

STREAM

Support to Regional Aquatic Resources Management

STREAM Journal

Learning and communicating about the livelihoods of fishers and farmers

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Note

As we were reviewing and discussing the six articles in *STREAM Journal 1(2)*, it became clear to us that each of the contributions in some way reflects what STREAM is working towards as it promotes learning and communication about the livelihoods of fishers and farmers: a farmer's story, organizational history, monitoring our work, documenting women's successes, aquaculture practices and accessing information.

The first article was written in Hindi by Ras Behari Baraik, then translated into English by Ashish Kumar who added his Department of Fisheries perspective. Terrence Clayton's contribution reminds us of the value of the histories of our organizations, and suggests ways that documentation can help us remember. In June 2002, STREAM colleagues experienced an exciting Process Monitoring and Significant Change Workshop which will result in an initiative-wide monitoring system. Nick Innes-Taylor, one of the workshop resource persons, wrote up his presentation as the third article. STREAM's partner in Nepal is the Agriculture Information and Communication Centre. In the next contribution, AICC's Chief, S K Pradhan, describes the impact that fish farmer groups have had on women's livelihoods. M E Azim and his colleagues then look at the socioeconomic impacts that may result from periphyton-based aquaculture. The final article by Paul Bulcock describes STREAM's Media Monitoring and Issue Tracking activity, encouraging readers to explore some of the Internet-based technologies which STREAM is trying out.

As this second number goes to press, Khmer and Vietnamese translations of *STREAM Journal 1(1)* are being prepared. The Communications Hub Managers will soon be holding their first e-meeting. They will discuss how to make the national language versions of the *STREAM Journal* a feature of the aquatic resources management communities in Cambodia and Vietnam.

We were thrilled to have feedback from our VSO colleagues that following the publication of the first *STREAM Journal*, Ronet Santos received requests for more information about Benjamin and VSO's methods. You'll recall that Benjamin's story was the first article in *STREAM Journal 1(1)*.

Happy reading!

Graham Haylor, STREAM Director
William Savage, STREAM Journal Editor

Efforts of a Farmer in Fish Seed Production for Self-Employment

Ras Behari Baraik and Ashish Kumar

The Situation

Jharkhand has recently been carved out of Bihar as a new “tribal” state of India. Its rural areas are full of hills, forests, reservoirs and ponds. With limited natural breeding grounds for major carps, quality fish seed has always been a problem for Jharkhand’s farmers. When natural seed production was higher in the Bihar rivers of Kosi, Sone and Ganga, farmers and the Department of Fisheries (DOF) used to procure seed from these rivers, and later in northern Bihar. Today natural seed has become scarce and people look to hatcheries in West Bengal. Millions of fish seed, fry and fingerlings are brought to Jharkhand through various means of transportation, and millions of rupees are taken back by the farmers of West Bengal. The Jharkhand DOF is establishing hatcheries and streamlining its farms, but the process needs to be more extensive to cover all the water areas of the state. At present, 45-50 percent of the water area remains unstocked because of non-availability of fish seed, financial constraints and the unawareness of farmers about the benefits of aquaculture.

Efforts of a Farmer

Ras Behari Baraik is a tribal farmer of Chhota Changru Village in Silli Block of Ranchi District in Jharkhand State. He was born in this village and lost his mother when he was just five years old. His father was so poor that feeding the children was a great problem for him. Often the family had to worry about what they would eat next. The situation of other farmers, all of whom were also tribal, was equally bad. They had sold their land to the rich people of the neighboring village and lived only on the petty work of roof-making or harvesting of crops in nearby villages. Since childhood, Ras Behari understood the situation and strongly felt that something had to be done to save his and fellow villagers’ families from dying from hunger. As Silli is adjacent to West Bengal State, from where vendors used to bring fish seed for sale in Bihar, it attracted his father, Moti Lal Baraik, to try procuring seed from Purulia and Jhalda Districts of West Bengal, and selling them to pond owners in Silli Block. He started this business and as Ras Behari grew up, he started helping his father. In the course of time, he also visited the farmers of Purulia where seed are grown, and then went to Howrah and Lilua where there are hatcheries. It forced him to think about whether he could try to grow spawn to fry, if not breed fish.

The Beginning

Ras Behari started growing fish seed by visiting places like Bankura and Lilua where he took initial training from Shyamal Biswas who was already in this business. It was clear to him that he could grow spawn to fingerlings in his village, and sell them to nearby pond owners. But the problem was ponds.

Government Support

The Fish Farmers Development Agency (FFDA) in Ranchi, the Jharkhand capital, solved this problem by settling (leasing) one of the ponds in Chhota Changru for ten years in the name of Ras Behari’s father. Both father and son started the work and brought seed from Bankura in West Bengal. They grew them to fingerling stage and sold to the farmers who visited their pond. Ras Behari’s seed grew well in the farmer’s ponds and he became popular in the area. This prompted him to try two crops the next year and he started taking help from his fellow villagers and paying them wages, which prevented them from having to go to other places in search of work. After some years, the FFDA settled another village pond with Ras Behari for ten years and two nursery ponds were excavated for him on his own land by the DOF. He was also given first year inputs like spawn, nets and feed.



Ras Behari Baraik (left) and Ashish Kumar (center) with village men and boys at one of the settled ponds in Chhota Changru Village

The Present Situation

Today Ras Behari has a small truck with two containers to transport seed to far-off places, not only in Jharkhand but also to Chhattisgarh State. He employs 50-60 villagers during the seed production season for the jobs of netting, feeding, transportation and security. He himself earns 75,000-100,000 rupees in a year after meeting all his expenses. He also leases ponds from private owners in West Bengal, stocks them with seed from his own ponds and shares the profit with the pond owners. He has sent his son to Ranchi for college study. Because of his efforts, the villagers are getting square meals and they never think of what will happen tomorrow. Ras Behari is the hero of the village.

His Future Plans

Ras Behari is not satisfied yet. He plans to construct a hatchery where he can himself produce spawn and can cover a large area. He has the confidence to tackle any farm of any size.

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Remembering: The Missing Capacity

Terrence Clayton

Organizational Questions

If you work for an organization now, or have worked for one before, think about it. How did it begin? What was the original vision? What are the milestone events in its history? How many people have worked for or with your organization since it started? Where are those people today?

Over the past few years, I have worked with many different organizations and have been surprised at how few have the capacity to remember their past beyond the last year or two. Why does this happen and why should it be so important?

History as a Resource

Think of your organizational history as an untapped resource. Keeping track of the people who have worked with your organization is your network of friends and allies. Sending them your newsletter or a New Year's greeting are mechanisms that keep your mailing list up to date and helps those people remember you. I know a government officer who attended a river ecology workshop ten years ago. He still gets the institute's newsletter. He's impressed that they continue to remember him and if they ever need a friend in the region, you can be sure he will be there to help.

In the process of helping one organization with its records management, I discovered that the country they work in once had a National Environment Committee. The people who were junior officers then are Director-Generals and Vice-Ministers now. Unfortunately, no one in this organization remembers any such committee or the connection they once had with these well-placed people. Universities have alumni associations – why not development organizations?

Documents and Stacks

Only a few of the organizations I have worked with take good care of their documents. Most have a simple filing system of some sort but I have yet to work with an organization that has a systematic records management policy that gives people clear directions on what to do with any document that comes across their desk: where to file it, how long to keep it in the active files, what to do with it after one year, two years, ten years. This is especially important if your organization has a high staff turnover or uses short-term consultants. Every time a staff member or consultant leaves a job, they tend to leave behind stacks of books and papers. Without a good records management system, the next person just pushes them out of the way. I have seen stacks like this a meter high, usually next to a row of half-empty filing cabinets. You can't throw the whole stack out without sorting through every item because you don't know what might be in there.

The Whole Story

Every activity an organization undertakes has a history. Perhaps several different people or groups of people have worked on this activity over time. Consultants were hired to advise, outside agencies were contacted, letters and emails exchanged, MOUs drafted and signed. Along the way, problems were encountered, then overcome. How many organizations could quickly call up a record of all that activity? Why would they want to? Because people will feel more confident going into situations when they know "the whole story".

It was my task on one assignment to help organize a series of national and regional workshops for a team of consultants formulating guidelines that could be adopted by four countries. Early in the process, someone wondered if anything like this had been done before. Fortunately, this organization does have a good document center and we were able to quickly write up a project history that went back to 1982. People were amazed that so much past effort had gone into this project. It added a whole new dimension to the project by giving it a historical context and it raised useful questions.

Is it possible that organizations would get more “value for money” from their consultants if they provided histories like this before the consultants arrived? Would people get more satisfaction from their work if they felt they were contributing to something with a history rather than just a two or three month input?

Organizational Forgetfulness

Organizations forget and things go missing because the capacity to remember is seldom shared widely. Every organization has its “old hand” who can remember everything and has boxes full of old documents and photographs. All you have to do is ask. That works as long as that person is with you and they are willing to share the information. I worked with one organization that has a headquarters staff of over 100, only five of whom have been with the organization longer than seven years. Hardly anyone else in the organization knows who those five are. A lot of time and effort is spent by “new” people rediscovering the past when so much of it is just across the corridor.

A professional records management system is the basis for developing organizational memory. If you don't know where to start, just type “records management” into an Internet search engine and stand back while the information pours in. Do not start with computer software and do not start before you have done a proper systems analysis of your needs. And remember, no matter what state your records may be in today, it's never too late to start.

A Living Organizational History

Keeping your documents in good order is a necessary beginning but it will take more than this to create a sense of “living history” in your organization. A good photo collection is essential. You must establish the habit for everyone in your organization to record the basic “who, what, where, when and why” details for the pictures they take. Without this information, even the most beautifully composed or important photographs are useless for publication or display.

Photographs are not much use if they are not displayed. Organizations I work with have bulletin boards with snapshots of recent events, but I have yet to see a good permanent display that portrays a history of the organization itself. Imagine the impact that would have on people walking into your offices for the first time.

Start writing your organizational history. With the help of the public relations officer, I managed to capture 50 years of an organization's history in three pages of text. The “outputs” (a website section and a three-panel theme brochure) are valuable communication tools in themselves, but the process of telling the story was equally important. It helped us identify a list of milestone events, a collection of key historical documents and photographs, significant gaps in documentation and themes for a series of exhibits.

Most of us are so busy keeping up with day-to-day events and planning the future that we have no time to keep track of the past. This is unfortunate because an organization that cannot remember its past has a poor foundation on which to build its future. With a few simple systems and some slight changes in procedures, most organizations could take better advantage of the enormous resource of their organizational history.

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Measuring the Process

Nick Innes-Taylor

This article highlights the importance of measuring the process of development. It provides some guidance on how process monitoring can be linked with participatory development. Measuring the *process* of development not only helps development organizations measure their success, but also helps them learn and improve their effectiveness. Process monitoring can also play a central role in encouraging and facilitating stakeholder participation.

From Monitoring and Evaluation to Process Monitoring

Monitoring and evaluation (M&E) of development initiatives has received increasing attention in recent years, as it has been realized that it is productive to have an effective M&E system. Development initiatives often deal with complex issues of social, cultural and political change. Considerable advances have recently been made in how to quantify and measure development progress. In particular, the growing acceptance of participatory methods means that development beneficiaries are now much more likely to be part of M&E processes. While such advances are seen as positive, there has also emerged a desire to develop M&E systems that simplify the complex nature of development (often characterized by confusing and less-than-transparent processes), and focus on measuring impact. Development impact is seen as the “bottom-line” and while the desire to measure this is understandable, there are drawbacks to this simplified approach. By just looking at the “end” of a development process, it is difficult to assess issues of relevance, efficiency and effectiveness.

One problem is that hard data on developmental impact are often difficult and costly to collect. Data on changes in beneficiaries’ social, cultural and political environment, or on changes in the natural environment, are usually difficult to obtain and interpret. The collection and analysis of such data often cannot be justified by the relatively large investment of financial and human resources required. Focusing a development organization’s M&E system at the end of a development process means that other steps receive little attention. For organizations seeking to promote *sustainable* change, this is problematic, as it is mainly through monitoring the entire development process that organizations and individuals learn how to adapt to change.

A further problem with focusing M&E systems at the end of the development process is that it overemphasizes the important of *what* has been done and diminishes the importance of *how* it has been accomplished. This is unfortunate, as more attention on *how* development is done would almost certainly result in more substantial achievements, especially in efforts to assist poorer members of society. The *how* and *what* of development are equally important and M&E systems should be developed that measure the whole development process. Process monitoring provides information not just on development impact but also on the relevance of the intervention and the efficiency and effectiveness with which development processes are undertaken.

Advantages: Participation, Flexibility, Accountability and Transparency

While the advantages of process monitoring are relatively clear, measuring the process of development in practice has yet to be widely accepted and adopted. Many people see the process of development as something that is established, and should be standardized and prescribed in advance of implementation: the more detailed the prescription, the greater the likelihood of success. In this context, monitoring the process of development has little value except to check whether a “recipe” is being followed correctly. Development practitioners charged with following such recipes (e.g., PIPs – Project Implementation Plans), understandably see process monitoring as just another name for what they are already doing.

The advantages of the process monitoring approach only become clear when development implementation is participatory and flexible, and not prescribed in advance by a donor (or their representative), and when objectives, plans and methodologies are regularly reviewed by stakeholders. When the responsibility for implementation is more clearly placed at the level of local

communities, monitoring the processes for implementing development activities can be a highly cost-effective and informative approach.

Local communities and government staff find the development of process indicators relatively easy. Local managers develop accountability and implement in a “transparent” way. Understanding more about *how* things are done promotes the development of trusting relationships that lead to increased delegation of authority. Without transparency, development organizations are reluctant to delegate management responsibility to local levels, which limits stakeholder participation. Measuring the process can therefore be seen to support effective participatory development.

Lessons Learned

Here are some lessons learned from experiences of assisting provincial and district government institutions in the region to establish process-orientated monitoring and evaluation systems:

Build on Existing Monitoring Systems

- For process monitoring systems to work effectively, they require local ownership and participation. In most cases, there are established ways of measuring development, but the systems and their indicators may be informal and undocumented. It is important to understand these systems and develop new systems from them, which provide institutions with new ways of delegating authority and increasing stakeholder participation.

Educate Stakeholders about the Monitoring System

- As many stakeholders as possible should understand the monitoring system in which they participate. This will improve the effectiveness of the system and help to create a common understanding of indicators and objectives.
- Spend time and effort to explain process indicators to stakeholders. Measuring the process is not easy to understand if you have been trained or conditioned to think only in terms of impact indicators.

Indicators Need a System for Regular Revision and Review

- Indicators need regular revision; a clear system of indicator review is required for this to work effectively. Delegate responsibility for indicator management (e.g., scheduling indicator review or data summary and presentation) and indicator reporting. Develop a system for recording and retrieving indicator statements, data and reports.
- Indicator statements should be formally recorded and regularly reviewed. All indicator statements require detailed description of quantity, quality and timing, and special attention should be paid to developing good “quality” statements.
- Build capacity to develop indicators as you develop the monitoring system.

Go for More Monitoring and Less Evaluation

- Develop a process monitoring system that encourages a continuous process of internal review and evaluation. Find ways in which evaluators can easily “plug-into” this system. Although formal evaluations are often necessary, they tend to scare people.

Measure the “Little Things”

- Good process indicators are simple and inexpensive to measure. When developing indicators of process, encourage people to identify the “little things” in their working life that are easy to measure, yet clearly show whether a development initiative is working as expected. These can be about impact as well as other stages in the process.

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Women's Fish Farmers Group in Nawalparasi, Nepal

S K Pradhan

Group Formation

Since His Majesty's Government of Nepal adopted group approaches in agriculture extension in 1991, many farmers groups have been formed in different districts. Among the groups, some are formed on the basis of the commodity they produce; others are formed as women's, men's and mixed farmer groups.

In Nawalparasi District, women's groups were formed to do aquaculture in the 202 community ponds and nine swamp-lands (*ghole*). The District Agriculture Development Office (DADO) started the first women's fish farmers group in 1995 under fisheries extension activities for income generation. With seven groups by 1997, their initial success encouraged the formation of other groups, which now number over thirty with a membership of 600 women – one woman per family.

Group Objectives and Activities

The objectives of the women's fish farmer groups are to:

- Empower women farmers
- Make the best utilization of human and local resources
- Bring socioeconomic change to poor, landless, rural women farmers
- Increase the production of fish from their community ponds
- Train women farmers in modern fish farming, and
- Raise the nutritional status of farm families by making fresh fish available locally.

Activities carried out by the groups include:

- "Modern" fish culture practices in community ponds
- Leasing of ponds to women's groups from local governments (District Development Committee, Village Development Committee, Municipality)
- Savings, credit and loans among group members
- Monthly meetings to solve problems, and
- Social work such as helping local clubs, schools and marriage ceremonies.

Support Programs for Groups

From July 1997 to March 1999, FAO funded aquaculture development for Nawalparasi women's groups under the Special Program on Food Production in Support of Food Security in Nepal Project (SPIN-SPFP/NEP 4501). Under the project, fisheries extension workers helped form new women's groups to initiate modern fish farming in their community ponds. They conducted on-the-spot technical training, especially on fish culture practices and integrated fish farming. They also organized study tours for women to visit government and private fish farms. In the project's first year, inputs such as fish fingerlings, feed, fertilizer and lime were provided to the groups. From 5,000-8,000 Nepali rupees (NRs) were allocated to 13 women's groups for pond renovation and logistical support like drag-nets, bicycles, weighing scales, plastic buckets and mugs.

The FAO/Women Farmers Development Division of the Ministry of Agriculture and Co-operatives implemented an income generation project under the FAO/Tele Food Project with the Janajyoti Fish Farmers Group at Manjharua. Under this project, Nawalparasi established a fish-drying plant with technical support from the Central Food Lab in Kathmandu and DADO. Since completion in late 1999, production of dried fish began in January 2000 and the project was handed over to the women's groups in April 2000.

Impact

Opportunities for Progress

Fish culture is proving to be a valuable means for women's empowerment and community development in poor rural areas of Nawalparasi District. Technical training and funds provided to women's groups, combined with their labor, initiative and limited resources, have allowed them to raise nutritional status in their communities. In addition, the income generated from their fish farming activities is recycled into their communities through new projects and loans to group members. Of equal importance, doors are being opened for the further progress of women farmers. They are learning new skills, being exposed to different ideas and experiencing a world that many have never known.

Women's Contributions

The women's activities have brought a visible change in the social and economic conditions of the fish farmer group members. Women are starting to show their strong leadership and are able to deal with various government and non-governmental organizations, thus benefiting the group. Women are becoming recognized and respected leaders in their villages. With over 600 members in 27 villages, and numbers still growing, these



women's groups have tremendous potential to make meaningful, long-lasting contributions to their communities, families and most importantly themselves.

Livelihoods and Nutrition

The groups are becoming economically sound with increasing savings from income generated by fish farming activities. The groups are able to invest further in fish farming and are providing loans to members. In 1998, 12 women's groups produced 1.7 metric tons (mt) of fresh fish and earned NRs 105,500. In early 2000, total fish production from 28 women's groups was 6.7 mt on an area of 6.7 ha, with earnings of NRs 401,405. In the first year, a fish-drying plant produced and sold 115 kg of dried fish, bringing in NRs 57,500 at a rate of NRs 500/kg. Group members' and their families nutritional status has also increased through consumption of the fish they produce. Fresh fish is easily available to villagers for domestic consumption.

Using Knowledge

Group members' knowledge about fish farming has improved through on-the-spot training and study tours. Groups also conduct literacy classes for members, to help them enter the world of farming based on written knowledge. Women farmers are sending their children to boarding school for better education. They have been trained in "modern" fish farming practices. More fish will be produced locally by women in coming days. Village community ponds have been well utilized. Women farmers are now being encouraged to practice integrated fish farming. DADO Nawalparasi is providing continuous technical support for these women's groups for their long-term sustainability to ensure local food security.

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Periphyton-based Aquaculture: A Sustainable Technology for Resource-Poor Farmers

M E Azim, M A Wahab, M C J Verdegem, A A van Dam and M C M Beveridge

Background

Rural aquaculture can make significant contributions to the alleviation of poverty, through small-scale household farming for consumption and income and by providing employment. Although fish production can be increased with supplemental feeding, many farmers cannot afford this. Fed aquaculture systems are also inefficient: only about 15-30% of nutrient input is converted into harvestable products (Acosta-Nassar et al., 1994; Gross et al., 2000). Periphyton-based aquaculture might be an alternative to the use of supplemental feed and may help improve the conversion of nutrients. Periphyton are tiny plants that can be grown on locally-available artificial substrates which are added to fish ponds, such as tree branches, higher aquatic plants, bamboo, bamboo branches, jute sticks and sugarcane bagasse. Fish can graze on these concentrated food items more efficiently than filter feeding only on planktonic food (Dempster et al., 1993). Here we report some results of periphyton trials conducted at Bangladesh Agricultural University, Mymensingh, funded by the European Commission.

Effect of Substrates on Fish Production

To determine the effect of periphyton on fish production, five ponds with bamboo poles and five control ponds without substrate were fertilized every two weeks with semi-decomposed cow dung, urea and triple superphosphate (TSP) at 4,500, 150 and 150 kg/ha respectively. Lengths of bamboo were inserted vertically into the pond bottom (9/m²), resulting in additional surface area approximately equal to the pond surface area. Juveniles of native major carp rohu (*Labeo rohita*) were stocked at a density of 10,000/ha. Net fish yield was 77% greater in substrate than in control ponds. When another carp, catla (*Catla catla*), was stocked together with rohu in the periphyton ponds, yields were even higher. The best stocking ratio was 60% rohu and 40% catla, and resulted in yields that were 180% higher than in ponds without substrate. Adding a third species, kalbaush (*Labeo calbasu*), to the optimum mix of catla and rohu, further increased total production by 40%. The combined yield from the polyculture of three species (rohu:catla:kalbaush = 60:40:15) with periphyton was 2,306 kg/ha in 90 days, which is 2.7 times the average annual fish production of 2,550 kg/ha in Bangladesh (FRSS, 2001). Although this figure may not be realized under field conditions, it demonstrates the considerable potential offered by the technology.



*Experimental pond site at Bangladesh
Agricultural University, Mymensingh*

Note: If readers are interested in obtaining materials referenced in STREAM Journal articles, they are encouraged to contact the authors or the Editor.

Mechanisms of Increasing Fish Production in Periphyton Systems

Periphyton serves as an additional food source without reducing the production of other natural food in the system. Pond productivity can be doubled by placing substrates equivalent to 100% of the pond surface area. Substrates also provide shelter and protection from predators. The nutritional quality of the periphyton was found to be high (ash 15-19%, protein 23-26%, energy 19-20 kJ/g, on a dry-matter basis). Water quality was improved in the periphyton systems, which trap suspended solids, enhance nitrification and produce oxygen. There is also evidence that ingested periphyton can act as an antibiotic or a vaccine (Azad et al., 1999). Since rohu fish ate periphyton and catla ate plankton from the upper part of the water column, there was little competition for food in the pond. Because the phytoplankton was grazed, more sunlight penetrated into the water column which further enhanced both phytoplankton and periphyton production. The bottom-stirring activities of kalbaush stimulated the release of nutrients from the bottom to the water column.

Socioeconomic Impacts

Partial harvesting of fish from ponds installed with substrates is impractical and may interfere with regular household fish consumption. Nevertheless, substrate-based aquaculture might be feasible and sustainable in South Asia because it is technically simple and makes use of local materials and labor. Since poor households have limited access to resources, the optimal use of substrates and inputs in ponds is essential. Consideration of the economics of the technology is necessary before suggesting it for resource-poor farmers, especially when such large quantities of fertilizers, urea and superphosphate are used. A strength of the system is that it is not a fixed technology, but rather a flexible package that can be adapted to the needs, capacity and resources of users.

Apart from benefiting poor people, production increases may also be of interest for commercial application. The consequences of large-scale adoption of this technology should be considered. A greater demand for substrate materials may lead to price increases and there may be increased employment opportunities in producing and supplying them. Some agricultural by-products may gain importance as resources for periphyton-based aquaculture. An example is jute sticks, the by-product of jute fiber. Once called "the golden fiber of Bangladesh", jute fiber lost the battle with synthetic fibers two decades ago. If the use of jute stick as a periphyton substrate were economically viable in aquaculture, the "golden fiber" could become important again.

References

- Acosta-Nassar, M V, Morell, J M and Corredor, J E 1994 The nitrogen budget of a tropical semi-intensive fresh water fish culture pond. *Journal of the World Aquaculture Society* 25(2), 261-270.
- Azad, I S, Shankar, K M, Mohan, C V and Kalita, B 1999 Biofilm vaccine of *Aeromonas hydrophila*: standardization of dose and duration for oral vaccination of carps. *Fish Shellfish Immunology* 9, 519-528.
- Dempster, P W, Beveridge, M C M and Baird, D J 1993 Herbivory in tilapia *Oreochromis niloticus*: a comparison of feeding rates on phytoplankton and periphyton. *Journal of Fish Biology* 43, 385-392.
- FRSS 2001 Fisheries Resources Information of Bangladesh 1999-2000. Dhaka, Bangladesh: Department of Fisheries, Ministry of Fisheries and Livestock.
- Gross, A, Boyd, C E and Wood, C W 2000 Nitrogen transformations and balance in channel catfish ponds. *Aquaculture Engineering* 24, 1-14.

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Unlocking Information on the Internet: STREAM Media Monitoring and Issue Tracking

Paul Bulcock

The Internet and Aquatic Resources Management Issues

The Internet contains a wealth of printed and digital information on many topics including aquatic resources management. As described in the previous *STREAM Journal* number, “[t]he art of ‘putting knowledge into the hands of users’ is rapidly advancing” due to the advent and uptake of new information and communications technologies (Raab and Woods, 2002). For some, the various sites on the ever-growing Internet, combined with CD-ROMs and an extensive range of digital databases, are important knowledge-gathering tools. However, many have limited access to the Internet and the large amount of available information makes it difficult and time-consuming to locate, sort and digest issues of direct concern and relevance to users.

One of the STREAM Initiative’s activities is therefore to gather, review and extend information to its stakeholders through facilitated learning and communications channels. A process called *media monitoring and issue tracking* has been started, with an objective to follow issues in newspapers and journals and report them widely to local audiences. STREAM aims to make available short, clear reports about people, aquaculture and fisheries, many of which can be translated at STREAM’s National Communications Hubs.

Key Areas

Using digital databases, from week to week STREAM will monitor worldwide media sources such as newspapers and magazines to track issues like the ones shown in the box.

STREAM will produce a monthly report to provide a comprehensive, up-to-date review of issues of potential interest to stakeholders. This report will be available in a downloadable format on the STREAM Website and as a shorter e-mail bulletin. A printed copy will be available from Communication Hubs for people who tell us that they want to receive it.

Occasionally, special reports will be produced on issues that are receiving attention in the media.

All the reports will be kept in archives on the STREAM Website. STREAM partners who need information can make requests to National Communications Hubs or to the STREAM Regional Office and receive summaries related to their interests. In many cases these can be provided in local languages.

Key areas for media monitoring and issue tracking

- Aquaculture and development
- Coastal communities
- Conferences
- Conflict and unrest
- Gender
- Health and nutrition
- Legislation
- Livelihoods
- Marketing and branding
- Markets
- Mountain aquaculture
- Poverty and aquatic resources
- Poverty and fisheries
- Regional cooperation
- Trade barriers

Examples of Current Issues

The media monitoring process has turned up thousands of short articles which are currently available from STREAM; about 100 have so far been made available through media monitoring reports. These two excerpts are examples taken from the June 2002 Media Monitoring report:

EU Aid Package for Cambodia

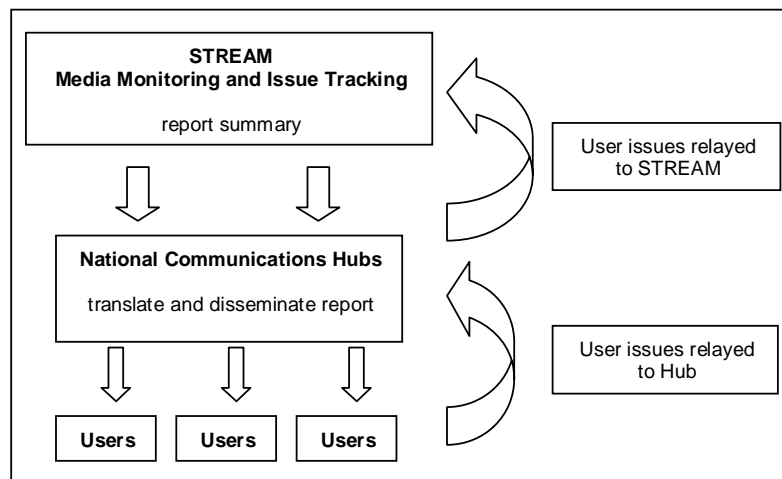
The European Commission (EU) recently announced a new three-year development aid package for rural Cambodia worth 68.7 million euros (almost 62 million dollars). The project focuses on livestock and fish rearing, water management and crop diversification, vocational training and mine clearance.

Vietnam and US Catfish Production

The ongoing trade dispute between Vietnam and US catfish producers continues to dominate aquaculture and fisheries legislation headlines. US importers of catfish from Asian countries will not be able to refer to the products (mainly basa, pangas and bocourti) as “catfish” after approval of the Farm Security and Rural Investment Act 2002. The new definition restricts the use of the label “catfish” to channel catfish raised on southeastern US fish farms. This forces the Vietnamese fish, which closely resemble the US catfish, to be called a different name – possibly basa – and is viewed by many as a trade protection policy expected to hurt Vietnamese catfish farmers.

Internet Access

Because many STREAM stakeholders do not have immediate access to Internet facilities, the STREAM National Communications Hubs will help partners at provincial level and beyond participate in the information-sharing process. Requests for information on issues that affect people can be directed to STREAM and searches of collected reports will be conducted on partners’ behalf (Figure).



Information-sharing – STREAM, Hubs and Users

Use and Feedback is Crucial

However comprehensive STREAM’s media monitoring and issue tracking process may become, its effectiveness will depend on the use and feedback of individual and institutional partners and users. STREAM partners interested in registering for the monthly reports, e-mail bulletins and special reports, or specific topics of their own, can forward their contact information to STREAM as described below. Additionally, if readers have comments on the preliminary list of key areas in the box, suggestions for other key areas, or ideas for particular issues for the special reports, they should contact STREAM.

Reference

Raab, R T and Woods, J 2002 e-learning to Support Knowledge Sharing in Aquatic Resources. *STREAM Journal* 1(1), 3-4.

Paul Bulcock is a Research Assistant with STREAM. He can be reached at <paul.bulcock@enaca.org>.

For more information, and to register as a subscriber of STREAM’s Media Monitoring and Issue Tracking, contact Paul Bulcock, have a look at <http://www.streaminitiative.org/newvirtual/MediaMonitor.html> or ask your National Communications Hub Manager to help you.

About the STREAM Journal

Published by STREAM – Support to Regional Aquatic Resources Management

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Purpose

The *STREAM Journal* is published quarterly to promote participation, communication and policies that support the livelihoods of poor aquatic resources users in Asia-Pacific, and to build links within the aquatic resources management and other sectors across the region. The *STREAM Journal* covers issues related to people whose livelihoods involve aquatic resources management, especially people with limited resources, and government, non-governmental and international practitioners who work with them in communities. Such issues include learning, conflict management, information and communication technologies, aquatic resources management, legislation, livelihoods, gender, participation, stakeholders, policy and communications.

Another equally important purpose of the *STREAM Journal* is to provide an opportunity for seldom-raised voices to be heard and represented in a professional publication that is practical yet somewhat academic. The contents of the *STREAM Journal* should not be taken as reflecting the views of any particular organization or agency, but as statements by individuals based on their own experience. While authors are responsible for the contents of their articles, STREAM recognizes and takes responsibility for any editorial bias and oversights.

Distribution

The STREAM Journal is available in three formats:

- an electronic version which will be printed and distributed by the STREAM Communications Hubs,
- a version which can be accessed and downloaded from the STREAM Website at www.streaminitiative.org, and
- a printed version which will be distributed from the NACA Secretariat.

Contribution

The *STREAM Journal* encourages the contribution of articles of interest to aquatic resources users and people who work with them. The *STREAM Journal* also supports community-level colleagues to document their own experiences in these pages.

Articles should be written in plain English and no more than 1,000 words long (about two A4 pages of single-spaced text).

Contributions can be made to William Savage, STREAM Journal Editor, at <savage@loxinfo.co.th>. For more information, contact Graham Haylor, STREAM Director, at <ghaylor@loxinfo.co.th>.

About STREAM

Support to Regional Aquatic Resources Management (STREAM) is an initiative designed within the five-year Work Programme cycle of the Network of Aquaculture Centres in Asia-Pacific (NACA). It aims to support agencies and institutions to:

- utilize existing and emerging information more effectively
- better understand poor people's livelihoods, and
- enable poor people to exert greater influence over policies and processes that impact on their lives.

STREAM will do this by supporting the development of policies and processes of mediating institutions, and building capacity to:

- identify aquatic resources management issues impacting on the livelihoods of poor people
- monitor and evaluate different management approaches
- extend information, and
- network within and between sectors and countries.

The STREAM Initiative is based around partnerships, involving at the outset a coalition of founding partners (AusAID, DFID, FAO and VSO) supporting NACA. It has adopted an inclusive approach, reaching out to link stakeholders engaged in aquatic resources management and supporting them to influence the Initiative's design, implementation and management.

The partnerships' work is coordinated in each country through National Coordinating Teams comprising the National Coordinator (a senior national colleague agreed with the government) and the Communications Hub Manager (a full-time national colleague supported in the first two years by STREAM), and linking a range of national stakeholders. The Communications Hub is provided with hardware, software, training, information-technology support, and networking and human resources support, and links national stakeholders through an Internet-based virtual regional network.

National coordination is guided by an annually-reviewed Country Strategy Paper (CSP) drawn up by the Coordinator and Hub Manager in consultation with stakeholders with whom they regularly network. A CSP identifies key issues, highlights regional linkages, proposes and prioritizes key actions, and seeks funding for these from STREAM and elsewhere (with STREAM support).

The STREAM Regional Office (at the NACA Secretariat in Bangkok) directs the Initiative, provides a regional coordination function, and funds and manages cross-cutting units dealing with livelihoods, policy development, communications and special issues. A communications matrix links interactions, lesson learning and partnership activities.

STREAM implementation will be an iterative process, initially operating in Cambodia, the Philippines and Vietnam, and expanding within Asia-Pacific where opportunities exist to tackle poverty and promote good governance, as experience is gained, lessons are learned, impact is demonstrated and additional funding is secured. STREAM's communications strategy aims to increase impact by ensuring that existing knowledge and expertise inform ongoing change processes around the region, and that the lessons learned are disseminated throughout Asia-Pacific. The *STREAM Journal* and associated Discussion Forum on the STREAM Website are components of this strategy.

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