



Announcements

AQUAHANA is the name of a new program at the University of Hawaii for system wide aquaculture development and coordination. Its goal, according to newly appointed program leader Dr. Albert Tacon, is to "elevate the university to become a world class institution with cutting edge expertise, taking advantage of our strengths in research and development, patenting and licensing, and education and training." Aquaculture within the UH has long consisted of many separate researchers and projects, with some collaboration, but sometimes with notable lack of contact and common information. The need for and potential of a more coherent community is illustrated by the fact that *AQUAHANA* has identified "more than 60 PhD-level faculty and research staff engaged directly or indirectly in aquaculture-related activities ... one of the largest groups .. within the U.S. .. in this field." Most of us can name a number of the others, but not nearly approaching this total, and therefore not knowing much about the help and collaboration that is possible. Tacon's formation of *AQUAHANA* is to be the best supported of efforts at unification, with backing

and involvement at high levels of the university administration. Albert has been a member of our aquaculture community for some years, having worked with Sea Grant, CTAHR, the Hawaii Institute of Marine Biology and the Oceanic Institute. He is an internationally noted researcher in aquaculture feed issues, and has worked for the United Nations FAO in Italy, Brazil, and Indonesia. Your editor and all of the aquaculture extension service welcome Albert with aloha and look forward to working with him in pursuit of our mission.

Information Sources

Southern Regional Aquaculture Center
Many readers know about SRAC publications, which are often handed out and referred to by us aquaculture extension folks. A recent update notices says that there are 171 titles currently available, covering many species, types of culture systems, and culture and management techniques. These fact sheets are short and to the point, typically 4-8 pages long, and also typically a "good start" for someone new to a subject. The project that produces these publications has been operating for 18 years; many of

Readers' contributions are invited with aloha, and much appreciated, though not all can be used. They may be mailed, faxed or emailed to the editor at this address. Contributors understand that materials may be edited for space and other considerations. This newsletter is part of a cooperative project funded by the University of Hawaii Sea Grant College Program, the UH Cooperative Extension Service, and the State of Hawaii Aquaculture Development Program.

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the topics/titles have been updated (rewritten by the original or other authors) during that time. They can be obtained in pdf format and saved or printed at www.msstate.edu/dept/srac; they can be obtained by mail from Jimmy Avery, Aquaculture Specialist, National Warmwater Aquaculture Center, P.O. Box 197, Stoneville, MS 38776-0197.

Aquatic Animals in Hawaii The state Dept. of Land and Natural Resources Division of Aquatic Resources presents the online and downloadable *Aquatic Species Database* which "includes all non-microscopic freshwater and marine animals for which we could find records ... it is compiled from Bishop Museum and other expert databases and texts. For each species, the database includes scientific name, endemic status, if the species is a Species of Greatest Conservation Need, if the species is listed in the Endangered Species Act, CITES, or IUCN Red List, and where available, species distribution, depth of occurrence, and any unusual ecology." The database includes 6273 native marine and 1359 native freshwater species. On the same DAR site (www.hawaii.gov/dlnr/dar/sawcs.htm#HIASD), one can access the *Hawaii's Statewide Aquatic Wildlife Conservation Strategy* (SAWCS), whose purpose is "to provide the opportunity for aquatic resource managers to develop a comprehensive planning process to help manage Hawaii's unique aquatic wildlife. The document can also be downloaded as a pdf file. The first step in developing the SAWCS was selecting Species of Greatest Conservation Need. For each SGCN or groups of SGCN, fact sheets were created ... (with) recommendations on methods to monitor the effectiveness of the conservation actions."

Updates

Zero Fish Meal The April issue of this newsletter discussed a study of juvenile Nile tilapia growth on several 100% plant protein diets. These did well in comparison to one with fish meal, but there were laboratory-based details that made the results still somewhat theoretical. A recent article summarizes 6 practical pond-based trials of all-plant diets on channel catfish grown from large fingerling to 3/4 to 2 pound size, within final food product range. This is a good time to note that channel catfish and tilapia are the U.S.' largest-produced freshwater food fishes, and that they are natural omnivores, for which all-plant diets have so far done best.

There were no significant differences (scarcely noticeable in fact) between the performance of the all-plant diets and those with some animal protein, in terms of feed consumption (fish meal was not needed for palatability), weight gain, feed conversion (good at 1.8), survival, fillet yield, and fillet composition in terms of fat, moisture, and protein. The authors pointed out that this result was made possible through use of detailed work on ingredients, with emphasis on using practical test conditions. They also noted that the product could be marketed as "truly grain-fed" and be free of consumer fears of, for example, mad cow disease from beef by-products. This is one of the most practical results so far presented here, but it must be noted that the diets with animal protein were already somewhat plant-protein substituted, and had less animal protein than standard commercial feeds. But this is nonetheless progressive and highly pertinent to questions of palatability and the final step to 100% plant protein. Reference: Robinson, E., and M. Li, 2006. Catfish nutrition: use of all-plant diets to grow food fish. NWAC News vol. 9 no. 1, p.8. (www.msstate.edu/dept/tcnwac).

U.S. Catfish Industry The above newsletter also presents a review of the U.S. catfish industry for 2005. The trend is presented as a beginning upturn from a recent bottom, though some indicators fell slightly compared to the previous year. The "total producer's gross income" was \$435 million (about 19 times that of Hawaii's total production of all products), down 1%. The average price received by producers was \$0.73 per pound, up \$0.03, for the 600 million pounds processed. It appears that the price will rise during 2006, perhaps to \$0.80. We might wonder how that much production can continue at those prices; the answer must involve low production costs. The price of 32% protein feed was \$233/ton - if this means 2000 lb English tons, it equals 11.6 cents/lb, and probably reflects quantity prices and proximity to feed mills among other factors. Ever-increasing fuel costs are a concern, as are increasing imports of competing fish products. Reference: Hanson, T., 2006. U.S. farm-raised catfish industry: 2005 review and 2006 outlook. NWAC News vol. 9 no. 1, p. 10,12.

TECHNICAL NOTES

Omega-3 Highlights

One of the most-noted benefits of eating fish is the effect of the fats and oils. Omega-3 is the chemical name for this general class of lipids, and it is well accepted that they are a positive factor in a healthy diet. Overview and specifics were presented at a federally sponsored meeting in Washington last December; Power Point slide shows from the meeting can be found at www.seafoodandhealth.org/powerpoints.htm.

They began with some big-picture items. There was a statistically significant (P =

0.03) reduction in risk of death from coronary heart disease (CHD) among 226,000 individuals with increasing average fish intake between 0 and 100 grams per day. Recipes often suggest planning for 1/2 pound (227 g) per person, which is a substantial portion but covers several days at this study's highest level. The risk in this work was some sort of relative index, but in another study, eating fish at least once per week compared with less than once per month, reduced risk of CHD death by 17%, with 4% added for additional servings per week. The same researchers reported an IQ increase in children whose mothers ate fish during pregnancy at + 1.3 IQ points per gram of fish eaten per day. The upper limit of this effect was not stated.

Getting down to specifics with smaller study groups, dietary intake and blood content of the most important omega-3 lipids EPA and DHA were related to reduced hospital admissions with coronary symptoms, sudden death and total mortality. Taking 850 mg/day of these compounds in capsules had no effect over 42 months on blood cholesterol analyses, showing that the good effects were not mediated through cholesterol.

Omega-3's are found in oily fish, marine types naturally, and cultured freshwater ones that receive them in feed. They are also found in canola oil, soybean oil, and flaxseed oil. They are generally important for brain development not only in ourselves but in fishes, and have been found to require attention during some larval rearing studies. Some of them are chemically related to prostaglandins, leukotrienes, and other materials important to control of inflammation in the body. For readers who may want more technical detail, the slide shows take it further, and the total body of research is very large.