



NEWSLETTER

OF

**AQUACULTURE ASSOCIATION OF SOUTHERN AFRICA &
AQUACULTURE INSTITUTE OF SOUTH AFRICA**



Volume 4: 06 ▪ December 2007

Contents

A Word from the AASA Chairman and the CEO of AISA

The Editor's choice

Letters to the Editor

Sector Contributions

Abalone

Catfish

Crayfish

Ornamentals

Oyster & Mussels

Prawns

Tilapia

Trout and Salmon

Other

Feeds

Environment, Health and Disease issues

Research matters, Reviews and Training

Regulatory matters

Announcements & Upcoming events

Conferences

Employment

Aquaculture Association of Southern Africa

Tel: +27 12 807 6720

Fax: +27 12 807 4946

E-mail: info@aasa-aqua.co.za

Aquaculture Institute of South Africa

Tel: +27 21 483 9106

Fax: +27 21 483 9100

E-mail: lbotes@ai-sa.org.za

A Word from the AASA Chairman and the CEO of AISA

Etienne Hinrichsen chairman@aasa-aqua.co.za

Once again we stand at the end of another year! In this year much has transpired in the realm of aquaculture. Government has developed policies and strategies, funds have started flowing into aquaculture development, legislation is being discussed actively and project ideas and plans are mounting. I hope that this continues into 2008 and that we will start seeing many viable projects rolling out as a result of these concerted efforts.

I will continue watching many projects that have recently commenced with interest. These include the pilot marine cage culture project launched by I&J in Port Elizabeth, the Camdeboo Bream (tilapia) project, the prawns in Coega, Hondeklip Bay (abalone), the various kob initiatives, the DST / Stellenbosch University inland cage culture developments and others - the list is quite long!

So then, for the break that lies ahead please ensure that you get in sufficient quantities of rest and recuperation. In fact, freely indulge in this regard.

From me I would like to wish all of you a blessed festive season – please come back to make 2008 a great aquaculture year!

Dr. Lizeth Botes lbotes@ai-sa.org.za

Another year has come to an end and I would like to take the opportunity to thank everyone who has contributed their time and energy to help build a stronger Aquaculture Sector not only in the Western Cape but also in South Africa.

To those who contributed their energy and time in order to comment on the Aquaculture Best Management Practice Guidelines and Authorisation Protocol published by the Western Cape Department of Environmental Affairs and Development Planning (DEDT), the final documents are now available and you can access it via the link on ASIA's website on the permits and legislation page or on the publications page.

A link to the Western Cape map, which was constructed by the Western Cape Department of Agriculture & AISA in order to assist Aquaculture Development, has also been created on the AISA website on the publications page where you can also access the questionnaire to update the Aquaculture statistics of the Western Cape.

Finally, AISA would like to congratulate all the Hands-On members that received their Business Principles Attendance Certificates at the Hands-On AGM on 24 November 2007. The one day training course was co-sponsored by AISA and we wish all the Hands-On members all the best with their activities in 2008.

To the rest of the stakeholders, may you have a wonderful Festive Season and we look forward to working with you in 2008.

The Editor's choice

Adrian Piers newsletter@aasa-aqua.co.za

Angola approves Accord of Co-operation with Mozambique

From Angola Press

Angolan Government recently approved a protocol of cooperation in the domain of fisheries and agriculture between Angola and Mozambique. According to a resolution carried in a recent edition of the State Gazette that reached Angop, the protocol was signed on January 12, 2006, in Luanda.

The accord is intended to establish and strengthen bilateral relations of cooperation in fisheries and aquaculture, in line with the policies and juridical framework of each of the two countries. The cooperation will cover training and technical upgrading, control and other aspects of fishery management, development of artisan fishery and aquaculture. It is also aimed at transforming and commercialising fishery products and aquaculture, as well cooperation among regional and international organisations.

Top ministers debate the future of fish farming – Africa is lagging behind

The message FAO gave to a group of the world's top fisheries authorities gathered in Rome for a high level meeting on the contribution of aquaculture to sustainable development was that by 2030 an additional 37 million tonnes of fish per year will be needed to maintain current levels of fish consumption for an expanded world population. Because traditional capture fisheries have reached their maximum production levels, fish farming represents the only way to fill the gap.

One worrying exception to the aquaculture boom is Africa, the only world region where per capita consumption of fish has dropped and whose share of global aquaculture production is less than one percent. "Africa has the full resource potential for aquaculture growth," FAO's paper said, and should be a "priority region" for aid aimed at promoting aquaculture development.

The fisheries ministers of Algeria, Angola, Bahamas, Bahrain, Chad, Ecuador, Eritrea, Faroe Islands, Ghana, Guyana, Haiti, Honduras, Iceland, Indonesia, Mali, Mauritania, Mauritius, Mozambique, Myanmar, Nigeria, Norway, Papua New Guinea, Samoa, Senegal, South Africa, Sudan, Syria, Tanzania, Togo and Uganda participated in the event, which was also attended by high-level delegates from a number of other countries. The session was co-chaired by Ms Helga Pedersen, Minister of Fisheries and Coastal affairs of Norway and Mr Amin Ahmed Mohamed Othman Abbaza, Minister of Agriculture and Land Reclamation of Egypt.

<http://allafrica.com/stories/200711191271.html>

The evolution of aquaculture in African rural and economic development

Paper by Randall E. Brummett and Meryl J. Williams

Abstract

In Africa, aquaculture has developed only recently and so far has made only a small contribution to economic development and food security. We review developments and identify constraints to the expansion of aquaculture in economic and rural development at the continental, national and farm levels. Past development initiatives failed to achieve sustainable increases in production. In contrast, a growing number of smallholder farmers in many countries have been adopting and

adapting pond aquaculture to their existing farming systems and slowly increasing their production efficiency. An evolutionary approach that builds on a fusion of local and outside participation in technology development and transfer appears more likely to produce fish production systems that are more productive and more environmentally and socially sustainable in the long term.

Full text at:-

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VDY-402TP9K-3&_user=613892&_coverDate=05%2F31%2F2000&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000032099&_version=1&_urlVersion=0&_userid=613892&md5=be9480b5a00783e4c704ea9cf1c5b48

South African Government to invest R100-million in six marine fish farming projects

From Sapa

The South African Government is to invest R100-million next year in six marine fish farming projects, Environment Minister Marthinus van Schalkwyk announced.

"There are huge opportunities in marine aquaculture, which will not only reduce the pressure on wild stocks, but provide new economic opportunities," he said in a speech prepared for delivery at the National Summit on Subsistence and Small-Scale Fisheries. The summit in Port Elizabeth is aimed at garnering the views of fishing communities in respect of fishery policies and the management of marine resources.

Van Schalkwyk said global demand for fish products had increased in recent years, while the supply from "capture fisheries" had dropped. "In contrast, aquaculture production has increased by an average of nine percent globally." South Africa imported more fish products than it exported. "According to studies, on average 200 000 tons of fish, valued at R700-million, was imported per year during the period 2000 to 2004. "In this context, aquaculture presents a good opportunity to diversify fish production to satisfy local demand, export opportunities, and the creation of new jobs.

"I am proud to announce that we have allocated R100-million in the next financial year to make... marine aquaculture interventions." The six aquaculture projects to be started in the 2008/09 financial year, included the establishment of:

- an abalone farm in Gansbaai, Western Cape;
- a finfish farm for silver cob or yellow tail in Saldanha Bay, Western Cape;
- abalone "ranching" in Port Nolloth, Northern Cape;
- a finfish farm in Qolora, Eastern Cape;
- a finfish farm in Sokhulu, KwaZulu-Natal; and,
- a State hatchery.

Van Schalkwyk said South African marine aquaculture industry currently contributed 0.005 percent to GDP and provided 1 200 direct jobs. "This is modest compared to countries like Chile, with a GDP contribution of 1.4 percent and 60 000 direct jobs; Norway, with a GDP contribution of one percent and 4 200 direct jobs; and Vietnam, with a GDP contribution of 0.06 percent and 670 000 jobs," he said.

US Ambassador calls for more fish production in Zambia

From ZNBC

United States Ambassador, Carmen Martinez has called for more investment in the country's fish industry. Ambassador Martinez said there is need for more Zambians to venture into fish production to reduce malnutrition. She also said the expansion of the fish farming industry can help create more jobs. The American Ambassador was speaking to ZNBC news after touring LKM Aquaculture Limited, which is funded by the United States African Development Foundation in Chilanga. LKM Aquaculture Chief Executive Officer, David Kaunda said there is need to seriously look at the fish deficit in the country.

Letters to the Editor

From Krijn Resoort, Chairman, Western Cape Trout Association

We attended a meeting on the 1st of December 2007 in Pietermaritzburg with The Mpumalanga trout grower's forum (MTF), the Natal trout growers (NTF), Aquaculture Association of Southern Africa (AASA) and the Federation of Southern African Fly fishers (FOSAF). The purpose of the meeting was to come to an understanding of the practical implications of the proposed draft Biodiversity act (10/2004), Alien and Invasive species Regulations. FOSAF has been actively involved in following the drafting of this NEMBA act and was until recently the only party that was consulted. However the original team that appointed by DEAT to draft the act was fired and the current draft is very different to the version that FOSAF made input into.

The current draft was gazetted for public comment and it was only by chance that FOSAF picked up on it. Both FOSAF and AASA have managed to get a comment out before the final comment date of 15th October. Neither the WCTA nor the MTF forum was consulted in any way during the draft process and both associations were therefore completely unaware of any public comment period.

The practical implications of the Act for trout farmers in South Africa if the act is approved by parliament is that Rainbow trout is currently listed in the draft as an alien invasive species. This would mean that once the act is approved all activities related to trout would be illegal (farming, fishing, processing and eating of trout products) The Act states that a permit will be required to carry out any activities with a invasive species, but does not make any mention of a relief period during which trout activities could continue until a permit is granted. It is proposed that permits will be granted at a provincial or even municipal level, and everybody was seriously worried about the capacity (or lack off) of people at this governmental level, especially since the act does not make a mention of training for its staff. The act will not only affect trout farmers, it will also affect the ornamental industry, potential tilapia farmers, bass fishermen and anyone else that deals with alien (invasive) species. It will cripple the current aquaculture sector and shy away any potential investors.

The stakeholders agreed that each association would go back to its members and relate the above information to them. FOSAF has over the past 6 years employed a team of specialists that are by now extremely well aware of the details of the act and its implications. The associations have asked the team of experts to come up with a quote for the immediate work required and their CV's. The consultants will present this to the associations by the 15th of January 2008 and the individual associations will present this information back to their members. The work that the consultants are required to do will not only be to draw up the specific implications for the different industries, but also to set up meetings with the minister and other stake holders. Although it is currently difficult to give an indication of a time line on all the above events, members must be aware that if the

stakeholders are continued to be ignored by government, we might be forced to take government to court.

AASA will in the mean time contact all its members to find out if AASA can contribute financially to this cause. The exec committee from the WCTA will have to look at its funds and depending on the financial requirements request a special NEMBA contribution from its members. I will continue to keep you all updated on the above, but I must stress the importance of gathering data of our industry figures. Could all farmers that have not send Ms Refiloe Thobejane (DOA) a copy of the filled in questionnaire please do so ASAP. The WCTA committee will need all these details for our case with regards to Nemba, but also for our input into the Salmon Import Duty case. If the Fly fishing operations could also please fill in this form and fax it through to me on 021 371 4900 marked for my attention , including an indication of number of customers per annum, we could use these numbers for both cases.

Krijn Resoort Chairman WCTA.

Abalone



Abalone fishing suspended, but date postponed

All wild abalone (perlemoen) fishing was to be suspended from 1 November, and a social plan to address the job losses resulting from the decision was approved, government communications head Themba Maseko told a media briefing after Cabinet's fortnightly meeting. "This suspension was based on the fact that the abalone stock is in a crisis and is threatened with commercial extinction." The main causes of the decline in abalone stocks were poaching and the migration of West Coast rock lobster into the abalone areas, which ate the sea urchins providing shelter to juvenile abalone. Policing to enforce the suspension and prevent poaching would be increased, Maseko said.

Studies showed that unless decisive and immediate action was taken, the resource would collapse completely with little prospect of recovery. For the past few years the recommendation from the department's managers and researchers had been that the fishery was in crisis and closure could not be avoided. "We are now at the point where the Total Allowable Catch reached a record low of 125 tons for the 2006/7 season." The only responsible option left, was to take the unfortunate decision to suspend fishing in the abalone fishery in terms of Section 16 of the Marine Living Resources Act. In the early years, catches of abalone were unregulated and landings escalated to a high of nearly 3000 tons in 1965, before declining rapidly to a point in 1970, when the first commercial quotas within a TAC were introduced. The stabilising effect of a TAC-managed fishery was apparent, with catches remaining relatively constant at 600/700 tons a year between 1970 and 1995. Over the past ten years, due to declining resources, the TAC had had to be reduced annually from 615 tons in 1995 to a record low of 125 tons for the 2006/7 seasons. Worldwide, abalone fisheries had either closed or were threatened by commercial extinction, for example the United States, Canada, Japan, Australia and New Zealand. The North American fisheries had now been closed for more that ten years, and it had been suggested that such fisheries were slow to recover because closure was delayed.

See also:-

<http://www.dispatch.co.za/2007/10/26/SouthAfrica/aalead.html>

<http://allafrica.com/stories/200711010154.html>

<http://allafrica.com/stories/200711010670.html>

Catfish



No submissions

Crayfish and Lobsters



Crayfish season in the US

By Jim Bradshaw jbradshaw@theadvertiser.com

It's not the best of news as the South Louisiana crawfish harvest gets under way. Consumers will likely pay more for their crawfish this year, and there may not be as many of them, according to Steve Minville, executive director of the Louisiana Crawfish Producers Association. The primary culprits are a dry summer and the cost of diesel that made it too expensive to pump enough water into them, according to Mark Shirley, LSU AgCenter aquaculture specialist.

"Crawfish are going to cost a bunch more this year," Shirley says. The price has to go up or the producers will have to go out of business, last year, fewer than 5 percent of the crawfish producers covered their expenses," Minville says. "You can't go on like that." He points out that crawfish producers are not "fishermen," and that they have rising input costs, such as diesel to pump water that must be met if they are to stay in business. "On average, it costs a producer 62 cents a pound to grow and harvest the crawfish. That's what he needs just to cover costs. This is a commodity crop just like any other commodity crop. We have to get back what we put out in land leases and fuel costs and other expenses that we put into the crop."

Sixty-two cents a pound equates to about \$25 a sack, just for the farmer to break even. That's just staying in business.

"You don't go to work every day just to break even, do you?" asks Don Benoit, a crawfish producer and buyer. He produces crawfish on 160 acres near Henry and buys from a list of 20 or so other producers. He says it's too early to tell just how much a 40-pound sack of crawfish will cost the consumer during the peak of the season, but that we can expect to pay at least \$40 a sack for medium-sized crawfish and more than that for the bigger ones. With production just beginning, the going price is substantially higher than that, he said, but it will come down as the weather warms and more producers begin harvesting. How much it will come down will depend on the size and quality of the harvest, and how many producers participate.

Minville says that last season, some farmers simply quit harvesting because they could not sell the crawfish at a price that would turn a profit. "We probably left \$18 (million) to \$20 million worth of crawfish in the field last year," Minville said. "It didn't get harvested because we didn't get a decent price."

Inside the brain of a crayfish

Look along the bottom of a clear stream and you may see crayfish waving their antennae. Look closer, and you will see them feeling around with their legs and flicking their antennules, those small, paired sets of miniature feelers at the top of their heads between the long antennae. Both are used for sensing the environment. The long antennae are used for getting a physical feel of an

area, such as the contours of a crevice. The smaller antennules are there to both help the creature smell for food or mates or dangerous predators and also to sense motion in the water that also could indicate the presence of food, a fling or danger. The legs also have receptors that detect chemical signatures, preferably those emanating from a nice hunk of dead fish.

'They constantly flick their antennules,' says DeForest Mellon, a University of Virginia biology professor, as he watches a Southern swamp crayfish in a bucket doing just that. 'It is doing two things that are processed simultaneously in the brain as he flicks: smelling the water, and also sensing motion in the water, which can indicate the presence of food or other things of interest.

I am interested in understanding how these senses are combined and interpreted in the brain of these animals. My question is how does the brain detect, integrate and use co-joined but dissimilar sensory inputs?'

Mellon and other neurophysiology researchers commonly use crustaceans to try to gain basic understanding of the nervous systems of creatures in general, and, wherever possible, for extrapolating what they find to a basic understanding of the much more complex human brain. All animals, from single-celled amoebas to humans, use similar cellular processes to interpret their olfactory environment. 'Due to the large-sized nerve cells of invertebrates, we can conveniently and practically examine these systems that are largely the same among all creatures,' Mellon says. 'And antennule flicking can serve as a practical model that helps us understand how two or more senses work together in the brain.' Mellon has been investigating sensory systems for half a century, since his grad school days at Johns Hopkins University. He's still learning. 'We can say we know that animals use their senses to make maps of their environment that direct their behaviours,' he says. What he's found is that there is still a lot not understood. 'It's fertile ground for ongoing research,' he said. 'The size of an area of the brain devoted to a particular sense gives us a good idea of how an animal perceives the world. It provides insight as to how the world is interpreted by that animal.' About 40 percent of a crustacean's brain is devoted to the sense of smell. 'This shows how important detecting odors is to the animal,' Mellon says. Crayfish and lobsters are generally solitary creatures, inhabiting an aquatic environment that is often dark, and they need that highly acute sense of smell.

Eels



Eels mentioned in new book on European fish

A new book Handbook of European Freshwater Fishes, produced in collaboration with the World Conservation Union (IUCN) says the diversity of life in European freshwater ecosystems is rapidly declining. Most threats have come as a result of development and population growth on the continent in the last 100 years.

During the seven years of research for the book, 47 new fish species were discovered. Some of the assessments are provisional and are to be reviewed before they are included in the 2008 IUCN Red List of Threatened Species. Gordon Reid, Director General of the North of England Zoological Society and Chair of the Freshwater Fish Specialist Group, said: "This comprehensive work allows us to see for the first time the true diversity of Europe's freshwater fishes.

One of the threatened species include the European eel, *Anguilla anguilla*, the only European fish which leaves to spawn at sea and which is now at just 5 per cent of its average level in the 1970s.

Handbook of European Freshwater Fishes: Maurice Kottelat & Jörg Freyhof. 2007. Published by the authors. ISBN 978-2-8399-0298-4

Ornamentals



Nothing coy about selling koi fish at this price!

By Sanchia Temkin

Why would someone spend hundreds of thousands of rands just to keep a few koi in a pond while another tattoos the fish's likeness on to her body? Whatever the reason for the world's interest in koi, the breeding and selling of these fish is proving to be a lucrative, if sometimes risky, business, especially when one fish can be worth over R1m. Frederick Sterzel, owner of Asagi Koi Farms in Chartwell, Johannesburg, has made the breeding of koi and some indigenous fish a large part of his livelihood. He sells between 15000 and 20000 koi a year. The department of agriculture in Western Cape estimated in 2000 that the industry was worth R135m annually and growing. Prices vary from R30 for a small fish to about R30000 for the larger ones. However, some customers are prepared to pay up to \$250 000 (R1,7m). Koi are, after all, the king of ornamental fish, says Sterzel. About a quarter of the koi sold by Sterzel are bred by him, while the rest are imported from Taiwan, Japan and Israel. Sterzel says koi have a long and distinguished history. The Japanese began to cultivate them for their beauty in the early 1800s, even keeping them as pets, since they can be tame enough to accept caresses from humans and be hand fed. "Koi are to fish what Ferraris are to cars," Sterzel says. He tells the unfortunate story of how a prized koi valued at R80,000 was attacked and eaten by an otter. "But that's nature. I had to trap the otter and send him packing to the local zoo," he says. Sterzel's other business, Ponds & Palms, which constructs large dams, lakes and ponds, complements his koi business. He speaks matter-of-factly about the businesses, which trade under the umbrella Great North Valley, in Chartwell, and the dramatic expansion that he is leading. Since the construction business started, he has built 240 large dams and lakes, 600 smaller water bodies and 80 rivers. Sterzel, who grew up in Barberton and on the KwaZulu-Natal coast, says he became fascinated with fish and other small creatures as a child.

Sterzel has owned a number of zoos, crocodile parks and snake parks in Cape Town. At one stage he owned a snake park in the UK. He turned to building projects and the more gentle art of koi breeding after a near-fatal experience with a venomous snake over 30 years ago. What started off small, eventually grew into an enterprise, he says. Ponds & Palms builds large rambling lakes and rivers for large corporations, clients include Investec and Cedar Lakes. Sterzel says the business constructs smaller water bodies, such as water features and ponds, for individuals. "We build these features to attract bird life back to the city and fill them with indigenous plant life and fish, such as koi. "We also construct trout rivers and dams for people on huge estates and farms." The business also builds wetlands, which are designed to attract wildlife such as birds and other small animals. Sterzel says that few people have been able to "stick it out in the industry". There are very few who are able to say that they can build ponds and dams which are of high aesthetic value, look natural and are completely waterproof. "It is extremely challenging and hard work." Sterzel designs each pond, lake, dam and river himself. "I go to the site and get a picture in my head of the finished project. "However, I give the client only a description of my idea and never a sketch," he says. The problem with drawings is that a client can never visualise the end product, Sterzel says. All the ponds and dams are hand-dug and the shell is covered with a polyethylene lining which is resistant to water, acids, alkalis and most solvents. It also protects the shell from the sun's ultra-violet rays, and from the beaks of large birds which may otherwise pierce the shell. Sterzel has 40 employees, including well-trained foremen. He takes on extra members if a project requires it. He has no succession plans as yet. "Unfortunately it is such a specialised and skilled business. It's not a business that I would advise people to go into to make a buck. You have to have flair and talent," he says.

Oysters & Mussels



Blue Bay Aquafarm empowerment project

By Melanie Peters in the Independent Online

Fisherman Lindela Makhotyana is up at the crack of dawn. Breathing in the fresh salty ocean air, he engages the seamanship he has acquired, operating his mussel raft and ropes. He is one of nine fishermen who have been given the opportunity to set up their own aquaculture mussel farm in Saldanha Bay, called Masiza Mussel Farm. Aquaculture is the fastest-expanding animal food producing sector in the world. The fishing industry says if small concerns are to be set up by fishermen who can no longer make a living by going to sea, it is vital they are given a foot in the door by bigger players in aquaculture. Makhotyana said he was grateful for the opportunity as work was scarce and he needed to provide for his family of six.

Blue Bay Aquafarm, a mussel and oyster-farming company, started the empowerment project four years ago with R1-million. Vossie Pienaar, the company's CEO, said it had started small. Now nine mussel farmers are involved in the project, and each owns two mussel rafts which they bought from the company. Together they produce about 400 tons of mussels a year with turnover of R1,2-million. Pienaar said Blue Bay stocked the initial rafts with 350 ropes each and made preparations for production during a run-up period of seven months. If the project continued to be successful it would expand to 42 rafts and result in 21 mussel farmers in total, plus another 50 jobs in the processing factory. He said pilings were planted at sea. Ropes, on which the mussels grow, are tied in a spiral on the pilings, while mesh netting prevents the mussels from falling off.

According to the Department of Environmental Affairs and Tourism, aquaculture, or fish farming, now accounts for almost half of the world's 140 million ton-plus annual seafood harvest, valued at some R650-billion and growing at about 8,8 percent a year.

South Africa is lagging far behind international efforts to boost aquaculture further to compensate for devastated wild fish stocks. Last month the ministry announced that tax breaks, grants, credit and other fiscal measures would be made available to stimulate the local marine aquaculture industry. In addition, in order to foster local and international investor confidence, rights to undertake marine aquaculture activities would be issued on a long-term (20 years) basis. The department noted that the contribution of capture fisheries to food security and employment had been in decline since the 1950s, partly due to over-exploitation of resources. For example, the size of the hake catch is now 10 percent less than what it was 50 years ago. This trend had recently been exacerbated by shifts in the distribution of certain fish species. Thirty years ago 70 percent of West Coast rock lobster landed along the Northern Cape coast but today 90% landed in the Cape Town area. The decline in catches has resulted in the closure of a number of fish-processing establishments, mainly along the Cape's West Coast.

Professor Danie Brink, head of the University of Stellenbosch's aquaculture department, said government steps would have a significant effect in developing the sector, as access to, and ownership of, land rights was one of the main factors prohibiting growth and development. But he did not see it improving opportunities for small concerns run by fishermen. He said marine aquaculture was capital-intensive and that there was a trendy to favour larger-scale commercial ventures, making it difficult for small, medium and micro enterprises (SMMEs) to compete. He said little attention had been paid to developing appropriate technologies and business models for sustainable small business development in the sector. The private sector favoured business models that provided an optimal return on investment. So additional steps would be required to ensure that small businesses and the previously disadvantaged could get access to these "opportunities". Constructive business partnerships between SMMEs and larger operations in relation to seed supplies, skills transfer, processing, marketing channels and support services, etc, could however, be an effective instrument in ensuring the development of sustainable SMMEs, he

said. It was not clear whether the "government initiatives" would acknowledge and promote such partnerships.

Originally published in Cape Argus

http://www.iol.co.za/index.php?set_id=1&click_id=14&art_id=vn20071028090746580C217319

Popular article on Oysters, their history and preparation

<http://www.post-gazette.com/pg/07298/828160-34.stm>

Prawns



National Taiwan University researchers gain understanding of shrimp virus

By Angelica Oung

Aquaculture researchers from National Taiwan University (NTU) say that genetic analysis is yielding new insight into the workings of a virus that has devastated shrimp stocks in the nation since it was discovered in 1992. Although her team is working on a way of inoculating shrimp against the dreaded White Spot Syndrome Baculovirus Complex (WSSV), aquaculture researcher Lo Chu-fang said that there was much Taiwanese shrimp farmers could do to overcome the disease through better aquaculture practices.

"We found that during periods of stress, the level of WSSV increases in the shrimp's body at an astonishing rate," Lo said. "For instance, we have observed virus levels increasing 100,000-fold during spawning, which is a stressful event." Local shrimp-rearing methods put a lot of stress on shrimp stocks because local shrimp farmers tend to adopt a very intensive approach, Lo said. "We are talking about keeping up to a million shrimp per hectare of aquaculture pond whereas abroad 300,000 to 400,000 is the norm," Lo said. She said that not only were crowded shrimp more susceptible to WSSV, the conditions may have actually caused the condition in the first place. "WSSV did not appear until 1992," said Lo, who has been working on the virus for many years. "Our research found that previously the virus was an obscure and largely harmless one affecting certain species of crab." However, once the virus started affecting farmed shrimp, it spread rapidly. "They say that WSSV spreads as the wind blows," Lo said. Major Asian shrimp production areas are affected, including Thailand and China. However, Australia remains unaffected by WSSV. Lo's research, which includes the discovery of a way of testing for WSSV, has helped some shrimp producers abroad drastically reduce losses to WSSV from up to 80 percent to less than 5 percent.

Paradoxically, Taiwanese producers have been slower to adopt the researchers' advice, Lo said.

Tilapia



Investors salivating over the poor man's fish

By Terje Engoe

Tilapia has been considered a species mainly for poor farmers in the third world for a very long time. The members of the American Tilapia Association, which have long understood the importance of the resource, are eyeing its potential on the world market while recently the management of the world's largest salmon farming company, Marine Harvest, has told the market that they are looking for new species to farm, and tilapia was mentioned as one of the species

being considered. The problem with the tilapia trade is the low price it commands, but many seem to forget that the production cost is also very low. Where salmon needs fishmeal and fish oil to grow on, tilapia is a vegetarian with feed costing just a fraction of the cost of salmon feed. If fact, too high fat content in tilapia feed will have a negative effect on the taste and texture. Tilapia is an herbivore feeding on algae and even bacteria growing in water. Some farmers that are not producing for export are fertilizing the tilapia ponds with excrement from pigs or poultry. The excrement increases the growth of algae, and the algae is then eaten by the tilapia. In this way the fish also solve an environmental problem in many rural areas.

Salmon is reported to have disease problems worldwide. Millions of dollars are spent on antibiotics, vaccines, and veterinarians. Tilapia meanwhile is not fussy. It will accept periods with very low water quality, and it is nearly free of any diseases. This is also the main reason for why China, the world's largest producer of tilapia have had no problem with their tilapia export. There is rarely any need to feed the fish with antibiotics or any chemicals. Last year there was 2,350,000 tonnes of tilapia produced worldwide. Only carp is farmed in larger volumes, but no other farmed fish species has been creating more jobs and values in third world countries than tilapia.

In 2000 was tilapia the 11th most popular seafood in United States, with tuna, shrimp, pollock, salmon, catfish, cod, clams, crabs, flatfish, and scallops all ranked higher in consumption and popularity.

In 2001 it overtook the position of scallops, while in 2002 it had surpassed flatfish, and continued swimming upwards in the ranking. In 2003 it left clams behind, in 2004 did it make it leap past crab and cod. Finally, in 2006 it became more popular than catfish and is now the fifth most popular seafood in US where it retails for close to USD 20 per kilo for whole fish. In Europe the fish is increasing fast in popularity, and is now a regular species in most large fish displays in United Kingdom. Tilapia is penetrating market after market at a steady pace. Tilapia is mainly farmed in labour intensive economies at a low cost, where it is cheap to fillet and add value to products. In Thailand the mighty CP Group has contracted farmers all over the country, and have set up feed mills for fish feed in Thailand and a number of other Asian countries. The Norwegian life science company Genomar AS is a leader in genetic selection of tilapia. They have branches in the Philippines, China, and a number of other countries. Tilapia is on the verge of going from being a fish consumed by the economically impoverished to a fish being eyed by large corporations and investors. AquaChile has invested in tilapia farms in Panama through the subsidiary Aquacorporacion Internacional in Cost Rica. The new planned farm will more than triple the Panamanian production of 5,500 tonnes of tilapia.

The next and probable giant in tilapia may well be India. Large areas of the country have climatic conditions that are ideal for tilapia farming. Indian shrimp farmers dealing with white spot disease also have the possibility of converting to tilapia. No large investments are needed to convert a shrimp pond to a tilapia pond. Most of the global tilapia production is consumed by the local population in the areas where it is farmed, but as investors are showing interest in the fish, more processing facilities are being built. Farms are modified and farming techniques are improved. The production of tilapia could grow very much without influencing the volume of tilapia available for local consumption. For now, China is the world's largest exporter of tilapia. They doubled their export from 90,356 tonnes in 2004 to 181,831 tonnes last year. Still, less than 25 per cent of the Chinese tilapia production is exported. This year tilapia imports to the US reached 47,600 tonnes during the first quarter. The main increase was in the import of frozen fillets, which increased from 14,200 tonnes first quarter 2006 to 25,100 this year. The total import to US reached 158,300 tonnes last year and there is no reason to believe the increase will let up, as tilapia is both competitive in price and has a quality that is appreciated by American consumers. China and Indonesia are the largest sources of frozen tilapia fillets imported to US, with Thailand being the third largest source. China is also dominating the source of frozen whole tilapia, with Taiwan the second largest source. The UN Food and Agriculture Organisation has estimated US imports to reach 180,000 tonnes for this year. What is more interesting than just total volumes imported or exported, is the change in presentation. In 2004 China exported 7,964 tonnes of tilapia characterised in export statistics as "preserved tilapia." According to Eurofish this is considered value added tilapia, such as breaded tilapia fillets and tilapia fillets with the addition of lemon,

pimento, herbs, or other spices. Last year 98,862 tonnes of the Chinese exports were "preserved tilapia". The export of frozen whole tilapia increased from 43,840 tonnes to 46,901 tonnes from 2004 to 2006. Tilapia is becoming an important raw material for Chinese processors, not just a commodity. The development seen in China, on a different scale, can be replicated in many countries around the world. Brazil, Burma, India, and many African countries have large freshwater resources suitable for tilapia farming. They are now waiting for the investors who in addition to money have knowledge about processing and marketing. Marine Harvest has made their intentions public. AquaChile has already begun tilapia growing in ponds. Many will follow.

<http://fisweekendnews.blogspot.com/2007/10/06102007-investors-salivating-over-poor.html>

Ethanol producers use waste heat to farm Tilapia

By Paula Lavigne in the Des Moines Register

A plan to recycle energy at a Wisconsin ethanol plant is turning into a fishing expedition with hopes for a big catch. Owners of Renew Energy plan to harvest about 4.5 million pounds of tilapia at an ethanol plant under construction in Jefferson. The plant would be among the world's largest indoor tilapia farms, and U.S. seafood experts say it could eventually play a big role in reducing imports of the popular fish.

Paul Olsen, one of the project's owners and originators, said once Renew Energy starts pumping out fish, which he hopes will be within a year, its experts could visit other ethanol plants to help them start their own tilapia operations. "A lot of ethanol plants will look at it and say, 'Hey let's build a tank,'" he said. After a sharp decline in ethanol profits in the past year, biofuel plants across the nation have been looking for ways to increase revenue by marketing various products related to production, such as the spent grain for animal feed. Fish and fuel might seem an odd match, but Renew Energy officials say the proposed tilapia tanks would be integral to their plant's energy efficiency plans. Hot steam that would otherwise evaporate from the plant is condensed into a liquid and carried in pipes through the fish tanks, where it warms the water to between 80 and 85 degrees F. About 95 percent of tilapia consumed in America is imported. Most U.S. tilapia farmers sell live, whole fish to high-end restaurants and Asian grocers. The Wisconsin fish farm plans to start out that way, targeting buyers in Chicago and the East Coast.

But Renew Energy is eyeing the elusive large-scale frozen and filet market currently dominated by China. Some companies are looking for other sources of tilapia in light of recent concerns about the safety of food imports from China and elsewhere. Earlier this month, Mississippi agriculture officials ordered stores to pull Chinese catfish from their shelves after samples tested positive for federally banned antibiotics. Wal-Mart, the nation's largest retailer, removed all Chinese catfish from its stores nationwide. Olsen said representatives from Wal-Mart and McDonald's have expressed interest in his future tilapia operation. Cargill - whose animal nutrition division is a global marketer of fish feed - is consulting on the project, he said. "It's kind of unique in how fish get brought into this country ... and what goes into the store and what people think they're buying and eating," Olsen said. Whether a U.S. tilapia farm can compete with farmers in Asia and South America comes down to scale, said Ronald Malone, a Louisiana State University professor who is consulting on the Renew Energy project. "The first issue is to get the cost of production down," he said. The catfish industry in Mississippi has reached hundreds of millions of fish per year and has a coordinated feeding, handling and processing system that makes it competitive, Malone said. Demand for tilapia is growing, but there aren't yet enough U.S. producers serving processed tilapia filets to compete effectively in the global market, he said. Foreign farmers benefit from lower land costs, electricity, labor and naturally warm water.

Fresh tilapia filets from U.S. suppliers cost about \$7.50 a pound, whereas imported fresh filets sell for about \$2.50 to \$3 per pound. The difference in frozen filets is similar. Tilapia experts say if larger U.S. farms can cut operating costs, they might be able to sell filets for less. Retailers want domestic fish because it shows they're supporting American agriculture, and they worry about whether imports are safe, said Kevin Fitzsimmons, treasurer of the American Tilapia Association

and an environmental sciences professor at the University of Arizona in Tucson. They'll pay a premium for that security, he said, "but the question is, is that a nickel a pound or 50 cents a pound?"

Large-scale tilapia farms in the United States will have to head toward the filet market because the live whole tilapia markets are saturated, said Bill Varano, a tilapia farmer in eastern Pennsylvania and vice president of the American Tilapia Association. He said Renew Energy isn't alone in its idea, as other large fish farms are considering expansion. An almost 4 million pound-per-year fish farm in Virginia announced recently that it wants to produce 40 million pounds of the fish.

"They have to market it as pure, clean, domestically raised seafood. This will help the entire seafood industry, not just tilapia," he said. "That's the trick. And that's going to be the trick for us in U.S. agriculture, whether we're talking about beef or chicken or fish. We have quality material."

Tilapia ideal for genome sequencing

From News Account

Tilapia, a fish that originates from southern regions, has been introduced in over 100 countries. It is the second most commonly produced fish in aquaculture in the world after carp. 99% is produced and consumed in China. Raising tilapia is easy and inexpensive. It adapts well to fresh or salt water and fattens fast. Unlike most salmoniforms in aquaculture (salmon, trout, perch, bream), for which fishmeal and fish oil constitute an essential part of their diet, tilapia is lower down in the trophic or food chain and feeds on algae, plankton or small animals. In extensive and semi-extensive production systems, tilapia is largely fed on vegetable waste (rice, cotton, etc.). Thus, with output exceeding 2 million tons each year, tilapia production contributes to sustainable development without damaging marine resources.

This is one of the arguments put forward to support research into the complete sequencing of the tilapia genome. In addition, it is one of two species of interest to aquaculture which is being studied more than any other in laboratories. This model fish belongs to the order percomorphs which includes many French and European species, such as perch, bream and pargo bream. These fish take a long time to reach sexual maturity, which means that their genetic study is not easy. As tilapia has a short generation gap, it can be used as a study model for improving percomorphs. It is also the main group used for studying the phenomena of speciation (birth of a new species). Of the 10 laboratories involved in the tilapia genome sequencing project, CIRAD and Stirling University of Aquaculture (Great Britain), are particularly interested in the benefits that the project may represent for aquaculture. They are researching genes linked to characteristics of interest, such as growth, rusticity, sex ratio, etc. The tilapia breeders are calling on research for the selection of male tilapias, which grow much faster than the females. The CIRAD research unit Aquaculture and aquatic resource management is developing research programmes to find a real hormone-free alternative for producing single sex male populations. Research into genetics and the use of breeding conditions could provide solutions to the danger of hormones in food, human health and the preservation of biodiversity.

"High water temperature may influence the sex of fingerlings, so we are genetically selecting parents in the hope that the progeny will have this heritable characteristic," explains Jean-François Baroiller, a scientist at the research unit Aquaculture and aquatic resource management. Genetic markers for thermal sensitivity are used to optimise this kind of selection and also to study individuals of interest within the natural diversity of tilapias. A similar approach has been set up to develop tilapias resistant to high variations in water salinity in order to meet the demand of numerous producing countries. The expected development of the first sequences will complete numerous specific genome resources for tilapia that have already been developed by CIRAD. Three PhD students from the research unit Aquaculture and aquatic resource management are working full-time on these issues in collaboration with international research organisations. The sequencing project is already of considerable benefit to the scientific community as well as for world aquaculture.

Full story :-

http://www.scientificblogging.com/news_account/omni_present_tilapia_ideal_for_genome_frequencing

Tilapia grown indoors in Scotland

By Marc Horne

Scientists are claiming farmers could balance their books by converting disused outhouses to rear tilapia - which usually thrive in the warm waters of Africa and Asia. Researchers believe harvesting a crop of 1,000 of the exotic creatures - which grow far faster than salmon or trout - could net an annual profit of £5,000. Tilapia is already a hit with American diners and the fish is being tipped to become the latest food fad with environmentally conscious UK consumers. Because of its white flesh and mild taste, tilapia is also being touted as a substitute for over-fished species such as cod and haddock.

A three-year study at Stirling University, funded by the Scottish Government-backed Rural Economy and Land Use programme, created a simple eco-friendly system which would allow the fish to be grown in converted farm buildings.

Read more at :-

<http://scotlandonsunday.scotsman.com/index.cfm?id=1678452007>

Trout and Salmon



Jellyfish attack destroys Salmon

From the BBC

A jellyfish invasion has wiped out Northern Ireland's only salmon farm, killing more than 100,000 fish. The density of jellyfish stopped workers from reaching cages. A Northern Salmon spokesman said last week's attack could cost more than £1m. Billions of small jellyfish, known as Mauve Stingers, flooded into the cages about a mile into the Irish Sea, off Glenarm Bay and Cushendun. The jellyfish covered an area of up to 10 square miles and a depth of 35 feet. Rescuers tried to reach the cages but the density of fish made it impossible.

Managing director John Russell said he had never seen anything like this in 30 years in the business.

It could take at least two years for the firm to recover. "The sea was red with these jellyfish and there was nothing we could do about, it, absolutely nothing," he said. "It's a disaster for this company - you cannot legislate for something like this."

The Department of Agriculture's fisheries division has carried out a full investigation, and talks with Northern Ireland Agriculture Minister Michelle Gildernew have taken place to try and rescue the farm and save the jobs of 12 staff.

Paper on Genetic effects of captive breeding of Salmon and Trout

By Hitoshi Araki, Becky Cooper, Michael S. Blouin

Abridged Abstract

Captive breeding is used to supplement populations of many species that are declining in the wild. The suitability of and long-term species survival from such programs remain largely untested, however. We measured lifetime reproductive success of the first two generations of steelhead trout that were reared in captivity and bred in the wild after they were released. By reconstructing a three-generation pedigree with microsatellite markers, we show that genetic effects of domestication reduce subsequent reproductive capabilities by 40% per captive-reared generation when fish are moved to natural environments. These results suggest that even a few generations of domestication may have negative effects on natural reproduction in the wild and that the repeated use of captive-reared parents to supplement wild populations should be carefully reconsidered.

Captive breeding was originally used as a form of conservation for the most critically endangered species, but is now widely used for the restoration of declining natural populations. In theory, captive-reared organisms may accumulate deleterious alleles that could hinder the recovery of natural populations. However, the extent to which captive-reared individuals contribute genetically to the restoration of natural populations is not known.

Hatchery programs for enhancing threatened populations of Pacific salmon and steelhead trout *Oncorhynchus spp.* release more than five billion juvenile hatchery fish into the North Pacific every year and although most of these hatchery programs are meant to produce fish for harvest, an increasing number of captive breeding programs are releasing fish to restore declining natural populations. Hatchery fish breed in the wild, and many natural populations are affected by hatchery fish. The use of hatchery-reared fish as broodstock for many generations has resulted in individuals that contribute less to the gene pool, in comparison with wild fish. On the other hand, captive breeding programs that use local wild fish as broodstock are expected to produce hatchery fish having minimal differences in fitness from wild fish. Nevertheless, such captive-reared fish can be genetically distinct from wild fish for a variety of traits. Thus, it is a real concern that these fish will also have low fitness in nature.

In this study, we investigated the strength of genetic effects of domestication on the reproductive success of captive-reared individuals in the wild. Confounding environmental effects were avoided by comparing captive-reared individuals with different histories of captive breeding in the previous generation. By comparison we were able to evaluate the effect of a single extra generation of captive rearing on subsequent reproductive success in the wild, while controlling for the effect of rearing environment.

Complete paper at :-

<http://www.sciencemag.org/cgi/content/full/318/5847/100>

Other



Singapore produces Super sea bass

By Tania Tan

Jurong Fishery Port was abuzz with activity yesterday as Singapore's first half ton shipment of 'super sea bass' arrived from Indonesia. Hatched in the research tanks of the Agri-Food and

Veterinary Authority's (AVA) Marine Aquaculture Centre (MAC) on St John's Island, the fast-growing fry were fattened for harvest on an offshore farm in Riau. With a survival rate of up to 80 per cent, MAC's fry are twice as hardy as wild fry, and able to grow up to 15 per cent faster, reaching market size - about 500g - in under six months. Yesterday's inaugural load is the first of many, said the AVA, as the successful harvest will help boost the Republic's future fish stocks - translating into a sustainable and affordable supply of quality fish.

The entire shipment of live sea bass was snapped up even before the fish was netted out of the sea - at a wholesale price of about \$7 per kg, comparable to current market prices, said the AVA. Supply of high-quality fresh fish has sometimes been unable to meet demand because, as MAC head Lim Huan Sein explained, 'limited supply of good-quality fry is often a bottleneck when it comes to large-scale fish farming.' Mr Eric Tan, managing director of seafood company Marine Harvest, which operates the farm, added that poor fry survival rates often drive the costs of farming up, which in turn have a snowball effect on prices paid by suppliers and customers. To help widen the supply net, 400,000 of the specially bred fry have been supplied to the Riau farm since last year. The farm is expected to produce up to 100 tonnes of fresh fish monthly, for the next two years - or close to 7 per cent of all sea bass eaten here. At the same time, another 400,000 fry have been supplied to fish farms here, which have been already selling the adult sea bass to the local market over the past six months. A large-scale marine farm in southern Singapore is also expected by the end of this year, with a projected production capacity of up to 3,000 tonnes of fish annually by next year.

Singaporeans consume about 72,000 tonnes of fresh fish a year, with most coming from farms in Malaysia, Indonesia and Thailand, said the AVA. The special sea bass fry were produced through a 'painstaking process of selective breeding', said Mr Lim. Generations of the fish were bred and selected for desirable qualities, including size, growth and survival rates - a process which took three years, he explained. This is the first time that fish from the four-year-old research centre has been produced and sold on a commercial scale.

The new sea bass have proven to be a hit with restaurants here, and plans are under way to boost production of MAC's super fry. And with the success of the sea bass project, researchers at MAC are turning their attention to other popular fish species, including red snapper and cobia. Looking at the wriggling sea bass, some weighing up to 3kg, Mr Lim said: 'It's a proud moment.'

See this for full story with pictures :-

http://www.straitstimes.com/Free/Story/STIStory_164142.html

Nile perch skins being used to manufacture shoes!

By Will Ross from BBC News, Kampala

For years fillets of Lake Victoria's Nile perch have been exported to Europe and beyond, but now Crane Shoes in Kampala is making use of the previously discarded skin of the fish. Since it was introduced to the world's second largest fresh water lake around 50 years ago, many smaller species have disappeared, having been gobbled up by the Nile perch.

These fish can grow up to 200kg and 2m in length - one serious pair of shoes in the making. "They are popular with expatriates and ministers," says John Byabashaija, the executive director of Crane Shoes, as he admires the latest Nile perch design.

These shoes are made to measure - Ugandan style. Shoe-maker Innocent Rwabukye places a sheet of A4 paper on the floor. I stand on it, he draws around my foot with a ball point pen and then displays a lengthy menu of fish skins which have been dyed in the tannery; pink, dark green, purple, light blue, in fact a different colour for each day of the week.

And no, they don't smell of fish.

The factory uses machines to cut and score the leather, with almost all the 30 staff employed on a casual basis. The factory was set up as a project under the United Nations Industrial Development Organisation, Unido. John Byabashaija spent a few months in Italy learning about the quality shoe industry before returning to run the factory which now produces more than 1,000 pairs each month bringing in close to \$20,000. Inside the Crane Shoes factory, the staff are not sticking to foot fashion; belts, wallets and bags are also crafted.

The following day I leave the factory with fish on my feet.

Feeds

Results of a survey among Aquaculture experts

At a recently held aquaculture meeting, organised by Alltech, the participating experts (50) gave their opinion about the current and future issues in the aquaculture business.

These are the results:

- 58% agree GM cereals and proteins will be fed to EU aquaculture within 5 years.
- 51% agree offshore open sea facilities will be prioritised due to EU Maritime zoning policy, with 13% disagreeing.
- 47% believe 1 or 1.5 ppm total Se is required for most fish species (legal limit just 0.5 ppm).
- 65% felt that 15 to 20% fish meal will be standard in salmon starter diets in the future.
- For carnivorous marine species, levels of 30 to 40% were suggested by 70% of the respondees.
- Half the respondees thought a combination of both Viral & Bacterial diseases threaten marine production.
- 65% agreed genetic selection of salmon, tilapia & sea bass has improved growth but reduced immunity and increased disease.

- 48% said all of the following factors are critical in developing aquafeed; identifying effective mineral levels, replacing fishmeal, feed contaminants and raw material prices.
- 51% agree that mycotoxin contamination has become a bigger issue in aquafeeds in the last 3 years.
- 33% thought controlling disease was the biggest threat to the development of aquaculture with rising feed costs and water quality a joint 2nd with 20% each.
- 38% felt that marketing fish as a source of DHA etc. and 37% the reducing wild fish industry were seen as the biggest opportunities for farmed fish producers.
- 66% see between 10% and 20% weight loss in their fish due to sea-lice.

http://www.allaboutfeed.net/news/id102-29426/results_survey_among_aquaculture_experts.html

Environment, Health and Disease issues

Organic aquaculture taking off in the Phillipines

The German Technical Cooperation in cooperation with the Philippine government, and a number of non-government organizations and people's organizations in Asia and Phillipines, have recently gathered at an Organic Aquaculture Symposium to share the best experiences and insights in the subject fields particularly in the promotion and development of organic aquaculture production. Dr.

Kai Kuhlmann, an aquaculture consultant was requested by the Provincial Government to survey and promote Organic Aquaculture in the province and region, said that in contrast to conventional aquaculture, organic aquaculture is an overall system of farm management and food production that focuses on best environmental practices, a high level of biodiversity, preservation of natural resources and application of high animal welfare. It guarantees stable prices of all goods exported to the European markets and job security for local farmers upon certification of quality standards and being labeled as organically produced products.

Full article at :-

<http://bulatlat.com/2007/10/organic-aquaculture-restoring-natural-production-systems-changing-lifestyles-and-raising-qua>

Research matters, Reviews & Training

Marine Seaweeds – Africas mostly untapped resource

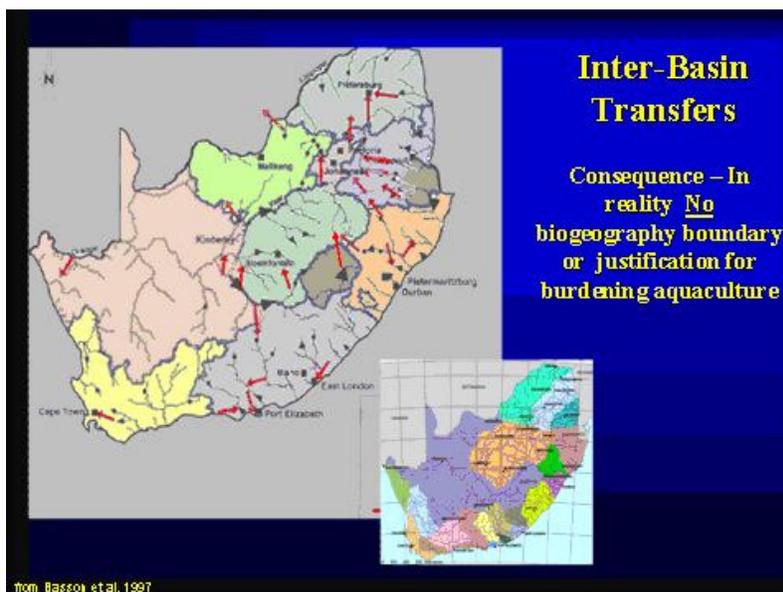
Seaweeds are seen as a menace that take over ferry-ways and disturb fishermen from earning legitimate income by spreading through their transit routes in Nigeria, however in Tanzania, there is this revelation by a leading scientist that seaweeds are wonderful delicacies and a neglected treasure with the potential for alleviating rural poverty.

Three page article by Kunle Somorin at :-

<http://allafrica.com/stories/200711200499.html>

Regulatory matters

Aquaculture Policy for the Western Cape



From the 17th to the 19th October a workshop on Policy was held in Cape Town with the aim of finalising the document that will become the basis of aquaculture development in the province and possibly a model for a National Policy.

Prof. Kirshen Rana was invited to moderate the discussion.

All sectors were represented and many useful inputs to the document were received which should be available for inspection soon.

One of the most interesting points that arose was the interconnections of the majority of South African rivers due to

interbasin transfers, which from an aquatic ecosystem point of view means these should be regarded as a single unit. Map above from the Department of Water Affairs.

Announcements & Upcoming events

World Aquaculture Events

WORLD AQUACULTURE 2008 Korea - May 19-23, 2008

World Aquaculture 2008 will be the first chance for the international aquaculture community to visit Korea and see the diverse and rapidly expanding aquaculture industry in Korea. Attendees will be able to see what is happening in Korean aquaculture as well as aquaculture developments in the rest of Southeast Asia and around the world.

AQUACULTURE AMERICA 2008 Orlando, Florida - February 9-12, 2008

Contact the Conference Manager
P.O. Box 2302 Valley Center, CA 92082 USA
Tel: +1 760 751 5005
Fax: +1 760 751 5003

Email: worldaqua@aol.com or register online at: www.was.org

AQUACULTURE EUROPE 2008 Krakow, Poland – September 16- 18, 2008

The annual Conference and Exhibit on Aquaculture of the European Aquaculture society

Email ae2008@aquaculture.cc

Postal address (for those unable to register online or to fax to +1-760-751-5003) :Aquaculture Europe 2008, c/o MarEvent, Begijnengracht 40, 9000 Gent, Belgium

Conferences

AASA 2007 Bi-annual Conference

With the Conference now complete I am sure all those that attended will join me in expressing thanks to the people who put it together so seamlessly and kept the wheels turning behind the scenes.



Employment

- From Melanie Jayne Smith.

I have recently completed the mini-dissertation required for the Master of Science degree in Marine Aquaculture, University of Cape Town. The thesis title: "Nutritional constituents and seasonal differences of *Ecklonia maxima* on the west and south west coast of South Africa."

MSc. in Applied Marine Science at the University of Cape Town and completed the coursework requirements on a student exchange program at Bergen University, Norway.

BSc. Honours in Oceanography and Aquaculture, University of Cape Town

To date my main research interest has been determining the physical, chemical and biological processes that govern the ocean and atmosphere and quantifying the effects of global climate change. I would like to pursue this line of research with special emphasis on environmentally sustainable aquaculture, in an effort to improve the yields without exhausting the local natural resources. My immediate goals are to gain practical experience as a scientific advisor/manager of an aquaculture farm before eventually establishing a marine fish farm of my own.

Tel: (H) 021 671 4244 (UCT) 021 650 4189

Cell: 072 337 5924

Email: melanie.smith@uct.ac.za or melaniepangea@hotmail.com

- Applications are invited for the position of the **CURATOR – LIFE SUPPORT SYSTEMS at Sea World at uShaka Marine World, Durban**. Submit your Curriculum Vitae and a covering letter to the Director: Finance and Administration by either:

E-mail: dbrowne@saambr.org.za

Fax: (031) 338 8188

Hand Delivery: The South African Association for Marine Biological Research
1 King Shaka Ave, Point, Durban

CLOSING DATE FOR APPLICATIONS: 17 December 2007