Aquaculture Association of Southern Africa

NEWSLETTER

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A Word from the AASA Chairman

The Editor's Choice and Letters to the Editor

Sector Contributions

- **Abalone**
- **Eels**
- **Oyster and Mussels**
- **Shrimp and Prawns**
- **Tilapia**
- **Trout and Salmon**

Regional Roundup

Environment, Health and Disease issues

Research matters, Reviews and Training

Aquaculture Association of Southern Africa

Tel: +27-(0)12 8076720 Fax: +27-(0)12 807 4946

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

A Word from the AASA Chairman

Etienne Hinrichsen

In the last grips of winter 2010…….the Soccer World Cup behind us, Wimbledon is done with, the Tour de France has past and the rugby is looking shaky…….all the more reason we have to hatch new aquaculture plans!!

From the AASA office, I can report that we are in the process of finalising the venue for Aquaculture 2011 and I hope to have news on this in the near future. In addition to this, the Durban Convention Centre has approached us around consideration for a future bid to host a global aquaculture conference (the likes of the World Aquaculture Society Conference). We're not quite there yet, but it is an inspirational thought and something that we will include on the agenda in AASA.

We are planning a regional discussion between people on the AASA Executive during September and I invite all people in the sector to take any particular issues, ideas, inputs, complaints, compliments or matters of relevance to the respective people that represent your region or sub-sector. If you are not sure who these people are, please feel free to contact the AASA office.

In South Africa, the new EIA regulations have now been promulgated. I will write and communicate more about this in the near future, but for now it is perhaps worth highlighting two aspects. The cut-off tonnages for which assessments and EIA's are required have been raised significantly, yet it has now been made mandatory to conduct a Basic Assessment for all aquaculture types within 100 meters of a watercourse. Speaking of EIA's, I am myself working with DEAT on new EIA guidelines related to the impacts of aquaculture and we hope to see these completed by the end of the year.

Please enjoy what is left of winter, because once spring arrives we'll be into the throws of 2010!

The Annual General Meeting of the Aquaculture Association will take place on 09 September 2010, in Pretoria. For further details please contact the AASA office – info@aasa-aqua.co.za

The Editor's choice

Adrian Piers newsletter@aasa-aqua.co.za

Editorial

My last Editorial was in much the same vein as a recent article analysing the environmental issues around fish farming. Herewith a short excerpt with a link to the full document below. A few other interesting snippets follow.

Environmental comment

Aquaculturists do a great job of raising fish. However, their prowess in public relations is, shall we say, somewhat lacking.

There aren't too many segments of the economy where so-called negative marketing is as alive and well. This is where you actively discourage the purchase and consumption of a product. With the exceptions of the political arena, drug use and drunk driving, negative marketing is a fairly new phenomenon.

Aquaculture has been thrown into this strange and eclectic mix by professed environmentalists. These are the people who want us to eat wild salmon, to the exclusion of farmed salmon, until all the wild salmon are gone. I guess we won't have to worry about the wild salmon at that point.

OK, I'll stop the sarcasm...for now.

Despite aquaculture's good intentions, they are pummelled almost continuously in the media, including print, broadcast, and blogosphere.

Much to its credit, the aquaculture industry is now responding more vigorously. There used to be a head-in-the-sand approach or attitude about aquaculture's perceived environmental missteps. But not anymore. I say "perceived" because, for the most part, these were perceptions or bald-faced falsehoods. Aquaculture has always been about environmental responsibility, and never claimed to be perfect. But, perception often is reality. Those warts and imperfections have since become a bane of its existence.

After several decades being labelled as an "infant," and then blamed for pollution, genetic chaos, and proliferation of disease—much like the teenager with the messy room and lifestyle—aquaculture has emerged as a more responsible and savvy adult, and less as an easy target.

A plethora of groups have now come forth to satisfy the public's craving for third-party certification and verification of production standards, product quality, and long-term environmental sustainability.

http://www.glgroup.com/News/Aquaculture-taking-the-correct-steps-to-repair-image-49992.html

Letters to the Editor

I have started an aquaculture company here in South Africa, with a webpage: www.arevo-aquaculture.com and am negotiation with several investor groups both in RSA and other countries. If you hear of any potential projects or investors looking for new technology please let me know. I have finished designing a tilapia biofloc system and hope to publish some info on it soon. Will let you know.
Regards,
Bill McGraw

Virtual fish farming on your mobile phone !!!!

Now aspiring fish farmers can try it *without even getting their hands wet*. A downloadable application for your mobile phone is available that lets you do stocking, feeding and a few other things as well.

See http://itunes.apple.com/us/app/fish-farm/id364918873?mt=8

And http://www.appstorehq.com/fishfarm-iphone-209628/app

http://www.iphone-network.net/fish-farm-out-today-for-iphone

Abalone

Global Abalone farming standards enter last process

From FIS

The last step in the process of developing global standards for responsible abalone farming began on Thursday and will run through 31 August. The Abalone Aquaculture Dialogue launched the last public comment period for the draft standards last week.

The standards will address and help minimise the major negative environmental and social impacts pertaining to the abalone aquaculture industry. Impacts include the infection of other aquatic species with diseases, the destruction of habitat for the creation of farms, energy use, waste management, water pollution and social responsibility.

Feedback obtained during the 60-day public comment period will be used by the Dialogue's Steering Committee to complete the standards in this year's fourth quarter. The committee manages the standards development process and World Wildlife Fund (WWF) coordinates the Dialogue.

"Since the Dialogue began in 2008, one of our priorities has been encouraging input from as many people as possible who have expertise and on-the-ground experience related to abalone aquaculture," said Steering Committee member Laura Rogers-Bennett of the University of California - Davis. "We will continue to do so through this comment period and are confident that the additional feedback we receive will help to strengthen the standards document and ensure that the standards will support environmentally sustainable abalone farming worldwide."

The draft standards are founded on the latest scientific findings on abalone farming, plus feedback from the 100 producers, academics, conservationists and others who attended the Dialogue and outreach meetings hosted in Thailand, South Africa and Australia.

This version of the standards document also takes into account input given during the first public comment period. The significant changes made in response to that input include a more thorough explanation with corresponding references for the effluent standards and a new standard for supervising the use of freshwater.

These will be the first global standards for abalone aquaculture created through an open, transparent process abiding by the International Social and Environmental Accreditation and Labelling Alliance's renowned guidelines for developing standards. The process promotes input from a wide and diverse group of people and guarantees that their ideas will be considered by the full Dialogue.

Four sets of draft standards (pangasius, abalone, shrimp and bivalves) are now being reviewed and one set of standards (tilapia) is completed. All of the standards are anticipated to be finalised within about six months.

The Dialogue standards will be provided to the Aquaculture Stewardship Council (ASC) to manage when the council becomes operational next year. The ASC will be responsible for working with independent, third party entities to certify farms that are complying with the standards.

Also

http://www.internationalabalonesociety.org/

Eels

PRO-EEL project aims for self-sustainable aquaculture

By Natalia Real

The Technical University of Denmark (DTU) has coordinated a EUR 5 million research project called PRO-EEL to reproduce the European eel in captivity. The European Commission (EC) is funding this project to establish a self-sustained aquaculture of eels in the continent in response to dramatically dwindling wild European eel stocks.

Eels in the PRO-EEL project receive hormonal treatment to develop gametes and fertilization is made in vitro, as eels do not reproduce in captivity due to a hormonal inhibition of maturation. The PRO-EEL project aims to broaden the knowledge on European eel (Anguilla anguilla) reproduction and enable successful maturation and offspring production. This includes choosing appropriate broodstocks, enhancing eggs and sperm quality and fertilization methods and culture conditions favourable for the production of viable eggs and larvae.

Determining suitable feed for the eels and establishing feeding cultures of larvae will be particularly challenging, as scientists do not know what to feed these larvae. Findings show that eel larvae feed on extremely diverse marine organisms. “The primary bottleneck in a controlled reproduction of eels concerns deficiencies in knowledge about their reproductive physiology and methods applied to induce and finalise gamete development,” stated the coordinator of the project, Jonna Tomkiewicz from DTU Aqua.

Gene technology and molecular methods will help obtain a regular and predictable production of viable eggs and larvae from broodstock eels fed enhanced diets. Other challenges are the identification of suitable larval rearing conditions and initial feed for the larvae. A particular issue is the step where larvae need to start feeding on their own and the diet is crucial for their healthy development and growth. Establishing first feeding and feeding cultures of larvae will constitute key breakthroughs. Still, the eel larval phase lasts one year or more, and eel production will require added research on proper feed and culture techniques to ensure the transformation from larvae to glass eels.

PRO-EEL expounds on the results of the consortium, including those of a series of DTU coordinated research projects that produced larvae of the European eel that lived for up to 21 days. These larvae reached the first yolk sac stage and entered the period where they need feeding. Japanese researchers recently produced offspring from captive-bred Japanese eel, thereby successfully finalising the life cycle of eel in captivity. As the Japanese eel is closely related to the European one, these results are promising for the success of the PRO-EEL project.
PRO-EEL will replace the use of wild glass eels as stocking material for aquaculture with fry raised under controlled conditions.

http://fis.com/fis/worldnews/worldnews.asp?l=e&ndb=1&id=37158

http://fis.com/fis/worldnews/worldnews.asp?l=e&ndb=1&id=36290

Oysters & Mussels

Virus threat to Oysters

By Heidi Blake in the Telegraph

An outbreak of herpes is threatening Oyster stocks off the coast of Whitstable, UK. Samples taken from the Pacific oyster species harvested off the coast of Whitstable have tested positive for type one oyster herpes, according to the Centre for Environment, Fisheries and Aquaculture Science. It is the first time the incurable virus has been detected in stocks in Britain

The movement of oysters off The Swale, Thames and north Kent coasts has been banned to prevent the spread of the outbreak. Inspectors from the Fish Health Inspectorate were called in to investigate after the company Seasalter Shellfish noticed a high mortality rate among its Pacific oyster stocks. John Bayes, the company's managing director, said he feared a "total wipeout" of the shellfish. He added: "The initial realisation was a massive blow and now having to deal with it is a blow. We've had to cease all oyster activity when we've just invested a large amount of money increasing that side of the business. "We were just getting to be in a position where we could be supplying millions of oysters all over the world."

The Cefas spokeswoman said the virus, which has no cure, has been responsible for huge numbers of deaths of oysters in France, Jersey and Ireland, but has no implications for human health. She said: "It could be devastating for oyster production in other areas, for instance the South coast, so it's really important that we contain the disease. "We're not worried about people eating them and getting sick, we just don't want it to spread." The virus does not pose a risk to native species of oysters, but around 1,100 tonnes of Pacific oysters are produced in Britain every year.

Oyster stocks off Kent, Essex and Cornwall are also under threat from a tiny snail which bores through their shell and eats their flesh, it emerged in January.

French oysters were last year stricken a mysterious plague which killed millions of the prized shellfish.

Shrimp and Prawns

Leaders in desert coastal Aquaculture

The National Prawn Company (NPC) is a world renowned integrated aquaculture enterprise, and a global leader in sustainable farming. On the pristine shores of the Red Sea, NPC carefully nurtures its popular white prawns, also known as *Penaeus indicus*, which is famous for its superior quality, texture, colour and succulent taste. NPC farms are fed directly from the Red Sea

Covering an area of approximately 250 square kilometres on the Red Sea Coast in Saudi Arabia, the privately owned NPC is among the largest, fully integrated desert prawn farms in the world. The 10 farms are fed directly from the pristine, crystal clear waters of the Red Sea. Sustainability is an integral part of NPC's commitment to its customers, employees and shareholders. Every aspect of production from hatchery to pond to plate is monitored and traceable. Located 150 kilometres south of the Kingdom's commercial centre, Jeddah, and close to the ancient port town of Al Lith, NPC's 2,400 employees help to produce over 15,000 tonnes a year of white prawn (*Fenneropenaeus indicus*) for sale in the Kingdom and around the world.

The first phase of development is complete with ten farms, each comprising up to 28 ponds with each pond measuring roughly ten hectares. NPC is at present engaged on a development project in order to meet the growth and expansion of seafood consumption in the Gulf. Bio-security programme is maintained at all times with daily sampling. Every aspect of NPC's production is based on sustainability from pond to plate. No antibiotics are used at any stage of production. NPC has a policy of low-density stocking and partial harvests to prevent overcrowding. An extensive bio-security programme is maintained at all times with daily sampling of various elements from NPC's scientists. NPC is certified for ISO 14001 and is actively seeking other accreditations.

Red Sea Shrimp are one of the most sought after shrimp by internationally acclaimed chefs and restaurants. NPC produces shrimp to a variety of sizes and is renowned for its superior taste and quality by internationally acclaimed chefs and consumers alike including those in Saudi Arabia, the United Kingdom, Spain, Italy, Japan, Korea, USA, China and Australia.

NPC is diversifying into production of other marine species that can adapt to the local living conditions. Currently the company is focused on producing one high value species of fish, the Greater Amberjack (*Seriola dumerelli*) a species which at present is new to aquaculture. Other locations interested in producing this species are in the Mediterranean and Mexico.

In addition to fish production the company has invested in commercial production of sea cucumber. The dried product is known as Bêche de Mer in the market, the primary ones being in Japan and China. Market demand for these products outstrips supply as worldwide fisheries have been devastated by over harvesting.

Last month Senior executives of the NPC and Aramco, the main distributor for refined oil products in the Kingdom, met to review possible areas of cooperation in the field of environmental management. The discussions resulted in an agreement that NPC would meet Aramco experts in the near future to work with the oil giant and benefit from its long experience in the fields of knowledge management and environmental care, especially with respect to the marine environment.

http://fis.com/fis/techno/newtechno.asp?id=37406&l=e&ndb=1

New breed of "Super prawn"

Australian scientific ingenuity developed the super prawn but the race is now on to protect the prawn's genetic identity. A booming, billion-dollar aquaculture industry could rest on the outcome. The crucial question is how to maintain breeding control of the elite black tiger prawn, which grows about 20 per cent faster than other farmed tiger prawns. One farm growing the prawn had average yields this year of 17.5 tonnes per hectare, more than twice the industry average.

It took 10 years to create the prawn, using DNA and selective breeding, and the three Queensland farms involved want to prevent unlicensed breeding of their valuable stock. A CSIRO research scientist, Nigel Preston, likened it to owning a pedigree horse: "You don't want other people using it without paying a stud fee."

The aim is to produce single-sex seed stock so prawns can be traded but not bred.

The DNA process used to develop the prawn has been used in the livestock industry for years, but this is the first time it has been applied to prawns. The process can also be used for salmon, abalone, oysters and barramundi. Australia's aquaculture industry is worth about $1 billion, but 70 per cent of the seafood Australians eat is imported. "We want to grow [the industry] to several billion dollars so we can provide Australian consumers with more local product," said Dr Preston, who will speak at a conference of Australian prawn and barramundi farmers in Brisbane. The CSIRO has had 22 expressions of interest in its prawn-breeding techniques from aquaculture companies in countries including India and Vietnam. As technology increases productivity, Dr Preston believes aquaculture could have an important part to play in Australia's food supply in

future. "It's a high-value animal protein grown in drought-proof conditions; there's no shortage of salt water here," he said.

Full article:-

http://www.smh.com.au/world/science/super-prawns-powers-surface-now-identity-must-be-guarded-20100802-113ff.html

Tilapia

Iceland starts farming Tilapia

By Michael Loubet

It is expected that this year could be the first in the history of humanity where more farmed than wild fish is consumed. In this context, it is important to note that for the future, only the production of species that do not require protein for development can evolve smoothly. But only two groups would be in this category, bivalves (mussels, clams, scallops, oysters, etc.) and vegetarian fish such as some types of Tilapia. In principle, for the species included in both groups, production could be increased almost without limit.

By contrast, in the case of species whose diet requires animal protein (fish meal and oil), the growth of aquaculture will face problems in the future, despite the large feed producing companies trying to increase the proportion of soybean and reduce that of fishmeal. But a carnivorous animal will always continue to be carnivorous. It is necessary to recall the negative background of the problem of mad cow disease, which made it clear that a non-vegetarian animal can be given a diet based on animal protein. The same principle of nature applies to a carnivorous fish, which can not be given a vegetarian diet without the risk of possible cases of "mad fish" disease.

Tilapia is sustainable from the ecological point of view and its production cost is relatively low. In the U.S. market, its use has quadrupled between 2003 and 2006, and was ranked in fifth place among the most consumed by Americans, according to the National Marine Fisheries Service (NMFS). The consumer guide from the Monterey Bay Aquarium (Consumer Guide to Ocean-friendly Fish) gives U.S. Tilapia the "best rating" and tilapia from Central America, a "good rating". However it recommends avoiding tilapia from China or Taiwan for the health hazard during its development. 95 per cent of tilapia consumed in the U.S. is of foreign origin, a figure which represents an increase of 17 per cent in the last five years. Perhaps it is now time to inform consumers about the existence of "naturally sustainable" species or "vegetarian fish." At the same time, its production and consumption should be increased gradually, as it does not affect species currently used for processing fish meal, such as anchovy, jack mackerel or capelin, resources which have almost reached the limits of exploitation and can not handle an increase in their catches.

http://www.fis.com/fis/worldnews/worldnews.asp?l=e&country=0&special=&monthyear=&day=&id=37481&ndb=1&df=0

Trout and Salmon

Genetically modified Salmon

By Andrew Pollack in the New York Times

The U.S. Food and Drug Administration (FDA) is "seriously considering" whether to approve for commercial use a genetically modified (GM) salmon that can grow to full size in half the normal time, this article reports. AquaBounty Technologies, the fish's developer, now seems to have submitted most or all of the data the FDA needs to analyze whether the GM salmon are safe to eat, nutritionally equivalent to other salmon, and safe for the environment, officials say. A public meeting to discuss the salmon may be held as early as this fall. The article says that if approved, the salmon would be the first GM animal that people would eat. It is not entirely clear how consumers might react, the article says. Some public opinion surveys have shown that Americans are more wary about GM animals than about the GM crops now widely used. But other polls suggest that many Americans would accept the animals if they offered environmental or nutritional benefits. Ronald L. Stotish, chief executive of AquaBounty, argues that the benefit of the fast-growing salmon would be to help supply the world's food needs using fewer resources. Some experts have speculated that if they escape into the wild fast-growing fish could out-compete wild fish for food or mates. Stotish responds that the GM salmon would be grown only in inland tanks or other contained facilities, not in ocean pens where they might escape into the wild. And the fish would all be female and sterile, to prevent them from mating. Stotish says that the GM salmon is identical in its "material properties" to other fish. The U.S. government has in the past opposed mandatory labelling of foods unless they are found to be different in their nutritional properties or other characteristics. However, the article says there is some discussion within the FDA of requiring that the salmon be labelled as GM in supermarkets.

The article can be viewed online at the link below.

http://www.nytimes.com/2010/06/26/business/26salmon.html?_r=1&ref=genetically_modified_food

Regional Roundup

Abandoning tobacco farming for Aquaculture

By Winsley Masese

Sam Robi sprinkles feed on a pond and after a while, a school of fish scramble for it. He repeats the same procedure in four out of eight fishponds at his farm in Kuria West District. Besides the fingerlings, there are the bigger fish especially Tilapia, which he sells in the local market. The cost of a piece of Tilapia in Kehancha market is Sh80. One pond, he said contains 200 tilapia and before December, he is optimistic of earning over Sh100,000 from the sale. As the leading supplier of fingerlings within the district, he also sells each at Sh5 and in numerous occasions, he has sold up to 3,000 fingerlings. In a single pond, he grows over 1,000 fingerlings. “This is a constant source of income, which I could not realise from tobacco growing, which I abandoned in 2003 and embraced fish farming,” he said.

This came after he realised that the losses incurred from tobacco growing were a curse rather than a blessing.“The cost of fertiliser, herbicide and the felling of trees to dry tobacco leaves was slowly depleting the trees on my farm,” he said. Besides this, he had to be on the farm all the time, which often required additional labour— he had to withdraw his children from school to work on the farm.

"Unlike tobacco farming, fish farming is not labour intensive. I need to feed them and maintain the pond," said Robi.

The fish mature fast and ensure a steady supply to the market. One has to wait for ten months to realise the profits from tobacco. Tobacco growing areas are also linked to the higher incidences of tobacco related diseases like cancer.

Mr Robi said he started fishfarming with Sh1,500 capital."I dug a pond and sought the help of a government officer to supply me with the fingerlings. But after waiting for over one year, the fingerlings were yet to arrive at my farm," he said.

It is then ActionAid, a non-government organisation working to alleviate poverty realised the need to supply him with 600 fingerlings for his three ponds so as to win him over from tobacco growing. Fish is a key nutrient for the growth and development of children and with his family he is able to net one at any given moment.

During drought he, however, experiences shortage of the commodity as fish survives in water.

http://www.standardmedia.co.ke/InsidePage.php?id=2000015742&cid=14&j=&m=&d=

Pollution in the Niger Delta

By Emma Amaize

Oil spillage is tearing Chevron and fish farmers in Uvwie local government area of Delta State, Nigeria, apart. There was an accusation and counter-accusation between Chevron Nigeria Limited (CNL) and the United Ufuoma Fish Farmers Association, Ekpan in Uvwie local government area of Delta State over the July 22 pollution of the largest fish farm in the Niger-Delta with about 6,000 fish ponds. With the massive death of fish and contamination, the damage to the fishing settlement, where over 2,000 families from different parts of the country eke out a living, is undoubtedly, unquantifiable. On Wednesday, August 4, when Sunday Vanguard visited the fish farm, dead fish were still being scooped out, while the farmers, in a bid to minimize their losses, were evacuating toxic water from the affected ponds with pumping machines to relocate surviving fish to fresh ponds. Some of the fish ponds in the farm had already been cordoned off to prevent further spread of polluted water into other ponds, but the deadly water still was still seeping through openings on the walls of the ponds.

A field joint investigation report (FJIR) on the incident, issued by the Department of Petroleum Resources, July 23, a day after the incident, also absolved the oil company, as it confirmed there was no impact on bordering community, creeks and fish ponds. The report was jointly signed by Anyanwu J.C. of DPR, Chevron's Orivoh Victor, Iluwa Kutu, Ikutegbe David and Nesiama O.O, while Enaefewan Friday and Ofudje Alexander curiously signed for Ekpan community and Aruakpor-Umah community.
A senior Chevron official, who spoke to Sunday Vanguard in Warri, stated, "Chevron is not denying that there was a leakage from a sunken tug boat, belonging to one of its contractors, but it's not the eight litres of diesel that caused the pollution the fish farmers are alleging. If there is any pollution in their fish farm, it is certainly not from our company because the minor leakage of diesel from the aforementioned tug boat occurred within our waterfront". He said the company carried out a flyover with a chopper and went a boat ride around the area to find out if there was any impact and the result was negative, adding, "Chevron, as a responsible company, carried out clean-up in the affected area and if, as you said, dead fish were picked from the fish ponds, whatever caused it is not Chevron, the people should look elsewhere".

http://www.vanguardngr.com/2010/08/08/pollution-in-n-delta-oil-firm-fish-farmers-fight/

http://allafrica.com/stories/201008030929.html

Research facility and hatchery in South Africa

By Brynn Simpson

An aquaculture facility is being built at Gariep Dam by the Chinese Government (as a "gift"). The workshop was run largely to debate how the facility would be utilised after construction is complete (towards the end of the year). The workshop was held at De Stijl Hotel in Gariep in the Free State. It was reasonably well attended (approx 20-25 people) with the majority of delegates from Government and Tertiary Education Institutions. There were a few commercially orientated delegates. There were no delegates present from the Chinese counterpart.

The facility is being built below the Gariep Dam at an old aquaculture facility that was constructed some time back. Based on the evident empty ponds, we assume that there were some issues related to the site and whatever species were being grown. I believe there are some indigenous species (better suited to local conditions) being cultivated now – though I have little detail of that.

As a general comment, I think this workshop may have been better run a good 18 months ago, prior to commencement of the construction. This would have allowed for feedback to the donor (the Chinese Government) and possibly some joint development of the project outcomes.

General Comments:
We made a visit to the site in the morning and were shown around the construction area by the Chinese project manager. He is one of a team of 23 Chinese staff on site for the duration of the construction project.

Buildings etc look very good. The quality of the general workmanship and finishes is excellent. The lab facilities, presentation rooms, etc. look like they will be very good once complete -this is based on a brief look through the near complete building and the comments from the Chinese project manager. The accommodation facilities for "students" etc look very impressive.

Aquaculture:
We were given very little detail on the aquaculture facilities that were being put together.

It would appear that there was limited debate (with South African users) with respect to the detail of the aquaculture systems prior to this development receiving a go-ahead. It didn't look like anyone at the workshop had much detail on the project or the expected aquaculture outcomes. It sounds as though the intention is to focus on tilapia culture – lots of debate on how sensible this was based on the Free State's environmental conditions (cold).

At the end of the first day a number of the "technically inclined" delegates headed back to the site and the site office and went through the drawings (all in Chinese). Based on what we saw and the interpretation of the drawings by one of the resident Chinese staff members, it would appear that there will be two separate systems (in the hatchery building) – both of which are flow through systems. We could not see anything that would suggest the use of recirculation, which is a pity as there is a rather large boiler system (apparently 750kW) which is heating the water and then running it to waste – this will be costly in the long term.

The system appears to be comprised of two separate flow-through systems, each with 28 x 2.5m diameter tanks and 14 x 2m diameter tanks (glass fibre). Water is delivered into one of two large concrete header tanks where the heating takes place (the boiler is in a separate building) – the replacement rate was quoted as 3m3 per hour for the whole facility. The water then runs via manifold and is delivered to each of the tanks. One system uses gravity feed while the other appears to use pumped delivery (didn't see any degassing). Water runs from the tanks into a floor channel and then out the front door to waste - couldn't see any sign of a heat exchanger to gather up some of the heat. There is good potential to convert to recirculation with some additions to what is shown in the Chinese construction companies site drawings.

There was significant discussion regarding the actual design of the system coupled with its location in the Free State and the species chosen. This workshop unfortunately did not include anyone from the Chinese counterpart's side, so we may have been missing some of the vital information to make informed conclusions.

I have no doubt that the facility will be beautifully constructed and extremely useful to South Africa, and that the Free State Dept Agric etc will make very good use of the facilities for training etc, while their Chinese counterparts will pass on their very useful aquaculture skills.

I would say though that more attention needs to be paid to the detail of the aquaculture systems and their functionality bearing in mind the environment they will be used in, the need for R&D to be carried out, the potential for juvenile production to seed an industry and obviously the direction that the various South African Govt departments are trying to channel aquaculture in. This in the form of a workshop with technical people (RSA and Chinese), research people (RSA and Chinese) and others (administrative etc) would be most useful.

My experience of the workshop process was that the lack of information on the facility made it difficult to plan its future use.

Environment, Health and Disease issues

Fish Disease Diagnostics and Fish Health Management in Switzerland

By Henk Stander

From 14 April to 15 May I was very fortunate to attend training in Switzerland on Fish Disease Diagnostics and Fish Health Management. The training program consisted out of two parts; the first part was focusing more on field work and the second part was more laboratory analysis orientated.

For the first part I worked as a trainee at Fish Doc consultancy with Dr. Ralph Knüsel. Dr Knüsel was doing between 8 and 10 consultancies with clients in the field on a daily basis during this time. He worked mainly with koi carp at private homes but he also serviced commercial trout farms, government fish hatcheries and commercial aquaponic systems in Switzerland and neighboring countries.
A consultancy consisted out of a water quality analysis, assessment of fish health on site (adspection and diagnostics, general condition, macroscopic changes, use of light microscope to identify external parasites in skin smears and gill biopsies). With his mobile clinic Ralph could also do basic treatment of diseased fish.

The second part of the training was at the Fish and Wildlife Institute (FiWi) based at the University of Bern's main campus. During my time spend here I was exposed to the following activities:

- Processing and diagnosis of different species of fish sent in for analysis.
- Further processing of samples in the lab (e.g. cutting and staining of samples for histopathology).
- Use different diagnostic methods to identify important fish pathogens (viruses, bacteria, parasites, fungi).
- Interpretation of laboratory results.
- Literature study in extensive library at the FiWi.

Fish disease and fish pathology is a very specialized field and I was amazed how advanced and well established Switzerland was in this field. In Southern Africa we are definitely way back and need to build on our limited capacity and experience in this very important field. Bio-security is an

area which we should focus on if we want to grow our local aquaculture industry and production and I believe that we can learn a lot from other first world counties in this regard.

At the Swiss reference and diagnostic laboratory in Bern, I was fortunate to gain experience in many different fields and be involved in the following:

Diagnostics & processing:
Orientation in the laboratory and other facilities. Routine diagnostic procedures such as receiving of fish, external and internal examination (of organs), dissecting, taking samples for virology and bacteriology and the further processing of samples in the laboratory.

Bacteriology:
Introduction to the most important bacterial fish diseases such as Bacterial/Environmental Gill Disease and Rainbow Trout Fry Syndrome; the common signs of bacterial diseases; how to take samples and working sterile; different growth media; the cultivation and identification of bacteria; use of microscope and preparing and conducting antibiograms: the importance in establishing whether the pathogen is resistant to the various available antibiotics before any treatment is prescribed,.

Parasitology and microscopy:
Classification and identification of most common fish parasites such as Dactylogyrus sp. (gill fluke), Gyrodactylus sp. (skin fluke), Ichthyobodo sp. (Costia), Trichodina sp. and Ichthyophthirius multifiliis (white spot) from the skin and gills using light microscopy.

Virology:
An overview of the most important fish viruses, e.g. Koi Herpes Virus (KHV), Infectious Pancreatic Necrosis (IPN), Infectious Haematopoietic Necrosis (IHN) and Viral Haemorrhagic Septicaemia (VHS); and identification (cell culture, molecular techniques and fluorescent stains).

Serology:
How to take blood samples and the preservation thereof.

Histopathology and anatomy:
Sample collection; basic anatomy of organs; cutting and processing of samples; light microscopy; interpretation; immuno-histochemistry.

Prevention, medication and therapeutics:
The safe and environmentally friendly use of chemicals/drugs; disinfection of equipment and facilities; prevention of disease. All of these topics were covered during the practical component with Dr. Knüsel as well.

Practical work and other experience while at FiWi:
Experience in general hygiene and the preparation and cleaning of tanks. Working with specialized equipment (e.g. centrifuge).

Research and other:
I did some general research on chemicals, treatments and available products that we may apply in South Africa.

Presenting Literature study on KHV (koi herpes virus) as pertaining to the situation in South Africa.

I am confident that the collaboration between South Africa and Switzerland has been strengthened due to my visit and training at FiWi and with Dr. Knüsel (fishdoc GmbH). As fish health management remains a priority to all involved parties, especially in developing countries due to the valuable protein provided by aquaculture, I am committed to promote further interest and involvement from role players in the aquaculture industry, the State Veterinary Services as well as academic institutions such as the University of Stellenbosch in South Africa.

Consumer Protection Act

A new consumer protection Act is due to come into force in South Africa. Links to the relevant legislation on the AISA Website at:-

http://www.ai-sa.org.za/news-events/index.asp

Sustainable Aquaculture Picks Up Steam

By Matthew Berger

As farmed fish consumption catches up on wild, a search for sustainable aquaculture picks up steam. Some experts are predicting this is the year in which humans, globally, will begin to consume more farmed seafood than wild-caught. Whether the milestone is reached this year or not, though, it is clear the trend is here to stay and that - with wild fish stocks continuing to dwindle - aquaculture, or fish farming, has a major role to play in ensuring global food security. With that in mind, work is being done to address the serious questions about aquaculture's negative impacts.

Over the past several decades, wild-caught fish landings have widely stagnated or declined, yet global seafood demand has continued to rise - as has, due to aquaculture, global seafood supply. The Food and Agriculture Organisation (FAO) has predicted that, due to population growth, by 2030 we will need an additional 37 million tonnes of farmed fish per year to maintain the current levels of per capita seafood consumption.

In response to this demand, aquaculture has already emerged as the fastest growing food sector industry. An industry that produced one million tons of fish in 1950 has since emerged as a sprawling, 80 billion dollar-industry producing over five times that amount of fish with operations around the world.

But its rapid growth has resulted in myriad environmental problems being largely overlooked.

"What happens when you see that type of accelerated growth and when the majority of that is coming from the developing world… sometimes you see a greater emphasis on expansion and technology development as opposed to conservation and sustainability and managing environmental and social impacts," said Jose Villalon, director of the World Wildlife Fund, based in the U.S.

The negative impacts are well documented. Salmon farming, in which the fish are usually raised in pens in the ocean, requires vast amounts of wild fish as feed - about three pounds of feed fish for every pound of salmon produced. The salmon waste, as well as antibiotics and additives used to make salmon flesh pink can leak out and damage the surrounding environment. Finally, when farmed salmon escape, they can spread disease and contaminate the gene pool of wild salmon.

Other species can be farmed more sustainably, but even operations like shrimp farming sometimes have impacts - like the removal of mangrove habitat in order to set up farms. This type of impact has hurt nearby communities and the environment, especially in aquaculture hotspots in Southeast Asia and in Chile.

Still, the degree, as well as the type, of impact can vary widely depending on the species and the methods used.

"When we're talking about eating more aquaculture fish than wild-caught fish we're talking about all types of fish, including molluscs like mussels and oysters. Those are not as bad as raising carnivorous salmon in an open-net pen," noted Andrea Kavanagh, manager of the Pew Environment Group's marine aquaculture campaign.

For now, the growth of the industry still seems to be largely outpacing the development of more sustainable aquaculture methods, and regulations and technical advances to mitigate those problems have so far been unable to keep up. But there is confidence that this gap can be overcome.

Villalon, himself a 26-year veteran of the shrimp-farming industry, points to a number of technical advances that have occurred in recent decades. While about a third of wild fish caught still go toward the fish meal and fish oil needed to feed farmed fish, he says salmon aquaculture has seen almost a halving of the feed-conversion ratios - the number of pounds of food needed to produce one pound of farmed fish. There has been a similar improvement in the farming of shrimp, he says.

Kavanagh pointed to advances in raising some freshwater salmon species in closed-system inland pens in Washington State.

"I would hope that eventually there is going to be a more sustainable way to raise salmon, given its popularity. And I do think we are moving towards that - I think we have to. It's not feasible for it to continue going the way it is," she told IPS.

WWF has also spearheaded a joint effort by NGOs and producer groups to form consensus on what sustainable aquaculture looks like for different species. The standards resulting from these Aquaculture Dialogues will be used by a new group, the Aquaculture Stewardship Council, to certify certain fish farming operations as sustainable and thus pressure ones that are not to improve their practices.

The results of the tilapia dialogue were released in December and the salmon dialogue draft is expected to come out Jul. 28. Villalon, who oversees the dialogue project, told IPS the salmon standards will have seven principles that farms will need to fulfill, dealing with everything from compliance with laws, to conserving local biodiversity, to abiding by international labour standards.

Setting out a list of standards like these is not a particularly new undertaking, but Villalon says this effort is unique because of the broad group of stakeholders involved and the measurability of operations' compliance.

He says there will be a clear threshold: "You're either compliant or you're not."

And with many humans becoming increasingly dependent on farmed fish for their protein, environmental NGOs are not the only ones concerned about the way these fish are farmed.

The Canadian government released new rules for fish farms in the province of British Colombia last week following a court case that found fish farming off the B.C. coast impacted the ocean and thus was under federal jurisdiction.

In Washington, D.C., the National Oceanic and Atmospheric Administration is in the process of developing an aquaculture policy that "will provide a foundation for sustainable aquaculture." Of the 47 percent of U.S. seafood consumption that comes from aquaculture, however, 42 percent is imported.

International certifying organisations like the Accredited Standards Committee (ASC) may therefore have a key role to play. The ASC is expected to begin its work in mid-2011, though certification of tilapia farms on an interim basis will start soon.

http://www.ipsnews.net/news.asp?idnews=52218

Organic aquaculture laws go into effect

By Natalia Real

New rules that went into effect for organic aquaculture production in the European Union (EU) last Wednesday will let the industry flourish like never before.

Hitherto, organic aquaculture had been regulated through a blend of national rules in four Member States and a range of private schemes, only a few of which have run beyond one sole Member State. This arrangement has been unsatisfactory and troublesome in terms of the single market, as free movement has not been ensured throughout all 27 Member States.

This move is a prelude of plans to create a sound and consistent aquaculture policy for the EU in the coming years to allow the sector to thrive. The expansion in organic seafood production using natural substances and processes will broaden consumer choice.

Aquaculture Regulation 710/2009 entered into force on Wednesday and sets conditions for the aquatic production environment and for impacts on other species.

This was a cooperative venture involving technical input from the fisheries side of the Commission and procedural aspects from the agriculture side. It entails the separation of organic and non-organic units and specifies animal welfare standards including maximum stocking densities.

For example, the maximum stocking density for salmon is set at 10 kg per cbm (kg/m3) in net pens in sea water and 20 kg/m3 in freshwater. For sea bass and sea bream the maximum density is 15 kg/m3 in the sea and four kg/m3in earth ponds and lagoons.

The animal welfare standards specify that biodiversity should be respected and prohibits stimulated spawning via artificial hormones. Organic feeds should be used while supplemented by fish feeds obtained from sustainably managed fisheries, with special provisions made for bivalve mollusc production and seaweed.

Last Wednesday is also the day when the new EU logo for organic food was applied, a logo that is easily recognized and will help the organic sector to burgeon.

In 2008, an estimated 123 certified organic aquaculture operations were running in Europe out of 225 worldwide. Those in the EU made up almost half of the world's production of 50,000 tonnes that year.

In production terms, the top five Member States were the UK, Ireland, Hungary, Greece and France.

The top species is salmon, with organic salmon fetching at a price premium about 50 per cent higher than conventionally farmed salmon. Its market growth is predominantly strong in France, Germany and the UK.

Some EUR 17 million worth of seafood is sold under the organic label in France, whose market skyrocketed by 220 per cent between 2007 and 2008. In Germany, in addition to being available at specialised organic supermarket outlets, organic seafood is now sold widely in discount chains operating across the EU.

Research matters, Reviews & Training

Tuna meltdown – Is there an alternative?

Numbers of bluefin tuna are so low that the species is heading for extinction. But there is hope for this magnificent red-fleshed, warm-blooded fish. Salvation may come in the form of Kona Kampachi, which is abundant and has the sushi bite of bluefin. Isn't it time we changed the menu and got tuna off the hook?

http://www.guardian.co.uk/environment/2010/aug/01/tuna-fishing-kona-kampachi