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Mangrove Conservation in Kampot Province, Cambodia

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A B S T R A C T

Mangrove is a plant that is always seen in tropical and subtropical coastal areas, along coastal lagoons, the margins of estuaries, and deltas as well. Cambodia has a long coastline of 435 kilometers across four provinces: Koh Kong, Preah Sihanoukville, Kep, and Kampot, which have rich natural resources such as mangroves. Because of humans and nature, 36,810 ha of mangrove forest were damaged between 1989 and 2017. This review aims: (1) to find out the reason for mangroves to be managed; (2) to define the problem of degradation of mangroves; and (3) to find out the method for restoring and conserving mangroves in Kampot Province. This review uses a qualitative approach to collect data from another document of the journal that was published; the website, the book, and the report combine it on the desk and analyze it by using secondary data as a qualitative and quantitative method. In this review, we found the mangrove forest has provided many benefits, both human, economic, and environmental. It is a renewable resource that must be managed and conserved in a sustainable way. The forest of mangroves has equity concerns about achieving the optimum forest products and services to fulfill the needs of recent generations without destroying them. Conserving mangrove forests is our role, together with that of future generations.

INTRODUCTION

Mangrove is a plant that is always seen in tropical and subtropical coastal areas, along coastal lagoons, margins of estuaries, and deltas as well (Vannucci, 2001). In the world, there are many countries connected with the ocean but only the coastal area in Southeast Asia which is favorable for Mangroves to grow, it has 34% of the world (Baltezar et al., 2023). Cambodia has a long coastline of 435 kilometers across four provinces Koh Kong, Preah Sihanoukville, Kep, and Kampot which are rich in natural resources for support the livelihood of the population on this coast such as mangroves and other biodiversity (Chey et al., 2002). Mangrove forests provide ecosystem services to protect the coast against tsunamis and cyclones, climate conditions, flooding, protection for carbon sequestration, and shelter for biodiverse crabs, fish, and shrimp. The total area of mangrove forests in Cambodia is 51603 hectares covered by four provinces as above, it is the largest mangrove in Asia. Because of humans and nature, 36,810 hectares of mangrove forest were damaged between 1989 and 2017 (Maquart et al., 2022). Kampot is a part of four provinces covered by mangrove forests which currently facing destruction each year. That's why we review on conservation of mangroves in Kampot province. This review aims: (1) to find out the reason of mangroves to be managed (2) to define the problem what make degradation of mangroves, and (3) to find out the method for restoring and conserving mangroves in Kampot Province.

LITERATURE REVIEW

Mangrove forests provide ecosystem services to protect the coast against tsunamis and cyclones, climate conditions, flooding, protection for carbon sequestration, and shelter for biodiverse crabs, fish, and shrimp. The total area of mangrove forests in Cambodia is 51603 hectares covered by four provinces as above, it is the largest mangrove in Asia. Because of humans and nature, 36,810 hectares of mangrove forest were damaged between 1989 and 2017 (Maquart et al., 2022). Kampot is a part of four provinces covered by mangrove forests which currently facing destruction each year. That's why we review on conservation of mangroves in Kampot province. This review aims: (1) to find out the reason of mangroves to be managed (2) to define the problem what make degradation of mangroves, and (3) to find out the method for restoring and conserving mangroves in Kampot Province.

METHODOLOGY

This review uses a qualitative approach to collect data from another document of the journal that was published, the website, the book, and the report state of the environment report, Kampot province combined it on the desk and analyzed it by using secondary data as a qualitative and quantitative method.

RESULT AND DISCUSSION

Beneficial of Mangroves

As we already know mangroves can grow only along coastal points between the sea and land in regions of tropic and sub-tropic (Tieng et al., 2019).

It is natural resources in the ecosystem that provide multiple functions and benefits as follows: (1) as a living barrier to protection and reducing erosion of coastal, storm, and also a place for fish breeding and organisms. (2) as a habitat for reptiles, birds, and other wildlife living around the sea. (3) Provide fuelwood, pole, timber, and charcoal from wood of mangrove. (4) As a source of tourism, education, and research for science. (5) the mangrove forest is the place used as reserved for population resettlement, fishpond, and oil industry in Southeast Asia (Kusmana, 2015).

Surface of Mangroves in Cambodia

In Cambodia, there are curved forests in the provinces located in the coastal areas and as coastal protection fences. However, estimating the surface of mangrove areas in Cambodia is complicated because there is not enough data, and there is no standard method to estimate the area of mangroves accurately, which is why the data related to mangrove areas is lost. In the Table 1, we collected information on the number of mangrove areas in the different years that Cambodia recorded.

Table 1. Surface of Mangrove (Data Between 1980 to 2005)

Year	Surface (hectares)
1980	91200
1990	82400
1997	72835
2000	73600
2005	69200

Source: FAO, 2005

The data in table 1 is the final estimate but in 2011 we had an interview with respondents who worked in this sector to provide news on the total number surface of mangroves (78405) hectares covered by four provinces in that: Kok Kong (62000) ha, Preah Sihanoukville (13500) ha, Kep (1005) ha, and Kampot (1900) ha (Sin, 2012). We noted the number of mangrove surfaces lost each year.

Mangrove Threats

The mangrove forest has provided many benefits, both human, economic, and environmental, which is why the mangrove forest area has been threatened and destroyed from the beginning to the present. Some of the reasons for the declining mangrove forest are (1) The clearing of mangrove forests to make a living by cultivating crops and wood as people from other areas move to the coastal areas up to 76%, increasing the demand for wood to build firewood houses for charcoal. Burning food is on the rise, especially as people have traded more than 300 illegal charcoal kilns, destroying forests. (2)

Deforestation for shrimp and crab handicrafts, of which 65 hectares of mangrove forest were purchased by a private company and clearance to raise shrimp in Prek Tasum during 1995 and 47 hectares in Kosh khcong were cleared. In 1997, in order to use the land for crab farming, later in 1999, people were hired by the company to dig an additional 15 hectares of mangrove forest to drain the shrimp when the water rose to store the water. Shrink back. Shrimp farming began to suffer losses, these businesses were shut down and the mangrove forest area was converted into a salt farm in 2000, covering 3,500 to 4,000 hectares in Kampot and Kep provinces. (3) Local people are encroaching on mangrove forests to sell their land to others, while migrants also need locations to build houses, need timber, and illegal fishing activities in coastal areas. Mangroves for fishing as well. On the other hand, people lack the knowledge of the proper use of natural resources, the authorities do not take measures to control natural resources effectively and fight against crime, which makes the mangrove forest in the coastal area decline year by year (Sin, 2012).

Current Status of Mangrove Forest in Kampot Province

Kampot is one of the four provinces with mangrove forests, but Kampot has traditionally had the smallest mangrove area. Follow the map of the mangrove forest in Kampot during 2001 is 1,514 hectares as below:

Table 2. Show the Surface of the Mangrove Forest in the Kampot Region

District	Commune	Village	Surface (hectare)
Kampot	Kosh Toch	Preak Ombil	150
		Kosh Toch	200
		Preak Chek	100
		Kilomet lek 12	50
	Boeing Tuk	O'Rolus	72
		Kosh Roka	95
		Boeing Tuk	54
		Thoteng Thngia	75
	Chhom Kraill	Kampong Kreak	34
		Chhom Kraill	36
		Kampong Kandal	30
	Kon Shat	Kampong Nung	21
	Trapeang Sangkea	Trapeang Sangkea	60

		Trapeang Thom	11.93
	Kampong Samrong	Kampong Samrong	5
	Preak Thnot	Chong Hon	15
		Preak Thnot	25
		Preak Kreang	2351
Kampong Bay	Trery Kosh	Boeing Tapram	105
Kampong Trach	Rosisrok	Thkov	38.28
		Lok	92.25
		Kosh Snay	5.85

Source: Mok, 2002

Until 2018 total surface of mangroves in Kampot was 1966 hectares from 1992 to 2018, the area of mangrove forest in Kampot Province decreased by 62% (Pich, 2019).

Mangrove Conservation

According to the 2002 Coastal Situation Report, the decline of mangrove forests in Kampot Province is due to shrimp farming, salt paddy business, and people's needs such as firewood and charcoal for their livelihood. Also. Mangrove forest is a natural resource that arises spontaneously, but its overuse, without conservation and foresight, is lost as it is today. Moreover, the loss of mangrove forests is also affecting the ecosystem and biodiversity of coastal areas, including the people in the area itself. Therefore, the relevant parties have taken some measures to manage and restore mangrove forests in Cambodia, especially in Kampot province, by setting out various principles, including (1) Dissemination of the benefits of mangrove forests to the people in the coastal areas of 26 villages of Kampot province, which is the cooperation of Apheda and the fisheries sector; (2) Experimental farming by planting mangrove trees. 5 hectares in Koh Smao village, Kampong Bay district to show people the benefits of having mangrove forests to balance the environment and biodiversity. (3) Take action to arrest the perpetrators who cut down the mangrove forest. (4) Similarly, in 2001, DANI cooperated with the Department of Environment and related departments to jointly study the resources in the coastal area and identify the problems encountered and tested the planting of 20 hectares of mangrove forest to ensure the regeneration of biodiversity, including training of officials and sending officials to study in Vietnam on mangrove forests to gain knowledge to develop in the province (Mok, 2002).

Restoring Mangrove

We Have Seen That In Recent Times, Mangrove Reforestation Activities In The Coastal Areas have emerged from many institutions and NGOs focusing on mangrove forests. In 2019, ActionAid Cambodia organized a campaign with the participation of young people to plant 100,000 mangrove trees in the Trapeang Sangke community in Teuk Chhou district, Kampot province. surrounded by lush green mangrove forest, which covers an area of about 26 hectares and is also a tourist attraction (Ith, 2019). In 2022, the Ministry of Environment, in collaboration with the relevant departments, planted 2,000 more mangrove trees in the Trapeang Sangke community. Since 2010, the community has planted a total of 600,000 mangrove trees (Meas, 2022). It should be noted that in Kampot province, a series of communities have been established to conserve mangrove forests, including Trapeang Sangke, Trapeang Ropov, Kampong Samaki, Prek Tnaot, Kep Thmey, Toteung Tngay, Koh Krisna and Lok communities, and communities that grow more mangrove trees is in the Trapeang Ropov community (Pich, 2019).

CONCLUSION

The mangrove forest has provided many benefits, both human, economic, and environmental. It is a renewable resource that must be managed on a sustainable basis in which the benefits of ecological, economic, and social. The forest of mangroves has equity concerns in achieving the optimum forest products and services to fulfill the needs of recent generations without destroying them. Conserving mangrove forests is our role together with future generations.

FUTHER STUDY

This research still has limitations therefore further research on the topic is still needed “Mangrove Conservation in Kampot Province, Cambodia.”

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