study Area and Data Sources

The study was conducted in Ungasan Village, South Kuta District, Badung Regency, Bali Province, Indonesia. Ungasan Village was selected as the study area because it was the site where the first rabies cases in Bali were identified in 2008 and subsequently became one of the earliest locations for the implementation of rabies control policies and practices at the local level. The data sources consisted of primary and secondary sources. Primary data were obtained through interviews with informants who were directly involved in or had knowledge of rabies control efforts, including officials of the Ungasan Village administration, academics, former animal disease investigators, journalists, and members of the local community. Secondary sources included archives, government documents, legislation and regulations, journal articles, books, newspapers, and statistical data on the development of rabies cases in Bali and Ungasan Village.

Data Collection

Data were collected through field observation, in-depth interviews, and literature review. Semi-structured interviews were conducted using an interview guide to obtain information on the spread of rabies, the implementation of control measures, and community responses to the outbreak. In addition, archives, government documents, legislation and regulations, and scientific publications were used as supporting sources to reconstruct the development of rabies control in Ungasan Village. Field documentation and interview recordings were also used to support the data verification process.

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Data Analysis

Data were analyzed using the historical method, which consists of heuristic inquiry, source criticism, interpretation, and historiography (Gottschalk, 1975; Kuntowijoyo, 2008, 2018). The heuristic stage involved identifying and collecting relevant sources. Source criticism was subsequently conducted to assess the authenticity and credibility of the data obtained from both archival materials and interviews. The verified data were then interpreted to explain the process of rabies transmission, the various control measures implemented, and their implications for the community of Ungasan Village. The findings were subsequently organized through historiography to reconstruct the development of rabies control in Ungasan Village in a chronological and analytical manner.

Data Trustworthiness and Study Limitations

Data trustworthiness was strengthened through source triangulation by comparing information obtained from interviews with archival materials, government documents, legislation and regulations, and relevant scientific publications. Nevertheless, this study has several limitations, including the limited availability of archival records at the village level and reliance on informants' recollections of events that occurred several years earlier. Therefore, the findings should be understood as a historical reconstruction based on the available evidence.

RESULTS AND DISCUSSION

Results

General Characteristics of the Study Area

Ungasan Village is located in South Kuta District, Badung Regency, Bali Province, and was the site where the first rabies cases in Bali were identified in 2008. Geographically, the village covers an area of 14.99 km² and is characterized by hilly terrain and coastal areas, together with relatively high population mobility (Figure 1). In addition, residents of Ungasan Village have long kept dogs as guardians of their homes, yards, and agricultural land. These conditions provide an important context for understanding the spread of rabies during the early stages of the outbreak.

Factors Contributing to the Spread of Rabies in Ungasan Village

The findings showed that the spread of rabies in Ungasan Village was influenced by biological, sociocultural, and institutional factors. From a biological perspective, the relatively long incubation period of the rabies virus meant that infected dogs could remain asymptomatic and were therefore difficult to identify during the early stages of infection. As a result, dog bites were not immediately suspected to be associated with rabies, increasing the likelihood of further transmission before control measures could be implemented.

The study also found that the practice of allowing dogs to roam freely increased the frequency of contact between dogs and consequently expanded the risk of rabies transmission. This pattern of dog ownership had existed before the outbreak and had long been part of everyday life in Ungasan Village.

In addition to biological and sociocultural factors, the spread of rabies was also influenced by institutional capacity. Based on interview findings, specimens collected from dogs suspected of being infected during the early stages of the outbreak had to be sent to a laboratory in Maros, South Sulawesi, because Bali did not yet have facilities capable of diagnosing rabies. Consequently, laboratory confirmation was obtained only after human deaths had occurred, preventing a rapid and timely response.

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Overall, the findings indicate that the spread of rabies in Ungasan Village resulted from the interaction between the biological characteristics of the virus, community practices related to dog ownership, and institutional capacity for outbreak detection and response.

Rabies Control Practices

The findings showed that rabies control practices in Ungasan Village evolved following the identification of the outbreak in 2008. During the initial stage, the government prioritized the elimination of dogs suspected of being infected with rabies as a measure to interrupt transmission. This policy was implemented under Minister of Agriculture Decree No. 1696/Kpts/PD.620/12/2008, Bali Governor Regulation No. 88 of 2008, and Bali Provincial Regulation No. 15 of 2009 concerning Rabies Control. In practice, officers captured dogs showing clinical signs consistent with rabies or roaming without an identifiable owner, after which euthanasia was carried out in accordance with the applicable procedures.

As the number of cases declined, the control strategy gradually shifted toward a more preventive approach through mass vaccination of dogs. Vaccination programs were routinely implemented by the Bali Provincial Government and the Badung Regency Government with support from non-governmental organizations, including the Bali Animal Welfare Association (BAWA). In addition to vaccination, community education was provided on the risks associated with rabies, the importance of vaccinating companion animals, and appropriate measures to take following bites from rabies-susceptible animals. The findings also showed that the participation of community members and village authorities supported the implementation of vaccination programs in Ungasan Village.

In addition to vaccination, rabies control involved dog population management through the provision of shelters for stray dogs and dogs rescued from elimination efforts. These shelters served as temporary holding facilities and as sites for vaccination, sterilization, and adoption programs. Their management involved collaboration between government institutions and non-governmental organizations, accompanied by community education on responsible dog ownership.

Implications

The findings showed that rabies control in Ungasan Village had implications for public health, dog ownership practices, and healthcare services. The most immediate and significant impact was the occurrence of human deaths during the early stages of the outbreak, which were associated with delays in diagnosis, limited public awareness of rabies, and an underdeveloped healthcare response system. Data on human deaths attributable to rabies in Badung Regency and Bali Province between 2008 and 2025 are presented in Table 1.

The study also identified changes in dog ownership practices in Ungasan Village. Following the enactment of Bali Provincial Regulation No. 15 of 2009 concerning Rabies Control, residents were increasingly encouraged to adopt more responsible dog ownership practices, including mandatory vaccination, the use of animal identification, and restrictions on allowing dogs to roam freely. Nevertheless, some residents continued to allow their dogs to roam after the number of rabies cases had declined.

In addition, the findings indicate that the effectiveness of rabies control was also influenced by developments in healthcare capacity. During the early stages of the outbreak, limited diagnostic facilities and the uneven distribution of anti-rabies vaccine (ARV) restricted access to appropriate healthcare services. As the healthcare system in Bali developed, these service capacities improved and subsequently provided greater support for rabies control programs.

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Discussion

This study shows that the spread of rabies in Ungasan Village resulted from the interaction of biological, sociocultural, and institutional factors. From a biological perspective, the relatively long incubation period of the rabies virus meant that infected dogs could remain asymptomatic, increasing the opportunity for transmission before the disease was recognized. At the same time, the practice of allowing dogs to roam freely increased the frequency of contact between dogs and facilitated the spread of the virus during the early stages of the outbreak. These findings indicate that rabies transmission cannot be understood solely as a biological phenomenon but is also shaped by social practices related to dog ownership.

These findings are consistent with those of Widyastuti *et al.* (2015), who showed that dog ownership practices in Bali are influenced by sociocultural factors and can affect the effectiveness of rabies control. However, the present study offers a different perspective by placing these practices within a historical context. In Ungasan Village, the practice of allowing dogs to roam freely had existed before the emergence of the rabies outbreak in 2008 and therefore constituted one of the conditions that influenced disease transmission during the early phase of the epidemic. Thus, this study not only identifies factors associated with the risk of transmission but also demonstrates how long-standing social practices shaped the dynamics of rabies spread.

In addition to biological and sociocultural factors, this study demonstrates that institutional capacity also influenced the effectiveness of the outbreak response. The findings indicate that limited diagnostic facilities required specimens from suspected dogs to be sent to a laboratory in Maros, South Sulawesi, resulting in delays in case confirmation. Consequently, control measures could not be implemented optimally during the initial stage of the outbreak. This finding supports the study by Putra *et al.* (2013), which reported that the early response to the rabies outbreak in Bali faced several institutional challenges, including limitations in surveillance systems and diagnostic capacity.

This study also shows that rabies control practices in Ungasan Village evolved in response to changing outbreak conditions. During the initial stage, control efforts focused primarily on eliminating dogs suspected of being infected as an emergency measure to interrupt transmission. As institutional capacity improved and greater resources became available, the strategy gradually shifted toward a more preventive approach involving mass vaccination, community education, sterilization, and the provision of shelters. This development indicates that rabies control was not a static policy but rather evolved in response to changing needs and the experiences gained throughout the outbreak.

The findings are consistent with those of Townsend *et al.* (2013), who emphasized that successful rabies control in island settings depends on a combination of high-coverage mass vaccination, dog population management, and community participation. The present study further demonstrates that the success of vaccination programs in Ungasan Village was determined not only by the implementation of vaccination itself but also by the involvement of local government, village authorities, non-governmental organizations, and the community. Rabies control therefore depended on collaboration among multiple stakeholders with complementary roles.

The implications of rabies control in Ungasan Village extended beyond a reduction in disease transmission to include changes in community behavior and the strengthening of the healthcare system. The increase in human deaths during the early stages of the outbreak prompted the government to strengthen control policies through the provision of vaccines, improved coordination among institutions, and expanded public education. At the community level, dog

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ownership practices began to change through increased awareness of the importance of vaccination, animal identification, and restricting dogs from roaming freely. Nevertheless, the study also found that some members of the community continued to maintain long-standing practices, indicating that behavioral change occurred gradually.

These findings suggest that the effectiveness of rabies control is determined not only by medical interventions but also by the preparedness of the healthcare system and changes in community behavior. From the perspective of the history of health, the development of rabies control in Ungasan Village reflects a gradual process of learning since the outbreak first emerged in 2008. The experience of responding to the outbreak contributed to changes in policy, improvements in institutional capacity, and the development of cooperation among government institutions, non-governmental organizations, and the community in rabies control.

Overall, this study contributes to the reconstruction of the history of rabies control in Ungasan Village, the site where the first rabies cases in Bali emerged. Unlike most previous studies, which have focused primarily on epidemiological or veterinary aspects, this study demonstrates that the dynamics of rabies transmission and control were also shaped by historical context, community social practices, and the development of institutional capacity. This perspective broadens the understanding of rabies control as a process involving not only biological factors but also social change, policy development, and the evolution of healthcare systems.

CONCLUSIONS AND SUGGESTIONS

Conclusions

This study demonstrates that rabies control in Ungasan Village has been a historical process that evolved in response to changing outbreak conditions, government policies, and community responses. The early spread of rabies was influenced not only by the biological characteristics of the virus but also by long-established dog ownership practices within the community and limited institutional capacity for outbreak detection and response. As knowledge and policies developed, control strategies shifted from an emergency-oriented approach centered on dog elimination toward more preventive measures, including vaccination, community education, sterilization, and dog shelter management. These developments contributed not only to rabies control but also to changes in community behavior, stronger interinstitutional collaboration, and improvements in the capacity of the healthcare system in Bali. Therefore, this study demonstrates that rabies control should not be understood merely as a response to disease but as part of a broader historical process reflecting the relationship between health policy, community social dynamics, and institutional development in responding to an outbreak.

Suggestions

Based on the findings of this study, rabies control efforts in Ungasan Village should be sustained through collaboration among government authorities, healthcare professionals, veterinary institutions, village administrations, non-governmental organizations, and the community. Mass vaccination programs, education on responsible dog ownership, and surveillance of the movement of rabies-susceptible animals should be maintained on a continuous basis to prevent the re-emergence of rabies cases. In addition, further strengthening of healthcare capacity and surveillance systems is necessary to ensure that rabies cases can be detected and managed more rapidly and effectively. Future studies are encouraged to examine rabies control across broader geographical areas or through interdisciplinary approaches integrating historical, public health, veterinary, and social science perspectives. Further research could also draw on more detailed epidemiological data, institutional archives, and

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interviews with additional stakeholders to provide a more comprehensive understanding of the dynamics of rabies control in Indonesia.

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REFERENCES

Besung, I. N. K., Suwiti, N. K., Suatha, I. K., Suastika, P., Suastika, I. W., Piraksa, N. L., & Setiasih. (2011). Vaksinasi, edukasi dan eliminasi anjing liar sebagai usaha percepatan penanggulangan penyakit rabies di Bali. *Buletin Udayana Mengabdi* 10(2): 57-60.

Gottschalk, L. (1975). *Mengerti sejarah* (N. Notosusanto, Trans.). Yayasan Penerbit Universitas Indonesia.

Kuntowijoyo. (2008). *Penjelasan sejarah*. Tiara Wacana.

Kuntowijoyo. (2018). *Pengantar ilmu sejarah*. Tiara Wacana.

Putra, A. A. G., Hampson, K., Girardi, J., Hiby, E., Knobel, D., Wayan Mardiana, I., Townsend, S., & Scott-Orr, H. (2013). Response to a rabies epidemic, Bali, Indonesia, 2008–2011. *Emerging Infectious Diseases, 19*(4), 648–651. https://doi.org/10.3201/eid1904.120380

Townsend, S. E., Sumantra, I. P., Pudjiatmoko, Bagus, G. N., Brum, E., Cleaveland, S., Crafter, S., Dewi, A. P. M., Dharma, D. M. N., Dushoff, J., Girardi, J., Gunata, I. K., Hiby, E. F., Kalalo, C., Knobel, D. L., Mardiana, I. W., Putra, A. A. G., Schoonman, L., Scott-Orr, H., & Hampson, K. (2013). Designing programs for eliminating canine rabies from islands: Bali, Indonesia as a case study. *PLoS Neglected Tropical Diseases, 7*(8), Article e2372. https://doi.org/10.1371/journal.pntd.0002372

Ward, M. P. (2014). Rabies in the Dutch East Indies a century ago: A spatiotemporal case study in disease emergence. *Preventive Veterinary Medicine, 114*(1), 11–20. https://doi.org/10.1016/j.prevetmed.2014.01.009

World Health Organization. (2023). *Rabies*. https://www.who.int

Widyastuti, M. D. W., Bardosh, K. L., Sunandar, Basri, C., Basuno, E., Jatikusumah, A., Arief, R. A., Putra, A. A. G., Rukmantara, A., Estoepangestie, A. T. S., Willyanto, I., Natakesuma, I. K. G., Sumantra, I. P., Grace, D., Unger, F., & Gilbert, J. (2015). On dogs, people, and a rabies epidemic: Results from a sociocultural study in Bali, Indonesia. *Infectious Diseases of Poverty, 4*(1), Article 11. https://doi.org/10.1186/s40249-015-0061-1

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Table

Table 1. Human deaths due to rabies in Bali Province, 2008–2025

No.	Year	Badung Regency	Bali Province
1	2008	4	4
2	2009	6	28
3	2010	10	82
4	2011	3	23
5	2012	0	8
6	2013	0	1
7	2014	0	2
8	2015	1	15
9	2016	0	5
10	2017	0	2
11	2018	0	4
12	2019	0	4
13	2020	0	2
14	2021	0	1
15	2022	0	22
16	2023	0	9
17	2024	1	7
18	2025	3	9

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Figure

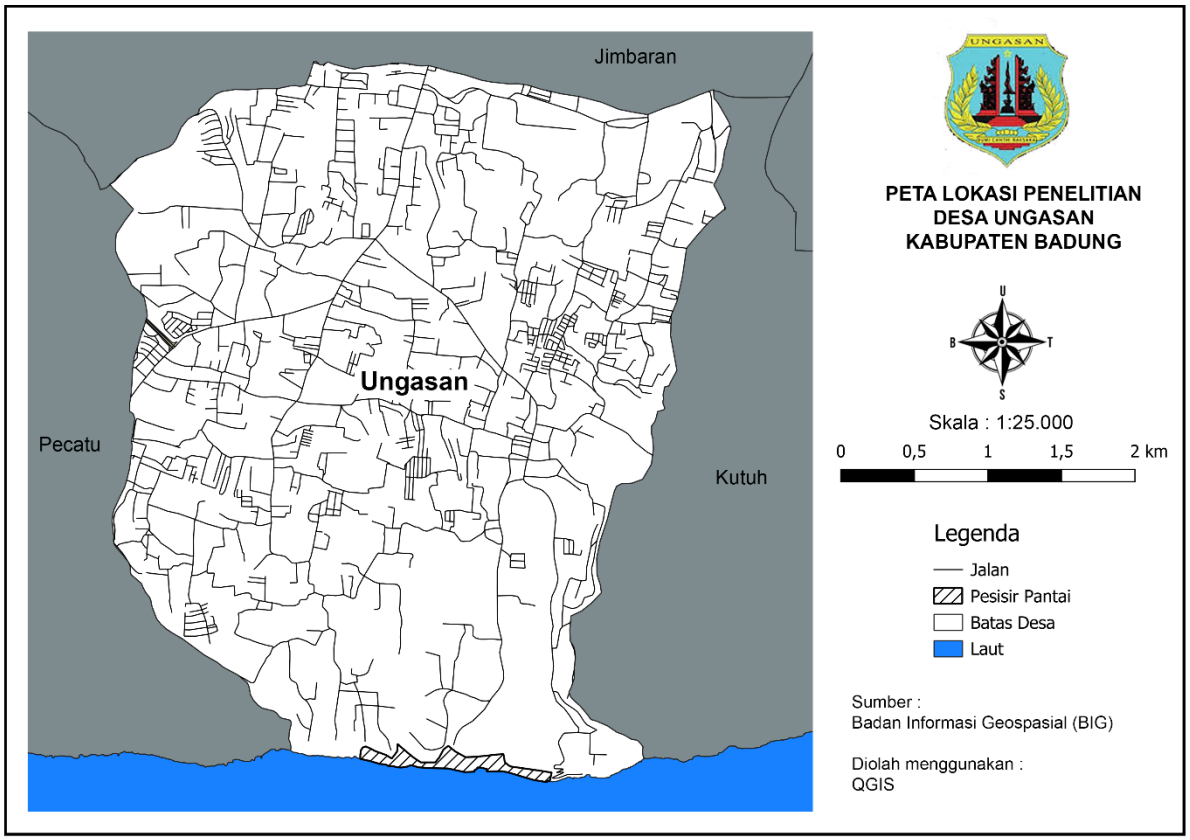

Figure 1. Study area map