

The Use and Transmission of Traditional Beliefs for Environmental Conservation in the Bueng Khong Long Wetland, Thailand

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Abstract

This study explores the use and transmission of traditional beliefs about supernatural beings for environmental conservation in wetland areas. The qualitative approach was used and 13 in-depth interviews were conducted with two groups of people—local residents and officials—selected using purposive sampling. The findings suggest that residents' traditional beliefs in the supernatural promoted an awareness of relations between humans and nature as well as moral concern for nature. Traditional beliefs primarily involved ideas about rewards and punishments bestowed by supernatural entities that encourage proper behavior in socialization and conservation contexts. Moreover, local residents transmitted their traditional beliefs through both traditional and modern approaches. Traditional beliefs were transferred from one generation to another through experiences and elders' oral stories. Meanwhile, social media applications such as Facebook and YouTube have become a primary channel for communicating with newcomers and new generations to help them understand the traditional beliefs of local residents around Bueng Khong Long wetland.

Keywords: traditional beliefs, traditional ecological knowledge, environmental conservation, common resources, sustainable communities

Introduction

Bueng Khong Long, a lake in northeastern Thailand, is a non-hunting area in Bueng Kan province that has been recognized as a wetland of international importance under the Ramsar Convention; it has been known as Ramsar site number 1098 since 2001 (World Wildlife Fund, 2016; Ramsar Convention Secretariat, 2001). This lake measures about 13 kilometers in length and 2 kilometers in width (Tourism Authority of Thailand, 2020). The wetland provides many benefits to the local communities, including agriculture, fishing, and livestock (World Wildlife Fund, 2016). It is home to a wide range of ecosystems that contribute to human and community well-being, in ways such as local economic development, natural resource utilization, human consumption, food security, as well as recreational, spiritual and religious social services (Wetlands International, 2020; Millennium Ecosystem Assessment, 2005). Moreover, Bueng Khong Long is a shared resource in which residents have the rights to access and use resources (Chunhabunyatip et al., 2018; Ciriacy-Wantrup and Bishop, 1975). Some local residents, especially those living nearby, depend heavily on ecosystem services and have become directly affected by their degradation (Millennium Ecosystem Assessment, 2005). The local communities play a critical role in environmental conservation and social-economic and environmental sustainability efforts, including managing natural resources, particularly in small and rural areas (Qin and Flint, 2012). Hence, it can be argued that inhabitants should have more control over the resources that are important for their livelihoods (Saunders, 2014).

The Bueng Khong Long wetland is a non-hunting area governed by the Royal Forest Department of Thailand. It is a wetland of international importance under the Ramsar Convention; therefore, these formal institutions have imposed restrictions on local people and their natural resource accessibility and utilization (World Wildlife Fund, 2016; Ramsar Convention Secretariat, 2001). Nevertheless, in practice, these regulations have not brought about the best solutions to protect these natural resources. They do not support the needs and way of life

of residents as they are top-down approaches that should not be used as the exclusive means of solving communities' common resource problems.

Each community has its own historical and cultural background; basically, the communities have rules that influence their members' actions to solve their problems. This study explores an alternative approach to environmental conservation based on the traditional ecological knowledge (TEK) of residents. Various kinds of TEK have been accepted and used by scientific experts in many fields (Berkes, 2012). TEK is a potentially powerful conservation mechanism for natural resource management (Drew, 2005). Therefore, in this study, TEK focuses on traditional beliefs based on religion, historical experiences, practices, and perceptions observed by generations through cultural transmission (Berkes, Colding and Folke, 2000).

Research Questions and Theoretical Background

The basic question of this study is: How do the local residents of the Bueng Khong Long Wetland use and transmit their traditional beliefs in supernatural beings for environmental conservation? TEK is gradually gaining increased recognition internationally in various fields since the 1980s (Bocco and Winklerprins, 2016; Berkes, 2012; Drew, 2005; Berkes, Colding and Folke, 2000; Huntington, 2000; Turner, Ignace and Ignace, 2000; Hunn, 1999). TEK offers an approach to improving research, resource management, and environmental impact assessment (Huntington, 2000).

TEK is defined as “a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes, Colding and Folke, 2000: 1252). It has also been defined as “all types of knowledge about the environment derived from the experience and traditions of a particular group of people” (Usher, 2000: 185). TEK is local because of the context of its acquisition, transmission, and use. “It is acquired via direct personal experience, is transmitted orally

within a community, and is validated by its relevance to the daily struggle to wrest a livelihood from one's land" (Hunn, 1999: 23-24). Since TEK is local knowledge, it is fragile; it means that knowledge common in one community is unique to its immediate environment and is not commonly known in other cultures. Therefore, a particular body of knowledge lives and dies with the culture that sustains and supports it (Hunn, 1999).

Based on substantive and epistemological grounds, TEK has been applied to four categories of information (Usher, 2000: 186). The first is factual/rational knowledge about the environment, ranging from specific observations to explanatory inferences, which constitute explanations of people's observations and the connections between them. The second category is factual knowledge, which concerns past and current use of the environment, including statements about social and historical issues based on a wide range of knowledge from personal experience and observance of oral history. The third category of knowledge consists of values about the environment, that is, moral or ethical statements based on culture, especially regarding how to act in terms of animals and the environment. The fourth is interpreting or understanding the information in the other three categories of knowledge. Therefore, TEK has become a tool for political, educational, and cross-cultural communication (Berkes, 2012). In terms of understanding traditional ecological knowledge, there are two unique approaches—ethnoscience and human ecology (Berkes, 2012). Ethnoscience relates to folk taxonomies as well as ethnobotanical and ethnozoological classifications. Human ecology refers to the indigenous understanding of natural processes, that is, human relationships with various natural resources and the environment, as well as supernatural factors. The two approaches have been combined with other applications of TEK to current issues, for example, conservation, management of resources, and sustainability (Berkes, 2012: 53).

TEK is fundamental in the local natural resource management that enhances resource management practices and social and cultural values (Turner, Ignace and Ignace, 2000; Berkes, Folke and Gadgil, 1995). TEK is based on a broad moral and ethical context that says that

nature and culture are not separate (Berkes, 2012; Berkes, Folke and Gadgil, 1995). For example, Aboriginal management systems rely on social sanctions and extensive teaching to strengthen expectations of wise use of resources, including the relationships between the community and the environment. Although these management systems have been affected by modern technology, resource depletion, and education, the use of traditional beliefs and good management practices still exists (Sherry and Myers, 2002; Johnson, 1998).

TEK has been applied in wetland management across various countries (Biro et al., 2019; Chunhabunyatip et al., 2018; Franco and Luiselli, 2014; McGregor et al., 2010). Chunhabunyatip et al. (2018) indicated that ancestral spiritual beliefs influence natural resource management in the Nongchiwan wetland in the Lower Songkham River Basin (LSRB) because these beliefs have traditionally linked local people with their natural resources, reflecting their lifestyle and wisdom. The indigenous peoples' way of life and traditional ecological knowledge have been shaped by their belief in the *Pu Ta* spirit, which resulted in the establishment of the sacred *Don Pu Ta* area surrounded by large trees and a thick forest. As a result, the traditional community's respect for nature is a significant factor in making local natural resource management more sustainable. Franco and Luiselli (2014: 530) found that the citizens shared some ecological knowledge of wetlands functions embedded in communities. For example, for those with cosmopolitan characteristics, the functions of biodiversity/habitat and recreation/culture were likely perceived by deep psychological mechanisms that identify "nature" as a symbolically high valued thing. This perception came from ethical attitudes and subjective norms shaping individual valuing behavior, in which uncertainty and disagreement would be viewed as contrary to common sense. These functions conveyed basic social expectations of "nature" regarding biodiversity and cultural values, with profound ethical and esthetic implications. However, the social shared ecological knowledge and historical awareness of the wetlands have tended to decline because of the rapid changes in the socio-economic structure of the communities.

The present study explores traditional beliefs, especially beliefs in supernatural beings, as an alternative approach to traditional ecological knowledge to environmental conservation in wetland areas, focusing on how residents use their traditional beliefs to maintain and enhance their natural resources. It also focuses on how residents transmit traditional beliefs from one generation to the next and to people outside the community for environmental conservation (Figure 1).

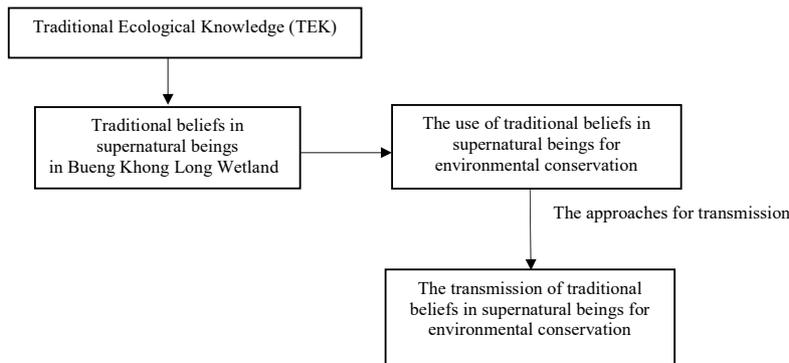


Figure 1 Conceptual framework of the study

Description of the Study Area

The Bueng Khong Long wetland is located in between two districts of Bueng Kan province: Seka and Bueng Khong Long (Figure 2). Bueng Khong Long is one of the largest freshwater lakes in northeastern Thailand, supporting diverse water plants and wetland wildlife (World Wildlife Fund, 2016; Ramsar Convention Secretariat, 2001). Also, it is recognized as a wetland of international importance under the Ramsar Convention that provides benefits to over 20,000 local people who live around the lake. For example, it supports local people as one of the primary fisheries resources and supplies water for horticultural plantation and livestock (World Wildlife Fund, 2016).

The Bueng Khong Long wetland not only performs many functions and provides many benefits to the residents (Majandang, 2015); it also is believed to be a sacred area, and traditional beliefs about it have

been transmitted through generations. Supernatural beings, especially *nagas* (sacred serpent beings), which are associated with Buddhism, are revered in Thai culture (Ayutaya and Tungtang, 2015). Traditional beliefs in the existence of supernatural beings enhance environmental protection practices in this wetland, which is considered a sacred zone where local residents must respect the natural resources and their utilization in their fishing, hunting, and agriculture practices. Therefore, the traditional beliefs of the Bueng Khong Long community reflect their cultural practices and environmental relations. Sacred places, known as *Don Pu Ta*, and the traditional rituals connected with them are described in great detail by Kettate (2000), who studied nine communities in Nakhon Ratchasima, Khon Kaen, Maha Sarakham, Sisaket, Nong Khai, Sakon Nakhon, and Chaiyaphum provinces. In his conclusion, he called for a study of the legal situation of *Pu Ta* forests, “including a review of provisions for community forests. The information derived from these studies should encourage the Thai people to preserve their heritage of community forests in an effective manner” (Kettate, 2000: 106).

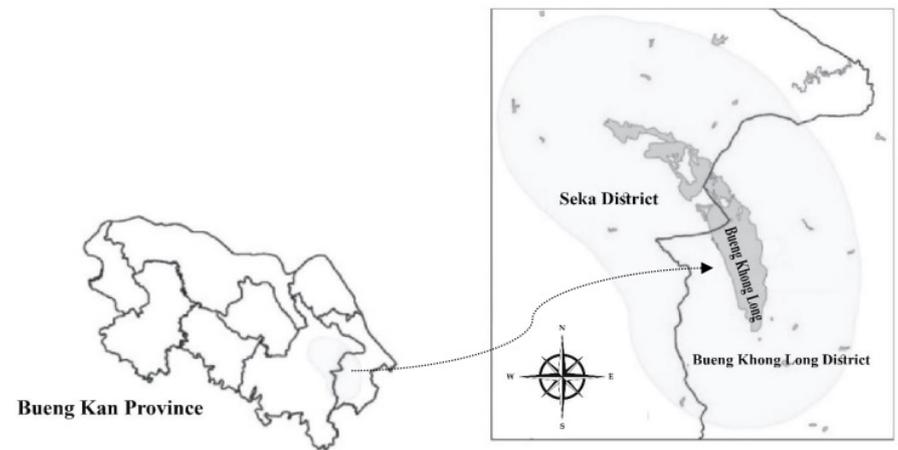


Figure 2 Location of the research area
Source: Adapted from Majandang, 2015.

Research Methods

The present study used the qualitative approach to collect and analyze data. In January 2020, in-depth interviews with key informants were conducted to explore how local residents use and transmit their belief in the existence of supernatural beings to protect and sustain their natural resources and environments. The unit of analysis of this study was the individual. Thirteen key informants were selected by purposive sampling and were divided into two groups: local residents and officials. The local residents' group included nine key informants, consisting of village heads and village members. The local officials included four key informants: a mayor, deputy mayor, secretary to the mayor of the sub-district municipality, and a representative of the sub-district municipality. The criteria were that the individuals must know about supernatural beliefs and behaviors for conserving natural resources (see Table 1). The key informants consisted of senior males and females who reflected local histories based on traditional beliefs about supernatural beings in the context of natural resource and environmental conservation and provided rich narratives for in-depth interviews (Chunhabunyatip et al., 2018). In addition, these interviews enhanced the contextual understanding in various domains, such as traditional beliefs, local knowledge, community rules, and formal regulations concerning natural resource protection. This study received Institutional Review Board (IRB) approval from the Center for Ethics in Human Research, Khon Kaen University (KKUEC).

Table 1 Description of key informants

Group	Description
Local residents	They consumed natural resources from the Bueng Khong Long for their economic activities, such as farming, tourism, and fisheries. Furthermore, traditional beliefs passed down from generation to generation can be used to conserve natural resources.
Local officials	They served as representatives of the sub-district municipality, tasked with protecting, maintaining, and conserving natural resources and the surrounding environment. They also regulated the Bueng Khong Long wetland to protect and support indigenous customs, cultures, and local wisdom.

Findings

Recognition of Bueng Khong Long Wetland

The Bueng Khong Long wetland is blessed with abundant natural resources that have significant economic and ecological importance for the livelihoods of the residents (Majandang, 2015). Generally, the wetland provides a wide range of ecosystem services, as follows: 1) food and water supplies, 2) social services such as spiritual, religious, recreational, and other non-material benefits, and 3) financial benefits through fisheries, agriculture, and tourism (Chunhabunyatip et al., 2018; Wetlands International, 2020; Franco and Luiselli, 2014; Kangalawe and Liwenga, 2005; Millennium Ecosystem Assessment, 2005).

The findings show that all 13 key informants from the two groups shared similarities in recognizing the abundant natural resources of the Bueng Khong Long wetland. This wetland enhances accessibility for utilization of natural resources, increasing the well-being of inhabitants and communities, and involves fish supply and water availability for agriculture, particularly rice and rubber. In addition, the Bueng Khong Long wetland has enhanced local economic development through tourism because of its beautiful natural settings and unique culture. This wetland has an abundant variety of diverse plant, aquatic, and bird species that are unique to this location. Since it is a non-hunting area, inhabitants are allowed to use their natural resources for substantive living only in specific zones. A sub-district municipal mayor discussed how local residents utilize their natural resources:

The Bueng Khong Long wetland is the primary source of economic activities for local residents. They depend heavily on natural resources for their living. For example, fish is the most valuable wetland food that contributes to local residents. Most local residents go fishing in the non-hunting area for family consumption as their traditional way of life (Bundee [Pseudonym], 2020).

Several key informants from the group of local residents gave examples of the recognition of the Bueng Khong Long wetland. The head of the village explained how its scenic beauty has added to the tourism boom:

The Bueng Khong Long wetland has a beautiful freshwater beach, known as Kham Somboon beach. During a long holiday, tourists from other places will visit this beach with their families for recreational activities. It has become a famous tourist attraction in Bueng Kan province (Swang [Pseudonym], 2020).

The Use of Traditional Beliefs for Environmental Conservation

The local residents of Bueng Khong Long wetland hold traditional beliefs in the existence of supernatural beings to protect their natural resources such as water, trees, and animals. These beliefs have been embedded in social institutions, such as family, religion, and ways of making a living. In particular, they have governed the environmental practices of residents affecting natural conservation (Chunhabunyatip et al., 2018).

For natural conservation, each community in the Bueng Khong Long wetland has its own rules to protect its collective resources. These common rules, based on the local people's traditional way of life, govern the use of shared resources and sustain their common resources for posterity. Although each community has its own set of rules, it also has certain traditional beliefs in common with Buddhism. Traditional religious beliefs play a major role in shaping the local residents' perceptions toward natural resources and environments, and their way of life and behavior.

All key informants from the group of local residents respect the common rules of their communities and local regulations to protect their natural resources and environments. However, some key informants have more confidence in supernatural beings to protect natural resources than in formal rules, regulations, and laws because the latter can easily be broken and violated. One key informant explained that sometimes formal regulations were against the community's way of life. Hence,

the local governments needed to compromise between legal rules and local residents' way of life to help formal regulations be accepted and enforced together. As explained by the head of the village:

The community established its own rules with the votes and permission of its members. Certain government restrictions work against the community's well-being.... And we are able to live happily without disagreements, with everyone following the rules. There are formal rules; for instance, fishing is prohibited because it occurs within a no-hunting zone. Nonetheless, legal restrictions have to be compatible with the villagers' way of life (Duang [Pseudonym], 2020).

Meanwhile, four key informants from the group of local officials revealed that as representatives of the local administrative organization, they were responsible for encouraging local residents to participate in natural resource and environmental management through collaboration with their local administrative organization regarding formal regulations that local residents must follow and respect. Nevertheless, one local official explained that there was a limited number of staff to monitor local residents who violated local regulations by entering the conservation zone. In addition, community rules were associated with traditional beliefs, through community ceremonies such as the forest ordination ceremony to protect community forest sites, or the worship of the *Don Pu Ta* spirit to bless them for a good living and protect their communities. She said:

Laws cannot be enforced effectively in the non-hunting area monitored by government officials for illegal fishing or hunting. It is so difficult to monitor at all times due to a lack of staff members. However, there is an effective way to monitor illegal fishing or hunting by using beliefs of supernatural beings to protect the site all day and all night so that no one intrudes into restricted areas. If people enter without permission, supernatural beings might cause harm or death to them. It is the main reason that local residents who live around the Bueng Khong Long respect and worship supernatural beings (Phaka [Pseudonym], 2020).

Moreover, all communities located around the Bueng Khong Long wetland have had their sanctuary in *Don Pu Ta*, the community’s sacred zone, for worshipping supernatural beings. Residents who believe in supernatural beings must respect and worship them to ensure their well-being and good luck (Chunhabunyatip et al., 2018). Bueng Khong Long residents worship supernatural beings various times throughout the year. As seen in Table 2, worship times are based on the lunar calendar (the third waxing moon) in what is called “the third-month ceremony.” Communities around the Bueng Khong Long will hold such a ceremony at *Don Pu Ta* every year in January or February, depending on the lunar calendar. Each community collects money from its members to organize the worship ceremony. Community members across all age groups can join the ceremony by offering food and flowers to worship their supernatural beings at *Don Pu Ta* for rewards in the future. In addition, communities also have ceremonies to worship supernatural beings related to agricultural activities, such as *Bun Bang Fai* Rocket Festival, the day on which Buddhist Lent begins, and the day on which it ends.

Table 2 Calendar of worship of supernatural beings in the Bueng Khong Long wetland

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual ritual sacrifice (Third-month ceremony)												
Bun Bang Fai Rocket Festival												
Buddhist Lent Day												
End of Buddhist Lent Day												

Source: Author’s in-depth interviews in 2020.

Traditional Belief Transmission for Environmental Conservation

The study found that traditional beliefs in the existence of supernatural beings in Bueng Khong Long wetland were transmitted through both traditional and modern approaches. In the traditional approach, beliefs based on elders’ personal lived experiences and histories were transmitted orally to their children and grandchildren. These beliefs shaped the local history and culture for the next generations. At the family level, parents transmitted their traditional beliefs to their children through verbal communication by sharing personal experiences and exchanging knowledge and wisdom among family members. At the community level, traditional beliefs were spread through cultural activities, which encouraged people’s participation and observation. Moreover, advancement in science and technology helped these traditional beliefs proliferate among all age groups, teaching them how their elders still believed in and acted according to nature’s rules and norms. Key informants from the local residents’ group revealed that most of them follow the tradition of transmitting supernatural beliefs to their children by sharing personal lived experiences. A local wisdom leader of their community described how traditional beliefs were transmitted among their community:

Traditional beliefs descended from ancestors and are still passed down to the younger generations. Although some details of traditional beliefs on memory and history might be forgotten, most traditional beliefs still exist as community practices. We respect supernatural beings because we have experienced them ourselves many times. For example, if we said something terrible in a sacred zone without supernatural beings’ permission, we would get punished by having bad luck, illness, or death in our lives. We respect supernatural beings as our great-grandparents did, and we tell our children to respect them because they have existed for a long time. If children would like to go fishing or cutting trees in a sacred zone, they have to worship and ask permission before entering a sacred zone (Khomsak [Pseudonym], 2020).

As for the local government organization, four local officials pointed out that they worked with communities to promote and support the community's traditional beliefs by providing a budget for activities that would bring together community members across age groups. Since the Bueng Khong Long wetland is divided into two sides—one side for tourism and the other for agriculture—each community had its own activity. For example, communities located on the tourism side had a boat race, while those on the other side had activities related to supernatural beings, such as worshipping *Don Pu Ta*. However, the limitations imposed by local officers enforcing central regulations became barriers to promoting and supporting the community's traditional beliefs in natural resources and environmental conservation. Therefore, the only way to support the community's traditional belief activities is to provide a budget and monitor what the communities do.

In the modern transmission approach, social media applications such as Facebook and YouTube are important channels to communicate with the new generation. For instance, when people move to Bueng Khong Long communities to start small businesses, the knowledge of how the local residents worship their guardian spirits for the protection of their sacred zone, including water bodies, animals, trees, and people, is conveyed to them. Moreover, the modern approach includes socialization activities in educational institutions, encouraging the students to participate in or observe spiritual activities. These activities help the students learn about their local histories and traditional beliefs. Although most local residents asserted that they transmitted their traditional beliefs to their children through the traditional approach, the modern approach transmitting traditional beliefs and supported using technology is also used. As a local resident explained:

At present, traditional beliefs are transmitted through Facebook to newcomers in Bueng Khong Long communities. For example, if someone fell into the lake and drowned, the cause was explained as having disturbed supernatural beings in the sacred area. This belief would be a local history tale spread by word of mouth from local residents to those outside of Bueng Khong Long communities (Bua [Pseudonym], 2020).

By contrast, local officials transmitted the community's traditional beliefs through the official municipality website rather than by social media. In addition, local officials play an important role as facilitators to support local residents when they need it. As a secretary to the mayor of a sub-district municipality explained:

We support local people when there is a need. For example, we provided a budget for presenting community identity related to the community's traditional beliefs—traditional dancing. In addition, when provincial organizations asked local people to join activities, we had to coordinate with community leaders and allocate money for those who participated (Tanat [Pseudonym], 2020).

Indeed, there was a shared perspective among the 13 key informants indicating that having traditional beliefs was a personal value and that it governed their ethical practices in their approach to natural resources. As explained by an official of a sub-district municipality:

Natural conservation in Bueng Khong Long wetland is different from that in other places because the people face water pollution. There was a loss of biodiversity—indigenous freshwater fish species gradually disappeared from the lakes. However, the wetland is fortunate to have traditional beliefs about religion that help protect natural resources around the lake. Because of supernatural beings, local residents will not enter a prohibited area, such as an animal sanctuary, sacred lake or forest. Therefore, natural resources in Bueng Khong Long wetland are protected by traditional beliefs and local residents (Phaka [Pseudonym], 2020).

Discussions

This study has explored the traditional beliefs of the local inhabitants of the Bueng Khong Long wetland as an alternative approach to environmental conservation popular across groups of people. Findings of the interviews indicate that traditional beliefs play a central role in protecting and sustaining the natural resources and environments of Bueng Khong Long communities. The local inhabitants of the wetland depend on natural resources and the environment for subsistence living, such as fishing, farming, and tourism. Here, the local residents are closely connected with and dependent on shared resources. In addition, the local residents have the right to manage the use of natural resources to prevent environmental degradation, such as loss of biodiversity, and sustain natural resources for their next generations.

In practice, the use of natural resources in wetland areas is controlled by the regulations of the Royal Forest Department of Thailand, the Ramsar Convention, and local sub-district organizations, as well as the community's rules. However, the local residents have their own traditional beliefs based on culture, religion, and geographic area, as an alternative approach to improving resource management. Across the local communities of the Bueng Khong Long wetland, traditional beliefs and resource management practices have contributed to the current understanding and use of many different ecosystems.

In particular, the local residents' beliefs and practices promote awareness of the connections between people nature as well as moral concern for nature for future use (Hollis, 2004). Likewise, Chunhabunyatip et al. (2018) indicate that traditional spirit beliefs play an important role in natural resource and environmental management in the Nongchiwan wetland. The link between community rules, taboos, and ecological behavior shows that inhabitants' beliefs cause the community to value the wetland and help them protect natural resources.

According to the traditional beliefs promoted to protect the resources of the local residents across communities, supernatural beings exist as invisible forces hidden in rivers, trees, and animals (Subbotsky,

2016) and punish those who break the rules by causing illness or death (Chunhabunyatip et al., 2018). On the other hand, those who do not break the rules and respect the supernatural beings would be rewarded appropriately. In other words, traditional religious beliefs involve supernatural punishments and rewards that encourage appropriate behavior among the local residents in contexts of society and ecology (Winkelman and Baker, 2015). Thus, belief in supernatural beings influences the local residents' thoughts, words, and behaviors regarding nature and sacred areas around the Bueng Khong Long wetland.

In terms of transmission of traditional beliefs, most children in the wetland communities absorb their parents' religious views (Subbotsky, 2016). However, the findings from the interviews reveal that elders hold a stronger belief in the existence of supernatural beings than the other age groups. For example, the youth tend not to believe much in invisible beings because their thinking is shaped by modern and scientific education. This finding is consistent with Anthwal et al. (2010), who explain that different groups of people may perceive and interact with nature in different ways of learning from their families and communities. Moreover, their knowledge and beliefs are influenced by values, religion, and environmental ethics. However, while supernatural beliefs originate in the Bueng Khong Long wetland communities, these beliefs are now shared through various social media platforms by local inhabitants and visitors, thereby enhancing the community's knowledge and beliefs that still exist there. This result is consistent with Berkes's view (1993) that traditional beliefs would live and die with the community if not shared with other communities.

Conclusions and Implications

Traditional beliefs in the existence of supernatural beings are an alternative approach for inhabitants living in close to nature to protect and sustain natural resources. According to inhabitants of the Bueng Khong Long wetland, supernatural beings play an important role in protecting communities and sacred areas. Traditional beliefs help in

supporting both formal regulations and community rules to utilize natural resources effectively. Additionally, traditional beliefs represent local histories through lived experiences and observations passed down through the generations. To maintain positive relations between inhabitants and their supernatural beliefs, inhabitants must act following the rules of nature, respect sacred ecology, and worship local deities by organizing ceremonies.

The findings of this study have implications for the planning of natural resources and environmental conservation and local natural resource management policy. Under government legislations, local government organizations in the area should be aware of and respect the community's way of life through customs, traditions, and beliefs in the conservation of natural resources and environments; therefore, the formal rules should not obstruct the community's way of life.

The majority of Bueng Khong Long residents adhere to both informal and official restrictions and regulations, especially when legal regulations are combined with local customs and traditional practices. In return, informal rules assist formal rules by efficiently enforcing long-term conservation and sustainability of natural resources. Moreover, local governments should promote co-management by requiring the participation of local residents in natural resource management policies rather than relying solely on local governments. Local residents' engagement in natural resource management will enable them to exercise greater control and decision making over the shared natural resources on which they rely. In the meantime, local governments should negotiate with residents to allow them to have the legal right to access and utilize shared natural resources, and to help local governments develop regulations and policies consistent with residents' traditional beliefs. Because this current study was conducted on an individual level, future research will focus on how communities respond to common resource problems that result in the degradation of natural resources and ecosystems which may directly affect the communities' well-being.

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- Khomsak. (Pseudonym). (2020, January 19). **Interview**. Local wisdom leader, male, 56 years of age. Bueng Kan province.

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- Swang. (Pseudonym). (2020, January 19). **Interview.** Village head, female, 48 years of age. Bueng Kan province.
- Tanat. (Pseudonym). (2020, January 16). **Interview.** Secretary to the mayor of sub-district municipality, male, 63 years of age. Bueng Kan province