



## NEWSLETTER

OF

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



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**Aquaculture Association of Southern Africa**

Tel: +27-(0)12 807 6720  
Fax: +27-(0)12 807 4946  
E-mail: [info@aasa-aqua.co.za](mailto:info@aasa-aqua.co.za)

**Aquaculture Institute of South Africa**

Tel: +27-(0)21 556 7339  
Fax: +27-(0)21 556 4428  
E-mail: [lbotes@ai-sa.org.za](mailto:lbotes@ai-sa.org.za)

## A Word from the AASA Chairman and the CEO of AISA

### Etienne Hinrichsen

In the past I have written about the rate at which aquaculture is expanding in South and Southern Africa. In years gone by a hand full of people in our region could relate to virtually all that was happening in aquaculture and most people involved in the sector were generalists – knowing a bit about technology, a bit about recirculation systems, something about feeds, had an idea about market development etc. etc. Now it is becoming abundantly clear that aquaculture activities are being planned and executed widely, many new faces are appearing and the hand full of people that knew anything about everything are now being replaced by an increasing number of specialists, multitalented teams, international partnerships, consortia, joint ventures and the likes. I am not an expert, but to me this is a sign of things to come for aquaculture in the Southern African region.

For our South African readers, it is important that I say something about the Alien Invasive Species Regulations in terms of the National Environmental Management Biodiversity Act. Over the last months I have been both very positive and very concerned about the influence of these regulations on aquaculture development and operation. Right now I am concerned about how these regulations will put aquaculture out of the reach of small scale entrepreneurs and how it may impact on existing farmers of exotic species (especially trout). This being said, I want to say with confidence that aquaculture development in our region is inevitable and although regulations such as these may challenge those of us that want to see aquaculture take off, I believe we will arrive at a conducive and all-round acceptable approach – it may cause some tears along the way and I am sure some of you will question my sentiments here! The fact of the matter is that I am trying to weigh up all sides of these regulations and if aquaculture development is the stronger driver for social, economic and environmental advantages, then I know aquaculture will come through. I believe the next step in this process is for the aquaculture sector to have the species it uses recognised more widely for their production value and to prove that we can build an environmentally responsible industry.

From the chair I want to urge you again to support the Association. Our office has recently sent default invoices to all past members and this has boosted our income somewhat. Yet, we need continued support and I want to call on all who receive this newsletter to contact the office for the renewal of your membership. This newsletter is open to all and you will continue receiving it even if your subs are unpaid, but we can not support the growth of this sector without your contribution.

Happy fish farming.

### Dr. Lizeth Botes

From Lizeth Botes [lbotes@ai-sa.org.za](mailto:lbotes@ai-sa.org.za)

The Western Cape Aquaculture Policy/Strategy and Implementation Plan.

A very successful international Western Cape Aquaculture policy and strategy workshop (as a follow-up on workshops held at the end of 2006 and beginning 2007) where

- Discussions and comment on the Western Cape draft Aquaculture policy discussion document and;
- Inputs with regard to the drafting of a discussion document for a Western Cape Aquaculture Strategy,

was held by the Western Cape Provincial Development Council (PDC) from 17-19 October 2007 in Cape Town. The inputs of the stakeholders from government, civil society, labour and business were obtained and incorporated into the policy discussion document. Furthermore, inputs from stakeholders in terms of a Western Cape Aquaculture Strategy were recorded as preparation for the drafting of a discussion document.

An integrated final policy discussion document was drafted and sent to Dr Krishen Rana, an international expert on aquaculture policy and strategy development based in Scotland, for content and editorial revision and conversion into the required policy format. The final policy document was submitted to the Department of Economic Development and Tourism (DEDT) during April 2008. The policy document will now be submitted to the Provincial Economic Cabinet Committee during the first part of May 2008 for approval and to be promulgated through a Provincial Green Paper / White Paper process.

The Western Cape Aquaculture Strategy discussion document is currently in the process of being finalised, after which it will be distributed to all stakeholders in preparation for an international aquaculture stakeholder strategy workshop where discussions and input on the afore-mentioned document will be obtained. The workshop is scheduled to take place during July 2008.

## The Editor's choice

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Adrian Piers [newsletter@aasa-aqua.co.za](mailto:newsletter@aasa-aqua.co.za)

### Editorial

Grimur Valdimarsson, the Director of FAO's Fish Products and Industries Division, recently was interviewed about international trade in fish products, the global seafood industry, and what it means for developing countries and the environment.

The developing world accounted for half of all fish exports in 2006. Developed countries accounted for 62 percent of all fish imports by weight. In value terms, the overall value of fish imports in 2006 was US\$90 billion, and developed countries accounted for 80% of that because they're particularly importing higher value products like shrimp or salmon.

This trade involves significant benefits for low income countries with their net export revenues from fish trade currently running around US\$25 billion. This means jobs and income, not only in the fishing and aquaculture sector but in fish preparation and processing, supply, transport and other related sectors. It is also a source of revenues for governments. So in addition to making crucial contributions to nutrition and protein intake in the developing world, fisheries and aquaculture is boosting food security and growing economies too.

<http://allafrica.com/stories/200805230735.html>

## Letters to the Editor

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### Call for submissions to Crayfish News

This is the first call for contributions to the June 2008 issue of Crayfish News. The deadline for submissions for this issue will be Friday, June 27<sup>th</sup>. Please send in any crayfish-related newsworthy items such as short research articles, crayfish-related news from your area or meeting

announcements. If you would like to highlight your own crayfish research, please send in a short article (2-4 pages, plus images).

For more information on how to submit an article to Crayfish News see

<http://iz.carnegiemnh.org/crayfish/IAA/cnsubmit.htm>.

The International Association of Astacologists 17 early bird Registration is now past, but you can still register for the meeting via the IAA17 website at

<http://www.iaa17.net/>

James W. Fetzner Jr., Ph.D. Carnegie Museum of Natural History

IAA Secretary & Crayfish News Editor

## Advertisement

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## Abalone



### Abalone certification gets underway

The process of creating standards for certifying farmed abalone is underway, the World Wide Fund for Nature (WWF) announced today. It says the standards will help minimise the key environmental and social impacts associated with abalone production. At the first meeting of the Abalone

Aquaculture Dialogue, held in Australia last month, participants identified the key impacts associated with abalone farming and agreed on overarching goals to address those impacts. The impacts discussed relate to biosecurity, genetics and the ecosystem effects of abalone aquaculture. Dialogue participants also made significant progress in categorising criteria, which are specific areas to focus on in order to reduce the impacts of abalone farming. For example, participants identified disease, broodstock/seed procurement, and the translocation of exotics as key criteria in addressing biosecurity issues.

For a summary of these and other issues discussed at the meeting, go to

[www.worldwildlife.org/abalonedialogue](http://www.worldwildlife.org/abalonedialogue)

Full story at

[http://www.fishupdate.com/news/fullstory.php/aid/11042/Abalone\\_Aquaculture\\_Dialogue\\_begins\\_.html](http://www.fishupdate.com/news/fullstory.php/aid/11042/Abalone_Aquaculture_Dialogue_begins_.html)

### **Fears for the Future of Australian Abalone industry**

From ABC News by Cate Grant

The abalone industry fears a viral disease could infect more stocks. There are fears a deadly shellfish virus could infect Tasmanian and South Australian waters within months. Tasmania's Abalone Council is supporting calls for a ban on human activity on stretches of the Victorian coastline.

The ganglioneuritis virus has jumped 20 kilometres along the Victorian coastline towards Port Philip Bay.

<http://www.abc.net.au/news/stories/2008/04/28/2229169.htm?section=australia>

### **Gansbaai Abalone production to expand**

Last month Cape Business News reported on plans to expand Premfish's aquaculture endeavours at the abalone farm at Gansbaai. Recently Premfish confirmed that it had acquired Transnet's Marine Growers abalone farm near Port Elizabeth for an undisclosed sum. Sekunjalo CEO Mo Kajee says the Marine Growers acquisition is in line with Premfish's strategy to grow its aquaculture interests to meet the growing local and international demand. "The capacity of Premfish's abalone farm in Gansbaai is in the process of being expanded to 150 tons per annum to meet international demand. The purchase of Marine Growers in the Ngqura precinct strengthens our position where we will have additional product to supply the market and also to improve our pipeline in the expansion of the Gansbaai farm."

Last year the total export production for SA abalone was around 1 000 tons. Kajee believes the export capacity for SA abalone can be 3 000 to 5 000 tons a year.

<http://www.cbn.co.za/dailynews/2813.html>

### **Australian farm plans to be worlds largest producer of Abalone**

Australian Bight Abalone's plans to become the world's largest abalone farmer received a boost with a five-year export contract potentially worth more than \$100 million. The lucrative deal will involve up to 300 tonnes of farmed greenlip abalone being sold each year from its Eyre Peninsula farms near Elliston to the U.S. The abalone will be available at leading West Coast and Canadian seafood restaurants and retail outlets. The deal follows the start of ABA's first harvesting program in January. ABA's chief executive Andrew Ferguson said the contract would significantly diversify

its abalone markets. "We have been in negotiations with U.S. importers for some time, and have been able to open up a valuable new export market for our abalone," he said. While Asia remained the world's primary market for abalone, the U.S. had been one of the largest abalone markets before the Californian fishery was closed in the 1990s. "Until now, little Australian abalone has been sold in North America, with most going to China, Hong Kong and Japan to meet the rapidly growing demand in Asia," he said. "We've been partially holding up our harvest for this deal because it will require a great deal of our stock. "The U.S. will take a good 50 per cent of our production next year and between 10 and 50 per cent after that depending on our growth."

Mr Ferguson said worldwide demand for abalone exceeded supply by about 30 per cent, placing significant pressure on available stocks. The U.S. deal involves some larger-sized abalone and some at the normal size. "This will mean allowing the abalone to grow out for an additional 18 months to two years before being harvested and processed," he said. "The significant factors that allowed us to clinch the deal in America were the quality of our abalone, which matches that of wild stocks, and our ability to guarantee consistency of quality and supply." Mr Ferguson said this was a direct result of the Aquafarm system the company used and the pristine waters around Elliston where its farms were. ABA's patented Abalone Aquafarm system uses a series of floating reefs to create a secure ecosystem for the abalone, which feed on natural algae, improving quality and growth rates. The nets and baskets are maintained by divers to ensure good water flow with the health of the abalone overseen by marine biologists and veterinarians. The abalone can be harvested at any time to meet demand. ABA is the largest holder of marine aquaculture leases by value outside the tuna and salmon industries in Australia. It also runs the largest offshore abalone operation outside China and plans to become the world's largest abalone producer by 2016. More than 450 investors hold units in ABA, which plans to raise an additional \$35 to \$50 million in share offerings this year.

<http://www.news.com.au/adelaidenow/story/0,22606,23539360-5006301,00.html>

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#### **Brynn Simpson & Grant Brooker**

Contact details:

#### **Brynn Simpson**

Email: [brynn@deepblueza.co.za](mailto:brynn@deepblueza.co.za);

Cell: +27 (0)83 972 3672

#### **Grant Brooker**

[grant@deepblueza.co.za](mailto:grant@deepblueza.co.za)

+27 (0)82 290 9628

## Catfish



### Catfish farm in the Eastern Cape launched

By Tisha Steyn in Die Burger

A fish farm near Pacaltsdorp George can serve as an example for numerous struggling small-scale farmers. The farm, which had struggled to get off the ground for four years because of a lack of expertise, developed into a model farm which could also serve as an example of how to provide for the world's growing food needs.

Jack Human of Jagido Holdings said on Wednesday at the launch of the Jagido Fish Farm: "I like designing things and I realised a long time ago that there would always be a shortage of food." Human and his brother-in-law, Gido Crous, started up the fish farm about four years ago. About 35 cement dams of different sizes were built on less than a hectare of land. "We're cultivating food, we're helping with the upliftment of previously disadvantaged people and we're creating jobs."

[http://www.news24.com/News24/Technology/News/0,,2-13-1443\\_2318670.00.html](http://www.news24.com/News24/Technology/News/0,,2-13-1443_2318670.00.html)

## Crayfish and Lobsters



### S A Premier Fishing harvests Lobsters but farms Abalone

Premier Fishing, which pulled off an encouraging turnaround in the year to end August 2007, looks ready to build a formidable business around the export of seafood delicacies.

At a recent presentation Premfish disclosed some serious ambitions around building major positions in the West Coast and South Coast Lobster markets as well as in the fledgling abalone aqua-culture sector.

<http://www.cbn.co.za/dailynews/2813.html>

## Eels



No submissions

## Ornamentals



### Paper on ontogeny of Cichlids colour perceptions

Cichlid fishes have radiated into hundreds of species in the Great Lakes of Africa. Brightly colored males vie to be chosen by females as mates. Strong discrimination by females causes differential male mating success, rapid evolution of male color patterns and, possibly, speciation. In addition to differences in color pattern, Lake Malawi cichlids also show some of the largest known shifts in

visual sensitivity among closely related species. These shifts result from modulated expression of seven cone opsin genes. However, the mechanisms for this modulated expression are unknown.

We ask whether these differences might result from changes in developmental patterning of cone opsin genes. To test this, we compared the developmental pattern of cone opsin gene expression of the Nile tilapia, *Oreochromis niloticus*, with that of several cichlid species from Lake Malawi.

In Tilapia, quantitative polymerase chain reaction showed that opsin gene expression changes dynamically from a larval gene set through a juvenile set to a final adult set. In contrast, Lake Malawi species showed one of two developmental patterns. In some species, the expressed gene set changes slowly, either retaining the larval pattern or progressing only from larval to juvenile gene sets (neoteny). In the other species, the same genes are expressed in both larvae and adults but correspond to the Tilapia adult genes (direct development).

The conclusions we came to are that differences in visual sensitivities among species of Lake Malawi cichlids arise through heterochronic shifts relative to the ontogenetic pattern of the tilapia outgroup. Heterochrony has previously been shown to be a powerful mechanism for change in morphological evolution. We found that altering developmental expression patterns is also an important mechanism for altering sensory systems. These resulting sensory shifts will have major impacts on visual communication and could help drive cichlid speciation.

[http://7thspace.com/headlines/282279/visual\\_sensitivities\\_tuned\\_by\\_heterochronic\\_shifts\\_in\\_opsin\\_gene\\_expression.html](http://7thspace.com/headlines/282279/visual_sensitivities_tuned_by_heterochronic_shifts_in_opsin_gene_expression.html)



## Oysters & Mussels

### Red Tide – Namibian Oyster growers look for solutions

By Charles Tjatindi in the New Era

Local oyster farmers have been dealt a huge blow in production following the loss of over 10 million oysters a few weeks ago due to a red tide. They are not giving up on restoring their industry. Weeks of a persistent algae bloom that is responsible for the feared red tide resulted in more than 75 percent damage to oyster production for the country's oyster sector which prompted stakeholders to look at new ways of handling the crisis. A meeting was held in Swakopmund.

Full story at <http://www.newera.com.na/page.php?id=6631>

### Plan to revive oyster production in the US

From the Associated Press

A trade group is proposing its largest experiment to revive the Chesapeake Bay's oyster industry, seeking to grow 1.3 million sterile nonnative oysters.

The Virginia Seafood Council proposal would "plant" the Asian oysters in the Bay and on the Eastern Shore, starting June 1. "We are very determined to continue forward with this," said Frances Porter, executive director of the Virginia Seafood Council. "It's good for our industry as we continue to develop our markets for the Asian oyster."

The Asian species-known as *Crassostrea ariakensis* or the Chinese oyster-does not succumb to the same diseases that have plagued native stocks in recent decades. In past trials sponsored by the seafood council, the oysters have grown well in aquaculture and received favourable

responses in taste-tests with consumers. The Asian variety is larger than the native oyster and grows to market size more quickly.

The Virginia Marine Resources Commission agreed to vote on the request after a public hearing at its March meeting in Newport News. The Army Corps of Engineers in Norfolk also must approve the experiment. The 1.3 million oysters would be grown in protective cages or bags at 13 sites in coastal waters. Each would first have to be certified as sexually sterile, and each would have to be removed by June 1, 2009. Past tests, aimed at learning the oysters' viability in aquaculture, have involved about 1 million oysters each.

Cameron Chalmers expects to grow about 100,000 of the Asian species on leased bottom in waters near First Landing State Park. He has raised the non-natives the last two years at the same locale, and they've won him over. "They grow almost twice as fast" as natives, Chalmers said. "And they don't need as much attention. They're pretty amazing." All of the Asian oysters used in the council experiments have been reared at a hatchery run by the Virginia Institute of Marine Science. The government mandates that the oysters come from the hatchery, given its adherence to mandatory safeguards and quarantines designed to keep the Asian oysters from somehow escaping into the wild, according to the institute.

## Prawns



### Research on Prawn feeding efficiency

From FishUpdate.com

Researchers in Tasmania are developing automated image sensors and software to assist the prawn aquaculture industry and improve feeding efficiency. The project is taking place at the Commonwealth Scientific and Industrial Research Organisation's (CSIRO's) Tasmanian ICT Centre. These scientists are developing automated submersible sensors that can accurately measure the feed consumed by prawns.

The industry uses a variety of methods for measuring feed consumption, all of them manual and labour intensive. These estimates of consumption are used to decide how much feed should be given at the next feeding. The two major inputs into prawn farming in Australia are feed pellets and labour. The efficiency of the industry can be improved by reducing these costs. Sensors that provide continuous information about feed consumption in prawn ponds will bring a number of benefits, including reducing overfeeding and reducing nutrient levels in farm effluent. The next stage of the project will focus on deploying the sensor at a working prawn farm, evaluating the performance of the unit against existing manual methods and developing algorithms for estimating the sizes of prawns from images of the feeding tray.

The project is part of CSIRO's Food Futures National Research Flagship. The combined impact of CSIRO's prawn projects is expected to double the value of the Australian prawn industry by 2020.

## Tilapia



### Tilapia Aquaculture on Lake Malawi

Maldeco Aquaculture company, established in 2003 to build up Tilapia "chambo" stocks through aquaculture hired Tom Shipton of Enviro-Fish Africa, a consulting firm based in Grahamstown, South Africa as a technical advisor to the project. He recently was interviewed on developments.

People around Lake Malawi have long depended on the chambo to help feed their families. Following the start of commercial fishing on the lake, however, the annual catch of chambo plunged, from 3,250 tonnes in 1985 to 207 tonnes in 2002. His view of the status of the aquaculture project available at:-

<http://www.ipsnews.net/africa/nota.asp?idnews=42610> or

<http://www.growfish.com.au/content.asp?ContentId=11532>

## **Tilapia loses momentum to other species**

From Business Daily by Allan Odhiambo

An unprecedented slump in tilapia production in China due to bad weather could provide an opportunity to Kenya and other exporters of rival fish species such as Nile perch to maximise on their sales. A latest market report showed that intense and long winter conditions had greatly affected China's tilapia industry, sending output plummeting by up to 80 per cent. Market players said China being a key producer of tilapia, the draw back in its local production is expected to cause a global scarcity that would last up to 12 months. Subsequently, prices have started to rise. Chinese exports of tilapia to certain African markets may be affected until the situation improves.

These developments could have a positive influence on Latin American tilapia producing countries like Ecuador, Costa Rica, Honduras and Brazil, which would be able to provide adequate supplies of tilapia, particularly fresh product, at better prices, the Food and Agriculture Organisation (FAO) said in market report. Analysts however said, suppliers of marine whitefish species, many of which had been substituted by tilapia products in recent times will also be able to take advantage of the situation.

Kenya, Tanzania and Uganda could particularly take advantage of the Chinese woes to boost their Nile perch exports that have been under intense pressure of competition from tilapia and pangasius species of fish, especially in special white meat segments, because of cheaper pricing. The challenges of high market prices for Nile perch exporters such as the three East African nations have been partly because of depleting stocks and high costs of production, prompting fears that their occupation could be pushed out by competition.

"The outlook for Nile Perch remains bleak. On the one hand, catches are further declining, on the other hand, competition is strong and expanding in the fresh fillet segment," FAO warned in a Nile perch market report for July 2007. A recent move by Anova, the leading importer of Nile perch into Europe, to expand its interest in the pangasius trade further sent chills down the spine of the Nile perch dealers because pangasius directly rivals their products in the market.

But with the dramatic situation in China, FAO said tilapia prices are likely to increase sharply, levelling out the advantage the species has upheld over Nile perch in the past few years. In only three years, Chinese tilapia exports grew from 90 000 tonnes in 2004 to exceed 210 000 tonnes in 2007 worth about \$ 500 million, with the US being the main importing country of tilapia from the Asian nation having taken 122 000 tonnes last year. Analysts, however, warned that even with the drop in output by China, Kenyan Nile perch exporters still faced a tall order because of the navigational challenges on Lake Victoria posed by various weeds that have invaded key fishing grounds on the lake affecting the movement of fishing vessels.

"We are tied up in many ways because weeds are all over the lake and we cannot fish. Cost of production also remains high with the high costs of fuel and refrigeration facilities so the new opportunities would only remain a dream for many," Charles Otieno, a dealer in Kisumu, told Business Daily by phone.

<http://allafrica.com/stories/200805051982.html>

## **Aquaculture the source of next generation of fish in Uganda**

By Dorothy Nakaweesi in the Daily Monitor

The water level on Lake Victoria, the main fish source in Uganda, is falling, fish stocks and species are continually declining and the threat to fish exports is real. To avert a catastrophic lack of fish in the country, some ingenious investors are venturing into aquaculture as an alternative to ignite fish production for export and the local market. Full story at:-

[http://www.monitor.co.ug/artman/publish/business\\_power/Aquaculture\\_is\\_source\\_of\\_next\\_generation\\_of\\_fish.shtml](http://www.monitor.co.ug/artman/publish/business_power/Aquaculture_is_source_of_next_generation_of_fish.shtml)

## **New Aquaculture project in Uganda**

By Ronald Kalyango in the New Vision

Uganda fish production is set for a boost. Two investors have injected over \$500,000 in the sector to increase the production of tilapia fish for export. The Ekitangaala Fish Farms (EFF) project is located at Ntuti village, Kitangala sub-county in Nakasongola district. Rand Blair, the EFF managing director and Robert Cook of the International Aquaculture, hope to export about 300 tonnes of tilapia and catfish every year when production begins. He said they had set up eight fish ponds and stocked them with 40,000 tilapia fish fry.

"Uganda has the potential to become the leading exporter of fish and fish products on the continent. We want to set up several fish ponds and train more farmers countrywide," Blair said.

In 2005, EFF and International Aquaculture formed a joint venture to engage in tilapia production.

## **Namibia Tilapia farm eyes expansion**

Echo Fish Farm at Hardap wants to double annual output for fresh water tilapia by securing a foothold on key emerging niche markets in Angola, Botswana, South Africa, Zimbabwe and Zambia where there is a high demand for fresh-water fish. For now annual production of fish for local consumers ranges between 8 to 10 tons at the farm whose burning ambition is to double output to 20 tons. Its manager Fritz Nasilowski says electricity limitations resultant from the transformer installed thirty years ago, that can only provide a maximum of 1.1 kilowatts of power to oxygenation and re-circulation water units, have caused expansion plans not being put in motion. "The local demand is there - we are aiming at opening an outlet in Windhoek and we are also looking to expanding to the rest of Africa in Angola, Botswana, South Africa, Zambia and Zimbabwe," said Nasilowski who for now only sells his fish at the farm.

Tilapia is packed in 5kg boxes, frozen and eventually sold for N\$100 per unit mostly to people from nearby Mariental and Windhoek and who see fish as a healthy alternative. Many of the aquaculture farms established by the Ministry of Fisheries and Marine Resources and scattered around Namibia as part of the government's multi-pronged strategy for poverty alleviation have been getting their fingerlings from Echo, the only private-run fish farm. For now the staff strength of this farm stands at 23 full-time employees and its owner is Ivo de Couvea who is also the brains behind Overberg Fishing Company.

Farming fish on a commercial basis in Namibia is gradually proving to be viable, though experts have previously said a lack of funding has continuously prevented this fledgling but promising industry from taking off on a large scale like marine fisheries. Namibians intending to venture into this industry say a lack of collateral results in them being precluded from applying for bank loans. Fish farming, like other types of farming, is a risky business that requires special knowledge and skills. But farm-reared fish is free from disease and could be a more desirable substitute than wild fish from potentially polluted rivers. Fish are also excellent animals to rear because they can convert feed into tissue more efficiently than most farm animals, transforming about 70 percent of

their feed into flesh. Fish is also a healthy food that is low in calories and cholesterol levels but rich in protein. Full story at:-

<http://allafrica.com/stories/200805130648.html>

## Chinese style steamed Tilapia

A recipe, with some humour on research, and good photos at

<http://evelayn.blogspot.com/2008/03/to-steam-tilapia.html>

## Project to produce 40,000 tons of Tilapia

Perak looks set to be Southeast Asia's largest breeding centre for Tilapia thanks to a joint venture between the state Agriculture Development Corporation and Trapia (M) Sdn Bhd, a subsidiary of Norway-based Genomar AS. As part of the project, some 200 hectares of the state's Temenggor and Kenering lakes have been turned into aquaculture industrial zones which are expected to produce between 30,000 and 40,000 tonnes of tilapia annually by 2013.

Fisheries Department director-general Datuk Junaidi Che Ayub said the mammoth aquaculture project would be carried out based on the contract farming concept and would provide some 2,000 job opportunities.

"The agreement was signed in February last year and involved an initial investment of RM35 million. It is hoped that Perak will attain the status of the world's largest fillet producer once the company is fully operational," Junaidi said after witnessing the harvesting of tilapia in Temenggor lake. Junaidi also revealed that Perak was chosen after attempts to breed Tilapia had been carried out in several locations in Thailand as well as Kedah, Johor, Pahang and Terengganu.

[http://www.nst.com.my/Current\\_News/NST/Tuesday/National/2226412/Article/index\\_html](http://www.nst.com.my/Current_News/NST/Tuesday/National/2226412/Article/index_html)

## Trout and Salmon



### “Bullet proof” Salmon nets tested

From the BBC

Nets designed to reduce escapes of farmed fish are on trial in Scotland. These nets are made from a material used in the manufacture of bullet-proof armour and aircraft cockpit doors and are now being tested on fish farms, at a cost of £100,000.

Part-funded by the Scottish Salmon Producers' Organisation, the sector hopes the tougher nets will cut down on escapes of farmed fish. The Scottish Government is a partner in the project. Fourteen nets to contain farmed fish are involved in the trials in Badcall Bay, Scourie, and on Harris. The aim of the design is to prevent damage, including that made by marine animals biting through the netting from occurring. Last year, up to 30,000 salmon were thought to have escaped from a fish farm on the Western Isles sparking concerns among anglers about an adverse impact on wild fish. Seals were blamed for making the two large holes in a salmon cage.

[http://news.bbc.co.uk/2/hi/uk\\_news/scotland/highlands\\_and\\_islands/7385171.stm](http://news.bbc.co.uk/2/hi/uk_news/scotland/highlands_and_islands/7385171.stm)



### Farmed Barramundi praised

When television's Iron Chef Hiroyuki Sakai becomes guest chef at ritzy Palazzo Versace on the Gold Coast in July his diners will feast on a very special fish from Mackay. Sakai will team with the hotel's executive chef, Steve Szabo, for three nights to present an eight-course banquet in which farmed Barramundi will feature. Szabo talks with gusto about the flavour and texture of the fish. "It's easily the the best barra I've ever tasted," he said. From a chef of Szabo's standing it was a glowing reference for the family company that breeds the fish. And it was an endorsement of aquaculture itself. "It's getting harder and harder to get quality seafood; in fact it's a nightmare," Szabo said, "but this fish is full of flavour. It's fantastic."

The fish are flown in from Central Queensland Barra, a company owned and run by cane farmers Michael and Hayley Deguara and their eight children. Leading Brisbane eatery Restaurant II also takes the family's barra. It took the Deguaras five years to successfully grow the fish in cages suspended from pontoons over a 6.4ha ring tank. "It was a real struggle setting it up," said Mrs Deguara. "It's hard work but we have fun. We strive for top quality. It's very clean and takes 12 months to produce a fish around 800g to 1.2k which the restaurants like."

As the wild fish supplies dry up, Queensland's aquaculture industry now produces prawns, oysters, red-claw crayfish, soft-shell crabs, Murray cod, jade and silver perch, pearls and pearl oyster meat, scallops and sleepy cod. All are native Queensland species. But despite the boom there is growing discontent in the industry, with accusations of government interference.

"Environmental regulators are not very sympathetic to the industry," said Queensland Aquaculture Industries Federation executive officer Graham Dalton. "It can take many years to win approvals. They keep demanding more studies, water tests and the like. It becomes a long, slow process. The State Government says it is a strong supporter of aquaculture industries but the people who tick the boxes in the Environmental Protection Agency are decidedly unhelpful."

As a result, the industry in Western Australia and the Northern Territory was racing ahead of Queensland, he said. "Wild caught fish are in decline globally," he said. "Aquaculture is certainly the answer but you wouldn't think so if you lived in Queensland." He said a move by the EPA to introduce a fee of \$6800 in licence fees had incensed the industry. "It's a new tax," he said. "It's a lot of money to find for a small family farm." Federation president Dr Trevor Anderson agreed. "The aquaculture industry is loaded with opportunity, But every time we turn round we get something stuck in our way. The industry is sustainable and environmentally friendly but we are faced with over-regulation."

Dr Anderson, a marine biologist, is general manager of Seafarm Australia, which farms prawns at Cardwell, south of Cairns. The company's Crystal Bay prawns recently won a gold medal at the Sydney Royal Fine Food Show. He believes the quality of Queensland farmed seafood is streets ahead of questionable Asian imports.

Bernie Sambell agrees. His Ausyfish company is farming 10 varieties of freshwater fish in 127 ponds and three massive dams at Childers, south of Bundaberg. "In the last 12 months we have seen the price of silver perch go from \$10 a kilo to \$14 a kilo," he said. "That's brilliant. That's more than Barramundi is fetching. Our customers reckon silver perch is better." Sambell, a former aquarium salesman from Sydney, said much of his fish ended up in Chinese restaurants via the Sydney fish market. Some is exported. He said a CSIRO study confirmed jade perch had 10 times the beneficial omega-3 oils than some other species and that Queensland aquaculture has prospered because of its "green clean image" "There are many millions of acres suitable for fresh fish aquaculture in this state," he said. "The trawler operators are already feeling threatened."

<http://www.news.com.au/couriermail/story/0,23739,23483430-5004581,00.html>

### Bluefin Tuna – farmed, from ova!

Toro is the extremely pricey, highly coveted, fattiest part of a Bluefin tuna. The species is so prized for its lush belly meat that in the past century, it has been severely overfished. But now a farm-raised bluefin called Kindai, the first ever raised in captivity from the egg, offers what some consider a promising new alternative. Produced by a Japanese University fisheries laboratory, you won't find Kindai in your local supermarket because supplies are severely limited, the only way to experience its silky, rich, clean taste is at one of a handful of restaurants.

Each week, one shipment of Kindai, generally three 130- to 200-pound fish, is flown from Japan to the United States. One fish goes to New York, and the other two to the Bay Area. IMP Foods Inc., a specialty seafood wholesaler that supplies many Northern California sushi bars is one of only three distributors of Kindai in the United States.

"It's not just a fish. The story behind the fish is very important, too," said Glenn Sakata, IMP branch manager, who has been importing Kindai since February. "It is the hope of the future. At this point, it's the only hope. The flavor is incredible, and it slices unbelievably well. It's not sticky like other farm-raised tuna," says Ron Siegel. The Kindai that arrived at IMP one recent Thursday was about 5 feet long, and 130 pounds. It took 3 1/2 years for it to reach this size, and 32 years for it to become a reality at all. That's how long Kinki University Fisheries Laboratory in Wakayama struggled to find a way to culture Bluefin tuna, not an easy task because the aggressive fish bruises easily and is prone to cannibalism. The laboratory finally succeeded in raising the fish from eggs in pens in the Pacific waters. The first Kindai (the name is a contraction of the university's name in Japanese) were sold to the Japanese public in 2004.

It remains a precarious operation. Only 1.5 percent of the eggs produced survives to adulthood, according to Mika Higurashi,

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project leader at IMP for the Kindai. There are other bluefin farms around the world. But they differ in that they catch young bluefin in the wild, herd them into pens, then fatten them up until they are large enough to slaughter.

<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/05/20/FDI910LR9P.DTL>

## Overfishing causing scarcity and high fish prices in Uganda

By Craddock Williams

Fish prices have risen in many places beyond the current rate of inflation in Uganda, 9.7%. This is a reflection more of the stock depletion rates in Lake Victoria than the higher costs we are meeting for fishing fleet and road transport operations. Fish population reductions are hard to measure, as with all wildlife dispersed over a large area. Part of it is attributed by the Department of Fisheries to the run-off pollution from lakeside agriculture, but most is the direct result of persistent over-fishing, and the illegal fishing of immature species. The number of registered fishing boats on Lake Victoria has increased by 16% since December 2005. The boats are travelling further to catch fish, and the number of processing plants filleting, cleaning, freezing, and packing fish, mainly Tilapia and Nile perch, has risen by 3 to a total of 16. Their average total throughput has increased from 160 tonnes a day to an estimated 180 tonnes in this year. And fish exports have increased from 39,000 tonnes in 2005, to an estimated 45,000 tonnes this year. The unit price for exports has risen even more, from \$3.64 a kg in 2005 to \$4.26. This is a fine record and handsome profit for Uganda's fish packing industry. But is it sustainable? Is Lake Victoria to follow the dismal record of the North Sea and Atlantic waters where some species have been over-fished close to extinction?

According to Shah Rais Khan at the Uganda Fishnet Manufacturers, "the most serious factor contributing to Uganda's over-fishing is the use of illegal small mesh nets". The law limits the mesh size to not less than 4 inches. This was designed to reduce the volume of small fish species and immature fish caught in small mesh nets. It has, according to reports from Shah and from fishermen who comply with the law, "only worked a bit". The reason is that small mesh nets, some with a mesh of less than two inches, are smuggled into Uganda, mainly from China, evading Customs vigilance. This seems largely beyond control by the law enforcement fisheries inspectors.

The result is not only are undersized fish caught but the natural growth of Uganda's fish stock is prevented. There is also an immediate damaging impact on the sales of legal nets by Uganda's two fishnet manufacturers in Kampala and Masaka.

<http://www.newvision.co.ug/D/8/459/625093>

## Feeds

### Fishmeal in feeds

From CNN

True or False? - Salmon farms drain our protein supplies as it takes 3-4kg of wild fish feed to produce 1kg of salmon.

The answer is - FALSE

This is an interesting one as it does indeed take between 3 to 4 kilos of wild fish to produce enough feed to produce 1 kilo of farmed salmon. The problem, says Greenpeace founder Patrick Moore and others is that it's not humans that are missing out, as the fish feed that is given to salmon is either not intended for human consumption or is not fit for human consumption.

According to The Society for the Positive Awareness of Aquaculture (SPAA), quoting Patrick Moore, only one third of the world's fishmeal is consumed by fish farms - "the majority is fed to chicken and pigs".

According to the U.S. National Oceanic and Atmospheric Administration, quoting 2002 figures, 81 percent of the fish oil produced globally and 46 percent of fishmeal is used for feed on fish farms. There is, however, some understandable cause for concern as global fish stocks are depleting, yet 30 percent of all fish caught go towards feeding animals. However, according to the UN's Food and Agricultural Organisation (FAO) 90 percent of the fish that makes fishmeal or oil, is "presently unmarketable in large quantities as human food". The reasons for this include the facts that some of the species that make up fishmeal are either unknown or "unpalatable"; the fish in question are "too small or break down or turn rancid too quickly for economic storage" and subsequent processing. The FAO says this on the matter: "Turning high quality fish into fish meal and oil should not be encouraged. It is obviously more efficient, however, in a protein-hungry world to harvest the unacceptable species for feeding to animals, subsequently consumed by man, than to leave them unharvested in the sea."

Sources: Greenpeace; The Society for the Positive Awareness of Aquaculture; U.S. National Oceanic and Atmospheric Administration; United Nations Food and Agricultural Organisation.

### **Omega 3 replacement from canola**

Two major players in the US healthy oils market are joining forces to develop a DHA oil from canola, which could lead to the launch of a new, cost effective source. DHA, or docosahexaenoic acid, is recognised as the most bioavailable source of omega-3 for humans. At present, the main source of DHA and EPA (eicosapentaenoic acid) is fish oil, but there are concerns over the sustainability of fish sources, as well as the amount of fish oil available to the nutrition industry as demand for crude fish oil from the aquaculture industry increases.

Martek has already established a reputation as a trailblazer in the omega-3 market, as it is a major supplier of DHA from microalgae, billed as a vegetarian alternative to fish oil-derived DHA.

Bringing a new source on line, and one that is expected to be more cost-efficient than current offerings, would be a tremendous boon to a market where food manufacturers have spotted lucrative potential to make appealing products to help consumers include more DHA in their diets. At present, only shorter chain omega-3 ALA (alpha-linolenic acid) can be obtained from crops, such as flax. While this has its nutritional uses, it is less bioavailable for humans, and is not included in the US health claims covering DHA and EPA and heart health. Martek spokesperson Cassie France-Kelly told [NutraIngredients-USA.com](http://www.NutraIngredients-USA.com) that AgroScience already has a canola seed with omega-9, which is used as the basis for a line of healthy oils. The cross-company team will work to apply an omega-3 producing gene from Martek's microalgae to this seed.

According to France-Kelly, the plant would be genetically-modified, but the resulting oil would contain no genetically modified proteins.

<http://www.foodnavigator-usa.com/news/ng.asp?n=85589-martek-dow-agrosciences-dha-canola-omega>

## **Environment, Health and Disease issues**

### **Quality and Health Management Program for Western Cape Aquaculturalists**

Aquaculture facilities in the Western Cape have regularly expressed the need for support services that relate to the monitoring and management of water quality and fish health. The favorable effect that such monitoring would have on overall product quality was seen as an added bonus. With these ideas and ideals in mind, a number of role-players within the freshwater aquaculture sector initiated the establishment of a regular and reliable Quality and Health Management Programme (QHMP) which has been in operation for the past three months.

The QHMP is being operated and funded by means of a Public Private Partnership (PPP) and include the following organizations:

Aquaculture Institute of South Africa (AISA) - coordinating agency for the QHMP

Provincial Department of Agriculture (PDoA)

Department of Economic Development and Tourism (DEDT)

Western Cape Trout Association (WCTA)

Hands-On Cooperative (Small Scale trout farmers)

University of Stellenbosch (Division Aquaculture)

NutriScience and Woolworths

The QHMP is of direct benefit to both commercial and small scale trout farmers as it provides accurate diagnosis of any fish health-related problems that may occur as well as providing appropriate advice for treating specific conditions and a comprehensive water quality assessment. It also makes provision for accurate record keeping of all the assessed farming parameters. Indirectly it affects feed companies, processors, retailers and consumers in a positive way as a more secure uptake of feed is expected from healthy fish, thus exhibiting better growth rates and subsequently leading to a high quality end-product.

Details of the QHMP are that farms that are part of the QHMP will be visited on a quarterly basis and general fish health examinations as well as water sampling will take place on-site. Water analysis is conducted at US and water quality parameters such as alkalinity, ammonia, nitrate, nitrite, pH, total phosphorus and total suspended solids are measured. In addition, samples from reservoirs that are being utilized for trout farming will be screened for phytoplankton. Identification of indicator species as well as comments on the general health of the system will be made in an attempt to assess the risk of possible algae blooms that may lead to adverse flesh quality and algal taint. Consultation with farmers is an essential part of the QHMP and all relevant information is recorded and kept on file. Regular feedback between service provider and farmer is also encouraged.

The scope of this programme could be viewed as a first initiative in the direction of a more mature and comprehensive QHMP and has been set-up in such a manner to compliment and collaborate with any other programme of a similar nature. It also has the potential to expand and include more species diversity such as marine finfish and ornamental species.

We wish to emphasize the accessibility of this programme to all aquaculturists within the Western Cape and invite you to contact us for further information.

Lizeth Botes [lbotes@ai-sa.org.za](mailto:lbotes@ai-sa.org.za) Phone 021 556 7339

Danica Resoort [danica.resoort@telkomsa.net](mailto:danica.resoort@telkomsa.net) Phone and fax: 021 859 5246

## Research matters, Reviews & Training

### Domesticated Brown Trout more susceptible to anglers

Now there'll be no excuse for the one that got away. Britain's rivers and lakes are to be restocked with trout carrying genetic modifications that make them easier to catch. The move has been ordered by the Environment Agency which wants to prevent interbreeding between native brown trout and those introduced for anglers. However, its research has shown that the genetic modifications, which are designed to render the fish infertile, also make them easier to hook.

"It is an unexpected bonus," said Dr Dafydd Evans, the agency's head of fisheries. "It means anglers can catch more and so get more sport out of them."

The study was prompted by concerns about the ecological impact of the annual restocking of lakes and rivers with 900,000 farm-reared brown trout. They are needed because the low numbers of native fish mean that Britain's more than 2 million anglers would otherwise stand little chance of catching anything. However, the problem is that farm-reared fish can interbreed with wild ones and so pass on undesirable genes. "We knew one answer could be to release so-called triploid fish — which have been altered to have an extra set of chromosomes," said Evans. "This makes them infertile so they cannot interbreed with native fish." Evans asked the Game & Wildlife Conservation Trust to examine the impact of releasing such fish into rivers including the Honddu in mid Wales and Arrow in Herefordshire as well as lowland chalk rivers such as the Avon, Allen, Frome and Piddle in the south of England.

Dylan Roberts, the trust's head of fisheries, said: "Releasing farmed fish is a bit like letting battery chickens into the jungle. "They are bred for eating and have lost many of the genes vital for survival. We don't want them giving those genes to native populations," he added.

In his research Roberts tagged about 1,000 genetically modified farmed fish and released them into the rivers. He attached alternative tags to a similar number of farmed fish with normal genes and released them too. Then he surveyed fishermen, asking them to declare how many of each they caught and how they fought. The results are being written up for publication in a scientific paper but show that dozens more of the genetically modified fish were caught. One reason for this could be that fish with normal genes stopped feeding when they were ready to spawn. The genetically modified fish, by contrast, had no interest in sex and just kept eating.

Restocking British lakes and waterways with fish for anglers has become big business because of the soaring popularity of the sport. Besides brown trout, about 2m rainbow trout, which originate from America, are poured into British waters every year. Research suggests that rainbow trout are unable to breed in British waters, probably because water temperatures and quality are not right for them. The brown trout reared by fish farms are mostly derived from a handful of lineages, most of which began with fish caught in Loch Leven, Scotland in the 1850s. This was when the first fish farms were established. The practice of restocking with farm-reared fish remains highly controversial among anglers as well as environmentalists. Some critics argue that the mass release of farm-reared brown trout simply for capture is akin to releasing cows into the woods and then shooting them.

However, supporters argue that recreational fishing is an industry that generates millions of pounds for rural areas and which offers urbanites a healthy hobby that gets them out of doors.

<http://www.timesonline.co.uk/tol/news/uk/science/article3868042.ece>

## Regulatory matters

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### July 2008 Aquaculture Policy and Strategy Implementation Plan

A workshop on Aquaculture Policy, Strategy and an Implementation Plan will be held in the Western Cape during July 2008.

Contact Lizeth Botes on email [lbotes@ai-sa.org.za](mailto:lbotes@ai-sa.org.za) or phone 021 556 7339 for details

## Conferences & Upcoming events

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### 5- 6 June 2008 Water use in South African Aquaculture

A workshop will be presented by Prof Claude Boyd of Auburn University, USA, in Stellenbosch, South Africa in collaboration with Division of Aquaculture, Stellenbosch University.

For more information, please contact Dorette du Plessis at [dorette.duplessis@gmail.com](mailto:dorette.duplessis@gmail.com)

### 21- 25 July 2008 Parasites as Agents of Selection- from genes to ecosystems

International Symposium of the Fisheries Society of the British Isles at Cardiff University UK .

Contact Tricia Ellis-Evans [tricia@paceprojects.co.uk](mailto:tricia@paceprojects.co.uk)

Tel: +44 (0) 1223 263477

Fax: + 44 (0) 1223 264663

### 25 - 27 July 2008 7<sup>th</sup> International Conference on Recirculating Aquaculture

Hotel Roanoke & Conference Center, Roanoke, Virginia, USA. Also

Aquaculture Engineering Society Issues Forum, July 23-24, 2008 - Roanoke, Virginia

14th Annual Recirculating Aquaculture Systems Short Course. July 28-31, 2008 at Virginia Tech, Blacksburg, VA

Contact Michael B. Timmons, [Mbt3@cornell.edu](mailto:Mbt3@cornell.edu),

James Ebeling, [james@beadfilters.com](mailto:james@beadfilters.com)

Web site: <http://www.bee.cornell.edu/outreach/aquaculture>

**4 - 8 August 2008 International Association of Astacology 17th Symposium**

The Symposium will be held August 4-8, 2008 in Kuopio, Savo, Finland, where the wild Noble crayfish still roam!

Contact Bill Daniels [daniewh@acesag.auburn.edu](mailto:daniewh@acesag.auburn.edu) <http://www.iaa17.net/>

Tel 1 (334) 844-9123

Fax 1 (334) 844-9208

**12 – 14 October 2008 8<sup>th</sup> International Symposium on Tilapia in Aquaculture**

“Tilapia Aquaculture from the Pharaohs to the Future” Cairo, Egypt

Register online at <http://www.ista8-egypt.com/index.php>

**19 – 23 April 2009 International Conference on Aquatic Invasives**

Montreal, Canada

This meeting will cover such topics as ecological impacts of changes in the biodiversity of aquatic environments; the role of invasive species in affecting human health, ballast water introductions of new species; invasions from the pet trade and aquaculture industries; and new barrier technologies.

Contact Elizabeth Muckle-Jeffs [elizabeth@theprofessionaledge.com](mailto:elizabeth@theprofessionaledge.com)

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## Employment

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### **Aquaculture Production Manager**

HIK Abalone Farm started abalone farming operations in 1997, and is currently one of the leaders in the industry. We are looking for a dynamic, enthusiastic and responsible person to lead our abalone production team in Hermanus.

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Please fax your CV to + 27 28 312 2288 or email to [Gavin@HIK.co.za](mailto:Gavin@HIK.co.za)

### **Marine Aquaculture Scientist**

The South African Department of the Environment and Tourism, Marine and Coastal Management, is looking for a Marine Aquaculture Scientist for employment in Cape Town.

Contact Dr. G. Pitcher on 021 4307016