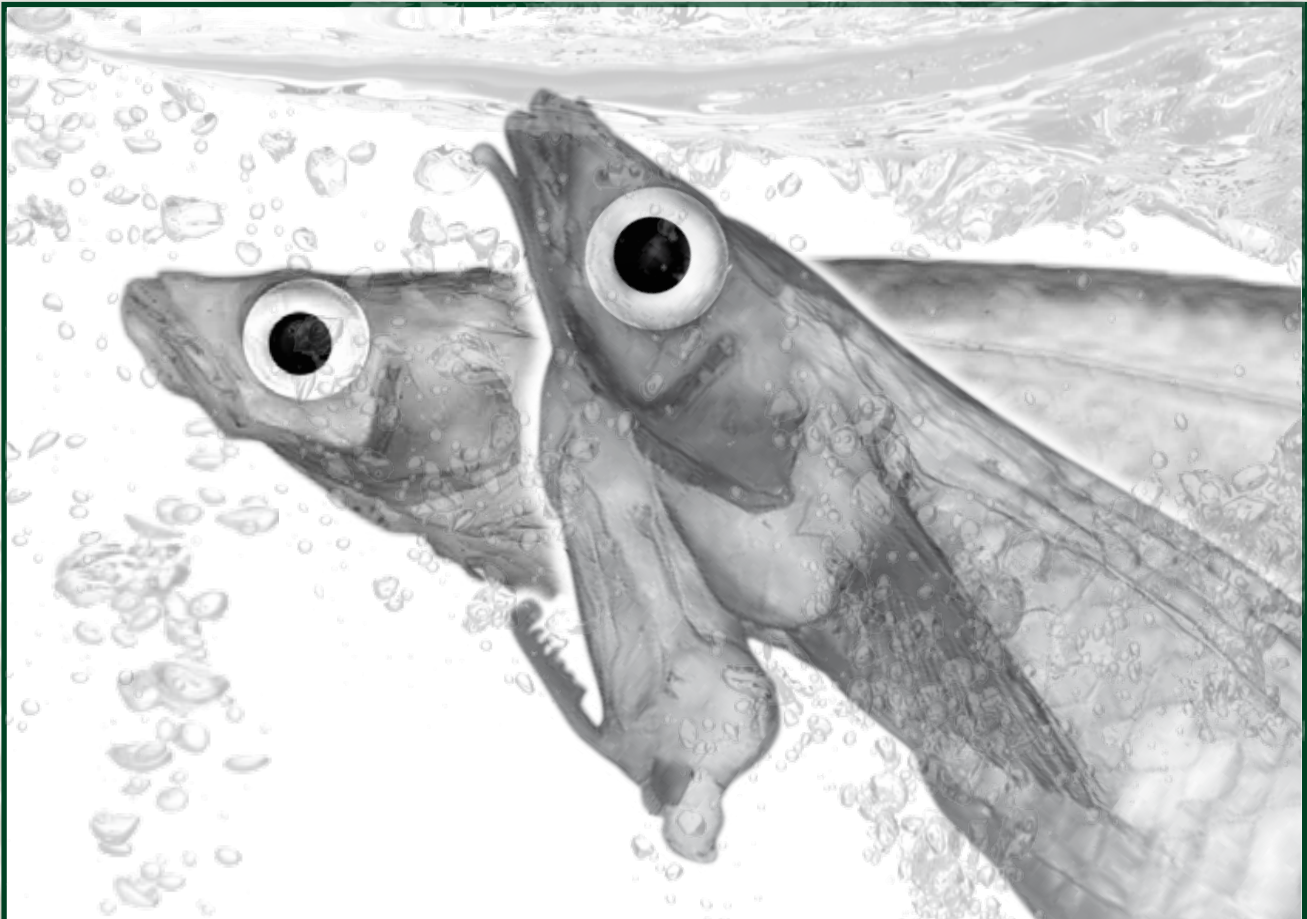


Fisheries Research and Development in the Mekong Region

Volume 18, No 3

ISSN 0859-290X

December 2012



INSIDE

- Critically-endangered turtle returned to Cambodia
- Scientists describe new priapium fish species in delta
- Vietnamese catfish production seen falling in 2012
- Truong Tang San: water as a global strategic resource
- Lao-Thai trans-boundary project finalised
- Cambodia, Viet Nam agree to cross-border project
- Call for action to protect last six Lao dolphins



Catch and Culture is published three times a year by the office of the Mekong River Commission Secretariat in Phnom Penh, Cambodia, and distributed to over 650 subscribers around the world. Free email subscriptions are available through the MRC website, www.mrcmekong.org. For information on the cost of hard-copy subscriptions, contact the MRC's Documentation Centre at doc.centre@mrcmekong.org.

Contributions to *Catch and Culture* should be sent to peterstarr@mac.com and copied to mrcc@mrcmekong.org.

© Mekong River Commission 2012

Editorial panel:

So Nam, Fisheries Programme Coordinator

Peter Degen, Chief Technical Advisor

Souvanny Phommakone, Fisheries Programme Officer

Buoy Roitana, Fisheries Programme Officer

Theerawat Samphawamana, Fisheries Programme Officer

Nguyen Hai Son, Fisheries Programme Officer

Malasri Khumsri, Fisheries Management and Governance Specialist

Ngor Peng Bun, Capture Fisheries Specialist

Kong Sovanara, Aquaculture Specialist

Editor: Peter Starr

Designer: Chhut Chheana

The opinions and interpretation expressed within are those of the authors and do not necessarily represent the views of the Mekong River Commission.



Cover illustration by Chhut Chheana based on photo by Tran Xuan Loi (retouched by Koichi Shibukawa) and illustration by Philippine Journal of Science. Photo above supplied by WWF-Cambodia.

Contents

4 Fisheries monitoring

Assertions that fish stocks are significantly declining remain controversial

6 Aquatic reptiles

Critically-endangered turtle returned to Cambodia from Viet Nam

8 Taxonomy

Scientists describe new species of priapium fish from Mekong in Viet Nam

13 Aquaculture

Vietnamese catfish production seen falling in 2012 on weak EU demand

14 Water, economics and security

Time for action to protect and manage water as global strategic resource

18 Trans-boundary and fisheries cooperation (1)

New trans-boundary project finalised for Lao-Thai stretch of Mekong

20 Trans-boundary fisheries cooperation (2)

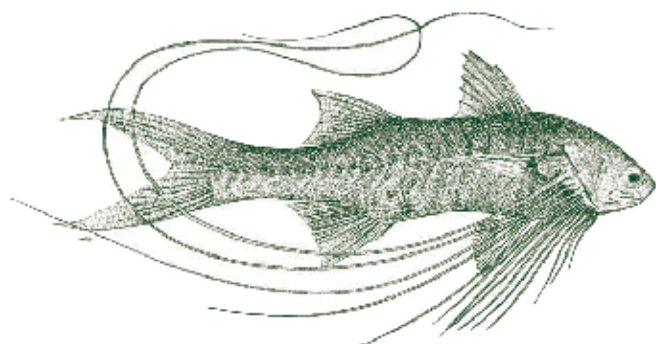
Cambodia, Viet Nam agree to details of cross-border fisheries project

22 Trans-boundary conservation

Lao, Cambodia authorities urged to take action to protect last six Lao dolphins

26 Fisheries management

Asia-Pacific regional consultation forum identifies major challenges to fisheries



Assertions that stocks are significantly declining remain controversial

Fish-monitoring programmes by the Mekong River Commission find no significant long-term trends for the multiple fish species that use the Tonle Sap Lake, the world's most productive inland fishery

Monitoring the status and trends of fisheries provides a baseline to assess the impacts of fisheries management and development activities including dams. Over the past two decades, the Mekong River Commission Fisheries Programme has supported four major monitoring programmes at more than 50 locations in the Lower Mekong Basin (see box).

While some of the data have been analysed and published, work to construct a time series of the data has been limited. Such data are needed to interpret long-term trends in fish resources and provide baselines for monitoring impacts.

A new study, published as MRC Technical Paper 32 *, presents indices of fish diversity, fish and larvae abundance, biomass and size over time for the multi-species assemblage and important species estimated from the four programmes. Intra-annual variation and long-term trends in these indices are also examined.

In attempts to clarify the extent of fish migrations, identify spawning locations and improve understanding of the life-cycles and dynamics of fish stocks in the basin, the authors examine and test correlations and functional dependencies in the indices through space and time.

Between 1997 and 2010, they detect no significant long-term trends in the indices for the multi-species assemblage that seasonally uses the Tonle Sap Lake. Nor do they detect changes in its species composition that reflect increased fishing pressure in response to the growing population. Even populations of some fishes included on the IUCN Red List of endangered species showed no apparent decline in relative biomass. Similarly, the authors find no significant trend in the biomass of

Major fish-monitoring programmes of the Mekong River Commission

1. Dai Fishery Monitoring Programme on the Tonle Sap River in Cambodia (1994–2010);
2. Lee Trap Monitoring Programme at the Khone Falls in southern Lao PDR (1994–2010);
3. Fish Abundance and Diversity Monitoring Programme at up to 40 sites across the basin (2003–2010); and
4. Fish Larvae Density Monitoring Programme in Cambodia and Viet Nam (1999–2010).

fish migrating upstream at Khone Falls in southern Lao PDR during the same period. Among 10 catch locations monitored between 2003 and 2010, they observe no consistent trends in indices of relative abundance, biomass or species richness.

“The assertion that the diversity and biomass of the multi-species assemblage have declined significantly in the basin ... remains contentious”

Compared to earlier years, however, relative fish biomass at many monitoring locations in the basin and reproductive success appear to have been relatively low since 2005-06. In addition "significant declines in the relative biomass index for several species were also apparent at some locations," notably Pres Bang on the Sekong River in northeastern Cambodia. According to the paper, "the assertion that the diversity and biomass of the multi-species assemblage have declined significantly in the basin therefore remains contentious." Much depends on whether recent estimates of relative fish biomass in the system recover to previous levels.

The authors find that most species assessed in detail exhibit life cycles and migrations largely consistent with the general life-cycle model described by previous workers. Migrations of selected cyprinid and pangasiid catfishes seem to extend long distances upstream, at least as far as the uppermost monitoring site at Luang Prabang. However, migrations of other cyprinids and pangasiid and bagrid catfishes appear to be much more limited.

Fish migrations from the Tonle Sap system seem to be strongly linked to the lunar cycle and the amount of water remaining on the floodplain. The authors did not detect a lunar response of fish migrations further upstream at the lee trap fishery in southern Lao PDR. Instead, water level seems to be an important factor affecting migrations of non-pangasiid species. The pangasiid catfishes selected for monitoring at this location appear to be caught in larger quantities at lower flows.

Statistical attempts to identify spawning locations in the basin were largely unsuccessful. But less formal analyses suggest that Stung Treng province in northeast Cambodia and the three Mekong tributaries in the Sesan Basin are relatively important spawning locations for small cyprinids. Among the tributaries, the Srepok River appears to provide important habitats for medium and large cyprinids and the Sesan and Sekong rivers seem to make important habitats available for pangasiid catfishes. These locations are consistent with results of analyses of age distributions of larvae sampled at Phnom Penh.

The abundance and biomass of the multi-species assemblage that seasonally uses the Tonle Sap system were found to respond significantly to the transport of larvae from upstream spawning locations as well as the extent and duration of flooding. Record catches for the dai fishery in 2004–05 and 2005–06 — apparent elsewhere in the basin in 2005 — were found to be in response to very high rates of recruitment during 2004 and 2005 rather than growth effects.

The paper says such high recruitment levels can not be linked to management efforts to conserve or rebuild spawning stock biomass by confiscating illegal fishing gear in the Tonle Sap system. But a combination of spawning success, larvae survival



Lee trap fishery in southern Lao PDR

PHOTO: JOE GARRISON

and rates of transport seem to be important.

Water levels rose rapidly in 2005, second only to rates observed in 2002. "This may have stimulated upstream spawning migrations and benefited larvae survival and transport," the paper says. However, very high rates of recruitment estimated for *Henicorhynchus* species in 2004 remain "perplexing." The authors conclude that "a closer examination of hydrological and water quality parameters across the geographic range of these species and particularly during the spawning season at likely spawning locations, including the Sesan basin, appears warranted."

* MRC-FP (in press). *Integrated Analysis of Data from MRC Fisheries Monitoring Programmes in the Lower Mekong Basin*. This paper was prepared by the MRC Fisheries Programme, with technical inputs by Halls, A.S.; Paxton, B.R.; Hall, N.; Hortle, K.G.; So, N.; Chea, T.; Chheng, P.; Putrea, S.; Lieng, S.; Peng Bun, N.; Pengby, N.; Chan, S.; Vu, V.A.; Nguyen Nguyen, D.; Doan, V.T.; Sinthavong, V.; Douangkham, S.; Vannaxay, S.; Renu, S.; Suntornratana, U.; Tiwarat, T. and Boonsong, S.

Critically-endangered turtle returned to Cambodia from Viet Nam

A Cambodian "royal turtle" is transferred from a resort in Ho Chi Minh City to a breeding programme in Siem Reap

A critically-endangered large mangrove terrapin (*Batagur affinis*) was returned to Cambodia in October after an almost 30-year stay in Vietnam.

Education for Nature-Vietnam (ENV) said it discovered the reptile at the Suoi Tien Cultural Resort on the outskirts of Ho Chi Minh City two years earlier. Dinh Van Vui, chief executive of Suoi Tien Cultural Tourism Ltd, said the turtle had been there since the 1980s.

To secure the female turtle's return to Cambodia, ENV said it worked with Mr Vui, CITES Vietnam,

Ho Chi Minh City authorities and the Cambodian Ministry of Agriculture, Forestry and Fisheries.

“At one time Cambodia’s king declared the turtle to be protected by a royal decree and strictly prohibited its hunting”

"We thank Mr Vui for his decision, because this turtle is particularly important to Cambodia," ENV Vice Director Tran Viet Hung said. "Cambodians value this species as part of their culture, referring to it as the 'royal turtle' because at one time Cambodia's king declared the turtle to be protected by a royal decree and strictly prohibited its hunting."



The female mangrove terrapin being prepared for transfer to Siem Reap
PHOTO: Education for Nature-Vietnam



Cambodian Fisheries Administration Deputy Director General Ing Try (left) presents a certificate of appreciation to Dinh Van Vui (centre), chief executive of Suoi Tien Cultural Tourism Ltd
PHOTO: Education for Nature-Vietnam

ENV said wild populations of the species in Cambodia had declined "remarkably" over the past few decades, and were now found mainly in the Sre Ambel River system in the southern coastal region. In 2011, only three females were confirmed to have nested on the sandy riverbanks in this region, "a stable but dangerously small fraction of a once-robust local population," ENV said. "Returning this turtle to Cambodia will mean a



The handover ceremony in Ho Chi Minh City on October 5 featured a traditional Cambodian dance
PHOTO: Education for Nature-Vietnam

lot for the future conservation of this significant species," Mr Hung said. "The race to revive declining wild populations in Cambodia will have a much better chance of success with the introduction of this large, adult female *Batagur* that is potentially capable of breeding ... It was this fact alone that drove our efforts to return the turtle to Cambodia."



Vietnamese National Assembly member Doan Nguyen Thuy Trang

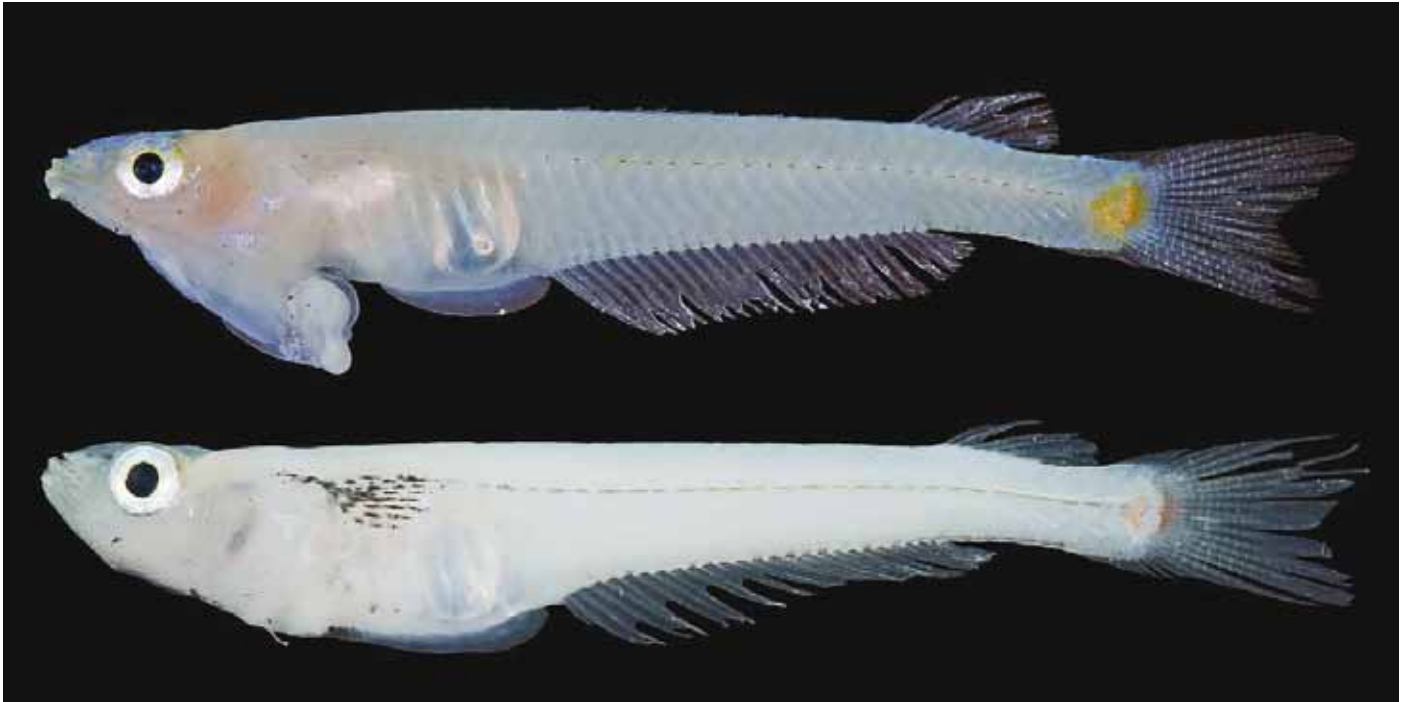
"The best place for rare animals of this significance is in the wild or in special conservation breeding programme"

Nguyen Dinh Cuong, director of the Ho Chi Minh City Forest Protection Department, said his agency was proud to have been involved in successfully returning the turtle to Cambodia. "It's our responsibility to protect all endangered species, and the best place for rare animals of this significance is in the wild or in special conservation breeding programmes," Mr Cuong said.

The mangrove terrapin was handed over to Ing Try, deputy director general of the Cambodian Fisheries Administration, on October 5. It was later transferred to the German-affiliated Angkor Centre for Conservation of Biodiversity in Kbal Spean district in Siem Reap where it entered a conservation breeding programme with a male *Batagur affinis* from the Sre Ambel river system.

ENV thanked the Wildlife Conservation Society (WCS) in Cambodia as well as Ms Doan Nguyen Thuy Trang of the Vietnamese National Assembly "for supporting the return and ultimately making it happen."

Scientists describe new species of priapium fish from Mekong in Viet Nam



Freshly-collected specimens of *Phallostethus cuulong* in the Mekong Delta in Viet Nam. The 22.5 mm male (above) was collected in Tra Vinh province, and the 23.7 mm female (below) was caught in Soc Trang province. The new species has been given the Vietnamese common name cá bụng đầu which means “belly head fish” in English.

PHOTO: TRAN XUAN LOI (RETOUCHED BY KOICHI SHIBUKAWA)/MAGNOLIA PRESS

In addition to the new species, Japanese and Vietnamese researchers confirm that two other priapium fishes recorded in Indochina and adjacent areas are also native to the Mekong

Phallostethidae (priapium fishes) are a family of small somewhat translucent fishes found in fresh and brackish waters in Southeast Asia. The name of the family comes from the ancient Greek word *phallos* which means penis. Under the throat of male phallostethid fishes is an anus on one side and a urogenital opening a bit further down. In between, is a unique copulatory organ derived mainly from the pelvic fins which is used to clasp on to females and fertilise their eggs internally. This complex muscular and bony organ is known as the priapium, named after the ancient Greek fertility god Priapus. Such claspers are better known in shark and ray species including the

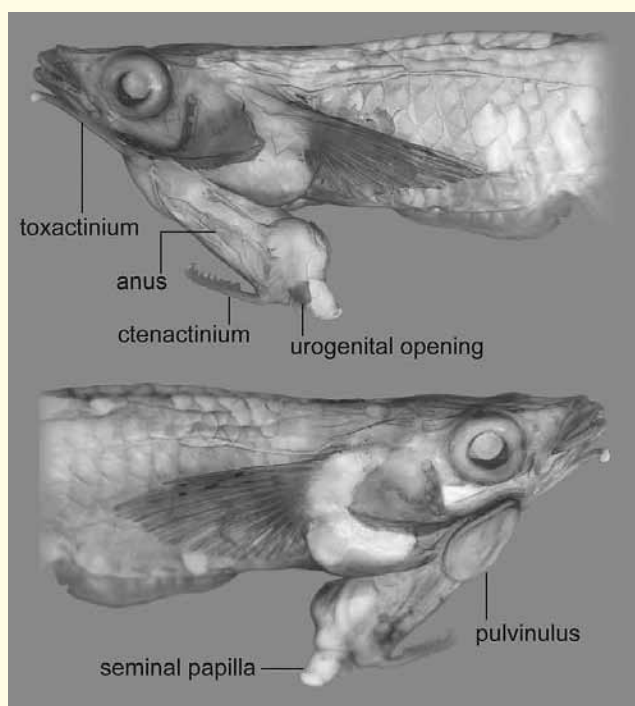
Mekong stingray (*Dasysatis laosensis*).

Until recently, scientists had described 21 species from four genera in the Phallostethidae family. These include Smith's priapium fish (*Phenacostethus smithi*) which is native to the Mekong Basin, the Chao Phraya Basin in Thailand, coastal streams in Thailand and Cambodia as well as being reported in Indonesia and Malaysia. Other species from the family had been reported from the Mekong but none had been named.

Recent field surveys confirmed four species of priapium fishes in the Mekong Delta. The surveys, by Koichi Shibukawa of the Nagao Natural Environment Foundation in Japan and Tran Dac Dinh and Tran Xuan Loi of the College of Aquaculture and Fisheries at Can Tho University, found Smith's priapium fish to be abundant in

How the new species differs from others in the same sub-family found in Borneo and Johor

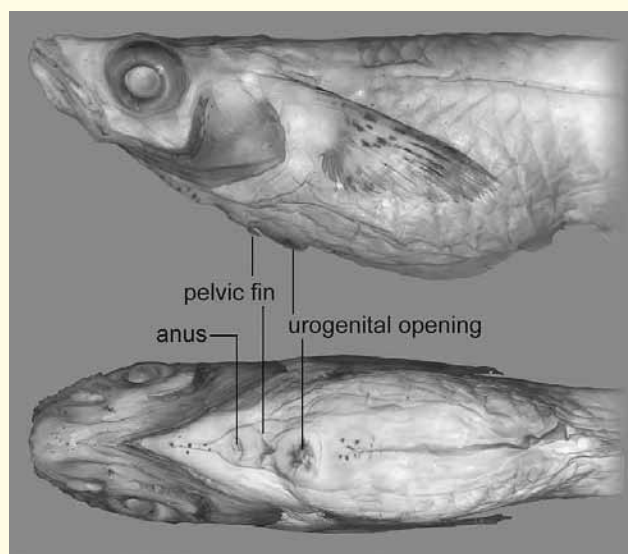
The new species *Phallostethus cuulong* lacks a first dorsal fin, has a long-based anal fin with 24-27 rays and has a rod-like toxactinium, the long curved projection from the anterior end of the priapium which is found in some priapium fishes (see below). According to the researchers, these characteristics unambiguously indicate that the fish belongs to the Phallostetinae sub-family of priapium fishes.



Head and anterior part of male showing the priapium including the toxactinium and the ctenactinium

PHOTO: TRAN XUAN LOI (RETOUCHED BY KOICHI SHIBUKAWA)/MAGNOLIA PRESS

With 11-13 pectoral-fin rays, the paper says the new Mekong species resembles *Phallostethus lehi* found in Borneo. But unlike the Borneo species, adults have seven rather than eight



Head and anterior part of female

PHOTO: TRAN XUAN LOI (RETOUCHED BY KOICHI SHIBUKAWA)/MAGNOLIA PRESS

serrae, saw-like notches, along the second ctenactinium, the curved rod-like clasper on the posterior side of the priapium (see left). The Mekong species also has 25-26 caudal vertebrae, versus 28 in the Borneo species, and 6-19 parodontary teeth, which compares with 28 or more in the other species. The six males examined were also found to be dextral, unlike the Borneo species which is sinistral.

The paper also noted that the new Mekong species differed from *Phallostethus dunckeri* which is known only from Johor, on the southern tip of the Malay Peninsula next to Singapore. Adults of this species have only five serrae on the second ctenactinium, and unlike the Mekong species, it has 9-10 pectoral-fin rays and 27 caudal vertebrae. The authors noted that the Johor species is now “presumed to be extinct.”

slow-flowing tidal canals in the delta.

Among the three other species, two were from another genus. These were *Neosthesus bircornis* and *N. lankesteri*, which have been known to be found in Indochina and adjacent areas for more than 20 years. These two species were found to be common in the inter-tidal areas of mangrove forests and adjacent brackish-water creeks in the

Mekong Delta.

The fourth species was relatively uncommon. It was found to come from a sub-family known as the Phallostethinae, previously confined to two species from the *Phallostethus* genus found on the Malay peninsula and northwestern Borneo.

Continued on page 12...

Interview with curator of fishes at Smithsonian Institution's National Museum of Natural History

Amid the intense global media interest generated by the discovery of the unusual species by the Japanese and Vietnamese scientists, the CBC Radio programme "As It Happens" in Canada interviewed Lynne Parenti, curator of fishes at the Smithsonian Institution's National Museum of Natural History in Washington. Dr Parenti has been researching priapium fishes for more than two decades and discovered with fellow scientist Kristina Louie the first phallostethid species on the Indonesian island of Sulawesi in 1995 (the species, Neostethus djajaorum, was also the first found east of the Wallace line where organisms of both Asian and Australian origin are found). The following is a transcript of the interview which was broadcast by CBC Radio on August 29:

Introduction: Nature comes up with some surprising stuff and tonight we're going to introduce you to a small fish that is clearly proud of its life form, so to speak. *Phallostethus cuulong* is a newly-discovered two-centimetre long fish from Viet Nam and, as those of you who understand Greek nomenclature have already likely guessed, its penis is attached to its chest—right under its chin actually, if fish can be considered to have chins. Lynne Parenti has studied this type of fish. She is the curator of fishes at the US National Museum of Natural History. We reached her in Washington DC.

Interviewer: Ms Parenti, we've had a bit of a go at it in the introduction, but can you describe exactly where the genitalia of this fish are located?

Dr Parenti: Well, it's basically on the chest. The genus name *Phallostethus* means phallus on the chest. It's very straightforward. Sometimes this fish has been described popularly as having its genitalia on top of the head but it's really more underneath the head.

Interviewer: All right. I've never noticed this in a salmon or a bass. How common is this among fish?

Dr Parenti: Not common at all. In fact, there are just 22 known species within this very small

group and they're the only fishes that are known that have this kind of genitalia



Dr Parenti

Interviewer: From the pictures I've seen, it's the male that gets most of the attention. But is the same true of the female of the species?

Dr Parenti: Well, everything is anterior in these fish in both male and female, which I guess makes it convenient. And so for the female as well, everything—by everything I mean the anus, the pelvic fin and her urogenital opening—are all anterior and they're underneath the head as well.

Interviewer: So roughly the same spot as on the male?

Dr Parenti: Roughly, yes.

“It makes it a little bit more efficient for their mating ... He grasps her with these two bones that are in the priapium and he's able to pass, it depends on the species, either free sperm or sperm bundles directly from him into the female.”

Interviewer: Do you know why a fish would want its genitals there?

Dr Parenti: I've no idea why it happened this way. But I can tell you some of the reasons that it makes it a little bit more efficient for their mating. For one thing, when these phallostethids mate, I describe it as they almost look like a little pair of scissors. Their heads are pointed in the same direction but the male is oriented just down, his tail is a little down relative to the female's head. So he grasps her with these two bones that are in the priapium and he's able to pass, it depends on the species, either free sperm or sperm bundles directly from him into the female. One of the things that I've discovered with a colleague of mine who's a

reproductive histologist (is that) we've looked inside the ovaries, the oviducts, of these fishes and they're completely lined with sperm. So what we estimate is that every egg that is produced, every egg that's ovulated, gets fertilised.

“A third species in this genus from southern Viet Nam, means we have a nice little coherent group around the South China Sea”

Interviewer: How surprised were you by this particular discovery?

Dr Parenti: I was delighted by the discovery, not necessarily surprised, because this is the region of the world where phallostethids live, of course, within Southeast Asia. There were other species within this genus known from northwestern Borneo and also from the Malay peninsula and so this one now, a third species in this genus from southern Viet Nam, means we have a nice little coherent group around the South China Sea.

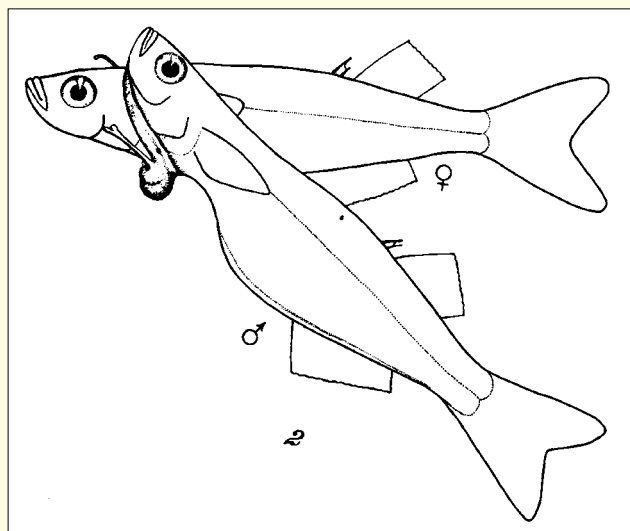
Interviewer: You say they look like scissors when they're mating? Are they culturally celebrated in the region?

Dr Parenti: Probably not. They're pretty much unknown. I mean they're unknown to us generally. Just really scientists know about them and the local people probably don't do very much with them at all. They may eat them if they can collect them in some large numbers. But they tend to be overlooked.

“These are very, very resilient fishes. They live in coastal areas throughout their range so they're not something that lives in a very pristine stream habitat.”

Interviewer: They were found in an area under some pretty heavy development. Are they threatened at all?

Dr Parenti: Probably threatened but these are very, very resilient fishes. They live in coastal



The mating of a pair of *Gulaphallus mirabilis*, a Philippine species from the priapium fish family. Dr Parenti notes that the priapium is not the same as that found in species of the *Phallostethus* genus (the large bone coming around the head of the female is the elongate ctenactinium here, not the toxactinium, and the shorter bone is called the aproctal axial bone). But she says one could infer that the toxactinium and ctenactinium of *Phallostethus* species are used to grasp the female in a similar way.

ILLUSTRATION: PHILIPPINE JOURNAL OF SCIENCE

areas throughout their range so they're not something that lives in a very pristine stream habitat. By resilience, I mean they're in a group that's called the Atheriniformes which includes very, very resilient fishes, ones that can tolerate very high temperatures, temperature ranges, high salinity and very great ranges in salinity. So yes, they're threatened by development by loss of habitat but they're pretty tough.

Interviewer: Do you expect to find more species of these fish?

Dr Parenti: I hope so. I was very delighted in my own research to find the first one of the phallostethid fishes that was known to live in the island of Sulawesi, so a bit further east in the Indo-Australian archipelago from these guys. We found those in 1995 and so we're still in the period of discovery throughout that whole region of the world and I expect to find some more.

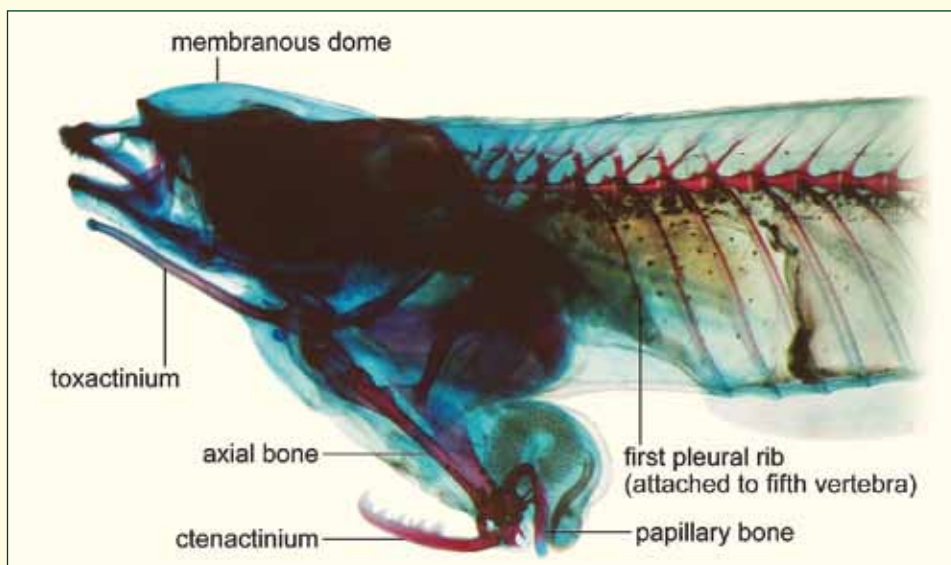


Sexual dimorphism in pleural ribs and precaudal vertebrae

The authors noted that sexual dimorphism—difference in shape between the sexes—was reported in the pleural ribs of *Phallostethus lehi* in 1996. According to a paper by Lynne Parenti, now fisheries curator at the Smithsonian Institution’s National Museum of Natural History in Washington, the first pair of pleural ribs of the Borneo species is on the fifth vertebra in males and the fourth in females.

This dimorphism is also found in *Phallostethus cuulongi* (see right). Moreover, the authors added that Mekong species also seems to show sexual dimorphism in the number of precaudal vertebrae—13-14 in the six males examined compared with 11-12 in the three female specimens. Dr Parenti and Kristina Louie, of the University of California,

reported similar sexual dimorphism in four species from the *Neostethus* genus of priapium fishes in 1998. The paper by the Japanese and Vietnamese researchers noted that such dimorphism in vertebral counts had previously not been known in other species from this unique family of fishes.



Head and anterior part of male showing first pleural rib on the fifth vertebra

PHOTO: TRAN XUAN LOI (RETOUCHED BY KOICHI SHIBUKAWA)/MAGNOLIA PRESS

... Continued from page 9

It has since been described as a new species, *Phallostethus cuulong*, in a paper by the Japanese and Vietnamese researchers published in *Zootaxa* in July*.

The new species, which has been given the Vietnamese common name of cá bụng đầu (“belly head fish”) is known from six male and

three female specimens found in Soc Trang and Tra Vinh provinces. The nine specimens were collected from shallow waters around the banks of slow-flowing turbid canals and rivers with soft muddy bottoms during field surveys by the Japanese foundation and the Vietnamese university between 2007 and 2010 (see *Catch and Culture*, Vol 17, No 1).

“Like other phallostethids in the Vietnamese Mekong, this fish has never been seen in the fish markets,” the paper says.” As far as we are aware, all fishes of the family Phallostethidae have no vernacular names in the Vietnamese Mekong (except for the new species herein named), since they are usually overlooked.”

* Shibukawa, K, D.D. Tran and L.X. Tran (2012) *Phallostethus cuulong*, a new species of priapiumfish (Actinopterygii: Atheriniformes: Phallostethidae) from the Vietnamese Mekong, *Zootaxa* 3363: 45-51



Dr Shibukawa



Dr Dinh



Mr Loi

Vietnamese catfish production seen falling in 2012 on weak EU demand

Good demand in United States fails to offset declining sales in Europe

Vietnamese production of pangasius was expected to be lower in 2012, depressed by weak European demand, Globefish reported in December. According to the FAO publication, the country's exports of Sutchi river catfish (*Pangasianodon hypophthalmus*) amounted to \$854 million in the six months to June. The EU was the largest importer, accounting for 28 percent of revenue, while the US took 22 percent.

“Despite good demand for the product in the US, imports into the EU are waning”

"Despite good demand for the product in the US, imports into the EU are waning," the report said, noting that the US was the single largest importer followed by Russia, Brazil and Singapore.

The value of EU imports of pangasius fillet fell 20 percent from a year earlier to \$199 million in the six-month period. However, average import prices were 4.9 percent higher at \$2.7 a kilogram.

“There is no sign of economic recovery in most European countries”

Vietnamese industry sources expected the negative trend in EU imports to continue in the first few months of 2013. "There is no sign of economic recovery in most European countries, although the popularity of newly-available ASC-certified pangasius is expected to increase," the report said.

In the US, Globefish noted that a National Marine Fisheries Service survey indicated that pangasius was the sixth most favourite seafood in the US in 2011. "NMFS statistics show strong and increasing demand for pangasius on the whole, but buyers

are likely to resist the higher price of the certified product as economic difficulties continue," it said.

In South Korea, Globefish said sales of frozen fish were increasing at large discount stores as consumers increasingly looked for cheaper products with a longer shelf life. From January to August, the country imported 87,800 tonnes of frozen fillet, of which close to 40,000 tonnes was pangasius from Viet Nam.

Recovering Bianfishco resumes exports

Binh An Seafood Joint Stock Co (Bianfishco), a major Vietnamese exporter of pangasius fillets until 2011, has resumed overseas shipments and is looking to a fruitful year ahead, Vietnam Investment Review reported.

The report in December said Bianfishco's three plants employing 1,200 workers were processing 100 tonnes of pangasius a day. The company has relaunched shipments to markets such as the United States and Europe.

“The company has relaunched shipments to markets such as the United States and Europe”

Established buyers including Maak Enterprises, Obaba Seafood and Western United have placed orders again with the firm, said Bianfishco chief executive Nguyen Tat Thang, who succeeded Tran Van Tri after two banks got involved in the company's restructuring.

The Can Tho-based company resumed operations in early May after closing its pangasius processing factory in the city in late February with VND1.5 trillion (\$72 million) in debts to banks and supplying farmers (see *Catch and Culture*, Vol 18, No 1).

Time for action to protect and manage water as global strategic resource

Vietnamese President Truong Tan Sang addressed the CEO Summit ahead of the annual meeting of leaders from the Asia Pacific Economic Cooperation (APEC) forum in the Russian Far East city in Vladivostok on September 7. The following is the text of President Sang's remarks.

The increasing scarcity of water as a global strategic resource constitutes an adverse impact not only on economic growth but also on the security environment of many countries and regions worldwide.

It would not be exaggerating or too soon to say that "the water resource of the 21st century is as crucial to life as oil of the 19th and 20th centuries". So, it is about time that we take a comprehensive approach and give due attention to the sustainable exploitation, utilisation and management of water resources on a global scale.

Water-related challenges have been in place throughout the history of mankind, but never have those challenges become an pressing issue of global and strategic concern as they are today.

First, water resources have a direct impact on the quality of life. As we all know, the world population is increasing rapidly, resulting in a strong demand for water, food and energy. About 1/3 of countries are located in water-scarce regions. Water-scarce countries will make up 2/3 of the world with 2 billion people by 2015.

Second, water resources are deeply impinged climate change. Obviously, the increasing frequency and intensity of abnormal natural disasters are making the water resource problems more complex, unpredictable and causing water depletion.

So, it is not a coincidence that the United Nations has selected "Water and Food Security" as the theme for the 2012 World Water Day.

Third, economic and social activities, especially



Vietnamese President Truong Tan Sang

PHOTO: NHAN DAN

hasty industrialisation and urbanisation, are adversely affecting water resources. Water pollution causes many epidemics. That is why the United Nations 2012 MDGs Report makes it clearly that, as of now, 11% of the world's population or 783 million people still are living without access to clean water.

"Tensions over water resources are threatening economic growth in many countries and representing a source of conflict"

We cannot deny the fact that tensions over water resources are threatening economic growth in many countries and representing a source of conflict, especially at a time when countries are accelerating their economic development.

“Dam construction and stream adjustments by some countries in upstream rivers constitute a growing concern”

Currently, about 150 nations are sharing the same water resources. Dam construction and stream adjustments by some countries in upstream rivers constitute a growing concern for many countries and implicitly impinge on relations between relevant countries.

Our region is typically confronted with numerous water-related challenges in the near future. Though making up 60% of the world’s population and having the highest rate of economic growth and urbanisation, the Asia - Pacific region possesses only 35% of global water resources.

Water scarcity also poses a major threat to food security in the region where 2/3 of the world’s underfed people are living. Concurrently, our region alone has recorded 70% of the world’s natural disasters, particularly floods, droughts, earthquakes, sea level rises, etc. These result in

declining water quality and adversely affecting the poverty reduction efforts in many countries.

Like many other countries in the region, Viet Nam is faced with numerous water-related challenges. Water resources, including river and underground water, are seriously declining, while floods, sea level rises, high tides, coastal erosion... have been exacerbated.

“Management and efficient utilisation of water resources in the Mekong River are developing into a pressing issue with direct and unfavourable bearing upon the largest rice granary of Viet Nam”

The management and efficient utilisation of water resources in the Mekong River are developing into a pressing issue with direct and unfavourable bearing upon the largest rice granary of Viet Nam.

As one of the leading global suppliers of agricultural products, Viet Nam holds the protection and management of water resources in high regard and considers this to be an important



President Sang addressing the APEC CEO Summit in Vladivostok on September 7

PHOTO: APEC 2012 CEO SUMMIT



President Sang on the second day of the APEC Economic Leaders Meeting in Vladivostok on September 9
PHOTO: ALEXEY KUDENKO (RIA/NOVOSTI)

element of the National Sustainable Development Strategy for 2011-2020 period and the National Strategy on Water Resources until 2020.

We are also making every effort to contribute to the multi-layered international cooperation in ensuring water resource security, ranging from bilateral, sub-regional to inter-regional and global channels.

“We have recently put forward proposals to enhance cooperation between the Mekong countries and Japan ... including research on the impact of hydro-power dams on the mainstream”

We have recently put forward proposals to enhance cooperation between the Mekong countries and Japan in conducting the “Research

on sustainable utilisation and development of the Mekong River, including research on the impact of hydro-power dams on the mainstream”.

We also joined initiatives on the management of underground water and water during the dry season within the cooperation framework between the Lower Mekong countries and the United States.

We are engaging in various cooperation mechanisms, including those with ASEAN on water resource management and with APEC on natural disasters response.

Viet Nam also co-sponsored Asia-Europe initiative on promoting cooperation and experience sharing on water resource management between the Mekong and Danube riparian countries.

Against such a backdrop, it is imperative for APEC to work more closely together to ensure water

resources security. In this vein, let me share with you some of my thoughts on what we need to do in the time to come:

First, water resources are closely linked to sustainable socio-economic development in every country and represent one of the UN Millennium Development Goals. For that reason, water resources protection and management should be mainstreamed into strategies for sustainable development and growth model transformation at national, regional and global levels.

Second, the APEC Forum should also expeditiously establish a dialogue mechanism on water resources. Such mechanism needs to be associated with APEC's new Growth Strategy as well as the cooperation pillar on human security, food security and climate change response.

We also need to promote experience exchange and cooperation in the management, sustainable exploitation and utilisation of water resources, particularly transboundary ones. This should be done on the basis of respect for the principle of equality among water-sharing countries, cooperation for economic development, resolution of social problems and diseases control for the benefit of the residents of riparian countries.

Third, we have got to uphold the role of supporting and connecting sub-regional and regional

cooperation programs in the Asia Pacific as well as the joint efforts of the international community towards that end.

We can engage in and support ASEAN Strategic Plan of Action on Water Resources as well as programs of the Mekong River Commission and the Greater Mekong Sub-region Cooperation.

To translate those endeavours into reality, I am of the view that the involvement and contribution of regional businesses are essential. We should encourage them to invest more in research and development to promote water resources saving and efficient utilisation, to develop waste water treatment technology, and to build up clean industrial process to minimize water pollution.

To uphold corporate social responsibility, APEC businesses can make critical contributions to raising community awareness, and engage in the management, exploitation, distribution and regeneration of water resources and waste treatment.

This is time for action! Let us join hands in the protection and management of water - a new global strategic resource and work together to contribute responsibly to the sustainable development and dynamism of the Asia-Pacific region.



APEC Economic Leaders with Russian President Vladimir Putin at an official photo session in Vladivostok on September 9

PHOTO: ALEXANDER VILF (RIA/NOVOSTI)

New trans-boundary project finalised for Lao-Thai stretch of Mekong

A two-year fisheries management project involving Lao and Thai stakeholders in the Golden Triangle region is on track to be launched by early 2013

Lao and Thai stakeholders held a third round of consultations in Thailand on August 23 to finalise preparations for a new trans-boundary fisheries management project. Expected to be launched by early 2013, the project involves the Lao province of Bokeo and the Thai province of Chiang Rai, located in one of the northernmost sections of the Lower Mekong Basin in the Golden Triangle area bordering Myanmar.

The final round of consultations, arranged by the MRC Fisheries Programme, took place in Chiang Khong district in Chiang Rai province. The meeting was chaired by Phiboon Roongpiboonsophit, a Chiang Rai provincial fisheries officer, and co-chaired by Khammy Philaphone, deputy director of the Livestock and Fisheries Section of the Bokeo Provincial Agriculture and Forestry Office. In addition to national and provincial representatives of fisheries agencies and research institutes, the consultations were attended by local stakeholders and officials of the Lao and Thai National Mekong Committees as well as Fisheries Programme staff.

The consultations finalised terms of reference for a joint working group and national consultants to support the two-year project in Bokeo and Chiang Rai provinces, which is scheduled to last until 2014. It also discussed the design and framework of desk studies to identify information gaps and detailed activities to develop Lao-Thai fisheries management mechanisms and plans.

“Knowledge and information gaps regarding the lack of a baseline will be used to develop a road map for trans-boundary management”

Subjects covered by the desk studies include characteristics of fisheries communities, the diversity of important species, technical aspects

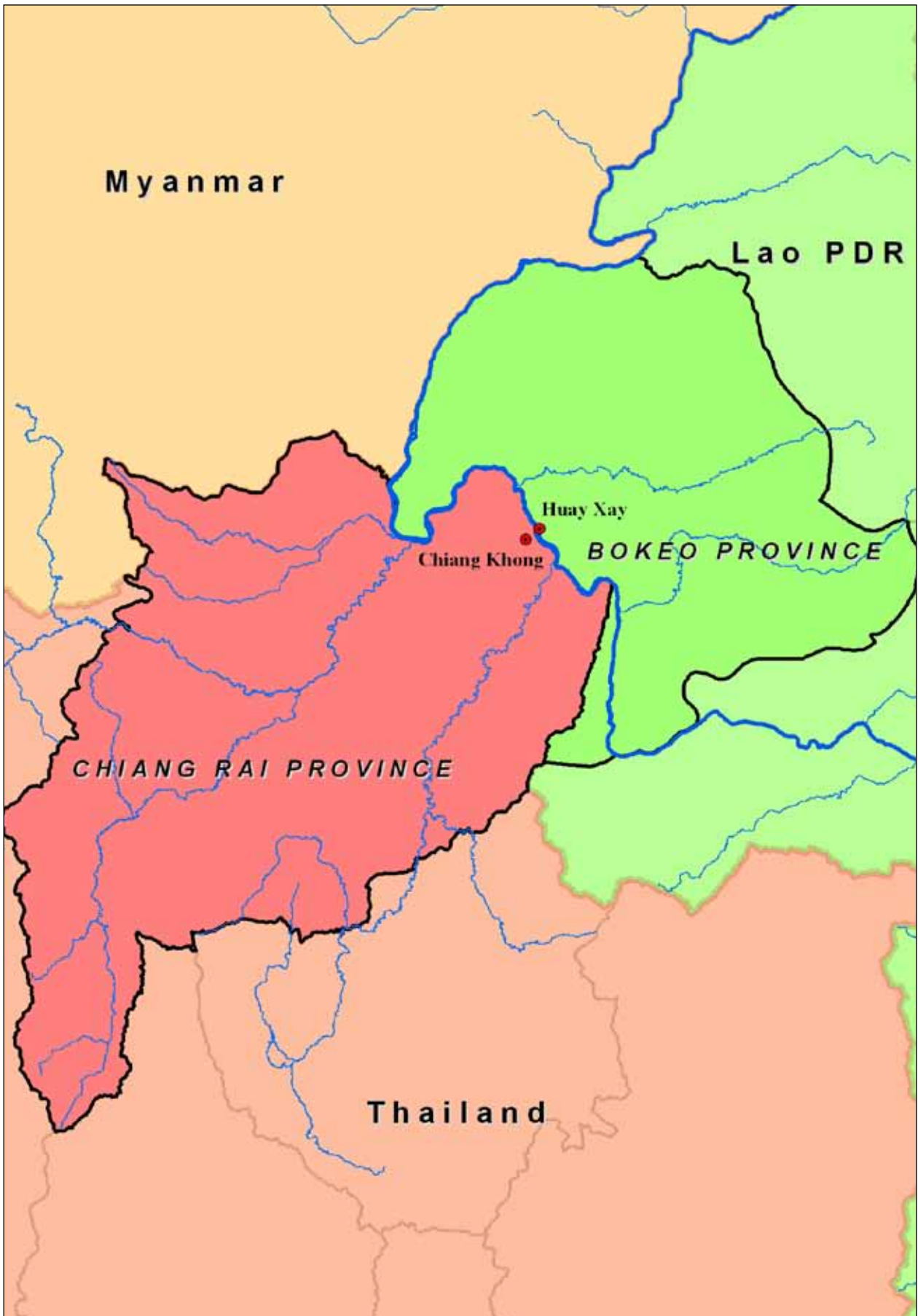
of fishing gear, changes in riverbank land use and socio-economic aspects of fishing households. The studies will also cover the impact of development on fisheries abundance and institutional arrangements for fisheries management. Knowledge and information gaps regarding the lack of a baseline will be used to develop a road map for trans-boundary management.

The cross-border initiative dates back to a learning event in 2008 under the Technical Advisory Body (TAB) on Fisheries Management, established by the MRC Fisheries Programme in 2000. At the time, stakeholders came together to visit several fisheries communities in Chiang Khong district and the Lao district of Huay Xay on the opposite side of the Mekong River. They also identified regional opportunities to improve trans-boundary management and apply tools, concepts and principles of cross-border cooperation.

Based on the discussions, several proposals were drafted and forwarded to national agencies for comments. In early 2010, Lao and Thai working groups discussed the idea in more detail, identifying priority themes and topics which were harmonised into the first draft of a project proposal. The first round of consultations was held in Chiang Khong in November last year and was followed by a second round held in Huay Xay in May this year before the final round in August.

The project development process has been actively supported by the two National Mekong Committees, fisheries line agencies at various levels and local authorities. The draft project document reflects in-depth discussions among stakeholders including local community representatives.

The new project coincides with a separate trans-boundary fisheries management initiative between neighbouring districts in the Cambodian province of Prey Veng and the Vietnamese province of Dong Thap (see *Catch and Culture*, Vol 18, No 2).



Golden Triangle region showing the northern Lao province of Bokeo and the Thai province of Chiang Rai

Cambodia, Viet Nam agree to details of cross-border fisheries project

Two-year project between Prey Veng province in Cambodia and Dong Thap province in Viet Nam coincides with separate project in Lao and Thai provinces

Cambodian and Vietnamese officials have agreed to details of a proposed cross-border project to improve fisheries management between Prey Veng province in Cambodia and Dong Thap province in Vietnam.

The agreement came during a two-day meeting in Siem Reap in October chaired by So Sophort, deputy secretary general of the Cambodian National Mekong Committee, and follows a recently-completed pilot project between the two provinces.

During the meeting, co-chaired by Vietnam National Mekong Committee senior official Ly Van Diem, the two sides agreed that the project would aim to contribute to better management and sustainable use of the shared fisheries resources.

“The project involves activities to harmonise fisheries rules and regulations and better protect resources from illegal fishing.”

Expected to start in early 2013 and last for two years, the project involves activities to harmonise fisheries rules and regulations and better protect resources from illegal fishing. Other activities aim to strengthen fisheries co-management institutions and promote complementary livelihoods.



Ms Kaing Khim, deputy director general of the Cambodian Fisheries Administration, with fellow delegates

PHOTO: LEM CHAMNAP



The workshop was chaired by Mr So Sophort, deputy secretary general of the Cambodian National Mekong Committee (centre), and co-chaired by Vietnam National Mekong Committee senior official Mr Ly Van Diem (left). Dr So Nam, coordinator of the Mekong River Commission Fisheries Programme (right), represented the MRC Secretariat.

PHOTO: LEM CHAMNAP

Cambodian and Vietnamese officials also agreed that the project would be overseen by a joint working group comprising seven members from each country including provincial, district and commune representatives.

The draft project proposal adopted at the meeting was to be sent to Cambodian and Vietnamese participants ahead of further consultations in December with the project being finalised by the end of the year.

Cambodia's delegation to the meeting in Siem Reap was led by Kaing Khim, deputy director general of the Fisheries Administration. The Vietnamese delegation was led by Nguyen Van Dung, chairman of the People's Committee in Hong Ngu district in Dong Thap province.

“The project proposal follows a pilot project involving two border communes”

The project proposal follows a pilot project involving two border communes in Hong Ngu

district in Dong Thap province and Koh Sampouv commune in Peam Chor district in Prey Veng province (see *Catch and Culture*, Vol 18, No 2).

Launched in 2011, the pilot project was overseen by the Fisheries Programme of the Mekong River Commission which organised the two-day meeting in Siem Reap. The Fisheries Programme is headed by Cambodian fisheries scientist Dr So Nam, the former director of the government's Inland Fisheries Research and Development Institute in Phnom Penh.

The Cambodian-Vietnamese project to improve cross-border fisheries management is being formulated at the same time as a separate project between the northern Lao province of Bokeo and Chiang Rai province in Thailand (see page 18). Both projects are being coordinated by the MRC Fisheries Programme's Management and Governance Specialist Dr Malasri Khumsri.



Mr Dung, chairman of the People's Committee in Hong Ngu district in Dong Thap province

PHOTO: LEM CHAMNAP

Lao, Cambodian authorities urged to take action to protect last six Lao dolphins

A conservation group warns that the sub-population of dolphins on the Cambodia-Lao border faces effective extinction in two decades. The following is a detailed summary of the current threats.

The Worldwide Fund for Nature (WWF) has appealed to Lao and Cambodian authorities to take urgent action to protect the six remaining Irrawaddy dolphins (*Orcaella brevirostris*) in Lao PDR which inhabit a deep pool in the Mekong River on the border with Cambodia. "The future for dolphins in Laos is bleak, though not hopeless," the conservation group concluded in a report released on September 27. "That both most of the threats occur on both sides of the Lao-Cambodia border makes it clear that both nations must respond with parallel actions and trans-boundary cooperation." Otherwise, it said, modelling indicates the population will be effectively extinct in 20 years.

Actions urgently required include an immediate Lao ban on gillnets from all parts of the pool throughout the year and a concerted effort to end illegal fishing and the use of explosives in the area. WWF also called for trans-boundary regulation of boat traffic and the cancellation of an infrastructure project in Cambodia. In addition, it stressed the need to secure funding to support conservation efforts at the site including effective enforcement of the recommended actions.

The report, by Gerard Ryan of WWF in Cambodia, notes that the dolphins are now critically endangered in the Mekong River. They once ranged from the Mekong Delta in Viet Nam to the Tonle Sap Lake in Cambodia and used to occur in the sub-basin of the Sekong River, which flows through Viet Nam, Lao PDR and Cambodia. The range of the dolphins extended to upstream from the Lao town of Kaleum, almost 300 kilometres from the Sekong's confluence with the Mekong in Cambodia and almost 200 kilometres north of the Cambodia-Lao border. They were also known from Xepian, Xenamboi and Xekhaman rivers, three Lao tributaries of the Sekong.



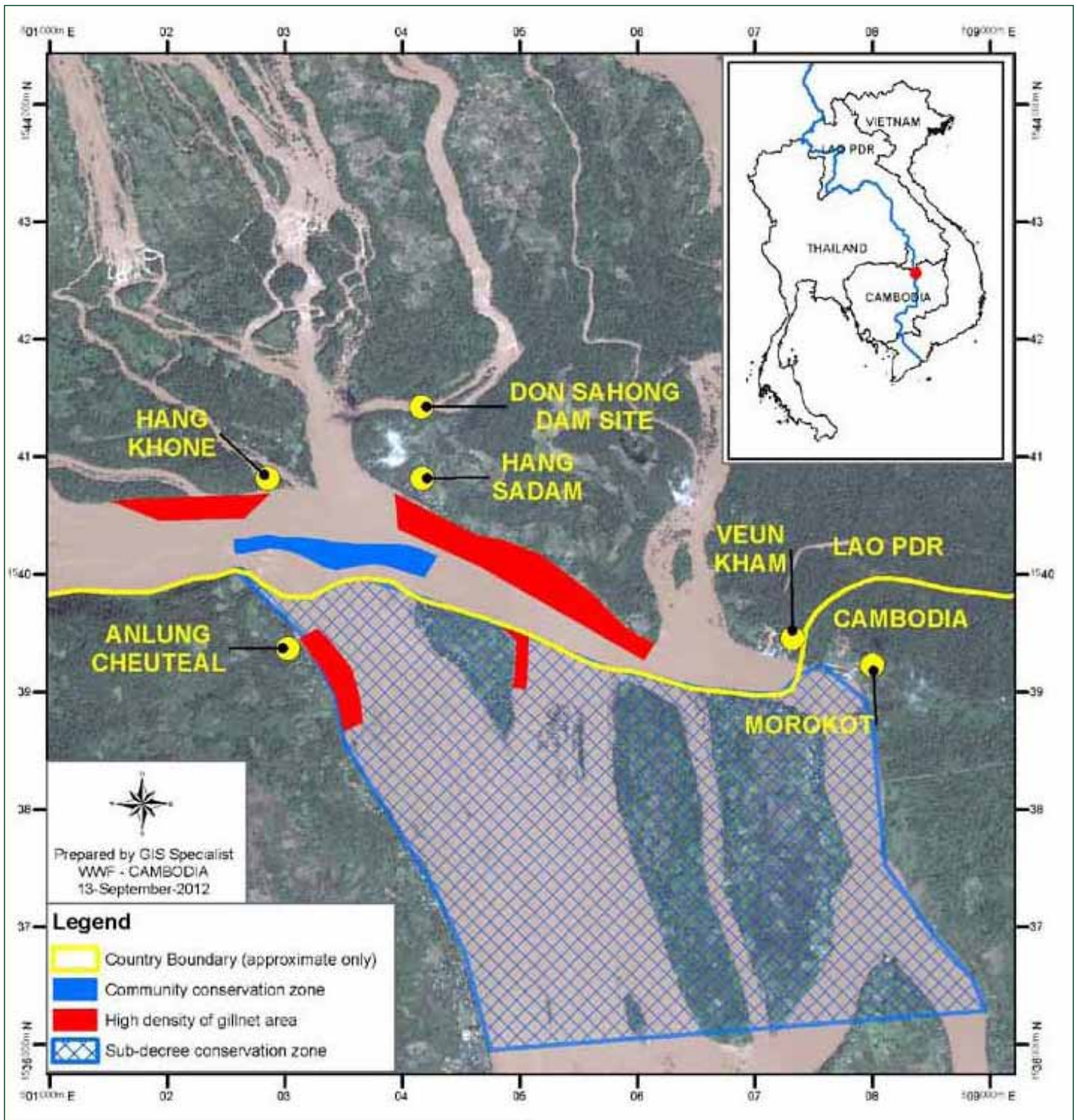
The WWF report released on September 27

PHOTO: WWF-CAMBODIA

Their range in Lao PDR is now confined to the deep pool area of about six square kilometres below the Khone Falls on the Cambodian border. The core of the trans-boundary pool is about one square kilometre and 40 metres deep. Although the species can traverse rapids, which are widespread further downstream, the six dolphins are believed to be an isolated sub-population separate from the second population of Irrawaddy dolphins in the Mekong River near Kratie in Cambodia.

Gillnets

In visits to the site between January and April



Trans-boundary area along the Mekong on the Cambodian-Lao border

MAP: WWF-CAMBODIA

this year, the report says observations counted more than 100 separate gillnets in and around the deep pool area and up to 188 on one occasion (see map above). Most were concentrated south of the Lao village of Hang Sadam, "where dense rows of nets were strung out in shallow water perpendicular to the shore." Higher densities were

also recorded in shallow areas west of the Lao village of Ban Hang Khone, and in shallow water in front of the Cambodian village at Anlung Cheuteal. Gillnets were also observed in other parts of the area on both sides of the border.

"The presence of gillnets in close proximity to



A dolphin is found dead, entangled in a gillnet

PHOTO: WWF-CAMBODIA

areas very regularly used by the trans-boundary dolphin group is a very grave concern," the report said, noting that such fishing gear is a well-known threat to small cetaceans worldwide. "Even if nets are not in the areas most often used by dolphins, it is almost certain that with so many nets animals will occasionally become entangled. With such a small population as this, the risk of entangling

dolphins is incompatible with the goal of them surviving in the pool for many years to come."

WWF noted that Cambodia had recently enacted laws that ban gillnet fishing in the entire pool and nearby areas on its side of the border. A small community conservation zone has been set up on the Lao side but is limited to the centre of the pool around the deepest areas most commonly used by dolphins. Despite attempts to instigate cooperative trans-boundary management, "there is little on the ground impact," the report said. "Enforcement is needed on both sides and over a larger part of the pool."

Destructive fishing practices

WWF also noted that destructive fishing with explosives, electro-fishing and fish poisoning were all reported to occur around Au Svay, just downstream of the trans-boundary pool in Cambodia, with the use of explosives reported to be particularly frequent. "Observations of unusually large numbers of freshly-dead fish floating in the pool itself in early 2012 gives credence to local reports that the use of explosives is also increasing in the surrounding area



Gillnets are the leading identified cause of mortality in the trans-boundary pool

PHOTO: WWF-CAMBODIA

Dolphin deaths over past two decades

Between 1991 and 1997, at least 26 dolphins died in and around the trans-boundary pool. "Gillnets were identified as the main source of mortality," the WWF report said. "However, many cases were also due to explosive fishing. Several animals were shot and died in fish traps." Between 2001 and 2008, eight dolphins either died around the pool or were recovered downstream. "Gillnets were recorded or implicated in three of the adult deaths," the report said. One was possibly hit by a boat and another was shot by a policeman.

upstream in Laos," it said. "Explosive fishing has already killed dolphins in the Mekong, and electro-fishing and poisoning have a high potential to do so."

"These destructive fishing practices are not only dangerous to the dolphins, unsustainable for fisheries, and extremely damaging to the local ecosystems, but they are a very serious danger to those who practice them—particularly the use of home-made explosives, which can explode in boats," the report said. "Several fishermen have died in the area this year using explosives. Efforts to control these dangerous practices are not only critical to dolphins, but are a humanitarian necessity requiring better education within local communities of the impacts and risks."

Navigation

Boats don't appear to be a major threat to dolphin survival by directly causing mortality. But WWF noted that boat traffic at the site is "significant and growing." While high-speed Cambodian boats between Stung Treng and the border could foreseeably hit dolphins, the large number of motorised Lao boats regularly traversing the pool is of greater concern. These are traditional narrow wooden boats with long-tail engines mainly used as fishing vessels, tourist boats and ferries on both sides of the border. While large French vessels boats navigated the waters in the late 19th and early 20th centuries, today's motorised-vessels are believed to have been used regularly in the area since only 1987.

Another concern is a shift from land-based to

boat-based dolphin-watching. Most tourists from Lao PDR used to be transported to a rock in the centre of the pool to view dolphins during the dry season. Now, however, "larger numbers of tourists remain in boats that often follow dolphin groups around the pool," the report said. In addition, kayak tours have recently begun, allowing paddlers to approach dolphins and easily harass them. If left unmanaged, kayaks could be a "significant additional source of disturbance to the dolphins," WWF said. Overall, the increasing numbers of tourists, growing boat traffic and unclear management of vessel movements through the pool is likely to be a "significant source of disturbance."

"The increasing numbers of tourists, growing boat traffic and unclear management of vessel movements through the pool is likely to be a 'significant source of disturbance'"

In such an environment, the report called for more "dolphin-friendly" tourism options from the riverbank at Anlung Cheuteal, the Cambodian island or the rocky islets near the centre of the pool in Laos. It also encouraged the use of canoes without engines. Simple yet consistent regulations on the movement and speed of vessels through the centre of the pool could be "very effective in reducing disturbance due to other non-tourist traffic."

Infrastructure

Proposed infrastructure projects also threaten the population including a large concrete pier structure proposed at Anlung Cheuteal in Cambodia which would be located over deep water often used by the dolphins. "Disturbance during construction, and increased boat traffic directly into a core micro-habitat of the population would be unjustifiably detrimental to the population," the report said. It also noted that the proposed Don Sahong dam site lies just upstream of the trans-boundary pool. "Of particular concern is the excavation of 2.3 million tonnes of rock from the Hou Sahong channel, directly adjoining the pool ... If the blasting associated with this excavation does not result directly in deaths or the dispersal of animals away from the area, ongoing noise disturbance from turbine operation almost certainly would."

Asia-Pacific regional consultation forum identifies major challenges to fisheries

For inland fisheries, six challenges emerge including the need for more effective valuation of the freshwater sector which is seen as a 'major contributor' to food security in the region

The Vietnamese Ministry of Agriculture and Rural Development and the United Nations Food and Agricultural Organization hosted the fourth regional consultative forum of the Asia-Pacific Fishery Commission in Danang in September. The three-day forum, which opened on September 17, brought together 73 participants from 16 countries as well as 12 regional partners including the Fisheries Programme of the Mekong River Commission. The focus was improving management and governance of both fisheries and aquaculture in the Asia-Pacific region.

The meeting, held ahead of the 32nd session of APFIC, concluded that both marine and inland fisheries were "typified by small-scale operations and high levels of participation" even though there were also large-scale fisheries in the region. "The complex combination of numbers of people and geographic range of activities necessarily means that fishery management is a challenge of managing human activity rather than managing fish," a statement said. "Tools for management using ecosystem approaches exist, but there remains a capacity and awareness gap in how to start practical fishery management at provincial and more local levels."

APFIC noted that aquaculture now produces more fish for food than capture fisheries in the region. Production has maintained a "strong



Delegates at the fourth regional consultative forum of the Asia-Pacific Fishery Commission in Danang in September

PHOTO: APFIC

growth trend" in recent years and the region is making "significant progress in improving sectoral performance" with increased implementation of the FAO's Code of Conduct for Responsible Fisheries. "Production growth and performance improvement varies across the countries and commodities," the statement said.

The forum heard that member countries were carrying out a wide range of activities and initiatives that respond directly to the FAO code of conduct. "The range and variety of the actions reflects the huge variety of national contexts, and the range of challenges facing members," the statement said. Among the 10 identified, six were of relevance to inland fisheries.

Livelihoods, science-based approaches

One of the challenges in both inland and marine waters is to sustain and improve the livelihoods of those engaged in small-scale fisheries, which represent 70 percent of fisheries labour and 87 percent of fishing vessels in the region. Another challenge is to take more science-based approaches to protected areas, habitat enhancement and seasonal closures. "Spatial and seasonal measures applied in fisheries should be assessed in terms of their fishery effects," the statement said, adding that science-based approaches were "strongly encouraged" for protected areas. "Science and local knowledge should be used to determine key habitats or areas that should be protected/closed."



Farms and inland fisheries for food security

The forum also highlighted the need to improve the planning and management of aquaculture for food security as well as for social and economic benefits. "Asian aquaculture continues to be a major growth sector and delivers directly to rural/domestic food security as well as export income," the statement said. It also called for a "regional vision for how to sustain the production and contribution (of) this sub-sector that addresses challenges of resource use, unplanned development as well as its considerable potential for providing food for the future." Improving the

valuation of inland fisheries is another challenge. "Inland fisheries are another major contributor to food security in the region, especially in rural areas," the statement said. "The effective valuation of their contributions is essential for informing policy regarding inland waters and the people who depend upon these resources."

Capacity building

At the same time, the regional consultative forum noted that capacity building remains a "significant regional need" with countries in the Asia-Pacific region being home to millions of fishers, millions of vessels, millions of aquaculture farmers and millions of farms. "Decentralised governance systems and the predominance of small-scale operators means that the administration and management of fisheries is a huge challenge to the region," the statement said. "There is a strong need to build the capacity of fishers, farmers and government institutions to effectively co-manage fisheries and aquaculture in the region, using ecosystem approaches to management."

Climate change

Yet another challenge is climate change and variability which are already having an impact on the fisheries sector, resulting in increased uncertainty in supplies from capture fisheries and aquaculture. "Much of the work and effort in better management of fisheries and aquaculture already directly contribute to resilience and mitigation of climate effects," the statement said. "As expected for a region as diverse as Asia and the Pacific, the focus and priorities of the countries vary according to the variety of issues that might affect them."

Established by the Food and Agriculture Organization as the Indo-Pacific Fisheries Council in 1948, APFIC is the region's oldest fisheries body. Its members are Australia, Bangladesh, Britain, Cambodia, China, France, India, Indonesia, Japan, South Korea, Malaysia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, Sri Lanka, Timor-Leste, Thailand, the United States of America and Viet Nam.



Cambodian recreational fisherman Chum Chanrong, a cook from a casino on the Vietnamese border, displays a 3.5 kilogram snakehead caught while fishing along the Mekong River downstream from Phnom Penh at the beginning of the dry season. "I've never caught such a big fish," said the 22-year-old native of Kien Svay district in Kandal province.

PHOTO: LEM CHAMNAP



**Office of the Secretariat in Vientiane (OSV),
Office of the Chief Executive Officer**

184 Fa Ngoum Road,
PO Box 6101, Vientiane, Lao PDR
Tel: (856-21) 263 263 Fax: (856-21) 263 264

Office of the Secretariat in Phnom Penh (OSP)

576 National Road #2, Chak Angre Krom,
PO Box 623, Phnom Penh, Cambodia
Tel: (855-23) 425 353 Fax: (855-23) 425 363