



18th NACA Governing Council held in Bali, Indonesia

The 18th meeting of the NACA Governing Council (GC) was hosted by the Government of Indonesia in Bali, 2-5 May 2007. It was attended by 75 people representing 15 member governments and one associate member. The GC is NACA's peak policy-making body.

The meeting was opened by the Hon. Minister for Marine Affairs and Fisheries of the Republic of Indonesia, Mr Freddy Numberi, and also graced by the Deputy Governor of the Province of Bali.

In his opening speech, the Minister noted the need to look to aquaculture as an alternative source of fish supply, given the current global trends in capture fisheries production, and in this regard Indonesia was quite fortunate to have large development potential for future expansion of the industry. He also noted, however, that many concerns needed to be addressed in order to ensure the sustainability and social acceptability of the aquaculture sector, and in order for aquaculture development to fully meet its potential to contribute to poverty alleviation, provide more job opportunities and spur economic growth, particularly in rural areas.

"I commend NACA's effort to promote sustainable aquaculture for food security and sustainable development in our region through cooperation among member governments. For many years we have been involved in numerous activities aiming to implement the NACA vision of promoting rural development through sustainable aquaculture, seeking to attain improved rural income, increased food production and foreign exchange earnings, and to diversify farm production where the ultimate beneficiaries are farmers and rural communities", the Minister said.

In addressing the meeting, Indonesia's Director General for Aquaculture, Dr Made, said "NACA has played



Delegates to Governing Council 18. Front row (left to right): Deputy Governor of Bali, Mr Freddy Numberi (Minister for Marine Affairs and Fisheries), Prof. Sena De Silva (NACA DG) and Made L. Nurdjana (Director General for Aquaculture, Indonesia).

a key role in promoting sustainable aquaculture development in our region, and has undertaken many aquaculture development programmes which have already provided great benefits to aquaculture development in Indonesia and in other member countries. It is my understanding that during our progress so far it has been proven that we have many common interests, and that cooperation with our partners in NACA is essential to establish a strong foundation for aquaculture in this region."

Professor Sena De Silva, the Director General of NACA, noted that "NACA also plays an active role, in facilitating bilaterally funded R & D programs, the foremost amongst this being the tripartite link between NACA, Indonesian Institutes - in particular the Directorate General of Aquaculture and the ACIAR and the associated Australian institutions. These programs have

impacted very positively in sustaining not only Indonesian aquaculture but impacting on the whole region. NACA looks forward to a further strengthening of these links, some of which could possibly even lead to global initiatives such as in the case of the PCR calibration program, in shrimp farming."

"In essence NACA, in conjunction with the member governments and their institutions and supporting national, regional and international donor agencies, wishes to be pro-active in its approach; this strategy I believe is crucial to maintain sustainability of the sector, meet the increasing demands of consumers, exporters and so forth, all crucial in the coming years to sustain the livelihoods of small scale aqua farmers in Asia, the major supplier to the global seafood basket," he said.

With regards to the NACA work programme, key themes in the discussion were:

- Strong interest was expressed in expanding the work on Better Management Practices for shrimp farming to cover additional commodities and countries throughout the region.
- Additional support was requested on addressing aquatic animal health issues, which are an ongoing concern.
- Support in the development of capacity in management of aquaculture broodstock in the interests of maintaining seed quality.
- Members requested support to address biodiversity issues.
- The Director General undertook to reinvest savings to create additional projects in other members for which it is difficult to obtain funding from international donors.
- The Governing Council introduced a policy of making use of the expertise available within members wherever possible, in line with NACA's mandate to build technical capacity amongst members.

The NACA Secretariat would like to thank the Government of Indonesia, Dr Made and his staff for their excellent arrangements and hospitality extended to all participants. We also look forward to the 19th Governing Council meeting, which will be hosted by the Government of Nepal in March 2008.

Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN - final workshop

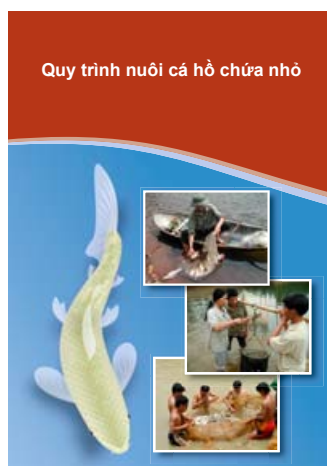
The final workshop under the ASEAN-Australia Development Cooperation Program's Regional Partnership Scheme (AADCP-RPS) project "Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN" was held from 7-10 May 2007 in Bali, Indonesia, attended by around 20 government nominated delegates from 10 ASEAN countries and resource experts from AusVet, NACA, ASEC and other regional and international organizations. The workshop reviewed the progress made by ASEAN countries on the identified action plans of the 1st policy workshop held in April 2006, built consensus on minimum harmonization required within ASEAN and developed a way forward program for accomplishing minimum harmonization within ASEAN. This project supports the implementation of key elements contained in the FAO/NACA Asia Regional Technical Guidelines on Responsible Movement of Live Aquatic Animals. Further information about the project activities can be obtained from CV Mohan at mohan@enaca.org.

Aquatic Animal Pathology Master Class

Pathology is in importance, at least first among equals, being the basis of medicine on which health management is built. An accurate appreciation of what is happening in the tissues will form the basis of health management and aquaculture medicine. Histopathology provides the simplest and easiest means of learning about interactions going on between the host and the pathogen at the cellular level. Through rational interpretation of histopathological findings, it is possible to arrive at conclusions on the pathogenicity mechanisms of pathogens, functional status of target organs, severity of a disease, cause of morbidity and mortality. Acquiring skills in histopathology requires considerable investment of time and resources. In view of the rapidly increasing popularity of rapid diagnostics including molecular diagnostics (e.g. PCR), the capacity for histopathology in the Asia Pacific region is dwindling at a phenomenal rate. This is alarming.

Recognizing the need to build capacity in aquatic animal histopathology, Australian Centre for International Agricultural Research (ACIAR) and Crawford Foundation have come forward to fund a 2 week master class on aquatic animal pathology, coordinated through the University Murdoch and the Department of Fisheries Western Australia. The master class will be conducted in Bangkok, Thailand from 12-23 November 2007. Murdoch University and Department of Fisheries Western Australia, AAHRI in Thailand and NACA will collaborate in implementing the master class. The master class will focus on training candidates in reading and interpreting slides to understand normal histology, pathological process, tissue pathology, disease case studies, artifacts, etc.

From the region 15 candidates will be supported for the master class. Support includes air travel in economy, accommodation and DSA for the duration of the master class. Target countries include Thailand, Cambodia, Vietnam, Myanmar, Singapore, India, Indonesia, Malaysia, Bangladesh, Sri Lanka, Nepal, Pakistan, and Philippines.



Vietnamese extension manual on culture-based fisheries

The Research Institute for Aquaculture No. 1 has produced an extension manual on culture-based fisheries in Vietnamese language, with technical assistance from Deakin University, NACA and funding support from the Australian Centre for International Agricultural Research. Get hard copies from RIA1 or get it from the NACA website, www.enaca.org.

New project: Culture-based fisheries development in Lao PDR

The MOU between the Department of Livestock and Fisheries, Ministry of Agriculture, Lao PDR, NACA, Deakin University and Australian Center For Agricultural Research (ACIAR) for initiation of the project FIS/2005/078, "Culture Based Fisheries Development in Lao PDR", funded by the latter (ACIAR), amounting to A\$398,000 was completed in Vientiane Capital, on 23-May 2007. This three year project will involve research into the development of community based and managed culture-based fisheries in non-perennial water bodies of the flood plain areas and reservoir coves, in Vientiane and Borikhamxay Provinces, and will also include a major component of broodstock management of selected indigenous species to be used in the aquaculture activities. The project will also entail significant capacity building amongst Laotian researchers and provincial extension officers in relevant areas.

Professor Sena S De Silva, DG NACA and Honorary Professor, Deakin University, Victoria, Australia, is the Principal



Photo (left to right): Prof. Sena De Silva (DG NACA), Dr Bounthong Bouahom (Secretary, Ministry of Agriculture & Forestry, Lao PDR) and Dr. Somphanh Chanphengxay (Deputy Director General, Department of Livestock and Fisheries).

Investigator and the Laotian component will be supervised by Mr. Bounthong Saphakdy, Chief technical Officer and Fisheries and Dr. Somphanh Chanphengxay, Deputy Director General, Department of Livestock and Fisheries. The project is also supported by the Department of Primary Industries, Victoria, Australia by providing the services of Dr. Brett A. Ingram to work on the breeding and broodstock management of selected indigenous species in conjunction with Dr. Thuy Nguyen of NACA, and Professor Uthairat Na-Nakorn of Kasetsart University, Thailand. The first mission of the team will start on 10 July 2007.

NACA would like to thank ACIAR for their support to this project. The details of the project will be posted on this site in due course.



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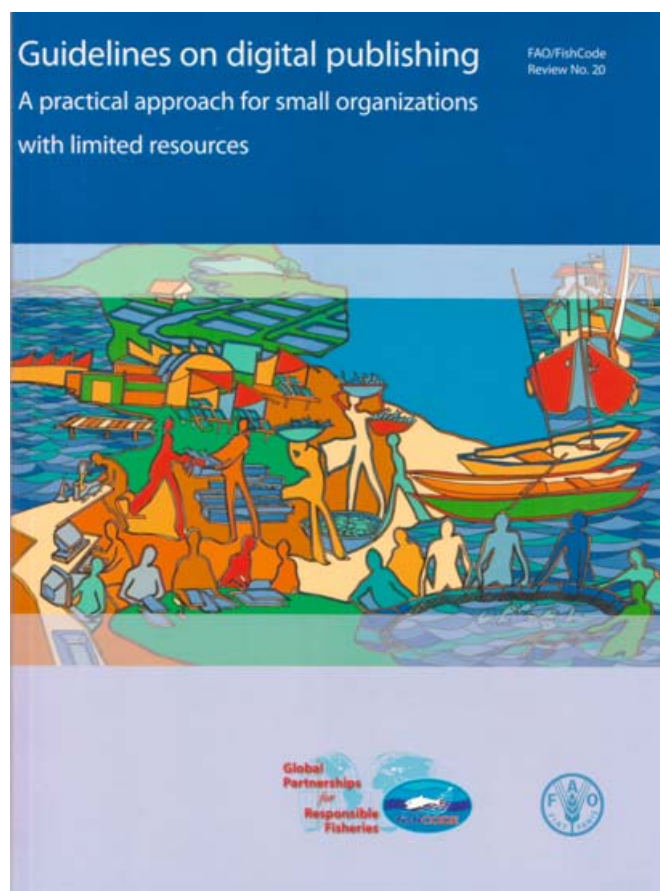
Guidelines on digital publishing: a practical approach for small organizations with limited resources

By Simon Wilkinson and Jean Collins
FAO/FishCode Review. No. 20. Rome, FAO. 2007. 68p.

The importance of research in fisheries and aquaculture is referred to throughout the Code of Conduct for Responsible Fisheries, as is the need to disseminate and share the results of research. Stakeholders in developing countries generally are still waiting for reliable, high speed and cost-effective Internet access that is widely available in the industrialized world. Once connected, users must grapple with, and make decisions about, myriad technological solutions that exist.

These guidelines on digital publishing are targeted primarily at small organizations with limited resources in developing countries, in order to facilitate decision-making on how to publish and disseminate their information, with emphasis on the internet. The Guidelines are based on the years of experience of the Network of Aquaculture Centres in Asia-Pacific (NACA) and its partners. The approach is practical in orientation, covering topics including: (a) planning, building and maintaining a sustainable digital publishing system, focusing on a common scenario of setting up a Web site as a digital publishing platform; (b) producing user-friendly digital publications and making them accessible; (c) some recent international developments in digital publishing; and (d) recommended software tools and technical resources for further reading.

These guidelines summarise NACA's experience in building the website you are now viewing. If your organization is interested in setting up a low-cost website/digital publishing operation, then I recommend that you read this document. Ed.



Workshop on Understanding and Applying Risk Analysis in Aquaculture

As a food-producing sector, while aquaculture surpassed both capture fisheries and the terrestrial farmed meat production systems in terms of average annual growth rate, it has a number of biosecurity concerns that pose risk and hazards to both its development and management, and to the aquatic environment and society. Responding to requests from the 2nd and 3rd sessions of the COFI Sub-Committee on Aquaculture a Workshop on Understanding and Applying Risk Analysis in Aquaculture was held in Rayong, Thailand, from 8-11 June 2007. The objectives of the workshop were to:

- Present a desk top study on this subject, focusing on seven major risk factors (pathogens, food safety and public health, ecological, genetic, environmental, financial and social);
- Discuss the unifying principles for analysis of the various risks and identify the inherent differences between approaches between sectors, and what risk analysis methodologies are available for the particular hazards being addressed;
- Provide a platform for better understanding the hazards, vulnerabilities, uncertainties and risks affecting the aquaculture sector, as well as the connections between the different

risk events and patterns in order to identify integrated approaches to risk management and reflect on how to share risks and responsibilities.

The workshop began the process of bringing together parallel initiatives in a consultative and participatory way aiming for a productive outcome. Plenary presentations on the identified major risk sectors in aquaculture were given by the invited experts based on the desk study, which formed the basis for subsequent workshop discussion groups tasked to identify key issues and actions. The discussions will form the basis for further elaboration of the Manual on Understanding and Applying Risk Analysis in Aquaculture.

GISFish: Remote sensing and mapping for aquaculture and inland fisheries

GISFish is a new website on geographic information systems (GIS), remote sensing and mapping for aquaculture and inland fisheries. It is managed by the Aquaculture Conservation and Management Service of the Food and Agriculture Organization of the UN (FAO) and a number of collaborating institutions. It is evident there are many opportunities to use GIS, remote sensing and mapping to improve the sustainability of aquaculture and inland fisheries, but the more widespread use of these tools is impeded by a limited of awareness of their benefits and a lack

of access to experience on how they can be deployed. GISFish was created to overcome these impediments. It is aimed at GIS practitioners and fisheries and aquaculture professionals in developing countries. GISFish makes the global experience on GIS, remote sensing and mapping as applied to aquaculture and inland fisheries issues easily accessible. Past experience is packaged as searchable data bases of applications published in the mainstream and grey literature. Applications are in the form of case studies, abstracts, and often, downloadable full

publications. Sharing of current experience is promoted through discussions and posting of on-going projects. Additionally, case studies, training opportunities, data sources, tools and freeware, news and events are featured.

Material in GISFish is constantly updated and expanded. Near future improvements will include increased coverage of abstracts and of full papers. Additional links to Cultured Aquatic Species fact sheets will also be made available. Visit the GISFish web site: <http://www.fao.org/fi/gisfish/index.jsp>.

Online encyclopaedia to list 1.8 m known species

Scientists from around the world plan to collaborate on a free website aimed at providing information on all 1.8 million known species of animals, plants, and other living creatures on the planet.

The effort, called the Encyclopedia of Life, will include species descriptions, pictures, maps, videos, sound, sightings by amateurs, and links to entire genomes and scientific journal papers. Its first pages of information will be shown Wednesday in Washington where the massive effort is being announced by some of the world's leading scientific institutions and universities. The project will take about 10 years to complete. If the new encyclopedia progresses as planned, it should fill about 300 million pages.

The MacArthur and Sloan foundations have given a total \$12.5 million to pay for the first 2 1/2 years of the massive effort, but it will be free and accessible to everyone.

The pages can be adjusted so that they provide useful information for both a schoolchild and a research biologist alike, with an emphasis on encouraging "citizen-scientists" to add their sightings. While amateurs can contribute in clearly marked side pages, the key detail and science parts of the encyclopedia will be compiled and reviewed by experts.

Other institutions helping head the undertaking include Harvard University, Chicago's Field Museum, the Marine Biological Laboratory in Woods Hole, Mass., the Biodiversity Heritage Library Consortium, the Missouri Botanical Garden and the Atlas of Living Australia.

For more than a decade scientists have tried to compile simply a list of all species on Earth, but failed. It's been too complicated, too expensive and too cumbersome.

This effort may succeed where the others have faltered because of new search engine technology - the same kind that Google uses. It will scan the Web for scientific information on the Internet and "mash up" all of the material into a file that then gets reviewed by expert curators, said Harvard's James Hanken, a steering committee member.

For scientists, especially those in developing countries, this can open up new worlds of research, said Samper, who has worked as a biologist in Colombia studying South American plants. And that means more science from different areas, he said. Research papers that used to be limited to northern science libraries will be easily accessible in remote Botswana, he said.

DELTA 2007

Managing the coastal land-water interface in tropical delta systems is the theme of the Delta 2007 conference, which will be held from 7-9 November, Bang Saen, Thailand.

Delta 2007 will examine the state of tropical coastal deltas with a particular focus on agriculture-fishery-aquaculture-environment conflicts and coastal hazards experienced in developing countries. The conference is forward-looking and will identify both research priorities and planning, management and governance strategies that promote environmental sustainability and improve the socio-economic conditions of marginalized rural communities.

Conference sessions will include: Sustainability at the land-water interface, planning and management of coastal resources, Coastal hazards and tropical delta systems, synthesis and research collaboration opportunities.

For more information contact Dr. Chu Thai Hoanh, IWMI-SEA, c.hoanh@cgiar.org, Dr. Brian Szuster, University of Hawai'i, szuster@hawaii.edu, or Ms. Florine Lim, IWMI-SEA, f.lim@cgiar.org.

The conference is organized by the International Water Management Institute, International Rice Research Institute, WorldFish Center, Challenge Program for Water and Food, FAO Regional Office for Asia and the Pacific (FAO-RAP) and Burapha University.

NACA/FAO partnership working to establish guidelines for certification of farmed fish

Where did that shrimp scampi you're about to tuck into come from? Do you know? Was a sea turtle accidentally killed when the shrimp were netted? Were the shrimp grown in a pond where once a biodiverse mangrove swamp stood?

What about the soup you just ordered? Is the farmed-raised seabass it contains healthy? Does the sea farm it came from pollute, or produce responsibly?

Who'd have ever guessed that eating seafood could be so complicated?

But as the world's appetite for seafood increases and greater amounts of it are farmed in captivity by humans rather than raised in the wild (45% of all fish eaten today), retailers and consumers alike are paying lots more attention to where their fish fry comes from and if it's safe to eat.

One way through the maze, experts say, is certification. Essentially, certification of a seafood product indicates if it was produced in a sustainable, healthy, socially responsible and environmentally-friendly way.

The practice is being used in both capture fisheries and aquaculture with growing frequency. Retailers and consumer groups alike support certification, but still the issue is not without its controversies.

"Establishing transparent, fair and reliable certification schemes is not at all straightforward," explains Lahsen Ababouch of FAO's Fisheries and Aquaculture Department. "Who sets the standards? Can producers be sure they are grounded in good science? Are they out of reach of poor fish farmers in the developing world? Are they a cover for efforts to protect domestic industries? To what extent should private-sector standards supplement governmental consumer protection policies, and how can the two be reconciled? All of these are issues that need to be resolved."

And, he adds, as certification programs proliferate, consumers and producers face choices as to which to trust. Competing schemes could confuse

consumers, causing them to lose confidence in standards and undermine the entire approach.

Putting certification standards on the same page

FAO recently began collaborating with NACA to hold consultations with a large group of certification bodies, producer groups, processors and consumer organizations in order to draw up global guidelines on how aquaculture certification standards ought to be established and applied.

"The idea is to bring together a broad group of all the different people involved in the industry, look at what's already being done in terms of certification, and come up with an overarching framework that can help put aquaculture certification schemes on the same page," says Rohana Subasinghe, also with FAO's Fisheries and Aquaculture Department. "That will help ensure that certification standards, wherever they are being applied, are credible, trustworthy, and fair and will give producers clear goals to shoot for."

The guidelines won't be certification standards in and of themselves but rather a shared roadmap that will help ensure that whoever is certifying farmed seafood - be it a government, an NGO, or a private company -- is going about it in a common way, he added.

The group recently held its first workshop in Bangkok. The event brought together 72 representatives of certification bodies, aquaculture farmer associations, governments, and major buyers from 20 countries across the world's major aquaculture producing and importing regions.

"There was wide consensus on the roadmap that is being proposed, that certification schemes should address four main areas: food safety and quality, social impacts of fish farming on local communities, environmental issues and economic feasibility," notes Ababouch.

A follow-up workshop is scheduled to take place later this year in Brazil, following which FAO and NACA will undertake a series of public consultations with various stakeholders on the issues with the goal of presenting a draft set of international guidelines for consideration by governments at the next meeting of the UN Agency's Subcommittee on Aquaculture, to be held in November 2008 in Chile.

Asia-Pacific Aquaculture 2007, 5-8 August 2007, Vietnam

From 5-8 August 2007, the Research Institute for Aquaculture No.1, in collaboration with the World Aquaculture Society, is going to organize an international aquaculture conference: Asian-Pacific Aquaculture 2007. The conference will be held in the Melia Hotel, 47 Ly Thuong Kiet Street, Hanoi.

The conference will be the first chance for the international aquaculture community to visit Vietnam and see the rapidly expanding Vietnamese aquaculture industry. Asian-Pacific Aquaculture 2007 is also the place to learn about the latest developments in the regional aquaculture industry and see the newest technology in the trade show with exhibits from around the world.

Deadlines for conference registration are 10 July (by mail) or 31 July (by fax); alternatively you may register at the show. Registrations can also be conducted online at the World Aquaculture Society website or by contacting Mrs Doan Thanh Loan, Research Institute for Aquaculture No.1, Dinh Bang - Tu Son - Bac Ninh - Viet Nam, Tel: 04 8 273 072, Fax: 04 8 273 070 or email: ria1@hn.vnn.vn.

Details on registration rates and exhibitor fees are available from the above contact points.

Skretting sponsorship & scholarships for the Marine Finfish Aquaculture Network

NACA is pleased to announce the extension of the sponsorship of the Asia-Pacific Marine Finfish Aquaculture Network by Skretting, Nutreco's global aquafeed division. This inaugural commercial sponsorship will continue to support the further expansion of the communications and training programs of the network.

Professor Sena S De Silva, Director General of NACA, said "this new agreement strengthens our partnership with Skretting and will enable further development of this important and increasingly active marine fish aquaculture network. The marine fish farming sector is one of the most dynamic in Asia and Skretting's support will be crucial in disseminating research, including some of the ongoing work funded by ACIAR, and building industry capacity to adopt new techniques and farming practices".

"Even though Skretting is a commercial fish feed company, we feel that we have similar objectives to NACA", said Rik van Westendorp, Managing Director of Skretting's Asian operations. "We want to contribute to modern, profitable and sustainable aquaculture practices in the region. Teaming up with NACA makes sense. Together we can reach more farmers and provide local farm management training and know-how transfer".

The cooperation will continue to support development of the Asia-Pacific Marine Finfish Aquaculture Network web site and the regular marine finfish newsletters and e-magazines, and will also provide annual sponsorship of three people from developing countries in the Asia-Pacific region to attend the network's popular Grouper Hatchery Training Course. Farmer training programs and feeding trials are also planned under the new cooperation agreement.

Skretting Scholarships for the 5th Regional Grouper Hatchery Training Course 2007

Skretting offered two annual scholarships for the regional Grouper Hatchery Training Course in 2005 and 2006. The Skretting Scholarships have been successful in training aquaculturists from developing countries including India, Myanmar, Thailand and Vietnam in the production of high-value marine finfish. Because of the success of the scheme, Skretting has increased the number of scholarships to three per year for 2007 and 2008 to further assist in the development of sustainable



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NACA is a network composed of 17 member governments in the Asia-Pacific Region.



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marine finfish hatchery technology in the Asia-Pacific region. Applications for the 2008 scholarships will be announced on the NACA website and in the newsletter.

The eleventh regular session on genetic resources for food and agriculture

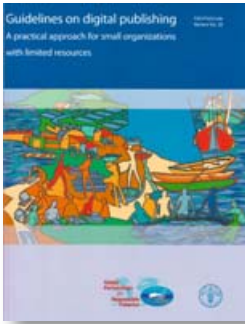
The FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) convened its 11th Regular Session from 11th to 15th of June 2007, at the FAO Headquarters in Rome. This session was of special interest to all those dealing with fisheries and aquaculture in that for the first time the commission addressed genetic resources of aquatic organisms. The meeting was attended by NACA's Director General, Prof. Sena De Silva.

In regard to this, and as announced by the Assistant Director General (Fisheries and Aquaculture) of the FAO at the Committee of Fisheries in March 2007, a general work program on aquatic genetic resources for food and agriculture has been put forward by the FAO for discussion at the Commission (The world's aquatic resources: status and needs). This document was tabled at the recently concluded 18th Governing Council of NACA on 5th May 2007 in Bali, where it was fully endorsed

and adopted. NACA will be attending the Commission as part of its ongoing working relationship with FAO and will raise important issues that will help guide the work of the commission.

For more information on the FAO CGRFA please visit <http://www.fao.org/ag/cgrfa/>.

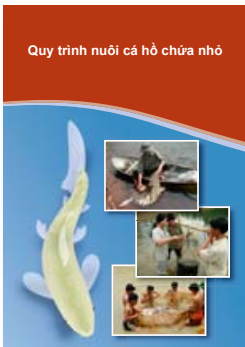
NACA Bookshelf: Highlighted publications



Guidelines on digital publishing: A practical approach for small organizations with limited resources

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Quy trình nuôi cá hồ chứa nhỏ

Nuôi cá hồ chứa là hình thức nuôi thả cá để tận dụng thức ăn tự nhiên có sẵn trong hồ. Hình thức nuôi này ít tốn kém vì kỹ thuật đơn giản, dễ áp dụng và phù hợp với điều kiện kinh tế miền núi. Nhằm mục đích khuyến khích mở rộng việc sử dụng hồ chứa nhỏ để nuôi cá và cung cấp một số kiến thức cơ bản về kỹ thuật nuôi cá hồ chứa nhỏ cho các hộ nông dân sẽ và đang tham gia nuôi cá hồ chứa tại những vùng miền núi phía Bắc Việt Nam, chúng tôi xin giới thiệu cuốn sách “Quy trình nuôi cá hồ chứa nhỏ” đến với bạn đọc. Tài liệu này do hai tác giả Nguyễn Quang Diệu và Nguyễn Hải Sơn biên soạn, dựa trên kết quả nghiên cứu của hai dự án FIS/97/68 và FIS/2001/013, do Trung tâm nghiên cứu nông nghiệp quốc tế Úc (ACIAR) tài trợ cho Viện nghiên cứu nuôi trồng thủy sản 1, phối hợp với trường Đại học Deakin (Úc) đồng thực hiện từ năm 1997 đến năm 2004.

- **Download:** <http://www.enaca.org/modules/wfdownloads/singlefile.php?cid=3&lid=826>

Report of the FAO/NACA/Government of Thailand Expert Workshop on Guidelines for Aquaculture Certification

This report is the final draft of the FAO/NACA/Government of Thailand Expert Workshop on Guidelines for aquaculture Certification held in Bangkok, Thailand during 27-30 March 2007. The workshop addressed many of the key issues around the growing interest in certification of aquaculture products. The status and trends in aquaculture, experiences in certification of aquaculture products, certification standards, harmonization and equivalence among certification schemes, stakeholder involvement and ownership, costs and benefits, and the participation of small-scale farmers were among the wide ranging issues discussed.

- **Download:** <http://www.enaca.org/modules/wfdownloads/singlefile.php?cid=175&lid=819>

Use of fishery resources as feed inputs to aquaculture development: trends and policy implications

Although aquaculture's contribution to total world fisheries landings has increased ten-fold from 0.64 million tonnes in 1950 to 54.78 tonnes in 2003, the finfish and crustacean aquaculture sectors are still highly dependent upon marine capture fisheries for sourcing key dietary nutrient inputs, including fishmeal, fish oil and low value trash fish. On the basis of the information presented within this fisheries circular, it is estimated that in 2003 the aquaculture sector consumed 2.94 million tonnes of fishmeal and 0.80 million tonnes of fish oil, or the equivalent of 14.95 to 18.69 million tonnes of pelagics.

- **Download:** <http://www.enaca.org/modules/wfdownloads/singlefile.php?cid=111&lid=825>

Approaches to linking producers with markets

This paper examines experiences of linking farmers to markets, in order to reach some tentative conclusions regarding success factors. It mainly considers examples of linkages promoted by outside organizations such as NGOs. Issues discussed include the choice of markets, the capacity of the linking organizations, and the relationship between the private sector, NGOs and farmers. Linking farmers to new markets invariably involves farmers organizing into formal or informal groups. Experiences with group organization are reviewed, as is the question of finance. Problems faced by farmers in maintaining linkages are examined and sustainability and scaling-up of linkage activities considered.

- **Download:** <http://www.enaca.org/modules/wfdownloads/singlefile.php?cid=85&lid=818>

