

Changes in the role and management of wetland commons in the Lao PDR: Elder perspectives from Pak Peung wetland

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Abstract

Freshwater wetland commons in Lao PDR are highly biodiverse, and provide food and income security for people living on the Mekong River floodplains. Wetland use, management and governance have changed dramatically over the last 50 years in response to population increase, irrigation and hydropower development, and institutional influences. This paper examines changes in the condition and management of the Pak Peung wetland common in central Lao PDR through the experiences of village elders living near the wetland. Twenty five elders from six villages were interviewed in 2012. An open interview guide was used to explore elder observations of changes to wetland condition and traditional commons governance, and their views on future governance and management strategies. Changes in wetland condition were described as significant loss of habitat with declining fish species and catches. Perceived causes were overfishing, use of modern or illegal fishing gear, felling trees to trap fish and the irrigation weir preventing fish migration. Elders recalled past traditional management practices with strict cultural rules and sanctions around when and where people could fish. Fishing was not allowed on Buddhist holidays or full moon, and people could only catch fish for themselves or for the temple. Conservation areas were well known in the past, and small or breeding fish were left alone. Suggestions for improving wetland management and governance included stronger regulations, policing of illegal fishing methods, conservation zones for fish breeding and revegetating around the wetland. A recent transition from government to community co-management of the wetland with a scientifically designed fishway was seen as positive. However the power of commercial markets, government policies, outsider access and loss of traditions continue to threaten the sustainability of the wetland. The paper concludes with a discussion of the potential to bring back the cultural elements of commons governance within the new realm of scientific co-management.

Keywords

Commons, Fisheries, Food security, Fish passages, Lao PDR, Livelihoods, Wetlands

Introduction

Freshwater wetland commons in Lao PDR provide food and income security for people living on the Mekong River floodplains (Martin et al. 2013). The extensive network of floodplains and wetlands that connect to the Mekong River produce year round fish protein for households, especially after regular flooding and fish migration events (Baumgartner et al. 2012; Mollot et al. 2005). There are 409 wetland commons in Lao PDR of which two are internationally recognised Ramsar sites (Phonvisay 2013). Governance of wetlands resides with the Lao national government under fisheries and water management laws (GOL 2009; IUCN 2008). However, community based and co-management arrangements are now being employed at many sites with wetland management committees or water user associations (DLF and WWF 2009).

Livelihood importance of wetland commons

Fish form a major part of the Lao diet with a high consumption rate estimated at 30kg per capita per year (Hortle, 2007), as in other Mekong countries such as Cambodia and Vietnam (Welcomme 2011). Over 75% of the 7 million Lao population are dependent on agriculture with most households involved in capture fisheries (Phonvisay 2013). Freshwater fish consumption and demand in the Lao PDR has grown steadily since the 1980s. A growing population and rapid increase in GDP has led to a 24.3 per cent increase in fish consumption between 1992 and 2003, and has continued to rise (Phonvisay 2013). The majority of Lao rural households fish in rivers, floodplains, reservoirs, aquaculture ponds and rice-fields covering over 1.2 million hectares (Martin et al. 2013; Phonvisay 2013). Individual fishing in small water bodies such as wetlands accounts for at least 70 per cent of the fish acquired by Lao rural households (Garaway 2005).

Although capture fishing from Lao wetland commons is traditionally for subsistence, there has been a rapid increase in small and large scale commercial capture fishing since the Vietnam War due to a doubling of the population, creation of hydropower reservoirs and access to growing urban and export fish markets (Phonvisay 2013). Income from fishing can be a major component of local household cash flow, assisting with education, housing, farm inputs and fuel (Garaway 2005; Silvano and Valbo-Jorgensen 2008). Lao women play a

major role in fish processing and sales, with significant influence on household income, expenditure and nutrition (Choulamany 2004; Moser 2015). Fish continues to be a main element in Lao cuisine, whether fresh or preserved as ‘pa dek’, a fermented sauce used in many dishes and a source of cultural pride (Baran et al. 2007). Indeed, some popular fish species (eg *Probarbus jullieni*) have become rare or threatened as market prices remain high, leading to black market exploitation and further endangered status (Phonvisay 2013).

People practice fishing in addition to many other livelihood activities such as agriculture, trading, labouring and professional occupations (Martin et al. 2013). Other factors driving the propensity to fish included tradition and enjoyment, available labour and low capital requirements. For example, Garaway (2005) demonstrated that small scale fishing in Lao PDR is not necessarily an ‘occupation of last resort’ or the domain of only poor families as is often assumed by development policy makers and socioeconomic analysts. Nevertheless, fishing often forms a greater proportion of income, employment and food security for poor households and those with poor quality farm land (Martin et al. 2013).

Development impacts on wetland commons and fish migration

The Mekong River has extremely biodiverse fisheries with approximately 900 indigenous fish species ranging in size from the Giant Mekong Catfish (*Pangasianodon gigas*) to the tiny Pa Siew (*Boraras micros*) at only 1.3 cm (Phonvisay 2013). Seasonal inundation during the monsoon months of June to September enables fish to migrate to and from the Mekong River via tributaries to wetland commons. Many fish species are highly migratory, and require connectivity among river reaches to maintain access to feeding areas, spawning grounds and refuge habitats (Jensen 2001). Increasing population and development of irrigation, hydropower, and urban areas continues to alter flow regimes and fish migration to and from the Mekong River, threatening fish diversity and production (Dugan et al. 2010; Welcomme et al. 2010). The creation of barriers on these important pathways can interrupt life-cycle stages and result in large-scale population collapses. For example, following construction of the Pak Mun Dam (Mun River, Thailand) daily fish catches in upstream reaches declined by 60-80% (Roberts 2001), and led to the disappearance of 169 fish species from upstream reaches. Fish decline has also been reported in lowland areas of southern Lao and northern Cambodian following irrigation development (Bush 2005; Mollet et al. 2005).

Changes in wetland commons governance and management

Lao people have traditionally used wetland commons for centuries. There is some literature on local ecological knowledge and traditional fishing practices in Lao PDR (Baird and Flaherty 2005; Lazarus et al. 2006; Valbo-Jorgensen and Poulsen 2000) but little information on indigenous wetlands management or governance systems. However, the Government of Lao PDR (GOL) recognises the historical rights of people and the state to access fisheries resources, and their obligation to use resources sustainably (Oh et al. 2005). There is no specific law related to wetlands use and management. Policies and legislation are embedded in fisheries, water and agriculture laws (GOL 2009; IUCN 2008). In the last decade, the Ministry of Agriculture and Forestry has devolved more responsibility to provincial and district fisheries offices to work closely with communities in managing wetland commons. The Mekong River Commission (MRC) and GOL have established water user associations at major reservoirs such as the Nam Ngeun Dam (Phonvisay 2013). The MRC and World Wildlife Fund have more recently encouraged community based or co-management of wetland fisheries in Lao PDR. Considerable effort has gone into capacity and consensus building, establishing fish conservation zones, drafting regulations, community education and monitoring (DLF and WWF 2009; Vientiane Times 2017).

Pak Peung wetland in central Lao PDR was one of the earliest sites to establish a co-management arrangement with support from the MRC and GOL. A local management committee was formed in 2004 made up of representatives from each of the six villages around the wetland common, and the Paksan district government fisheries officers. Regulations were drafted and patrolling enforced to monitor fish conservation zones and use of illegal fishing gear. The committee continues to co-manages the wetland with support from the World Wildlife Fund, however patrolling has reduced due to lack of funding. The wetland is connected to the Mekong River, but an irrigation weir was built in 1986 to increase rice production in the dry season and control flooding in the wet season, however it has blocked fish migration. From 2011 to 2014, the first fishway designed for Mekong fish species was installed at Pak Peung wetland funded by the Australian Government. Fish species and numbers are being monitored as they pass through the fishway (Baumgartner et al. 2016).

This paper examines changes in the condition and management of Pak Peung wetland common in Lao PDR, through the observations and experiences of village elders living near

the wetland. The purpose of interviewing elders was to also explore past management and governance of the wetland including cultural beliefs and practices. Knowledge and views of elders was considered important to inform future management decisions for the wetland and operation of the fishway. The paper concludes with a discussion of the potential to bring back the cultural elements of wetlands commons governance within the new realm of scientific co-management.

Methods

Location of Pak Peung wetland common

The Pak Peung wetland common is situated on the Mekong River floodplain in the district of Paksan (population 47,398) in Bolikamxay province in central Lao PDR. There are six villages situated around the wetland with 1,008 households and a total population of 5,308 (Figure. 1). The wetland is connected to the Mekong River via a tributary and covers 300 hectares in the dry season and 1200ha in the wet season. The wetland was chosen as a site to trial development of the first fishway designed for Mekong River fish species (Baumgartner et al. 2016). The research was funded by a project titled “Development of fish passage technology to increase fisheries production on floodplains in the lower Mekong Basin” funded by the Australian Centre of International Agricultural Research (ACIAR), from 2011 to 2015.

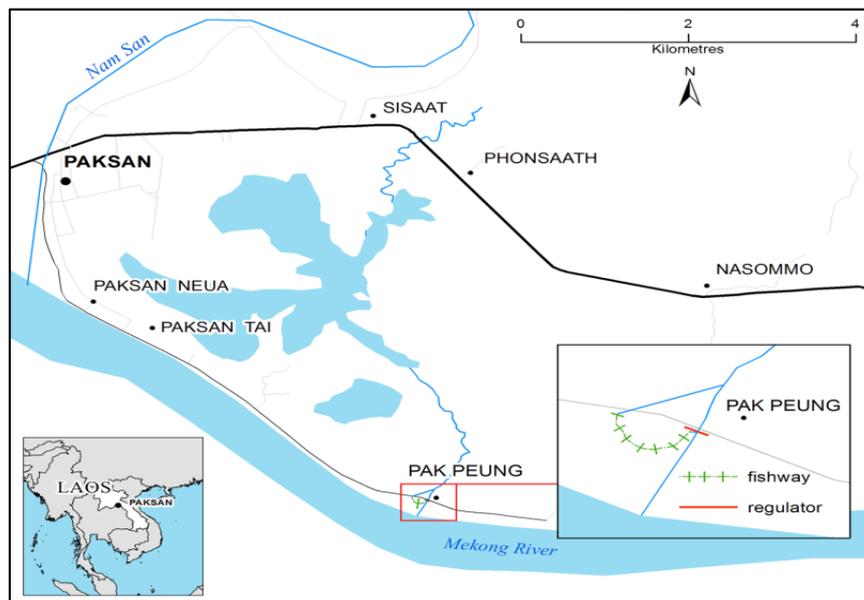


Figure 1 Location of Pak Peung wetland common in Lao PDR.

Data collection and analysis

Twenty five elders (16 male and 9 female, ages 60 to 89 years) from six villages were interviewed in 2012. (Figure 2) They were selected on the basis of still fishing regularly and their willingness to be interviewed. An open interview guide was used to explore elder observations of changes to wetland condition and traditional commons governance. Elders were also asked about future governance and management strategies. Final year fisheries students from the National University of Lao PDR conducted the interviews after training and pre-testing the questionnaire. Six students worked in pairs (one male, one female), alternating interviewing and note taking roles as a capacity building exercise. Male students interviewed male respondents and female students interviewed female respondents (a common practice in Lao culture to make participants feel more comfortable).



Figure 2 University students interviewing an elder at Nasammo village

After the first few interviews, the students shared their results with the trainers and discussed how to improve the interview process. This continued throughout the data collection process to ensure continuous improvement. Qualitative data were analysed by coding responses and collating into themes. Quotes are used throughout the results to highlight elder knowledge and views.

Results

Observed changes in wetland condition and drivers of change

All the elders interviewed spoke of the decline in wetland habitat and number of fish species within their lifetime. They had vivid memories of how the wetland looked in the past with many respondents describing more vegetation in and around the wetland, and more wildlife. Some respondents described which fish species had disappeared as shown in the following quotes;

“Many years ago we could catch fish easily and catch many species. There were many wildlife species and many vegetation in the forest. Now fish and vegetation has changed.” Female elder from Pak Peung village.

“Before, we had many fish, wildlife and vegetation. We had enough food for the family and had fish only in wet season because in the dry season the water dropped.” Male elder from Phonesaat village.

“Before the irrigation weir there were big fish in the wetland, for example Pa Wa and Pa Vai and some areas were not flooded during the rainy season. After construction of the weir, the quantity of fish decreased and now there are no big fish.” Female elder from Nassamo village.

Elders also talked about changes in flooding and water levels, and how this influenced fishing and rice growing. Some respondents explained that before the irrigation regulator, there was more variable water flow and a greater diversity of fish to catch in the wet season (June to August), and when water levels were low in the dry season (November to May) it was easy to find fish as illustrated by the following quotes;

“Before building of the weir fish can easily come from Mekong River. Many people were fishing in the dry season because the water was shallow and easy to catch fish then.” Female elder from Phonesaat village.

“Before the weir, it flooded and water flow was fast. Also when flooded it took a long time to recede and there was a bad effect on the rice field.” Female elder from Nassamo village.

A few people acknowledged that the irrigation regulator had largely prevented flooding of ricefields in the wet season (when water is often let out) and enabled families to grow more rice and vegetables in the dry season.

“Before we had flooding and it impacted on rice production but now it’s good for rice production. We can grow a second rice crop in the dry season.” Female respondent from Nasammo village.

However some elders saw the trade-off in terms of fish decline as illustrated by this quote from a male respondent from Ban Nasammo;

“After weir construction we can have a rice field and grow vegetables to sell in market now better than before. But after weir, big fish species are not seen”

Elders identified that the decline in fish numbers was also due to the increasing population, fishing for commercial use and by outsiders as well as the use of more modern, efficient fishing gear such as larger dense nets. Some respondents also talked about the use of illegal fishing methods such as electro-fishing.

“Fish decrease because more people and many people fishing for eating and also commercially. Some people are using modern fishing gear.” Male elder from Pak Peung village.

“Many more people catching fish for home eating, for trading and using modern fishing gear e.g. gillnet, cast net, electrofishing.” Male elder from Paksan Nua village.

Changes in wetland management and conservation practices

According to most elders interviewed, in the past there was no problem with access to the wetland commons as fish were abundant. However, local villages followed certain Buddhist edicts such as not fishing on Buddhist holidays or full moon, and only taking enough fish for family and monk consumption, or to make cash contribution to build temples as shown in the following quotes.

“Before, the monks had a foundation for conservation method to protect fish - can only catch fish for self, or catch fish for money to build temple.” Male elder at Pak Peung village.

“We had conservation zones and on Buddha holidays we could not catch fish. Now fishermen have freedom to catch fish.” Female elder from Pak Peung village.

There were also village rules on catch limits to fish size and a ban on catching fish that were breeding. On the other hand, one elder described a traditional three day fishing festival which has now been curtailed due to regulations on fishing in that area.

Before the village chief did not allow fishermen to catch small fish Now people can catch small fish.” Female elder from Paksan Tai village.

“Before it was different - fishermen did not catch the fish that were breeding. Now people take the breeding fish.” Male elder from Sisaat village.

“In the past, we had a traditional fishing 3 day festival in the wetland but now they have regulation to stop people fishing in that area and the villages developed the regulation.” Female elder from Nassamo village.

Elders appeared to understand the changes in wetland commons governance including the role of the management committee, government officials and regulations. However, according to some respondents, not everyone follows the regulations, and the patrolling has ceased.

“They have regulation around fishing and people using illegal fishing gear. Regulation is from the district and the villages follow. But sometimes other villagers do not follow and come to fish in the conservation area.” Male elder from Nassamo village.

“Before they had management in the area and had village police to monitor the area after that found illegal fishing in the area. Now the regulation does not work any more.” Female Elder from Nassamo village.

Future management and governance of the wetland common

All the elders felt that the wetland needed stronger protection and rehabilitation with ongoing fish conservation zones for breeding and safe passage to and from the Mekong River. Most were positive about the new fishway providing a return of certain fish species to the wetland but cautioned that fishing needed to be regulated at the fishway. They also wanted a return to stronger policing of illegal fishing methods with heavy fines or jail. One elder suggested that bigger gates were needed to allow fish to also migrate out of the wetland.

“Build large gates during the wet season so the fish migrate out of the wetland. Get government to help them organise fisheries management in that area and maybe stop fishing during the spawning season.” Male elder from Phonsaat village.

“I want to grow more trees near ponds in the wetland. Some bamboo at the edges is good for the fish to live in and for protection. It is harder to catch fish in the protected vegetation. We need people for patrols.” Male elder from Paksan Nua village.

“I want government to talk to fishers to get them to not use modern fishing gear e.g. electrofishing and haul net (seine net) in the wetland. If people are caught using electrofishing they need to be given heavy fines or go to jail.” Another male elder from Paksan Nua village.

A few elders indicated that it was the responsibility of the district and provincial agriculture and fisheries officers to help villages to establish strong protection as one elder from Phonsaat village aptly stated;

“Build relationships within the local population to create an understanding about fish, fishing gear and a good management plan for conservation. Build strong relationships and it will enhance knowledge and understanding of the wetland”



Discussion and Conclusion

From the elders living around Pak Peung wetland common we learnt that access and use rights in the past were regulated by cultural rules involving local monastic bodies and village leaders. Water and fisheries resources hold significant cultural and spiritual significance in Buddhist countries such as Lao PDR (IUCN 2008). Special festivals and events are held to honour and celebrate water and fish throughout the year (Vientiane Times 2017). Examples include a national fish release day held every July, “Ork Phansaa” in October where people set candle-lit boats adrift with prayers for the coming year, and “Pi Mai Lao” or Lao New Year in April when houses are cleaned and people are blessed with water. Whilst these cultural events continue, the influence of monks and elders in reinforcing cultural rules and values around wetland commons management appears to have faded. The access and use rights are now governed by fisheries laws and a management plan in a co-management arrangement between the local management committee and district fisheries. In this discussion we explore the possible reasons why this loss of cultural governance has occurred, and the potential to bring back the cultural elements of wetland commons governance within the new realm of scientific co-management.

According to the elders, under lower population and extraction regimes and with regular fish migration to and from the wetland, the fisheries resource remained relatively sustainable. Local people used rudimentary fishing gear and fished nearby the village in local commons zones to catch enough for daily subsistence or small cash income. This traditional style of fishing still occurs in the more remote upland areas of Lao PDR (Choulamany 2004). In contrast, the lowland areas along the Mekong River corridor have experienced more rapid population increases and development since the Vietnam War including resettlement of mountain communities from war zones along the border with Vietnam. These changes have put demand pressure on floodplain and fisheries resources. The Pak Peung wetland lies on the main road connecting the capital of Vientiane with southern provinces, and is close to the provincial centre town of Paksan which has developed a thriving domestic and export fish market (to Thailand and Vietnam). The proximity of Thailand has enabled modern fishing gear to be imported across the border. Pak Peung wetland is also easily accessible to outsiders for commercial or recreational fishing. The combined pressures of increased populations, modernisation and commercial markets, outsider access and new government regulations appears to have led to a loss of cultural influence over wetlands commons governance. So

should cultural governance of wetland commons be brought back, and if so, how can it be incorporated into the community co-management approach being adopted for fisheries? Is there a stronger role for elders, the monastic community, women and youth in providing leadership and reinforcing more sustainable fishing practices?

Any decision to strength cultural elements of wetlands governance has to be made by the communities living around Pak Peung wetland, and not imposed on them. At the time of the research, elders were not asked if traditional rules and sanctions would work again in the current social and political environment. Further research and sensitive consultation would be required with elders, village leaders and monks to ascertain their views. However, this research has shown that the elders have valuable knowledge and suggestions but are not formally engaged in the management committee which is mostly made up of middle aged representatives and village headmen. Likewise, the monastic communities in each village do not appear to play a role in wetland or fisheries management other than officiating at ceremonies. Elder and monastic engagement would add more nuanced cultural meanings to management plan regulations, and presiding over cultural events that reinforce messages would give them a legitimate role in commons governance (depending on each village's capacity and level of interest to do so). The long term local knowledge held by elders could help to decide where to carry out habitat restoration, protect spawning areas and report illegal activities. The monastic community could play a role in encouraging people to refrain from fishing on significant days in the Buddhist calendar, in fish conservation zones, and taking breeding fish. Women are the keepers of spiritual life in Lao families and provide food for monks at their local temple. Their role would also be pivotal in encouraging people to attend sermons and communal days devoted to wetland conservation.

There is a high level of respect for elders and monks in Lao PDR particularly among youth who may have lost cultural links to wetland resources. The demographic profile of Lao PDR is dominated by those under the age of 25 years who can now access better education and alternative professions (World Bank 2013). Indications are that younger generations are staying on longer at school and seeking off farm occupations (World Bank 2014). Their income contribution to household wealth may negate the need to fish in floodplain areas for income or food security, particularly if they can afford to buy farmed fish from aquaculture cages or ponds (a common practice amongst urban dwellers in Vientiane and provincial towns in Lao PDR).

On the other hand, increased household wealth from off-farm employment or remittances can lead to an increase in fishing intensity and consumption if family members invest in more sophisticated or commercial fishing gear and boats (Garaway 2005; Martin et al. 2013). In an unregulated environment, floodplain wetlands can be overexploited with rising incomes as has occurred in parts of Vietnam and Thailand (Johnston et al. 2010). The role of elders, monks, women and the management committee in educating youth about cultural and scientific reasons for fish conservation is paramount. Involving young people in the management committee and fish conservation efforts would also be a valuable learning experience and ensure their input to decision making.

In conclusion, this research has revealed the hidden voice of elders who are the keepers of cultural knowledge on communal management of wetland commons. An opportunity exists to engage them and the monastic community as key players in fisheries co-management based on traditional Lao and Buddhist culture combined with scientific and local evidence on fish populations. According to Baird and Flaherty (2005), the fisheries co-management approach is proving effective in Lao PDR in gaining long term commitment to managing wetlands commons sustainably. However, the process of engaging communities requires careful facilitation, appreciation of local knowledge and gender roles, and ongoing technical support (Baird and Flaherty 2005; Moser 2015). To these conclusions we can now add the importance of maintaining cultural beliefs and practices that reinforce fish conservation efforts based on science and policy. Greater involvement of elders, monks, women and youth could re-establish stronger cultural commitment to Pak Peung wetland as a common resource in decline.

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