Sea Around Us

# Business as usual for tsunami-affected communities in Thailand?

***by Ratana Chuenpagdee[1]***

Thailand was one of several countries in Asia heavily hit by the tsunami of December 26, 2004. A disaster of this magnitude was a new experience to the country, which had until then been largely spared from major natural disasters and hazardous events. Compared to India, Indonesia and Sri Lanka, the tsunami damages on Thai coastal areas and coastal communities were small. Nonetheless, Thailand attracted exceptional media attention, largely due to the fact that about half of the lives taken by the tsunami were those of foreigners. Emergency responses, humanitarian aid and other immediate relief efforts were very effective and there were no disease outbreaks or health, water or sanitation problems. Temporary shelters were quickly built and children were well cared for. Help came from several directions including volunteer organizations, religious and student groups from all parts of Thailand, several major international organizations and from individuals who were able to donate money or volunteer their time. Responses from the Thai government were also rapid. An 'Ad-hoc Task Force on Tidal Wave Disaster' was formed to coordinate foreign and national assistance. It was not long before focus was shifted from emergency responses and recovery to rehabilitation and reconstruction.


Reports on the damages showed the death of 5,395 people, with between 100,000 to 120,000 people in 490 fishing villages affected, destruction of about 7,500 fishing boats, damages to 225 hectares of agricultural farm lands and death of 54,000 livestock. Scientists from several universities in Thailand also worked collaboratively in assessing damages to marine resources and ecosystems, such as coral reefs, seagrass, marine mammals and water quality. They found that the damages were generally less severe than anticipated. Physical alterations of land- and seascape were evident, however, with collapsed houses and damaged buildings, large areas with fallen trees and a widening of channels and bays. Cleaning up of debris was most intense in tourist hot spots, like in Patong Beach in Phuket Province (see map above). In other areas, like Khao Lak in Phangnga Province, a new tourist development, reconstruction faces challenges as many of the damaged properties were either newly opened or about to be opened for business, and there seemed to be some uncertainty whether or not to continue with the investment. While evidence of the damages can still be seen eight months after the disaster in many fishing

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*The Sea Around Us Project Newsletter*

*Issue 30 – July/August 2005*

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villages in Phangnga and Ranong Provinces, rehabilitation efforts are active, as seen in the numerous signs announcing permanent housing and boat replacement programs.

Visitors to these fishing villages today will witness rows of identical, small one or two-story houses, built on land often adjacent to mangrove forests, with a blue wall plate indicating the name of the donors. The only image that resembles the pre-tsunami period is the people working on their fishing gears near their houses (see Figure opposite). These new houses were built quickly by the Thai military with external funding channelled by the Thai government to the tsunami-affected people, who were basically offered either a house or a sum of cash as compensation. There was no consultation with the people about the kind of housing they preferred and some expressed discontent with the structure and design of the new houses, but accepted them in fear of not receiving the promised cash. However, the few who accepted the cash benefited more, since other independent volunteer groups arrived in the villages soon after and asked them what they needed. Soon, new houses were built for them, as the owners wanted them and on land bought with the cash received from the government. It is likely that the government-built houses are owned by the inhabitants, but it is less clear whether they own the land.

*The new boats, including about 400 trawlers, are generally larger in size than the ones they replaced*

Another striking image in these fishing villages is the number of beautiful wooden boats that are being built (see Figure opposite). Many aid organizations, including the Food and Agriculture Organization of the United Nations (FAO) supported boat replacement programs. After conducting the rapid need assessment, FAO allotted a sum of money to buy materials to build boats and fishing gears and to buy boat engines. The distribution of these materials was based largely on a list of tsunami-affected fishers compiled by the village heads and through consultation with government officials and FAO representatives. However, there were some challenges with this process (K. Juntarashote, pers. comm.). Firstly, it was difficult to verify whether those on the list were really those who were affected. Secondly, by the time the materials were ready to be delivered to the villages, many fishers had already received new boats from other sources and many fishers are now in possession of more than one boat. The new boats, including about 400 trawlers, are generally larger in size than the ones they replaced, just as predicted (see *Sea Around Us*, Issue 26, p1-2). Similar drawbacks affect the fishing rehabilitation and livelihood restoration programs funded by other agencies and donor organizations.

Lots of aid rapidly arrived in Thailand from around the world due to the accessibility of the tsunami-affected areas. The coordination of the aid and assistance was, however, neither sufficiently effective to meet the needs of the affected communities nor were direct inputs from the communities sought about their needs and preferences in the process. As a result, the post-tsunami situation in Thailand leaves one wondering whether people will be able to resume their livelihoods, despite numerous efforts such as a religious ceremony held one hundred days after the disaster to help people to move on. Although some tourists from Europe and Australia have started to come back to Phuket, those from China and Korea are still reluctant. It is thus difficult to gauge the overall impacts of the

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The ***Sea Around Us*** project newsletter is published by the Fisheries Centre at the University of British Columbia. Included with the Fisheries Centre's newsletter *FishBytes*, six issues of this newsletter are published annually. Subscriptions are free of charge.

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The *Sea Around Us* website may be found at saup.fisheries.ubc.ca and contains up-to-date information on the project.

**The *Sea Around Us* project is a Fisheries Centre partnership with the Pew Charitable Trusts of Philadelphia, USA.** The Trusts support nonprofit activities in the areas of culture, education, the environment, health and human services, public policy and religion. Based in Philadelphia, the Trusts make strategic investments to help organisations and citizens develop practical solutions to difficult problems. In 2000, with approximately $4.8 billion in assets, the Trusts committed over $235 million to 302 nonprofit organisations.

*Above: Fishers making traps in front of their new houses; Below: New wooden fishing boats.*

tsunami on the tourism industry and consequently on the socio-economics of the people. With fishing beginning again in the fishing communities after about six months of disruption, can one expect that business will be as usual? Given the increase in vessel size and number, fishing effort will increase. Furthermore, given the lack of knowledge about the impacts of the tsunami on the health of fisheries and marine ecosystems, there may be long-term changes to the resource. Questions such as sustainability and ecosystem health need to be raised. On another note, many residents of the fishing communities seem to have a new appreciation for the mangrove forests, after seeing that shabby huts built behind the forests were saved while the sturdy ones in the front were destroyed. Yet, the challenge is how to provide a balance between protection and uses of these coastal resources, given the current demands. Many of these questions remain unanswered and it requires mid-term and long-term research programs to provide information needed for sustainability of the coastal areas and for building resilience within coastal communities of Thailand.

At an international workshop hosted by the European Commission in Brussels on 25-26 May 2005, scientists and researchers involved in post-tsunami efforts put together recommendations for research programs related to human health, land use and socio-economic implications of the tsunami and other natural disasters. This is encouraging, as several long-term research programs will likely be initiated as a result. At the People and the Sea III Conference in Amsterdam, a special tsunami roundtable discussion was organized on 9 July 2005 to discuss the state of affairs, implications and research agenda. It was interesting to hear stories from Sri Lanka where concerns about the fisheries similar to those of Thailand were raised, in addition to the competition between tourism and fisheries in the reconstruction plan. Most striking, however, was the story about Indonesia where the rehabilitation and reconstruction process is much slower than in the other countries. Some of the people in Banda Aceh actually have a unique opportunity to 'custom-make' their new houses to their own liking. The story was remarkable and uplifting, despite the dire state they are in.

What lessons can be learned from these experiences? Surely, donations, aid and restoration efforts from international aid agencies, government and NGOs, private and public associations, scientific communities and individuals are to be strongly commended. Thailand rapidly recovered because of the generosity of the people around the world. Internally, Thai people need to recognise, however, that it is also their responsibility to help themselves. There is certainly sufficient local knowledge and scientific expertise that can contribute to enhancing our understanding about the roles of mangrove forests, for example, in mitigating the tsunami damages. In the understanding of 'social capital', which is the degree to which a community or society collaborates and cooperates (through such mechanisms as networks, shared trust, norms and values) to achieve mutual benefits[2], the capacity of local scientists also needs to be examined. As much as local communities should not be seen as simply waiting to receive external aid, local scientists need also to turn their expertise into knowledge and take an active role in setting research agendas and conducting research to deal with such events. By the same token, research projects initiated and funded by international agencies should directly involve and engage local experts in the exchange and sharing of knowledge to build overall research capacity at local and international levels.

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**Footnotes**

[1] Ratana Chuenpagdee (ratana.chuenpagdee@dal.ca) is an adjunct professor at the Fisheries Centre; senior research fellow at the International Ocean Institute – Canada, in Halifax; and co-director of Coastal Development Centre in Thailand. Together with Jackie Alder and Colette Wabnitz of SAUP, she is involved in a project that examines the roles of ecosystems and human systems in mitigating tsunami damage (See *FishBytes (Issue 11-4),* p1). The project is led by Dr Stephanie Chang of UBC, and Dr Phil Berke of University of North Carolina and is funded by the National Science Foundation. The opinions expressed in this article are based on the author 's personal observations. Alida Bundy and Daniel Pauly provided helpful comments on this article.

[2] See more definitions in Putnam (2000) 'Bowling Alone: The Collapse and Revival of American Community', Simon & Schuster Publishing.

# Mapping the global biomass of mesopelagic fishes

*by Vicky W.Y. Lam and Daniel Pauly*

*Mesopelagic fishes are generally not exploited by fisheries ... but are an important prey item to a number of species targeted by fisheries*

Mesopelagic fish, most belonging to the lanternfish family (Myctophidae) live, during daytime, at depths between 200m and 1000 m, performing a diel migration to between 200m and the water surface at night. They are largely quiescent during day, but feed actively at night, mostly on crustaceans (copepods, amphipods and euphausiids). Their oceanic distribution ranges from the Arctic to the Antarctic, but their annual production is highest in subtropical and tropical seas.

Mesopelagic fishes are generally not exploited by fisheries, owing to their extreme dispersion (about 1 g·m$^{-3}$), but are an important prey item to a number of species targeted by fisheries, as well as to marine mammals and seabirds. As such, they must be included in ecosystem models, which is why the *Sea Around Us* project includes them as a 'layer' in its coverage of the world ocean (see www.seaaroundus.org).

Gjøsaeter and Kawaguchi (1980; henceforth: G&K), who also reviewed the biology of mesopelagic fishes, are the only authors to have attempted to describe their distribution globally. Combining the surface areas covered with estimates of density (in g·m$^{-2}$), G&K estimated a global biomass of 945 million tonnes. This was done by summing up the biomass estimates (i.e., the products of density x surface area) from 15 Large FAO Areas, (Table 1), themselves composed of between 2 and 8 strata.
We noted, however, some obvious typographical errors, as well as small inconsistencies between different parts of G&K's report, which then prompted a verification of the entire work. We recomputed the surface area of each stratum, checked that they added up to the larger FAO area (using ArcGIS 9.0, a tool not available in 1980), and verified that the density estimates for each stratum were consistent with the text of G&K's report and with each other.

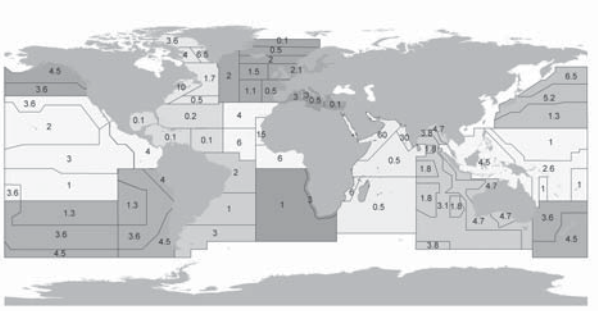

*Figure 1. Density of mesopelagic fishes (in g·m$^{-2}$) by strata of the world ocean. Shades of grey represent different FAO Areas.*

Table 1 summarizes the results by FAO Area. As can be seen, the sum of products calculated directly from the tables in G&K (which give densities and surface area for the different strata) for all 15 FAO Areas add to 797 million t (column **A** in Table 1), while the sum of the biomass for each FAO Area, mentioned in the text of G&K, is 945 million t (column **B**). Our revised estimate, finally, with all density estimates checked for internal consistency, and the surface area of all strata recomputed, is 999 million tonnes (column **C**) - very nearly one billion tonnes. The resulting map (Figure 1) can be downloaded from www.seaaroundus.org, as a graph and as a shapefile, under the WORLD OCEAN menu item. This is new, incidentally, and features those of our web products that are global in nature.

**Reference**

Gjøsaeter, J. and Kawaguchi, K. 1980. *A review of the world resources of mesopelagic fish*. FAO Fisheries Technical Paper, 193, 151 pp.

*Table 1. Biomass (in million t) estimated in various FAO Areas Columns **A**, **B**, and **C** are defined in the text).*

| FAO Area | A | B | C |
|---|---|---|---|
| Northwest Atlantic (21) | 14.9 | 14.8 | 22.0 |
| Northeast Atlantic (27) | 14.7 | 14.7 | 15.9 |
| Western Central Atlantic (31) | 1.9 | 19.4 | 2.3 |
| Eastern Central Atlantic (34) | 77.5 | 77.0 | 80.7 |
| Mediterranean Sea (37) | 2.5 | 2.5 | 3.0 |
| Southwest Atlantic (41) | 33.0 | 39.0 | 33.4 |
| Southeast Atlantic (47) | 17.8 | 18.0 | 20.4 |
| Western Indian Ocean (51) | 133.0 | 257.0 | 263.2 |
| Eastern Indian Ocean (57) | 92.9 | 94.0 | 02.3 |
| Northwest Pacific (61) | 48.6 | 49.0 | 52.5 |
| Northeast Pacific (67) | 26.8 | 27.0 | 27.8 |
| Western Central Pacific (71) | 51.3 | 52.0 | 85.4 |
| Eastern Central Pacific (77) | 129.0 | 129.0 | 35.0 |
| Southwest Pacific (81) | 101.0 | 01.0 | 99.9 |
| Southeast Pacific (87) | 52.1 | 51.0 | 54.9 |
| **Total** | **797.0** | **945.0** | **999.0** |

Publications Mail Agreement No: 41104508