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The Editor's choice

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Editorial

An interesting story, *The End of the Line*, and a prediction, from the mainstream press is reproduced below. Prompted by a documentary, it gives a bleak picture of wild fish capture fisheries and the effects of subsidies.

Can Aquaculture help to reverse the trend?

Also on the environmental front, a new document has just been published by the UN Food and Agriculture Organisation (FAO).

A summary of the section on Africa is reproduced below, along with a link to the full document.

The End of the Line

By Johann Hari in the Independent

An extraordinary documentary has been released, *The End of the Line*. It forces us to stop, think, and see. Its story is stark. In my parents' lifetime, we have killed 90 per cent of the world's fish. In my lifetime, we will finish off the rest – unless we change our ways, fast. We are on course to be the people who wiped fish from the earth.

The story begins in the sleepy Canadian resort of Newfoundland. It was the global capital of cod, a fishing town where the scaly creatures of the sea were so abundant they could be caught with your hands. But in the 1980s, something strange happened. The catches started to wane. The fish grew smaller. And then, in 1991, they disappeared. It turned out the cod had been hoovered out of the sea at such a rapid rate that they couldn't reproduce themselves. But the postscript is spookier still. The Canadian government banned any attempts at fishing there, on the assumption that the few remaining fish would slowly repopulate the waters. But 15 years on, they haven't. The population was so destroyed that it could never recover.

A growing number of scientists are warning that we could all be living in Newfoundland soon. Professor Boris Worm of Dalhousie University published a detailed study in the prestigious peer-reviewed journal *Nature* saying that at the current rate, all global fish populations will have collapsed by 2048. He says: "This isn't some horror scenario, it's a real possibility. It's not rocket science if we're depleting species after species. It's a finite resource. We'll reach a point where we run out."

The species in the frontline is bluefin tuna, the pinnacle of the evolutionary chain for fish. This little creature can swim at 50mph, and accelerate faster than the swiftest sports car. It has even developed warm blood. Yet every year, a third of the remaining population is ripped from the seas and slapped onto our plates. Soon, it will be gone. All over the world, from the Bay of Bengal to Lake Victoria to the shores of South America, I have heard fishermen say their catches are shrinking, in size and in number. Industrial-scale fishing only began in the 1950s. By the standards of the news cycle, this is slow – but by the standards of the planet or of settled fishing communities, this is a click of the fingers. The effects of the new industrial fishing are uniform. Professor Ransom Myers found that whenever the vast industrial trawlers are sent in, it takes just 15 years to reduce the fish population to a 10% shadow of its former self. This process of trawling is an oceanic weapon of mass destruction, ripping up everything in its path. Charles Clover, who wrote the book on which the documentary is based, has a good analogy for it. Imagine

a band of hunters stringing a mile of net between two massive all-terrain vehicles and dragging it at speed across the plains of Africa. Imagine it scooping up everything in its way: lions and cheetahs and hippos and wild dogs. The net has a massive metal roller attached to its leading edge, smashing down every tree that gets in its way. And in the end, when the hunters open up the net, they pick out the choicest creatures and dump the squashed remains in the sun as carrion for the vultures.

But we need fish. Our brains don't form properly without their fatty Omega-3 acids. So why do our governments allow this process of destruction to continue? Why do they actively encourage it, with \$14bn of subsidies for fishermen to keep on trawling every year? A small number of people are making a lot of short-term profit out of this destruction, and they are using this cash to ensure they can carry on hunting, down to the last fish. In 1992, an attempt to get the bluefin tuna listed as an endangered species was scuppered by the US and Japanese governments at the urging of the tuna lobby, who happen to give large campaign donations to all parties. A similar corruption has eaten into European politics. Add to this the fact that fishermen are a determined and demanding constituency with an equally short-term agenda. They demand the maximum quotas today, even if that means no quotas tomorrow.

Our societies are structured to put these short-term cries for money for a few ahead of the long-term needs of us all. A small determined group with hard cash almost always beats a diffuse group with good intentions until they get angry and fight back. Yet today, ordinary people in rich countries are being insulated from the fish crisis. As we exhaust our own fish stocks, our corporations are sailing out across the world to steal them from the poor. Today, there are armadas of industrial European and American fishing boats across the coast of West Africa, leaving the small fishermen who live on its coasts to starve. Professor Daniel Pauly says: "It is like a hole burning through paper. As the hole expands, the edge is where the fisheries concentrate, until there is nowhere left to go." We are not only stealing fish from Africans; we are stealing them from future generations. In the age of limits, we are hitting up against the capacity of the planet to provide for us, yet we are reacting with blank denial. This story is unfolding, in one form or another, in the rainforests, the air, and in the planet's climate itself.

It has left us at a strange crossroads. We will either be a despised generation who left behind a depleted husk-planet or a heroic generation who, at five minutes to ecological midnight, turned back to the light.

With fish, the solution is even simpler and more straightforward than with the other ecological crises ensnaring us. The scientific experts say we need to follow two steps. First, expand the 0.6 per cent of the area of the world's oceans in which fishing is banned to 30 per cent. In these protected areas, fish can slowly recover. Second, in the remaining 70 per cent, impose strict quotas on fishermen and police it properly, as they do in Alaska, New Zealand and Iceland. The cost of this programme? - \$14bn a year – precisely the sum we currently spend on subsidising fishermen. At no extra cost, we could turn them from the rapists of the oceans into their guardians.

Yet *The End of the Line* has one flaw, and it is one that riddles current environmental thought. It presents us with a great earth-altering crisis, and then says our primary response should be to change our own personal consumption habits. It urges people not to buy from Nobu, which shamefully still sells bluefin tuna, and to ask if the fish we buy is sustainably produced. It's like the end of *An Inconvenient Truth*, where the primary response Al Gore presses on us is to shop green and change our light bulbs. Of course this is valuable, but it is only an anaemic and minor first step. We needed collective action that prevents anyone from irreparably trashing the means of life.

At the moment, many good people get anxious about environmental issues, and hear the message that *The Response* is to scrub their own lifestyle clean. Yet individual voluntary action by a minority of nice people will not save the bluefin tuna, never mind the ecosystem. But if all these honourable people act together – by volunteering for, and donating to, organizations like Greenpeace, Friends of the Earth and *Plane Stupid* – they can change the law, so everybody will be required to change their behaviour, not just a benevolent 10 per cent. It was just such determined minorities armed

with the facts that spurred the fights against slavery, colonialism and fascism. When you respond as a consumer, you are weak; when you respond as a citizen, you are strong.

The voice of millions of people can drown out the concentrated power of the fishing industry and all the other industries with a vested interest in trashing our planet, but not with the swipe of a credit card. The alternative to collective action today is catastrophe tomorrow. As Charles Clover explains: "When the human population comes under pressure on land because of global warming, when we are running out of ways to feed ourselves, we will have just squandered one of the greatest resources on the planet – wild fish."

The epitaph for the human species would turn out to have been scripted by Douglas Adams: So long, and thanks for all the fish.

Environmental impact assessment and monitoring in aquaculture - FAO Doc

Recently enacted Environmental Impact Assessment (EIA) legislation across the African continent comprehensively encompasses aquaculture and this is an important factor for the sector to take on board as implementation and enforcement of these laws increases. Aquaculture is not as well established in Africa as elsewhere and EIA regulations are still being refined, which indicates an opportunity for the sector to work with environmental authorities to innovate and to further develop appropriate Environmental Assessment (EA) mechanisms for aquaculture.

There are opportunities to emphasize a didactic and enlightening role for EA/EIA with the goal of influencing farmers to improve the sustainability of aquaculture practices in Africa, while reducing the need for extensive and repetitive EA studies and enforcement.

At the present level of aquaculture development, African countries should consider opportunities for strategic studies using Strategic Environmental Assessment (SEA) for the sector rather than relying only on project-level environment impact regulations. Extending the assessment boundaries in this way will provide the information needed for good strategic planning (such as zoning decisions), as well as environmental information vital for the planning of individual projects. Successful SEA should make project-level EIA more efficient and less onerous. The platform of EA can serve to guide aquaculture in Africa towards sustainable and ultimately more beneficial options. There are many aspects of integration of aquaculture with other agricultural activities which bring potential environmental benefits and these can be promoted to counter some of the negative perceptions of aquaculture in this regard. Africa is fortunate in possessing many relatively unpolluted aquatic ecosystems. There are opportunities for using EA processes that can confirm the adoption of environmentally friendly aquaculture methods, to achieve added value in the marketing of aquaculture products from Africa's pristine environments. The feasibility of this is being demonstrated by initiatives in Madagascar and Zimbabwe to access premium export markets.

Biodiversity is a critical element. EIA for alien introduction needs clarification. Given the uncertainty of predicting the impact of an introduction, opportunities should be taken for effective application of risk assessment and management and for adapting up-to-date technologies to local species. The key stages in the EIA process for aquaculture in its present stage of development are screening and monitoring, rather than in universal in-depth environmental impact studies. Screening, focussed mainly on a few significant parameters, is needed to identify high-risk proposals. Effective monitoring is probably the most valuable part of the EA process to Africa at present, needed to provide the missing information on real-life impacts and ensure this feeds back into the process, thereby improving planning and screening and future EA.

EIA is most obviously applied to large-scale intensive enterprises. However, small and medium scale farmers will be important to the future and the EA processes need to be adapted to their reality. This could be with a simple field "check-list" type appraisal, or it could simply be by exemption. Eventually the sector needs to consider a mechanism to deal with aggregated impacts from multiple small farms. Fixing reasonable thresholds at which EA becomes necessary,

appropriate to each national context, makes the EIA process more “workable”. It will be important that care is taken to avoid EIA contributing unnecessarily to barriers to the entry of new farmers and investors. Cost, risk and lack of information about environmental impact are all restraining factors that need to be constantly reviewed. It is also important that countries do not weigh down future development with excessive regulation of which EIA is a part; investors must be given enough freedom to develop the sector. This is another reason to emphasize the screening stage (to filter out for further study only those proposals with obvious risk to the environment) and the monitoring stage (to gather data on real problems as they occur) as being the parts of the process that need most effort at present. Public participation is an important element of a successful EIA and there is a lot still to be done to convince government authorities and investors of possible benefits of appropriate public participation.

EA considerations in general and stakeholder consultation in particular, will bring greater benefits and less opposition if applied earlier in the project planning sequence. Knowledge and data about the environment and about alternative aquaculture options is very incomplete at present. Accumulating this information and making it openly available to new entrants should be an active priority for both the public and private sectors together. EIA studies and the conclusions of project monitoring, should be in the public domain and contribute to this national database. Enacting the legislation is only the beginning for the national bodies responsible for the environment.

Overseeing the EIA system requires substantial competent staff resources to successfully review the different documents produced throughout the process, critically interpret the technical data in the environmental impact statement (EIS), take appropriate note of public concerns and finally take an important decision on complicated evidence. The national capacities required fall short of requirements at present and building these up is recognized as being a priority. The sector must be aware of the risks to the integrity of EIAs. Two to note are

- (a) the partiality of EIA studies led by project proponents in the absence of robust oversight and
- (b) the reduction of the process to a paper-based bureaucratic authorization exercise bringing delay and inefficiency to efforts to develop aquaculture.

None of this can make any progress without substantial political will. Both public and private sectors will gain from active engagement in this environmental debate in order to put the case for aquaculture growth. International and regional cooperation over EA has a number of benefits. Coordination of appropriate articles of the legislation will make it easier to deal with the transboundary impacts that can occur through the ecosystem. Sharing of experiences and expertise in this field can compensate for some of the shortfalls in current national capacities.

Africa section only 600Kb

<ftp://ftp.fao.org/docrep/fao/012/i0970e/i0970e01b.pdf>

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Abalone



Abalone fishing ban to be lifted in South Africa

From the Herald

A two-year blanket ban on perlemoen (abalone) fishing has been “conditionally” lifted by Agriculture, Fisheries and Forestry Minister, Tina Joemat-Petterssen. President Jacob Zuma announced that fisheries would be moved to Joemat-Petterssen’s department because “fisheries is an economic activity – it’s not an environmental thing”.

Details such as what department will be responsible for marine conservation and research would be ironed out, Joemat-Petterssen said. She addressed an ANC meeting in Hermanus yesterday alongside Zuma, six weeks after he promised fishermen that an urgent decision would be taken on the ban. The perlemoen fishery, shut down early last year, would be reopened after February 1 when Joemat-Petterssen said she would declare what quantities could be harvested and where this would be permitted.

“The ban is not working and poaching is out of control. We lift the ban conditionally,” Joemat-Petterssen said.

See also:

<http://www.eyewitnessnews.co.za/articleprog.aspx?id=27998>

Catfish



Nigeria fish production still a fraction of demand

By Ayodamola Owoseye

Despite massive fish and shrimp rearing potentials, Nigeria still spends over N85 billion yearly on fish importation. Ever since 2001 when the federal government reduced the tariff on the importation of all fishery products from 25 to 5 per cent, the country has become a major importer of sea food. This led to the neglect of local aquaculture activities in the country.

The president, National Association of Chambers of Commerce, Industry, Mines and Agriculture, Simon Okolo told a fish farming workshop last month that Nigeria spends over N82 billion yearly on the importation of fish. According to Mr. Okolo, Nigeria imports 740,000 metric tonnes of fish valued at 594.4million US dollars (N82.2billion) into the country yearly making Nigeria the largest importer of fish and shrimps in the world. According to the National Bureau of Statistics, Nigeria spent N72.756 billion on fish importation in 2008, this was an increase from the N51, 23billion spent in 2007. The data on the domestic supply put fish importation on an average of 900,000 tonnes not adding up those smuggled in from the various borders across the country to supplement the 620,000 believed to be produced locally. With the total market demand of fish products growing to over one million tonnes per year, Nigeria has become the largest import market for different species of frozen fish in West Africa.

In spite of the abundant coastal waters and aqua cultural activities in the country, experts believe that the resources are not well utilized as local supply produces less than 3 per cent of the fish consumed in the country.

http://234next.com/csp/cms/sites/Next/Money/Business/5491334-147/There's_something_fishy_about_this.csp

Eels



Dutch ban Eel fishing

A long dark-grey snake-like fish with a silver belly, the eel's decline acquires significance in the light of the fact that restoring their numbers through breeding isn't an option, because the eel's life cycle remains a mystery to science. European eels spend most of their lives in freshwater tributaries and canals along the coast of Europe and the Mediterranean, but return 5,000 km to the Sargasso Sea in the North Atlantic to reproduce. They have never been observed mating or spawning in the wild, captive breeding has been unsuccessful and the only way to farm them has been by capturing and raising wild baby eels. Many blame the harvesting of these young fish, known as "glass eels" because they are transparent, for the decline. Apart from being caught on the coast of Spain and France, glass eels are also bought by fishermen in Europe and Asia to stock aquaculture farms, where they are raised for consumption. Eel catches in Asia have also fallen 82 percent since 1969, researchers say.

The Dutch ban will increase to three months in coming years, and despite planned compensation has aroused anger in the vastly depleted community of fishermen in a country where in the 19th century people rioted for days about eels. Just over 900 tonnes of eel are caught in Dutch canals, lakes and rivers every year. Europe's total annual eel catch is estimated by the European Union at 18,000 tonnes.

The ban, a unilateral step, has been complicated by the fact no one knows what is behind the decline. "Nobody knows why, that's the bottom line," said Willem Dekker, senior scientist and eel researcher at Dutch marine ecology institute IMARES. Several theories exist, ranging from the presence of pollutants in ocean waters through over-fishing to a viral infection.

Full story:

<http://www.reuters.com/article/idUSTRE59B00U20091012>



Oysters & Mussels

Pearl production from freshwater mussels

It started with a check dam. Four years ago, Pandit Dinanath was at the fisheries department in Una district, Himachal Pradesh. He was there to find out about subsidies for check dams; he wanted one on a nullah behind his house. A few days later, officials from the department visited the area. While at the inspection, one of the officers picked up a shell from the nullah and put it in his pocket, recalled Dinanath, addressed as Panditji by villagers. Curious, he posed a question to the officer. "You can make pearls from these mussels," was his reply. A conversation on pearl culture followed and instead of a check dam, Panditji ended up making two ponds. A traditional healer by profession, Panditji fretted about the lost opportunity: mussels were always found in the nullah. At 72, he decided not to waste any more time and joined a 10-day course on pearl culture at the Central Institute of Fresh Water Aquaculture in Bhubaneswar in Orissa.

There, he learnt how to breed mussels and induce pearl formation.



Inserting a nucleus for pearl formation



Now, Panditji is inspiration to several other farmers in the district. The fisheries department also trains farmers on freshwater pearl culture in batches. Seven farmers have started work. "I have sold 50 pearls in the past four years," said Panditji, "at Rs 5,000 each." Sales records from his bill book showed his pearls are popular in Himachal Pradesh, Punjab and Delhi. "As is the case with other gems, if a pearl does not suit somebody, it would result in adverse effects. But if it does, life would change for the better," Panditji asserted. The negatives start to show early enough, he believes. "A person spent his month's salary the day he bought a pearl from me. If it doesn't suit you, it might make you restless too," he said. Panditji's first buyer escaped unhurt from an accident on his way back from Una. "Destiny, or, the pearl?" Panditji wondered, his eyes fixed at the two ponds he owns in an acre.

Of the two ponds, the embankment of one gave in during the rains this year and the pond dried. "So many of my mussels got washed off. This means loss of crores of rupees," he said and pointed to a heap of shells lying next to the pond. Mussels take time to breed. The ones translocated take about six months to acclimatize to their new environment and only then pearl culture can begin.

Moving mussels is not an impossible task. Enclosed between two shells, mussels are sluggish and can be easily caught from the shallow edge of the pond where it is usually half-buried in the sand.

“Not all mussels produce pearls. Of the three species we have in the rivers of Himachal, *Lamellaedense marginelis* is suitable for pearls,” said Ashok Verma, assistant director of Una fisheries department. Verma had roused Panditiji’s curiosity when he pocketed a mussel in 2005.

Shrimp and Prawns



Shrimp farming in Gambia declines

According to information gathered by the fisheries column, in 1982 a company called West African Aquaculture engaged in fish farming. Two fish farms were being operated in Pirang and Sanyang points by Scan Gambia Limited from Norway, who introduced the foreign Black Tiger Prawn in 1988 but closed down in 1992 due to financial problems.

In 1982, The Gambia industrial farm, "West Africa Aquaculture", a semi-intensive farm, including a hatchery and a processing plant came in producing to the EU standards. Of the original 200 hectares, only 50 are being used for production today. With a production of 50 tons in 2006, this farm is the only one in West Africa today with the capacity to serve as a base for modelling production methods adapted to the local context.

<http://allafrica.com/stories/200912020270.html>

Trout and Salmon



Status and perspective for the Trout farming industry in South Africa

By Henk Stander and Danie Brink, Division of Aquaculture, University of Stellenbosch.

The trout sector has to a large extent pioneered aquaculture development in South Africa and trout is currently the most common grown freshwater fish species in SA. Trout was introduced into South Africa for sport fishery purposes in the 1880's whilst commercial production only started in the 1960's. Today trout farming is a well established industry that is assisting in providing key services and technology to other developing aquaculture sectors in South Africa.

Two types of trout are produced in South Africa, namely brown trout and rainbow trout *Onchorhynchus mykiss*. Brown trout were first introduced and serve mainly the interest of the recreational fishing industry. Rainbow trout followed soon after and were introduced throughout many freshwater lakes and rivers in South Africa. Lachlan MacLean one of the pioneers had arranged for a shipment of 20 000 brown trout ova in 1884. This was done on his own initiative and at his own expense when he was in charge of the Donald Currie steamship office in Cape Town. The eggs arrived in good condition and 17 000 hatched in troughs fed by a furrow from the upper Breede River, near Ceres. All but 60 of the alevins died, possibly of zinc poisoning from the metal lining of the troughs used for hatching the eggs. An unseasonable flood carried away 57 of the survivors, leaving three, which lived for six years and grew to about three pounds (1.35 kg) in a small pond. No breeding took place, so this initially promising enterprise came to nothing. In the 1890's attempts from John Clarke Parker of Natal and Ernest Latour in the Western Cape were successful. Parker succeeded on 10 March 1890 when the first trout fry were hatched at Boschfontein.

South Africa's current production capacity is approximately 1 800 tonnes of trout, with a farm gate value of R 63 million and a unit value of R 35/kg. The four main areas of production are: Mpumalanga (700 tons, 14 farms), Western Cape (550 tons, 14 farms), Kwa-Zulu Natal (200 tons, 4 farms), Eastern Cape (50 tons, 3 farms) and Lesotho (300). The Western Cape and Lesotho focus mainly on the production of larger trout (>1kg), with the other provinces producing mainly plate size trout.

Services providers such as feed suppliers, hatchery services, equipment suppliers, veterinary services and processors are well represented in Mpumalanga and the Western Cape. The trout sector is represented by the Western Cape Trout Producers organization and the Mpumalanga Trout Producers Forum.

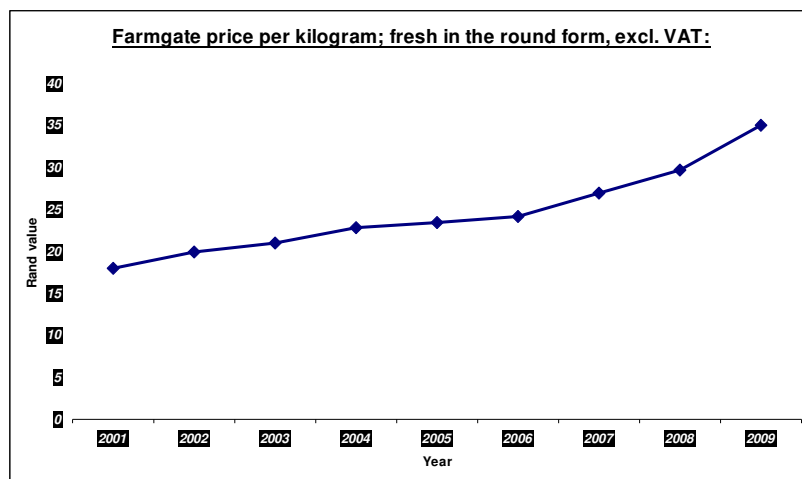
Trout are sold in a variety of forms including whole fish (gilled and gutted), smoked and fillets, as well as live fish for supply of the sport fishery sector. Marketable sizes range from plate-sized (230 g – 450g) fish and upwards. Generally in SA, trout reach a market size of about 1 kg in 16 months. Production costs are generally higher than in Europe due to less favourable economies of scale. Fluctuation in the value of the Rand and cyclical oversupplies on world markets often affect the local industry in terms of competition from substitute products such as imported Pacific and Atlantic salmon. The sector does, however, manage to maintain stability and competitiveness, particularly with regard to value added products.

The sport fishery and related ecotourism industries have developed into an important sector of its own and provides an important economic contribution to the rural areas of KZN, Eastern Cape and Mpumalanga. There are approximately 24 commercial trout farms in South Africa, including the Hands-On Fish Farmers Co-op that consists out of 35 small scale production units. The trout sector provides an estimated total of 220 direct jobs on the level of production, with a further 280 indirect jobs involved in processing. Trout lends itself to the production of a wide range of value added products. There are 8 specialist processors of trout products in South Africa, with the top three processing approximately 90 percent of the total production. The total trout production is marketed almost exclusively in South Africa, with markets mainly consisting of the hospitality and retail industry (Woolworth's, Pick & Pay, Spar and Checkers) in all of the main urban areas, especially Gauteng, Cape Town and Durban. Approximately 60 to 70 % is sold in the food service sector and 30 to 40 % in the retail sector. Direct sales to local markets also play an important role in terms of marketing. The local demand for trout is higher than the local supply and the production is as a result market driven at this stage. The local market was approximately 2 000 metric tons per annum in 2008 with a predicted 2 to 3 % annual future growth rate. Frozen headed and gutted rainbow trout are imported mainly from Blue Marine in Chile to supply in shortfalls in local markets.

The main constraints and challenges that is restricting growth in the local trout sector are:

1. Unfavourable environmental conditions (high summer water temperatures)
2. Limited freshwater resources with a seasonal nature
3. Technical constrains such as fingerling and feed supplies
4. Biodiversity legislation (NEMBA) restricting movement and farming areas
5. High input costs (fish feed and transport cost)
6. Limited access to finance and development funding

Most areas of South Africa experience high summer temperatures, exacerbated by global warming, that has a negative effect on trout production in South Africa. Poor water quality and water temperatures of 25 °C are responsible for disease outbreaks and high



mortality rates particularly in late summer (February and March). Better control over environmental conditions, such as with recirculation systems (RAS), is required particularly with regard to trout hatcheries. The costs of recirculation technology (RAS) are often though prohibitively expensive and a lack of development funding further jeopardize the access to and implementation of these technologies. New biodiversity zoning regulations will also restrict the development of the trout industry in South Africa. A mapping exercise is in progress where the country would be divided in different regions where trout farming would be allowed by licenses in the future. Good quality extruded trout feeds are available on the local market but prices are high and resulted in very high production costs.

An opportunity, though, exist in the market where there is a potential room for expansion. The local trout market exists in a relationship with the tourism industry and if the tourism industry keeps on growing as shown in the last couple of years, this is promising for the local trout market. With the FIFA soccer world cup tournament taken place in South Africa in 2010 the country is expected almost 1 million football supporters visiting our shores from around the world. This will increase the demand for trout rapidly but only for a short window period. The market price for rainbow trout are relatively high compared to other parts of the world and a trout farmers will get in the region of R 35/kg excluding VAT for trout in the round form this season.

Considering that all constrains and challenges are faced, trout farming in South Africa does have a good future because of the stable prices and growth in the local market demand. It will always be a high risk sector but with the ideal site location and good operational management with feed conversion ratios of less than 1:1.5 it is a tempting investment to consider. Predictions are that smaller farms will consolidate and merge into lager farms to get to the economies of scale which make profitability more viable in future times.

Trout in South Africa will remain popular as both a sport and food fish and expectations are that it will remain South Africa's most popular freshwater fish.

Other



First Dusky Kob ready for market in Eastern Cape

The Mooiplaas zero-waste farming venture launched by former Eastern Cape Economic Affairs MEC André de Wet has yielded its first commercially viable Kob. Soon the first harvest will be on the market.

<http://www.dispatch.co.za/article.aspx?id=353543>

Combining Rabbit and Fish farming wins prize

A project that combines backyard rabbit-keeping with fish farming, produces affordable protein, and provides the means to keep children in school, is the winning idea in a competition to find solutions to rural Africa's most pressing challenges.

<http://blogs.nationalgeographic.com/blogs/news/chiefeditor/2009/12/541-rabbit-fish-farm-wins-contest.html>

Regional Roundup

Norway and Iceland pledge fisheries cooperation aid

By Denise Recalde

The governments of Mozambique, Norway and Iceland are set to renew their cooperation in fisheries for the period 2009-13, in a bid to improve and make sustainable the exploitation of Mozambican fisheries. The programme of fisheries assistance for the next four years will be co-financed by Norway and Iceland in the amount of USD 27.7 million in grants, under new bilateral agreements and a tripartite memorandum of understanding. The funds will be used to strengthen the capacity and skills of the fisheries administration in the areas of research, fisheries management, aquaculture, artisanal fishing, quality control and training. It will also finance measures to improve the living conditions of fishing communities, and small and medium-sized business activities.

Mozambique Fisheries Minister Cadmiel Muthemba reiterated the undertaking of the Mozambican government to observe the principles that will guide trilateral cooperation, particularly the sense of responsibility in managing the resources that the two Scandinavian partners are making available, to implement the goals advanced in the programme. Muthemba described Norway and Iceland as "strategic partners in developing the fisheries sector." It was thanks to their support, he said, that Mozambique "has laid the technical and scientific bases necessary for the sustainable management of fishery resources and to keep our fisheries produce on the international markets".

The Minister estimated average annual production to consist of 130,000 tonnes of fish. Most of this is consumed locally, but 10,000 tonnes of high value produce -- notably prawns -- is exported, earning the country about USD 55 million. Muthemba said that the contribution of the fisheries sector is 3 per cent of gross national product; it employs 150,000 people in fishing and aquaculture, and in the processing and marketing of seafood products.

Hatchery to be built on Gariep Dam, South Africa

By Mosidi Mohlakela

Gariep Dam - A R45 million fish hatchery is to be constructed in Gariep Dam in the Free State to not only supply local community projects, but create employment opportunities. The South Africa Agricultural Demonstration Centre, which is a result of a partnership between South Africa and China, is envisaged to be a fingerling supply station to rural aquaculture community projects in the Free State and outside the province. The hatchery will also be used to advance research and will provide a facility where agricultural scientists, technicians and farmers will test methodologies. It is expected to be completed in 2011.

Speaking at the sod turning ceremony in Gariep Dam on Tuesday, Free State Premier Ace Magashule said hundreds of jobs would be created as the next construction gets underway. "Through the construction of this hatchery, unemployed communities will gain employment and develop their skills by learning more about fishery," said Magashule. He said the project marked the beginning of prosperity for the unemployed locals. A total of 105 locals and 12 Chinese nationals will be employed at the beginning of the project.

Chinese Ambassador, Zhong Jianhua said the partnership was a result of his government wanting to assist developing countries and teach them about fisheries. He added that the project was a sign of friendship between the two countries.

The Chinese government has injected more than R45 million into the project and will give R15 million each year for the next three years.

<http://www.buanews.gov.za/news/09/09102810451001>

Aquaculture in Egypt

Egypt has built the largest aquaculture industry in Africa, accounting for four out of every five fish farmed on the continent. Egyptian fish farms produced over 650,000 tons of finfish last year, or about 60 percent of the country's total freshwater and marine fish production, providing a cheap source of protein for the country's 80 million people.

"The massive growth of aquaculture has kept fish affordable for the majority of Egyptians, so that today fish and poultry prices are more or less similar (cost) per kilo basis," says Malcolm Beveridge, Director of Aquaculture and Genetics at the WorldFish Centre. "It seems the majority of consumers switch between the two, depending on which is cheaper."

Full story at <http://www.ipsnews.net/africa/nota.asp?idnews=49099>

Mauritius planning to be Seafood Hub

By Karen Kuhlcke

The seafood sector is also highlighted by Last who says that "growth prospects for the sector, namely activities such as storage, warehousing, processing, canning and distribution of seafood are good.... This is linked to insatiable world demand - estimated at USD 100 billion - coupled with the fact that Mauritius commands a vast maritime zone. With the Indian Ocean holding one of the world's largest stocks of tuna, with over 20% of the global annual tuna catch coming from the region, Mauritius is on the ideal platform to become the major transshipment and processing hub for tuna."

<http://allafrica.com/stories/200910120880.html>

New aquaculture initiative in Western Kenya to make 120,000 jobs

An initiative to expand fishing in Western province has been developed as part of the national economic stimulus package. According to fisheries minister Paul Otuoma, the sector is poorly developed in Western province, which has huge potential for rearing fish. Fishing is only practised on a commercial scale in Budalang'i and Funyula constituencies, which border Lake Victoria. Between them, they generate about Sh300 million. The 24 constituencies in the province are now earmarked to benefit from the fish farming plan that targets 4,800 fish ponds being dug in the region to raise different fish species.

<http://www.businessdailyafrica.com/Company%20Industry/-/539550/671876/-/u602ghz/-/>

And also

<http://www.businessdailyafrica.com/Company%20Industry/-/539550/675312/-/u5we9iz/-/>

<http://www.nation.co.ke/News/-/1056/814288/-/vnhu2a/-/>

Returns good on Uganda Aquaculture

By Lominda Afedraru in the Monitor

Farmers will have to go a step ahead if they want to increase their revenue by venturing into fish farming. Researchers have said fish farming is one of the quickest means of getting returns within the shortest period of time. Agriculturalists at Makerere University Agricultural Research Institute (Muraik), Kabanyolo, said within eight months of good feeding, a farmer can harvest tilapia of one and half Kilos which is sold at about Shs5,000. In case of other types such as lung and mud fish, one can harvest them within the same duration although at six months these species are ready for harvesting.

The Kabanyolo farm assistant manager, Chrysostom Tweyambe says this is one of the simplest types of commercialised farming methods to venture into with big profits. According to Tweyambe, for a farmer to harvest a reasonable number of fish, the pond site, must be located on a sloppy area covered with grass to avoid soil erosion. He says it's good to drain the water using dykes but this method mostly practiced in developed countries is costly. Ugandan scientists advise farmers to dig up soil and the pond must be fertilised by applying living organisms. A farmer can as well formulate feed concentrate out of mingled posho poured in the pond and water is then allowed to flow in it. Tweyambe says a good fish pond must be dug away from any trees because the fish are supposed to be exposed to sunshine to get direct energy from the sun. The Kabanyolo farm manager, Francis Mukunda says in fish farming, farmers can opt for single stocking and single harvesting type of farming. This farming requires farmers to stock the species together and harvest them once. He says in single stocking and multiple harvesting, farmers may opt to stock variety of fish species or single fish species but harvest them in bits either after every week or two weeks depending on the number of the species that have matured.

Farmers are also advised to feed the fish regularly by pouring feed into the water. At Muarik, fish pond attendants have planted sweet potatoes next to the pond where they collect potato vine to feed the fish. The pond is segmented into portions and the water level is subdivided using soil. Here each water segment has its feeding point where solid feeds such as potato vine are placed at the feeding point thereby attracting the fish to feed. Each water level has about three to four feeding points but according to Tweyambe there could be more depending on the capacity of the fish pond. At the time of harvesting, the fish must be starved for one week to avoid harvesting fish with a lot of digestive waste in them. The institute usually offers free training to farmers interested in fish farming.

<http://allafrica.com/stories/200912020237.html>

Feeds

Brewers waste converted to fish feeds

By Jennifer Alsever in CNN Money

Oberon uses bacteria to turn unwanted beer sludge into premium protein feed for fish farms. Andrew Logan has what every manufacturer craves: an endless source of free raw materials that his suppliers can't wait to dump and a market starving for his product. Logan, a biologist in Idaho Springs turns waste from breweries into a fish-food ingredient. His company, Oberon FMR, spent a decade refining a proprietary mixture of microbes trained to eat food-based wastewater. When dried, the bacteria become high-protein flakes for the booming \$100 billion aquaculture industry.

"The opportunity is massive," says Logan. His suppliers agree. By law, breweries and foodmakers must find safe removal solutions for wastewater; hauling it away and composting it (or, in winter,

storing it) can cost up to \$3 million a year. Now Oberon takes it off companies' hands for free. With 65 million tons of seafood farmed for human consumption annually, fish farms are growing by an average of 9% a year and need a new kind of premium feed.

Full article

http://money.cnn.com/2009/11/24/smallbusiness/beer_sludge_fish_flakes.fsb/

Environment, Health and Disease issues

Greenpeace founder defends shrimp, salmon farming

One of the founders and long-time leaders of Greenpeace, Patrick Moore has voiced a stinging attack on environmentalist groups for their opposition towards salmon and shrimp aquaculture. "Greenpeace opposes the farming of salmon, shrimp, and other species even though this takes pressure off wild stocks, provides employment farming the sea, and produces some of the healthiest foods at affordable prices," Moore explained. On the other hand, Greenpeace says that "Rapid development and expansion of intensive aquaculture for species such as salmon and shrimp has, for example, resulted in widespread degradation of the environment and the displacement of coastal fishing and farming communities. Moore was an active figure in Greenpeace from 1971 to 1986, serving as president of the Greenpeace Foundation in Vancouver. He is now chairman and chief scientist at Greenspirit Strategies Ltd.

"Since I left Greenpeace in 1986, partly over their decision to "ban chlorine worldwide," they have adopted a number of policies that I believe are not in the best interests of the environment or humanity," Moore says. Moore founded his own salmon farming company, Quatsino Seafarms Ltd, at Winter Harbour. At this time, he also served as president of the British Columbia Salmon Farmers Association (BCSFA) from 1986 to 1989. In a statement on Moore, Greenpeace said that "Patrick Moore often misrepresents himself in the media as an environmental "expert" or even an "environmentalist," while offering anti-environmental opinions on a wide range of issues and taking a distinctly anti-environmental stance." One of the "anti-environmental opinions" raised in the statement was that of salmon farming.

Despite opposition from the organisation he was once a member of, Moore sticks to his guns: "The campaign against salmon farming, based on erroneous and exaggerated claims of environmental damage and chemical contamination, scares us into avoiding one of the most nutritious, heart-friendly foods available. Salmon farming takes pressure off wild stocks, yet activists tell us to eat only wild fish. Is this how we save them, by eating more?" he wrote in the Miami Herald.

In light of the recent outbreak of Infectious Salmon Anemia (ISA) in Chile, some practices, such as the use of antibiotics in salmon farming, have come under attack by environmental groups.

Moore has said that the amount of antibiotics used in salmon farming do not compare to that of more traditional livestock. "Whereas these livestock are on low-dose antibiotics for more than 50 per cent of their lives, only 3 per cent of salmon feed is medicated. Many salmon farms are now completely antibiotic-free and some are able to qualify for "organic" status."

Responding to claims of harmful waste being produced by salmon farming, Moore said that "Activists compare salmon farms to cities of 500,000 people dumping their raw sewage into the environment. The primary reason for concern about untreated human waste is disease transfer, not the waste itself. Once human waste is treated and sterilised it is a perfectly good fertiliser, and

fish waste is no different except that there are no diseases that can be transmitted from fish to people.” In the case of shrimp farming, it is, for him, a much more ethical issue. In an interview with The Competitive Enterprise Institute, he comments: “First World environmental activists are campaigning against shrimp farming in Bangladesh, where hundreds of thousands of people depend upon it for their livelihood.” Due to the vast negative coverage that aquaculture has received in the world press, Moore believes that he should provide a positive vision for aquaculture since “the negative side already has way too much airtime.”

<http://www.fis.com/fis/worldnews/worldnews.asp?l=e&country=0&special=&monthyear=&day=&id=34446&ndb=1&df=0>



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Research matters, Reviews & Training

Impact of antimicrobial agents in aquaculture

By Analia Murias

A team of researchers studied the impact of antimicrobial-agent use in aquaculture on human health and concluded that its intensive use produces a selective pressure. This means that they create reservoirs of resistant bacteria and cause the transfer of resistant genes in fish pathogens and other bacteria in the aquatic environment.

According to the group's experts, led by Ole Heuer, at the European Centre for Disease Prevention and Control (ECDC), the two most common routes of administration of antimicrobial agents in the aquaculture sector are the use of medicated feed and its direct dissemination in the water.

In an article published in the last edition of *Clinical Infectious Diseases*, the researcher detailed that the apparent coincidence between several ecological environments, including human and aquaculture, can lead the bacteria and drug-resistant genes they contain to be exchanged between these zones. That increases the risk that the drug-resistant genes can be transferred to humans in an aquatic environment. According to Heuer and his collaborators, the associated risks are the following:

Indirect dissemination of antimicrobial resistance through horizontal transfer of genetic information: Quinolone use in aquaculture resulted in the development of quinolone-resistant *A. salmonicida* stocks, due to *A. gyrA* gene mutation. In addition, resistance in shrimp pathogens, like *Vibrio harveyi*, was developed due to exposure to antimicrobials and to sulphonamides in bacteria found in shrimp hatcheries in India. Specialists estimate that the fact that some bacteria that cause infections in fish belong to the same genus of bacteria that cause infections in humans, probably increase the likelihood of dissemination of antimicrobial resistance from aquaculture to humans.

Direct dissemination of antimicrobial resistance: Aquatic environments can be a source of drug-resistant bacteria that can be transmitted directly to, and cause infection in, humans. This contact is possible through water consumption, or through aquaculture product handling or ingestion. These can include human pathogens like *V. cholerae*, *V. parahaemolyticus*, *Vibrio vulnificus*, *Shigella* species, and *Salmonella*, or opportunistic bacteria like *A. hydrophila*, *Plesiomonas shigelloides*, *E. tarda*, *Streptococcus iniae*, and *E. coli*.

The team of scientists emphasises that the transfer of drug-resistant bacteria in aquaculture to humans can generate an increase in the number of infections and the frequency of treatment failures, as well as acute infection severity.

Sustainable Seafoods

Eight Sustainable Sources of Farmed Fish & Seafood

<http://www.treehugger.com/files/2009/11/8-sustainable-sources-farmed-fish-seafood.php>

Monterey Bay Aquarium

The Monterey Bay Aquarium opened 25 years ago this week, paid for with about \$55 million from computer mogul David Packard and his wife, Lucile. It was built on the 3.3-acre site of the old Hovden Cannery on Monterey's Cannery Row and was dramatically expanded in 1996, then renovated again in 2005. The aquarium has become one of the state's leading tourist attractions, drawing about 1.8 million visitors a year. Julie Packard, daughter of David and Lucile, is the executive director and vice chairman of the institution's board of trustees.

Although the number of accredited aquariums in the U.S. has increased from 18 to 40 in the 25 years since Monterey Bay opened, it remains the only one to successfully exhibit great white sharks, and it has pioneered the display of jellyfish and deep-sea animals. Moreover, with its advice on what seafoods consumers should eat and chefs should serve, the aquarium has taken an influential role in the debate over sustainable fishing practices.

http://www.huffingtonpost.com/julie-packard/turning-the-tide-for-seaf_b_323992.html

<http://travel.latimes.com/articles/la-trw-monterey18-2009oct18?page=1>

Scientists breed a non-lethal puffer fish, ending risk of eating "torafugu".



The fugu is one of the world's most dangerous foods, thanks to a concentration of anhydrotetrodotoxin 4-epitetrodotoxin in the liver or ovaries that is 1,200 times more lethal than cyanide. The poison paralyses the nerves and prevents the lungs from working. There is no antidote and death occurs within minutes, with the first indication that all is not well reportedly a numbness of the lips. Only specially-licensed chefs are qualified to prepare this winter delicacy for human consumption and there are several fatalities

every year, mostly among sport fishermen who think they know how to remove the poisonous parts. Now an aquaculture company based in the southern prefecture of Ehime, Japan, said it had raised 50,000 non-poisonous fugu at a fish farm.

But many fugu chefs, who are traditionally bound to commit ritual suicide with their own fish knife should one of their customers expire after eating one of their meals, said they preferred to take their chances with the potentially deadly wild varieties. "It's a very tasty fish, but that's not the only reason people choose to go to a fugu restaurant," said Shinichi Ueshima, the chef at the Dote fugu restaurant in Yokohama. "It's obviously more than a little exciting to go to a restaurant knowing that it might be the last meal that you ever eat," he said. "Where is the enjoyment in eating something that has no risk in it?"

Fugu chefs consider themselves among the elite in the very competitive world of Japanese cuisine and are required to undergo three years of training and apprenticeship, followed by a test that just 35 per cent of applicants pass, before they are permitted to prepare their first fish.

Investing in Aquaculture

Mauritius

Mauritius is positioning itself as prime location for sustainable aquaculture in view of the positive conclusions of the Aquaculture Master Plan. One of the main findings of the Master Plan is that there is potential for an annual production of 29,000 tonnes of fish in the medium term and 39,000 tonnes of fish in the long term.

http://www.tradeinvestafrica.com/investment_opportunities/983307.htm

Uganda

Uganda's fisheries sector has undergone major improvements which has seen fish exports soar due to demand by the European Union. The Nile Perch and Tilapia, found in Lake Victoria, have proven to be the most commercially viable. Ugandan fish and fish products comply to the European Union's hygiene directive (91/493/EEC), and other international standards. The Department of Fisheries is continually enforcing compliance to international standards. Investment opportunities are in fish farming and establishment of more fish processing factories near waters other than Lake Victoria to meet government's set annual export quota of 60,000 metric tonnes.

http://www.tradeinvestafrica.com/investment_opportunities/781757.htm