

A decorative graphic at the top of the page features a horizontal line of stylized fish swimming to the right. To the right of the fish is a large, cylindrical woven basket, possibly for catching fish, shown at an angle.

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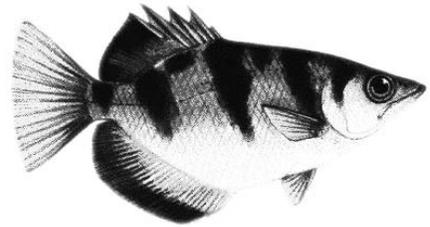


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Letter from the CEO

The fisheries of the Lower Mekong Basin are, without question, essential to the tens of millions of people who rely on fish as their main source of food and income. Indeed, it has been estimated that the current yield of fish and other aquatic animals from the Lower Mekong Basin is about 3 million tonnes per year. This is a resource of immense importance.

But the fishery is under pressure. We see this through rapidly increasing fishing effort throughout the Basin, often leading to illegal fishing practices as are discussed in this issue of *Catch and Culture*. Fisheries management needs to be improved to reduce the impacts of illegal fishing and over-fishing. Other indirect threats to the fishery such as habitat loss and modification of water quality and quantity need to be managed.

At the same time we need to appreciate that there are many legitimate uses of the waters of the Mekong in addition to fisheries. These include irrigated agriculture, hydroelectricity production, navigation, and domestic and industrial water supply. From a fisheries perspective, the task is for the fisheries managers to engage with planners from other sectors, and identify mitigation measures that will optimise fisheries production while allowing for the benefits of development to be shared by as many people as possible.

If we are going to see an end to poverty in the basin, we must look at ways of making optimum and sustainable use of its prime resource - its water. The water of the Mekong offers a high potential for balanced socio-economic development in the sectors of irrigated agriculture, fisheries, navigation, hydropower, flood management, water supply and sanitation, land use, tourism and recreation. More - but careful - developments and investments are needed in all water-related sectors, including fisheries.

Water resources development in such a large, international river basin is not without risks and difficulties. But with a constructive and integrated approach, based on close cooperation between sectors and between countries, we can come up with environmentally and socially acceptable solutions to some of the challenges facing the river basin and its fisheries. This development can only be for the benefit of the Mekong people, especially the poor.



Dr Olivier Cogels
Chief Executive Officer
Mekong River Commission

Illegal fishing emerges as new challenge in Mun River

By Peter Starr

Following an agreement to open the sluice gates at Pak Mun dam in Northeast Thailand for four months a year, the migrating fish have returned, but with them they have brought a new controversy.

In 2003, after nearly 10 years of lobbying and protests, environmentalists and ecologists finally had cause to celebrate when the Thai Government agreed to open the gates of Pak Mun Dam for four months every year during the rainy season.

The move, which followed a year-long study on restoring the ecology and livelihoods of people affected by the dam, allowed migratory fishes to move upstream from the Mekong to spawn, helping to restore the biodiversity of one of Thailand's most fragile ecosystems. However now the fishery is facing a new problem - and this time it comes from within the community.

According to the local fisheries department, half a dozen patrol officers clashed in June with about 20 villagers, some wielding knives, over the use of illegal fishing gear. Although nobody was injured, the incident highlighted the continued tensions in an area which has become a battleground for Thailand conservationists.

The illegal gear in question is used to catch freshwater prawns near the dam, located almost 6km upstream from the Mun River's confluence with the Mekong.

Under a prawn-stocking program designed to reverse the decline in fish production following the dam's construction, tens of millions of prawn larvae have been released into the reservoir since 1995. At the height of the season, according to a local fisheries biologist, illegal fishing gear can yield up to 100 kilograms of prawns in a couple of hours.

Efforts to curtail the use of the equipment have had mixed results. "A meeting was held with villagers in July last year, but there was no solution," the biologist said. He explained that although villagers had agreed to stop using the illegal fishing gear, this year they used it again. Amid threats of arrests, local authorities ordered the fishing gear to be seized within seven days. "They've collected some, but others are still operating," the biologist said.

Dilemma

The fuss over illegal prawning is only one part of a bigger picture. According to a report from a Ubon Ratchatani research team, stocking the *Macrobrachium rosenbergii* prawn, also known as the giant freshwater shrimp, has been a "successful effort in fishery management in the Pak Mun Dam" but it is not a long-term solution for sustaining the local fishery.

Tuantong Jutagate, Associate Professor at Ubon Ratchatani University's faculty of agriculture, agrees. "The Department of Fisheries will have to stock it every year," he said. A more urgent issue is the use of illegal fishing gear to catch migratory fishes that are now returning to spawn in the Mun River with the opening of the dam gates every year. "We want people to earn an

income, but we also want the fish to move upstream to spawn," Tuantong said. "We have a dilemma. It's quite a challenge."

Tuantong was a member of an Ubon Ratchatani University research project that studied the impact of the dam during the one-year trial opening of the gates in 2001 and 2002. They reported that unlimited fishing during the spawning season between May and September would "inevitably lead to negative impacts in the long term", regardless of whether the gates were opened or closed.

However, during the one-year study period, these impacts could not be clearly demonstrated. They did find some destructive, non-selective gears, such as funnel traps and shore-based seine nets, were being used, but not in large numbers, nor could they be used in the rainy season. As a result, the report stated: "use of fishery methods destructive to the resource is not an apparent problem yet".

But in a separate study published in early 2003, a group of researchers led by Tuantong reported that, during the trial opening of the gates, villagers had "fished heavily" during the closed fishing season between July and September. "The Pak Mun Fishery Conservation Unit should concentrate on patrolling and stopping any forbidden fishing gear uses during this time to let the fishes have a chance to move upstream," the study said.

Almost two years on, fishery patrol officers have to deal with both halting the lucrative business of illegal prawning and stemming the impact of non-selective gear on fish migration. At one village several dozen kilometres upstream from the dam, a 50-year-old fisherman explained that a funnel trap operated by two people could bring in as much as 100kg of fish on a good night at the peak of the season in November.

The earnings from such a catch could be as high as 7,000 baht (US\$170) compared with average earnings

Researchers have been monitoring the impact of illegal fishing gear, such as this thong or stationary bagnet, which can trap extremely small fish.



Giant eels and stingrays return to Mun River



By Peter Starr

Before the Pak Mun Dam was completed in 1994, there were 265 recorded species in northeast Thailand's longest river, including 10 introduced species. For the next seven years, monitoring was haphazard, then in 2001, the government ordered the dam gates open for a year to see what was going on.

When Thai fish biologists started surveying changes to fisheries after the opening of the Pak Mun Dam gates in 2001, the last things they expected to stumble across were freshwater giant stingrays and giant mottled eels. "We were surprised," said Tuantong Jutagate, a professor at the nearby Ubon Ratchatani University. "We thought they were extinct."

The two species were among 48 found that were "uncommon" to the area, meaning that they hadn't been seen by local fishermen for a long time. The giant mottled eel was so rare that it was thought to have disappeared from the Mun River before the dam was built. So too was a species of herring known as the Laotian shad. Other uncommon species caught during the 12-month survey were the mad barb, the Mekong giant catfish and the black sheatfish.

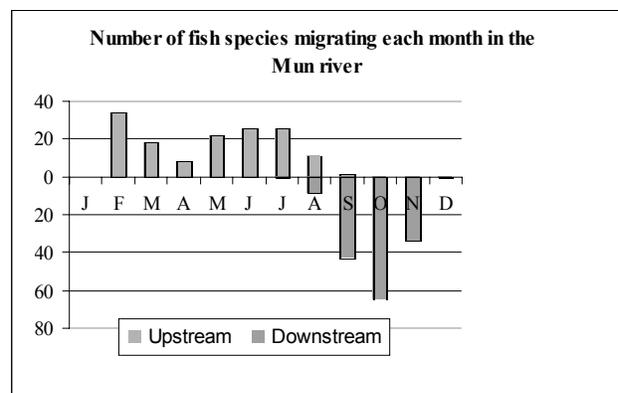
Overall, Tuantong and fellow researchers listed a total of 184 species from 44 families caught at two sampling sites located upstream and downstream from the dam during the trial opening of the gates. They identified the main families as barb, catfishes, sheatfishes and loaches. Among introduced species were two stocked fishes (carp and tilapia) as well as a stocked giant freshwater shrimps.

In addition to species that had not been seen for a long time, the survey contained a further surprise - many of the species that reportedly could not use the fish ladder were found upstream from the dam. It was previously thought that only about two dozen species could climb the ladder, considered to be less "user-friendly" for the bigger and more valuable species that start migrating up the river from the Mekong in June.

In a separate survey, villagers working with the Chiangmai-based South East Asia Rivers Network (SEARIN) reported finding 156 species, including 56 which spawned in flooded and wetland forests and 33 which spawned in rapids. Local researchers classified the total number into 123 migratory, 25 native and eight introduced species. The researchers found that fish migrated to the Mun River between February and September and back into the Mekong between July and December.

Further reading

SEARIN-Thailand. 2004. The Return of Fish, River Ecology and Local Livelihoods of the Mun River: summary of fish knowledge of Pak Mun people. Southeast Asia Rivers Network, Thailand. 72 pp. (In English and Thai)





of 1,000 baht a day during the rainy season and as little as 200 baht a day during the off-season.

At 2m long and 30cm wide, the funnel trap resembles a huge basket woven into the shape of a condom. The trap is connected to a one-centimetre mesh net which is up to 20m long and 8m wide. The cost? Anywhere between 2,000 and 4,000 baht. Asked if he was worried about being caught using the equipment, the fisherman shrugged. "I've got nothing to eat anyway so it doesn't matter," he said, noting that about 100 other villagers could be found using similar gear during the peak season in November.

At a village further downstream, a 47-year-old villager said he used to earn an average of 6,000 baht a month from gillnet fishing between June and September using nets of 3-8 cm mesh. But catches diminished when the dam was built. "We had enough fish to eat during the dry season but not enough to sell," this fisherman recalled. "During that time, many villagers went to Bangkok to get jobs on construction sites. It's better now that the gates are open."

Another gillnet fishermen agreed. "It was difficult to catch fish before when the gates were closed. We had enough for household supplies, but could only sell fish to the market if we were lucky," the 66-year-old villager said. "The problem now is that people don't stop fishing during the spawning season in June and July."

Weighing the options

It may be better that the gates are now open for four months a year, but it's still not good enough for activists at the nearby "Center for Local Wisdom" who want the gates open all year round. The centre, affiliated with a local non-governmental organisation known as the Forum of the Poor, includes a meeting hall and a huge monument to the people's struggle against the Pak Mun Dam. And downstairs in the fisheries museum there is a depiction of the idealised lifestyle of Pak Mun fishermen, with laughing children playing in the rapids as cheerful mothers do the laundry.

In fact, year-round opening for an initial period of five years was one of the four options proposed by the university research project in 2002. It was argued that

keeping the gates open all year round would address long-term environmental issues such as riverbank destruction, changes in biodiversity and riverside vegetation. Keeping them closed all the time was another option, albeit with associated continuing economic and social problems. Between these two extremes, the research report proposed five months or eight months as two possible compromises. The five-month option from July to November was designed to revive fish migration. The eight-month option, which involved opening the gates three months earlier at the height of the dry season in April, would have uncovered natural rapids, providing additional benefits to fisheries and forest ecology.

Both of these "compromise options" took into account problems with a fish ladder built after the dam's construction in an attempt to revive fish migration. The research team found that the ladder had "not worked as intended" - only species that were small and surface dwelling, such as certain catfishes, could climb the structure. Most of these fishes started migrating upstream in June so the gate wasn't a major issue. But from July, bigger fishes with higher economic and consumption value were starting to migrate and were unable to climb the ladder.

In the end, the government opted for the option that was likely to have the least impact on electricity supply and allowed the gates to open from July to October. It subsequently reviewed the period of opening and in 2004 changed it to May to August, based on advice from the Department of Fisheries.

Chavalit Vittayanon, a fisheries taxonomist who works for the Thai branch of the international conservation group World Wide Fund for Nature (WWF), said local people were "very unhappy" with the decision to reduce the open period to only four months. "Our problem is with the fish, not water or electricity," he said.

Indeed, a report in 2000 found that monitoring of species and fishing activities was typically haphazard and not systematic after the dam's completion. Moreover, compensating fishing households had been long and tedious due to difficulties in identifying households depending on fisheries and estimating the value of their catch.



Nevertheless, there are some positives to be found in the agreement to open the gates and even the Chiangmai-based South East Asia Rivers Network (Searin) has agreed that the four-month opening will have a "major impact" on food security and the general livelihood of villagers.

Pak Mun Dam will continue to cause controversy within different interest groups in Thailand, and questions about the true benefits the dam brings to Thailand's electricity grid have also been raised in the national press. But the 15-year saga of Pak Mun has provided some important lessons for future dam construction on the Mekong River and its tributaries. Dam construction must be undertaken with care, taking into account the need to balance the economic benefits against possible social and environmental impacts, and suitable mitigation measures should be built in from the earliest stages of planning.

Further reading

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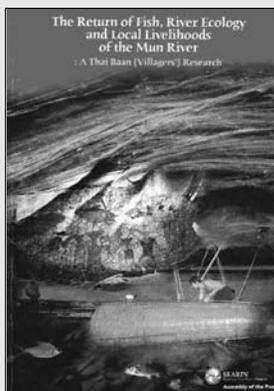
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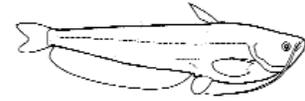
Thai Baan research is a process whereby research is undertaken by villagers who live and work with the subject being investigated. The strength of the process is that it elicits the villagers practical understanding of the complexity and dynamics of natural resources, the ways they are used, and the social economy of those who depend on them for their livelihoods. Professional researchers are not involved - the process is driven conceptually and organisationally by the users of the resource.

Such *Thai Baan* research has been under way on the Mun River since 2001. Now the findings have been put together in a new book entitled "The Return of Fish, River Ecology and Local Livelihoods of the Mun River: a Thai Baan (Villagers') Research". The book contains information on the use of the river, and details the culture, traditions and cultural values associated with the river. Knowledge of fisheries ecology is documented, and particular attention is given to the changes in ecology and return of fishes that took place after the Pak Mun

Dam gates were opened in 2001. The content of the book is complemented with high quality photographs.

Editions of the book have been published in both Thai and English. They are available from Southeast Asia Rivers Network, 78 Moo 10 Suthep Road, Tambol Suthep, Muang, Chiang Mai 50200, Thailand. It can also be downloaded from www.searin.org

Critical times on Songkram River



By Peter Starr

The Songkram River may not be largest Mekong tributary in Thailand but it's one of the most productive in terms of fisheries. Efforts to crack down on bagnets and other illegal gear aim to keep it that way ... but don't yet seem to be working.

Villagers in Sri Songkram, a town on the lower reaches of the Songkram River in north-eastern Thailand, are visibly upset. As long as anyone cares to remember, local fishermen say, the villagers have used *thong* bagnets to catch riverine sheatfish (*Belodontichthys* sp.) migrating downstream towards the Mekong in the fast-flowing currents that occur at the end of the rainy season in September and October. All that changed in 2001 when fisheries patrol officers started apprehending and fining fishermen found using the illegal fishing gear.

"When I go fishing these days, I feel like a criminal," one irate fisherman said. "If the officers don't want us to use *thong*, they should suggest what we should do." In addition to the loss of their livelihoods, many villagers complain that they are now deeply in debt as they are unable to repay loans taken out to invest in bagnet equipment. "If the government asks us to stop, we'll ask for compensation," another fisherman said.

Villagers say that about 30 families in Sri Songkram operate bagnets for about three weeks a year in September and October. Each family has an average

of two units and the minimum investment is 100,000 baht (US\$2,400) for equipment that can last anywhere between five and 15 years. With catches of up to 200 kilograms per unit, villagers say the net returns for a single season can be as high as 45,000 baht after the costs of fuel and labour are taken into account.

Fisherman say the crackdown on bagnets, with fines of up to 9,000 baht, is complicated by the use of other illegal gear which appears to be sanctioned by local government authorities. The use of *ouan tap taling* nets, for example, is nominally illegal. But fishermen say that those found using the nets are exempted from fines if they can produce "tax receipts" made out by the local government.

The use of highly-destructive *kad* nets is meanwhile subject to public auctions, with the rights to use such



U-shaped bagnets, or kads, like these ones on the Songkram River are causing particular concern as they catch everything.



The authorities often turn a blind eye to the use of our tap taling nets.

illegal gear being awarded to the highest bidders. A local official said the proceeds of these auctions were allocated to "regional development" projects.

Viratham Thongpan, director of the Inland Fisheries Research and Development Center in the provincial capital of Sakon Nakhorn, said he first heard about the problem two years ago when working in a neighbouring province. "A lot of people told me about this problem in 2002 and 2003," he said, adding that Fisheries Department staff later visited the area to carry out research. "We found quite a lot of fishing gear that destroyed the resource."

In an attempt to resolve the problem, Viratham said, a committee was set up comprising government officials and villagers. "We used a participatory approach and

tried to teach people how to use the gear without destroying the resource." A compromise was drafted, but had not yet been implemented as of late September 2004. "Right now, there's no budget so the project's stuck," the director said.

To get a clearer picture of the level of fishing pressure existing in the lower Songkram Basin, Viratham is keen to conduct detailed research in cooperation with local villagers. "One year's research is not enough. It should be three years," he said. "But there would have to be a guarantee that villagers wouldn't be caught." Another challenge is that local fisheries officials would have to spend extended periods with the villagers as "they don't trust outsiders" following recent raids by patrol officers who work for a separate part of the Fisheries Department.

For the time being, however, the status quo persists. "My concern is that we may be in a critical period," the director said. "After bagnets, I'm particularly concerned about *kad* nets - they catch everything."

With vast areas of the lower stretches flooded and used for spawning during the rainy season, Viratham described the Songkram as "highly productive" in terms of fisheries. "It's easy to access and, in terms of production, it's more important than the Mun River."

In such a climate, commercial fishing is becoming more intense. Indeed, some bidders are said to have paid as much as one million baht at the annual auction for *kad*-use rights. "Before, fishing was mainly to supply domestic households," Viratham said. "But these days, fishing is increasingly for trade."



Fatal feast



By Chris Barlow

While the Mekong has many varieties of edible fish, puffer fish is one that should not be added to the menu. The dangers were highlighted in August when two men in northwestern Cambodia were fatally poisoned after sharing a meal of this poisonous fish.

Puffers are quite common in the Mekong. They derive their name from their ability to inflate their bodies into a balloon-like shape. They do this by inflating their stomachs with water or air as a defence against predators or people handling them after being caught.

Known as *ca noc* in Vietnam, *trey kampot* in Cambodia, *pa pao* in Lao PDR and *pla pak pao* in Thailand, puffer fish are not fished commercially, but are often taken in nets and traps by fishermen targeting other species.

The flesh of puffer fish is not poisonous but the organs and skin are highly toxic. The poison (tetrodotoxin) is not produced directly by the fish but by bacteria inside. The toxin is 1,200 times more lethal than cyanide, and there is enough in each fish to kill about 30 adults.

First signs of poisoning are numbness of the lips and mouth, usually within 20 minutes to three hours. This quickly progresses to a burning sensation in the face and limbs. Paralysis and respiratory stress follow. In the final stages, the victim may be fully conscious but completely paralysed. Death usually occurs within four to eight hours.

The only country where puffer fish is commercially caught and eaten is Japan, where it is known as *fugu* and served as a delicacy in specialised restaurants. But only licensed chefs are allowed to prepare *fugu* dishes.



Zeb Hogan

Puffer fish inflate themselves to avoid capture; but if humans eat them they won't just swell up ... they will die.

The flesh - harmless if not contaminated by poison from the organs or skin - is usually served in paper-thin slices and eaten raw, although it is sometimes cooked in a broth.

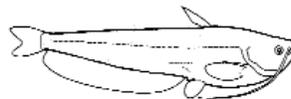
Some chefs leave a minute amount of poison in the meat, giving a prickling feeling and numbness on the tongue and the lips. This sensation is part of the thrill of eating *fugu*. But controlling the amount of poison is like playing Russian roulette, and it is not uncommon for several people to die every year from eating this delicacy.

In the absence of licensed chefs along the Mekong, *Catch and Culture* recommends throwing all puffer fish back into the river.

Further reading

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Reaping the harvest



Lao women enjoy broad access to aquatic resources. Diversification could help them fully realise the benefits of government strategies and policies already in place.

Most Lao people live in rural areas. What they grow is supplemented by the fish they catch and the food and other materials they gather from forests and wetlands. As up to 90 percent of animal protein is derived from fish and aquatic animals (such as frogs, snails, crabs and water insects), fisheries are a big contributor to food security.

Fisheries also provide much-needed income for those times when households are faced with periodic or exceptional spending such as for school fees and household emergencies.

As in other areas of the Lower Mekong Basin, women play an important role in fisheries. But their role is not confined to processing and trading. Lao women are also deeply involved in aquaculture and capture fisheries.

A recent paper by MRC fisheries management experts Kesone Sayasane and Wolf Hartmann finds that women's involvement in activities previously thought to be male-dominated partly reflects their access to aquatic resources.

Natural resources are "common" property held by the state for the use and benefit of all Lao people. Land is owned and administered by the state but can be allocated on a long-term basis to individuals, groups and private companies. The same goes for land under or around water which can be passed on to organisations or individuals.



Many women are actively involved in capture fisheries, while others operate aquaculture ventures and make fishing gear.

Obtaining property rights officially involves purchase, inheritance or allocation by the state. However, ownership is not always based on legal title as the government accepts de facto management rights by local people.

Most local fisheries management is based on specific traditions for different environments and seasons. With ponds (*nong*), fish stocking or lotus planting may lead to aquatic resources being temporarily privatised. Fisheries in other water bodies like small tributaries, back swamps, oxbow lakes, natural depressions and reservoirs are effectively controlled by the community. Such control can be for individual members of the community but not outsiders, or for the community itself to generate income for the group or to help finance village social occasions.

Community fisheries may overlap with individual subsistence rights. At the same time, larger water bodies are often beyond the control of single communities and have open-access fisheries. Important riverine fishing areas can meanwhile be privately or communally owned.

In the south of the country, the paper notes that *li* and



tone fish trap sites around the Khone Falls as well as some falling-door trap and gill-net spots in Khong are considered by locals as private property.

"People own the spots like their houses or rice fields," one researcher is quoted as saying. "It may not be official, but the government basically recognises the tenure arrangement, and collects taxes from the registered owners of trap sites. People can inherit them, and even rent them out in years that they are not used by the owner. There are also some trap sites that are considered to be village property, rather than individual private property."

As for women, they own all property including fish traps "although their husbands and male relatives are the ones who mainly operate them and govern them on a day-to-day basis". The researcher is further quoted as saying that a large *li* trap near Hang Khone village is owned by a widow who also has a couple of gill net sites. "I don't hear people in Khong referring to trap sites as being owned by women. But the reality is that women traditionally own all property. So if it came down to it, they would also own the trap sites," he adds.

In addition to aquatic resources, Lao women have access to capital and technology. Credit and savings schemes are available through the Lao Women's Union. Technology is simple, and women make some fishing gear from local materials. Their access to authority has also improved.

But the authors note that women's time has become scarce and that they have less access to knowledge and information than men. Moreover, in some of the water bodies in Vientiane and Bolikhamxay provinces where the MRC has a regional fisheries management project, neither women nor men have legal access to fish marketing. The authors find that local property rights and resulting benefits are "far from complete" and that a big drawback is the privatisation of marketing rights and a concession that benefits a monopolist trader.

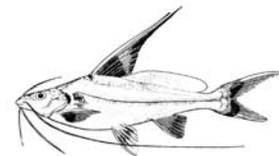
With policies and strategies for "gender responsiveness" and community decision-making largely in place, the authors reckon that practical

support from technical line agencies and units of local government is now needed. This should not be limited to activities traditionally attributed to women, such as fish processing. In the case of the water bodies in Vientiane and Bolikhamxay provinces, they recommend that institutional aspects of fish utilisation, such as the granting of marketing concessions or similar, should receive similar attention.

"Increased collaboration and coordination of activities between agencies involved in similar enterprises on national and regional levels would be beneficial," the authors conclude. "This could be made operational through inter-agency working groups or networks concerned with specific issues. While some examples of such collaboration already exist, they depend largely on the initiative of interested individuals. Their institutionalisation could have important benefits."

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For many women the fish they catch bring in much-needed income to support their families.

TAB emerges as key player in fisheries governance



Since its inaugural meeting in the Lao city of Pakse in 2000, the Technical Advisory Body for Fisheries Management has become the focal point for "good governance" in regional fisheries management. But what does that mean?

Among the buzzwords now in common use in development circles, governance is probably the most difficult to define.

The World Bank Institute defines governance as "traditions and institutions by which authority in a country is exercised for the common good". It says the success of its approach to improving governance depends on public availability of knowledge and

information as well as political leadership and collective action.

Canada's Institute on Governance, founded in 1990, uses a similar definition but says governance also encompasses "how citizens are given a voice, and how decisions are made on issues of public concern". In other words, governance broadly refers not only to how a society is governed, but also to who makes the decisions, what their powers are and how they are held to account.

How this relates to managing fisheries in the Lower Mekong Basin has recently been examined by Wattana Leelapatra, one of three Thai members of the Technical Advisory Body for Fisheries Management (TAB), and Wolf Hartmann, coordinator of the Management of River and Reservoir Fisheries component of the MRC's Fisheries Programme. Their results were presented to the 7th Asian Fisheries Forum held in Penang, Malaysia in December 2004.

In the area of fisheries, they found that governance and related reforms in the lower basin had mainly involved the decentralisation of decision making, usually from national to lower levels. But governance of shared natural resources may have local to global implications, hence the term "glocalisation" to describe simultaneous action at both levels. In an increasingly interconnected "Mekong society", players at all levels are part of regional governance.

Given that water and fish are shared in the Lower Mekong Basin, the TAB is therefore an important step in developing and strengthening governance of trans-boundary aquatic resources.

Four main issues

Wattana and Hartmann identify four main issues for "multi-scale" fisheries governance in the lower basin, the first and foremost being the importance of migratory fish stocks, their management and conservation. A second issue is the trans-boundary impact of unsustainable fishing, exploitation of fish in critical habitats at critical life stages, environmental disturbances and loss of genetic diversity. Another issue is that local management techniques - breeding indigenous species, for example - may be common to

more than one country. The final issue covers principles of governance such as participation, rights and gender equality.

How does trans-boundary cooperation work in practice? One example is that of Thai and Lao fishermen using traditional management practices for the endangered Mekong giant catfish on both sides of the river. Management also extends to important deep pools in southern Lao PDR and Cambodia.

Meanwhile, representatives of Cambodian, Lao, Thai and Vietnamese fishing communities held their first regional conference in Phnom Penh in 2002. The setting up of a regional fisheries organisation is a step in the same direction.

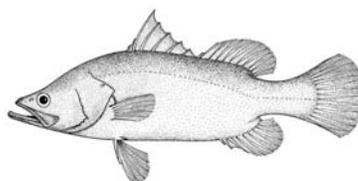
Wattana and Hartmann note that the TAB is different from early regional fisheries organisations, which dealt mainly with straddling and migratory stocks. More than 80 percent were in the area of marine fisheries, and many of these were set up with the support of the Food and Agricultural Organisation following the United Nations Conference on the Law of the Sea in 1982. Their main objective was to develop the contribution of fisheries to national economies.

Since the 1990s, however, a "new wave" of regional fisheries organisations has emerged with environmental concerns at the forefront. Indeed, the TAB is arguably the only body anywhere in the world that has been specifically set up to provide inputs into regional river fisheries management and development.

Lean and mean

In line with the capacities of member agencies, the TAB is a "lean" organisation. Its bureaucracy is minimal and, with all members taking part in decisions, it has no formal decision-making body. Its "secretariat" is the TAB Support Group based at the MRC Fisheries Programme. But the TAB is not an intergovernmental agency with sovereign states as members. Instead, it is comprised of fisheries agencies and National Mekong Committees. It is also open to civil society organisations, such as the Regional Network for Promotion of Gender in Fisheries (NGF).

As such, Wattana and Hartmann argue "it may be more



flexible and nearer to where management and development in fact take place". Moreover, TAB activities have been broad and not narrowly confined to the state and fisheries sectors.

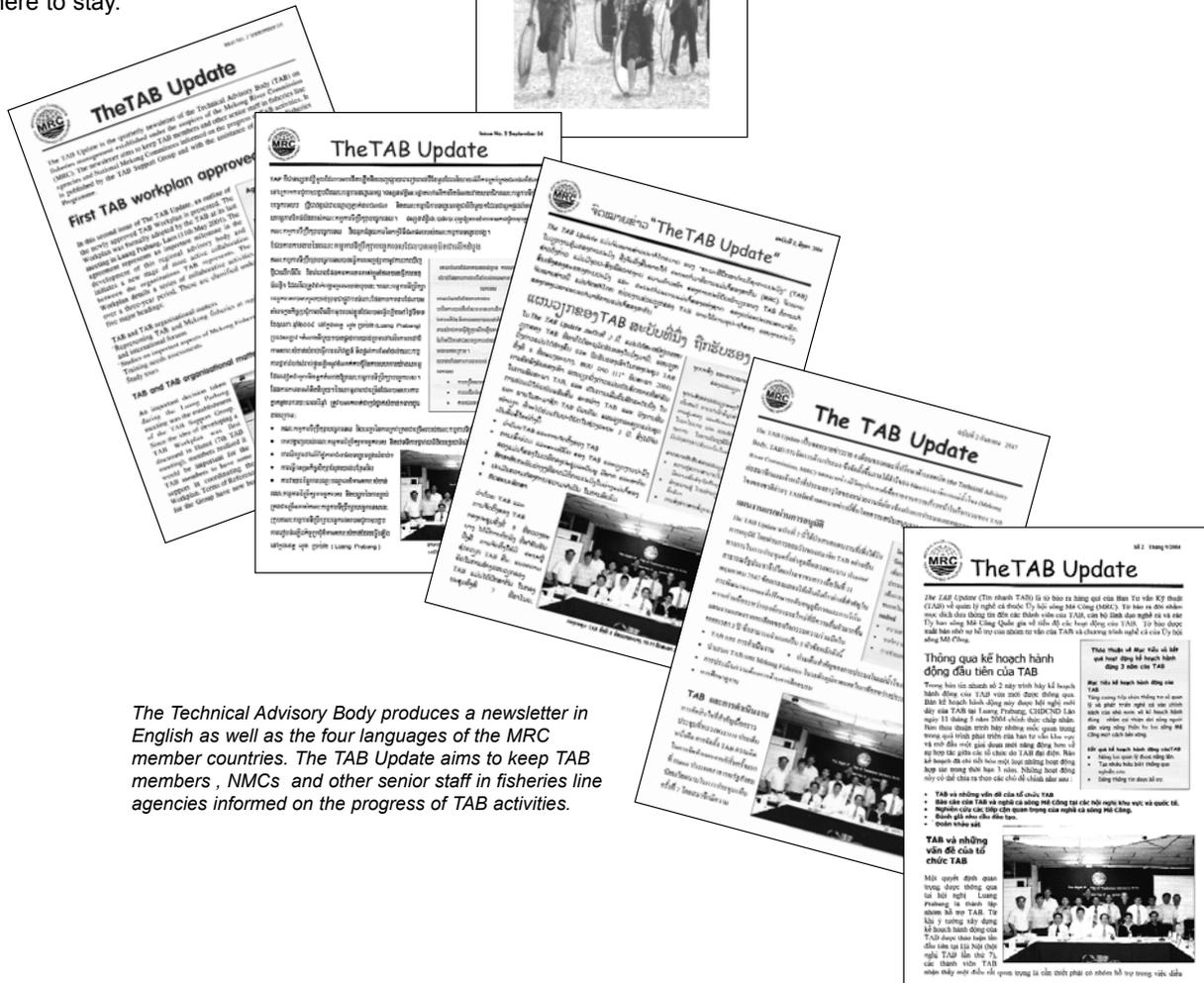
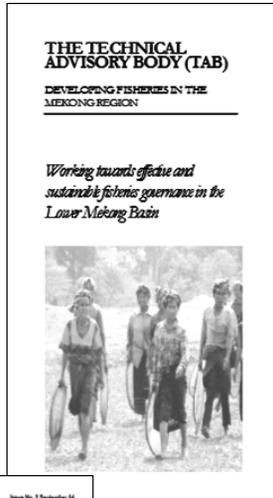
And with training in co-management of inland fisheries, there is now a core group of about 100 staff who have undergone continued and sustained capacity building in participatory management.

The TAB operates under the umbrella of the Mekong Agreement. The MRC, as well as Danish and Swedish donors, support it administratively and financially, but it is not a bilateral or multilateral project for technical development. As far as Wattana and Hartmann are concerned, the Technical Advisory Board for Fisheries Management is a regional organisation here to stay.

Further reading

Graham, J., Amos, B., & Plumtree, T. 2003, Principles for good governance in the 21st century. Policy Brief No. 15. Ottawa: Institute on Governance (IOG). Institute on Governance. Home Page: <http://www.iog.ca>.

Wattana Leelapatra & Wolf Hartmann. 2004. The TAB: An Emerging (Sub-) Regional Fisheries Organization For the Mekong? Why We Need It, And What It Should Do. 7th Asian Fisheries Forum, 30 November - 4 December 2004, Penang, Malaysia.



The Technical Advisory Body produces a newsletter in English as well as the four languages of the MRC member countries. The TAB Update aims to keep TAB members, NMCs and other senior staff in fisheries line agencies informed on the progress of TAB activities.

Staff changes

By Khamtanh Vathanatham

Outgoing



Xaypladeth Choulamany has been appointed Deputy Permanent Secretary of the Lao Ministry of Agriculture and Forestry effective April 1. Mr Xaypladeth was previously the LARReC director and the Lao national coordinator for the MRC Fisheries Programme between 1998 and 2004. During this period, he supported and coordinated field activities, especially in Lao PDR, and also helped develop the programme as a whole. The fisheries programme acknowledges his contribution to fisheries development in the Mekong Basin.



Nguyen Thi Bich has been appointed Senior Officer of the Management of River and Reservoir Fisheries Component of the MRC Fisheries Programme in Ban Me Thuot in the central highlands of Vietnam. Ms Bich was previously an assistant programme officer in Phnom Penh between 2001 and June this year. The fisheries programme wishes her every success in her new position.



Singkham Phonvisay retired as Director General of the Lao Department of Livestock and Fisheries in July and **Keeree Kohanantakul** retired as Director of the Thailand's Inland Fisheries Research and Development Bureau in September. With their long service of supporting fisheries management and development cooperation in the Mekong Basin, the MRC Fisheries Programme wishes Mr Singkham and Mr Keeree good health, happiness and the best of luck in their retirement.



Dr Nguyen Quoc An retired in December 2004 from the MRC Fisheries Programme. Prior to joining MRC, Dr An worked as a fisheries scientist with the Ministry of Fisheries in Vietnam. He was most recently based with the Research Institute for Aquaculture No. 3, at the field station in the Central Highlands of Vietnam, where he coordinated the work of the Fisheries Programme. He took up an appointment as a Programme Officer with the MRC in December 2001. All his colleagues in the MRC wish him every happiness and good health in his retirement.

Incoming



Seng Moheth has been appointed Assistant Programme Officer with the MRC Fisheries Programme effective August 16. Mr Moheth previously worked as a fisheries officer in Cambodia's Department of Fisheries. He completed his Bachelor of Science in Fisheries Sciences at Vietnam's Nong Lam University in 1977.



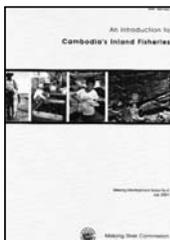
Suchart Ingthamjitr has been appointed Programme Officer with the MRC Fisheries Programme effective October 4. Dr Suchart previously worked as a senior fisheries biologist in Thailand's Department of Fisheries. He completed his Doctor of Technical Science (Aquaculture) at the Asian Institute of Technology in 1997.

New information products



An Introduction to Cambodia's Inland Fisheries

Cambodia relies heavily on its natural resources and agricultural land to provide food and livelihood for its 12 million people. Among the most vibrant of these renewable natural resources are the inland fisheries, which provide income and food security for millions of people. This report synthesises much of the relevant research on Cambodia's fisheries. Its easy-to-read style is complemented by numerous attractive photographs



Mekong Development Series No. 4, November 2004, 56 pages. US\$5.00

Distribution and Ecology of Some Important Riverine Fish Species of the Mekong River Basin

This new report complements an earlier report on fish migrations (Technical Paper No 8), which provided an overview of the general patterns of fish migrations and their significance for management. This report provides more detailed information of 40 key species which are significant in the Mekong River fishery. For each species it provides notes on distribution, feeding, size, population structure, critical habitats, life cycle and its importance in fisheries.



MRC Technical Paper No. 10, May 2004. 116 pages. US\$5.00

A new CD - Fisheries Information in the Lower Mekong Basin



The Fisheries Programme has produced many publications, databases, maps and photos covering the fisheries of the Mekong. Much of it is dispersed, having been published in various places and over an extended period. Now, for the first time, we have compiled the great majority of these publications in electronic form, and produced them on one CD.

The Fisheries Information in the Lower Mekong Basin CD-ROM has been compiled to provide a comprehensive research and educational resource for scientists, researchers and all those interested in the fisheries of the Lower Mekong Basin.

The CD offers a vast range of information produced by the Mekong River Commission's Fisheries Programme and its counterparts including approximately 300 technical papers and reports produced over the past 10 years. It contains nine databases related to catch assessment and five databases related to migration and spawning. Each database has its own manual and/or data dictionary. There is also a selection of photos on fishing activities in the Mekong.

A bibliography section provides references for a substantial collection of fisheries related papers and books.

Users can also access and explore 18 pre-made maps using the ArcReader, GIS software provided.

Publication of this CD is part of the Mekong River Commission's ongoing campaign to promote awareness of the issues surrounding the fisheries of the Lower Mekong Basin.

December 2004. US\$5.00

Fishing Gears in Songkhram River Basin

Mr Keeree Kohanantakul, Thailand Department of Fisheries, has documented the fishing gears of the Songkhram River in a new book. Many fishing gears used in the Songkhram River are based on local knowledge built up over centuries. Their designs and use reflect knowledge of fish behaviour, including feeding and movements associated with weather and moon phases, as well as local hydrological conditions. In compiling the information in the book, the author wanted to inform new generations of the initiative shown by their ancestors who invented and constructed fishing gears which do not over-exploit fish stocks like some of the modern fishing gears. This book has photos of all gears and information on their use. Soft cover, 87 pp, in Thai



Available from: Inland Fisheries Research and Development Bureau, Department of Fisheries, Thailand or Fisheries Programme, Mekong River Commission Secretariat, Vientiane, Lao PDR.

Tonle Sap Watch - a new newsletter

The Fisheries Action Coalition Team (FACT) in Cambodia is producing a new newsletter titled "Tonle Sap Watch". It aims to improve understanding about the latest development issues around the Tonle Sap Great Lake in Cambodia. The up-to-date news and articles review what is going on around the Lake and highlight major concerns and issues arising from development programs that might affect the richness of biodiversity, cultural and natural resources of this region.



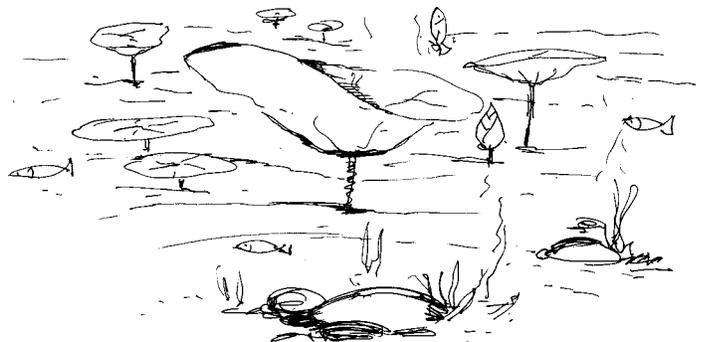
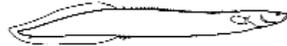
The newsletter is available electronically at www.fact.org.kh Hard copies can be obtained from The Fisheries Action Coalition Team, PO Box 2295, Phnom Penh, Cambodia.

Freshwater Fish Larvae

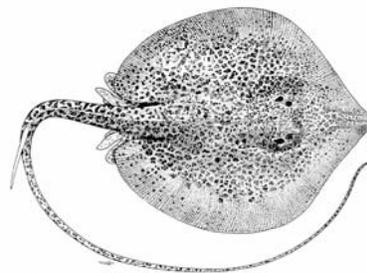


Knowledge of freshwater fish larvae is important for fisheries since it is the fundamental for aquaculture and management of aquatic resources. One of the leading researchers in the field is Dr Apichart Termvidchakorn, from the Thailand department of Fisheries, who has produced the book *Freshwater Fish Larvae of Thailand*. It contains basic information on reproduction, biology and classification of freshwater fish larvae. It will be a valuable resource book for researchers, students and others who are interested in the freshwater fisheries of Thailand. Soft cover, 130 pp, in Thai.

Available from: Inland Fisheries Research and Development Bureau, Department of Fisheries, Thailand



Mekong Fisheries Index



Bangkok pushing for ban on trade in Irrawaddy dolphins

Bangkok Post. May 6, 2004

Thailand is lobbying for support from other ASEAN member states and Australia for a ban on trading in rare Irrawaddy dolphins, now under the threat of extinction. The deputy chief of the Marine and Coastal Resources Department has called on the countries to back its proposal to ban trading in Irrawaddy dolphins (*Orcaella brevirostris*), a protected species under Appendix II of Cites (Convention on International Trade in Endangered Species of Wild Fauna and Flora). The Appendix II status means the sale of a listed animal is possible with a certificate from a relevant state agency. In order to ban the sale completely, the animal must be listed on Appendix I of Cites.

Mekong Delta to become biggest aquatic producer

Vietnam News Agency. 31 July 2004

The Vietnamese Government's 2001 goal of expanding the Mekong Delta's aquaculture area to more than 700,000ha and its annually netted output to 1.7 million tonnes by 2005 looks set to be exceeded. Forecasts are now predicting output of 1.8 million tonnes of aquatic products including 250,000 tonnes of shrimp. This makes up 60 per cent of the country's total aquatic output. The output is expected to rise to two million tonnes, including 400,000 tonnes of shrimp, by 2010.

Concern voiced over excessive river dredging

The Nation. 30 July 2004

Environmental advocates have expressed concern that excessive dredging of rivers to source sand for construction projects has caused erosion of riverbanks in major arteries across the country. "The country's two largest waterways, the Chao Phya and the Mekong Rivers, are confronted with serious environmental problems, including eroded banks, shifting currents and increased sediment," a senior environmental official

said. The problems being experienced on the Mekong were in the areas of Mukdahan, Nakhon Phanom and Sakon.

ADB to study poverty in Mekong region

United Press International. 4 August 2004

The Asian Development Bank says it will be conducting a survey on the impact of economic integration on the greater Mekong region. The Manila-based ADB said it has been granted \$750,000 for the study by the Netherlands to examine how the poor in the region have been affected by the economic boom in the cross-border areas of Cambodia, Laos, Thailand and Vietnam.

Climate change will have catastrophic effect on key rivers: study

Agence France Press. August 2004

PARIS (AFP) - Climate change will have a disastrous effect on the flow of rivers that provide water for most of Earth's cities, it was reported. Rising levels of carbon dioxide pollution, caused by the unbridled burning of oil, coal and gas, will warm the troposphere, the lowest layer of the world's atmosphere, in addition to the land and seas, New Scientist says. In a computer model that factors in these changes, Princeton University researchers found that precipitation over the next three centuries will increase, boosting the discharge of fresh water around the world by nearly 15 percent.

Those that will start to decline include the Mississippi, Mekong and the Nile, one of the world's most heavily used and politically contested rivers, where (the) model predicts an 18 percent fall in flow," the report says.

Chemical free shrimp

Bangkok Post. 13 August 2004

Medical researchers have long hailed the potential health benefits for humans of probiotics and prebiotics



in products such as yoghurt, which help promote beneficial bacteria in the digestive system. Now Thai shrimp farmers are being encouraged to pick up on the trend. The Fisheries Department is suggesting that they replace drugs and food supplements with probiotic microbes in shrimp feed in order to make shrimp free of hazardous chemical substances and reduce farm production costs.

China plans more work on Mekong

Bangkok Post, 13 August 2004

China will deepen a section of the upper Mekong River that stretches from Jing Hong to Guan Laei in Xishuangbanna in Yunnan province to ease the way for freight ships, according to a transport official. He said the 80km river section was dominated by shallow sand bars that obstructed cargo ships. The sand bars would be removed so cargo ships of up to 400 tonnes could navigate year-round.

River At Risk

Special feature in the Far Eastern Economic Review, 26 August 2004

Drought, dam building and over-fishing are suffocating the Mekong, one of Asia's mighty, life-giving arteries. Can countries along its banks rally to save it? The sight of the mighty Mekong so depleted has galvanised international agencies, local environmentalists and a few government officials to take a fresh look at the state of the waterway that links China with Southeast Asia. The picture that emerges is of a river subjected to neglect, abuse and haphazard development, and heading for a crisis.

Mekong River Commission to strengthen cooperation with China, Myanmar

MRC press release, 26 August 2004

The Mekong River Commission is proposing increased technical cooperation with China and Myanmar as part of its Water Utilisation Programme. Mr Siripong Hungspreug, chairman of the MRC Joint Committee for 2004/2005, told delegates at the 9th Dialogue Meeting of the MRC held in Vientiane on August 26 that the cooperation would evolve around visits to the MRC Secretariat and to the Mekong Delta and Tonle Sap areas. At the Dialogue Meeting the MRC members

briefed their dialogue partners on trans-boundary issues involved in the MRC's four core programs and sharing information on fisheries-related hydrological data and fish ecology.

World Bank consults on big Laos dam project

The Guardian, 1 September 2004

The World Bank launched an unprecedented exercise in public consultation yesterday on whether it should back a project to build a dam in Laos on a tributary of the Mekong river. More than 200 officials from the Lao and Thai governments, businessmen, environmentalists and academics began debating whether the bank should underwrite a £675m project to build the dam, being developed by a consortium of Lao, Thai, French and Italian investors. Bank officials claim the "detailed and intensive" level of consultation is setting a new benchmark for project assessment that should be copied worldwide.

Land rental attracts shrimp breeders to provinces in Mekong Delta area

Vietnam News Service website, 10 September 2004

Renting land for shrimp farming has become a popular trend in the Cuu Long (Mekong) Delta in recent years; people from Ca Mau, Bac Lieu and Soc Trang provinces have flocked to the southern province of Kien Giang in search of suitable and affordable land. In most of the cases landowners rent their land because they lack investment capital, skill or both. And while local residents have little experience with shrimp breeding, most renters have been in the business in their home provinces for years. With thousands of hectares of prime water surface for shrimp raising, the farmers in the southern part of Kien Giang Province have become the largest exporters of shrimp in the province.

Eel breeding makes Viet Nam debut

Vietnam News Service website, 10 September 2004

Multinational, joint venture Tan Do Phat-Vinh Phuc company has become the first fishing enterprise to breed eels in Viet Nam. Do Ngoc Lien, one of the company's senior officials, said the company will export its first batch of 65,000 eels in September. Tan Do Phat-Vinh Phuc has already received an offer from a Japanese importer to buy raw eels at US\$7 per

kilogram and processed eels at \$10 per kilogram. Lien says the company has imported about two million baby eels to raise on 28 large and small ponds.

Shrimp 'dumping' ruling

Mercury News, Vietnam Bureau, September 2004

At the behest of US shrimpers, the Commerce Department ruled earlier this month that Vietnamese and Chinese shrimp growers have been "dumping" their shrimp on the US market at unreasonably low prices. The United States has begun collecting tariffs of up to 93 percent on Vietnamese shrimp and 113 percent on Chinese shrimp. The rates are preliminary. The foreign shrimpers can appeal the ruling, which won't become final until January. Almost half of Vietnam's shrimp exports go to the United States. Europe and Japan are also major buyers.

Hundreds flock to see annual prawn 'parade'

Bangkok Post, September 2004

Hundreds of tourists flocked to a wildlife sanctuary in Nam Yuen district, Thailand to see the annual "parade" of Lanchester's freshwater prawns. The parade, or march, is actually the yearly migration of millions of prawns from Yod Dom wildlife sanctuary when they make a nocturnal 25km journey upstream to mate and spawn. The migration takes place each September. The parent prawns die after laying their eggs and when these eggs hatch the offspring are washed downstream in the rapids where they mature and then make the same trek upstream the following year.

Asia's Small-Scale Fishers Vulnerable to Global Fish Crisis, says New WRI Report

US Newswire, 29 September 2004

In the rural provinces around Southeast Asia's largest freshwater lake, the Tonle Sap in Cambodia, violent conflicts are increasingly becoming routine between small-scale fishers and operators of large-scale, commercial fish pens. The local fishers accuse the wealthy outsiders of having corrupt ties to the government and of using destructive fishing

methods. In turn, the commercial owners say that the independent fishermen poach their stocks. Such conflicts and other issues related to the complex problem of the global fish crisis are examined in a new report by scientists from the World Resources Institute (WRI). The report, *Fishing for Answers: Making Sense of the Global Fish Crisis*, is written by WRI's Yumiko Kura, Carmen Revenga, Eriko Hoshino, and Greg Mock. The report also investigates the depletion of global fish stocks and details actions consumers can take to achieve sustainability in fishing.

Giant Catfish classified as critically endangered

Bangkok Post, September 16 2004

The World Conservation Union (IUCN) has listed the Mekong Giant Catfish (*Pangasianodon gigas*) as "critically endangered" which means that unless their situation is addressed urgently, the world could lose a key species in one of its most complex river systems. The IUCN hopes that listing the status of threatened species in its Red List of Threatened Species will help reflect how healthy the environment is and encourage proper oversight to improve and maintain global biodiversity.

Scientists in 17 Nations to Study Fish

Associated Press, November 18, 2004

Scientists in 17 countries will scout waterways to locate and study the world's largest freshwater fish species, many of which are declining in numbers, hoping to learn how to better protect them. The Scientists will look for creatures such as the Mekong giant catfish, goliath catfish, giant stingrays, razor-toothed gars, massive carps, caviar-producing sturgeon and predatory salmon -- which can all weigh more than 200 pounds and grow to six feet or longer, the World Wildlife Fund said. The animals are "unique" and "disappearing fast," said Dr Zeb Hogan, who will lead the project funded by WWF and the National Geographic Society. Hogan, who researches the Mekong giant catfish in Cambodia, said scientists will tag fish to track their movements in hopes of better understanding their migration paths and why they're dying off.

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Catch and Culture

Fisheries Research and Development in the Mekong Region

Volume 10, No. 2 Supplement 23

December 2004

Sea catfishes - *Ariidae*

By John Valbo-Jorgensen and Kent Hortle

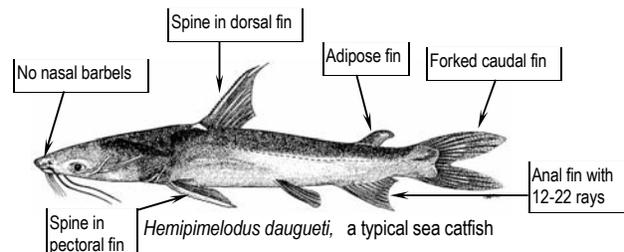
The ariid catfishes are a family of marine fishes comprising about 120 species. The family is distributed worldwide, with most species spending their lives in tropical or subtropical coastal areas, but many entering estuaries and rivers (Berra 2001). Ariids are common in the South China Sea in the Mekong River plume. Most of the 22 ariids found in the Mekong River are widely distributed in Southeast Asian rivers because they can move between river systems via the sea.

Ariid fishes are characterised by a stout body, bony cephalic shield, three pairs of barbells around the mouth, an adipose fin, forked tail, and poisonous spines at the front of the dorsal and pectoral fins that are capable of inflicting painful wounds (Allen *et al.* 2002). In most species, the flanks and belly are silvery and the back is dark grey, but various colourations occur.

The majority of ariids are medium-sized fishes. Most Mekong species grow to 30-60 centimetres in length, but one species, the giant sea catfish, *Netuma thalassinus*, reaches 185 centimetres.

Mekong ariids probably breed in estuaries or the sea, with one possible exception, *Hemipimelodus borneensis*, which may breed in freshwater (MRC 2003). Haines (in Coates 1991) states that most northern New Guinea species, even the ones confined to fresh water, migrate downstream towards the estuary before spawning.

Compared to many river fishes, female sea catfishes have relatively few large eggs. Baird (1998), for instance, found only 18-23 eggs in three females of *H. borneensis* weighing from 250 to 540 grams. The eggs

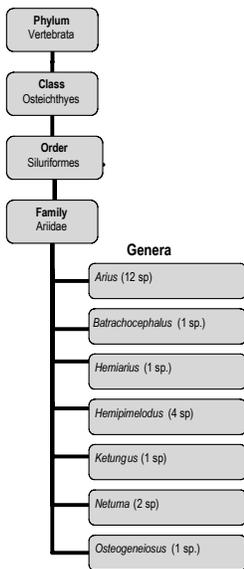


of ariids are very large (10-20 millimetres) and the larvae hatch with an enormous yolk sac (Smith 1945; Coates 1991; Hortle 1986). Adult male ariid catfishes are mouthbrooders, holding and protecting the eggs in their mouths and buccal cavities until they hatch and the fry absorb their yolk sacs. In egg-bearing females, the last rays in the pelvic fins are thickened and modified into claspers to hold extruded eggs until they are fertilised, after which the male takes them into the mouth. The fry start feeding while they are in their father's mouth and the entire period of incubation may last 2-3 months (Rimmer and Merrick in Coates 1991).

Sea catfishes make a loud sound by rubbing the roughened base of the pectoral spine against its socket. The sound is amplified by the swimbladder (Moyle and Cech 1988). Many ariids swim in large schools and perhaps use the sounds to communicate when they enter turbid waters, or possibly to warn predators about their painful sting.

Most researchers agree that the Khone Falls act as a zoogeographic barrier to ariids, as none have ever been recorded upstream of the falls (e.g. Roberts 1993). However, at least two species, *Hemiaris stormii* and *Hemipimelodus borneensis*, occur as far upstream as the border area between Cambodia and Laos, where *H. stormii* is said to be common (Roberts

Fisheries Research and Development in the Mekong region



1993; Baird 1998). Several ariid species have been reported from the Great Lake, including *Arius truncatus* (MRC 2003), *Hemipimelodus borneensis* (Kottelat 1985), *H. daugueti* and *Osteogeneiosus militaris* (Chevey 1936). There is very little precise information on the life cycle of ariids in the Mekong. Baran and Baird (in Baird 2004) point out that *A. stormii* and *Hemipimelodus borneensis* have a preference for deep pools.

In Australasian freshwaters (including those in New Guinea), where there are no true freshwater catfishes, ariids have speciated to occupy

niches filled by freshwater catfishes in other regions. So there are now many ariids which are wholly freshwater. Ariids cannot displace river catfishes from rivers like the Mekong, probably because the large seasonal fluctuations in flow and habitat favour many other species which produce large numbers of eggs. Ariids may be favoured in more stable coastal marine environments, where parental care is perhaps also an advantage to reduce predation.



Hemiarus stormii occurs as far upstream as Khone Falls and has a preference for deep pools

In northern New Guinea, ariids never enter the floodplain, but stay in the mainstream, whereas in southern New Guinea, at least two species have evolved to primarily exploit floodplains (Coates 1991; Hurtle 1986). Some ariids deposit most of their fat during the dry season, as they eat prey such as prawns or juvenile fish that increase in density during that period (Coates 1991). One species, bigmouth sea catfish, *Ketungus typus*, is known to feed on scales (Vidthayanon in MRC 2003).

Sea catfishes are of some importance to the fishery in the South China Sea and in the Mekong Delta where they are caught with a variety of gears and mainly marketed fresh or dry and salted. Further upstream, they are not common and so they are of very limited importance in the fishery. In Cambodia, they are sometimes caught when people fish with hooks for juvenile pangasiids that are used for stocking aquaculture farms.

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