Best Aquaculture Practices Certification Program
Global Aquaculture Alliance
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Comments on BAP Standards

Channel Catfish Farm Standards

Comments concluded March 2008

New England Aquarium

Matthew Thompson, Michael Tlusty, Heather Tausig
Boston, Massachusetts, USA

GENERAL COMMENTS:
These comments are provided to the Global Aquaculture Alliance (GAA) on the Draft Catfish Standards with regard to the role that the New England Aquarium plays in the seafood industry within its mission to protect, preserve and promote the world of water. These comments should not be considered an endorsement of the GAA or its standards; neither should the suggestions made be considered conditions to obtain that endorsement. The Aquarium recognizes the challenges and potential benefits of certification schemes, especially in regard to aquacultured products, and offers comments and suggestions to the draft standards. These comments are presented from a general perspective and not prescriptive, as the GAA technical committees should be allowed to generate the specific technical values.

BAP: *Thank you for your thorough and helpful response for public comments on Best Aquaculture Practices for Channel Catfish Farms. Hopefully, the incorporation of your comments will bring the catfish farm BAPs closer to the mission of the New England Aquarium -- to protect, preserve and promote the world of water.*

SPECIFIC COMMENTS:
1. Property Rights and Regulatory Compliance
Application Form: These are good points. We see the inclusion of predator control compliance as a positive step. Legal requirements on chemical use should also be included here, and additionally (critical) veterinarian or health care professional sign off in standard 11.
Guidelines: Specify non-native species laws and laws regarding chemical use in the list.

BAP: *We added your guideline suggestions as bullet listings under the Implementation title. In Standard 11, we addressed your comment regarding the use of health care professionals.*

3. Worker Safety and Employee Relations
Application Form: Minimal safety requirements such as first aid kits and emergency response plans should be critical requirements. (Specify in 3.9 and 3.12.)

BAP: *First aid kits and emergency response plans are included in the scoring procedure. See the BAP Application/Inspection Form.*

4. Wetland Conservation and Biodiversity Protection
Application Form: Where mitigation is based on financial grounds a minimum amount should be specified. We acknowledge that this may reduce input in some cases, however it will give greater confidence in the

standard. Potentially the GAA may wish to identify specific restoration programs and require a statement from them that the amounts donated will enable a 3:1 restoration.

The inclusion of point 4.5 (Does your facility use humane, nonlethal methods of predator control?) is positive, however the standard should include monitoring of predator mortalities as critical, with a statement that an appropriate quantitative metric and standard will be included in the next three years or sooner if practical, based on the data collected (or a five-year target of zero mortalities similar to the effluent decreases). A critical item should also be included that where lethal methods are used, they must be in accordance with national laws. The GAA should include zero mortality of species listed by the World Conservation Union (IUCN) red list.

Guidelines: The promotion of non-lethal predator controls is positive, please see above comments on how the standard could be improved.

BAP: *We are asking Daniel Lee, the Standards Coordinator, to assess these comments. The Channel Catfish Farm Committee is unsure how to incorporate these comments into this standard.*

5. Effluent Management
Application Form: As an encouragement for facilities that do not discharge waters, but use them for additional beneficial processes, such as growing crops etc, this could be included as a scored criteria. We recognize that setting effluent limits are challenging based on the general availability of data. We recommend the inclusion of a statement that effluent standards will be reviewed in three years or sooner, if practical, to assess their environmental rigor.

Guidelines: We recommend the inclusion of a statement that effluent standards will be reviewed in three years to assess their environmental vigor. This will encourage the standards meet the target coverage of industry as well as promote continuous change.

BAP: *Several statements were added to this section that reflect your comments and concerns.*

6. Fishmeal and Fish Oil Conservation
Application Form: We see the inclusion of a fishmeal and fish oil conservation standard as a positive move and recognize the importance of gathering data on feed. We recommend that the GAA introduces a maximum acceptable ratio, especially given that Channel catfish require little or no fishmeal and oil, and add a scored criteria (i.e., a non-critical but assessed criteria) for farms that obtain levels of zero. The GAA should also state that it will use this data to create and establish a quantitative standard in three years or sooner if practical. Sources of byproducts should also be considered, with preference given towards byproducts from well regulated fisheries (such as those certified by the Marine Stewardship Council (MSC) and avoidance of those from fisheries that are overfished and/or overfishing is occurring.

Guidelines: We see the inclusion of a fishmeal and fish oil conservation standard as a positive move and recognize the importance of gathering data on feed. Please see the above comments.

BAP: *Here, again, we incorporated a statement addressing your comments.*

7. Soil and Water Conservation
Application Form: Both 7.1 and 7.3.1 should be critical. If legal monitoring is not performed by authorities in 7.3.1 the farm should undertake quarterly inspections itself.

Guidelines: To ensure prevention of salinization of groundwater (where higher salinities are used), monitoring should be included to ensure that those methods are working. Quarterly assessment would be suitable.

BAP: *Other reviewers also made suggestions similar to your comments on salinization. An addition was made to reflect these perspectives*

8. Control of Escapes, use of GMOs
Application Form: We see the inclusion of escape recording as a positive step. Please identify how escapes will be recorded as there may be potential counting problems (i.e., unknown numbers of fish introduced to the system and unknown numbers taken out). With the view of encouraging improvement, a scored criteria of no escapes for three years could be included, as well as a maximum level by which certification could be removed if numbers of escapes are exceeded. The GAA should also state that it will use this data to create and establish a quantitative metric and standard in three years or sooner if practical. These should cover both the cultured species and the biological control species.

Guidelines: The inclusion of an escape prevention and use of GMOs standard is a positive step. Again, should escapes occur there should be a review process with regard to the certification. The GAA should use the collected data to establish a quantitative metric and standard for introduction in three years.

BAP: *We are not aware of GMOs being an issue with channel catfish. However, the issue of GMOs would have to be applied to BAP standards for other species.*

10. Animal Welfare
Application Form: We see collecting these data as a positive step. The GAA should also include requirements to record disease outbreaks and mortality rates. The GAA should also state that it will use this data to create and establish a quantitative metric and standard in three years.
Guidelines: The inclusion of an animal welfare standard is a positive step. Please see the above comments.

BAP: *We believe that the issue of establishing a quantitative metric is beyond the capabilities of this catfish committee. Daniel Lee will be advised of this concern.*

11. Drug and Chemical Management
Application Form: The standard should include a critical point that all treatments should require the authorization and conducted by a veterinarian or fish health specialist. The inclusion of discharge prevention for treatments should also be included, with monitoring of effluents to ensure prevention systems are operating.

Guidelines: This aspect should include environmental protection linked to drug and chemical use, with aspects of monitoring to ensure that the methods are working. All treatments should be authorized and administered by a licensed veterinarian or fish health specialist.

BAP: *We added your concern as a critical point under this standard.*

Rosalie Schnick

National Coordinator – Aquaculture New Animal Drug Applications
Michigan State University
La Crosse, Wisconsin, USA

SPECIFIC COMMENTS:
(Please consider the following:)

Standard 11 -- Food Safety
Drug and Chemical Management

Banned antibiotics, other drugs or other chemical compounds shall not be used. Therapeutic agents shall be used as directed on product labels for control of diagnosed diseases or required water management, not for prophylactic purposes. Catfish shall be monitored for residues of suspect pesticides, PCBs, and heavy metals that are confirmed in the vicinity.

Critical Points:
- FDA recommends that drugs be used judiciously. For details, see http://www.fda.gov/cvm/JUAQUATIC.htm.
- Drugs and chemicals that may be legally used in channel catfish culture in the United States are listed in the box below. Additional information for each category may be found on the websites listed after the listed category.

Approved Antibiotics (http://www.fda.gov/cvm/drugsapprovedaqua.htm)
Terramycin 200 for Fish® (oxytetracycline dihydrate)
Romet® 30 and Romet® TC (sulfadimethoxine and ormetoprim)
Aquaflor® and Aquaflor®-CA1 (florfenicol)

Other Approved Drugs (http://www.fda.gov/cvm/drugsapprovedaqua.htm)
Chorulon® (human chorionic gonadotropin)
Finquel® or Tricaine® (tricaine methanesulfonate)
Formacide-B®, Formalin-F®, Parasite-S®, or Paracide-F® (formalin)
OxyMarine®, Oxytetracycline HCL Soluble Powder-343®, Terramycin-343®, or TETROXY Aquatic® (immersion oxytetracycline)
35% PEROX-AID® (hydrogen peroxide)

Low Regulatory Priority Aquaculture Drugs (http://www.fda.gov/cvm/Documents/LRPDrugs.pdf)
Acetic acid
Calcium chloride
Calcium oxide
Carbon dioxide gas
Fuller's earth
Ice
Magnesium sulfate
Papain
Potassium chloride
Povidone iodine
Sodium bicarbonate
Sodium chloride (salt)
Sodium sulfite
Urea and tannic acid

Regulatory Action Deferred (http://www.fda.gov/cvm/Documents/LRPDrugs.pdf)
Copper sulfate
Potassium permanganate

Piscicides (http://aquanic.org/jsa/wgqaap/drugguide/drugguide.htm)
Fintrol Concentrate® (antimycin A)
AK Product of Peru Cube Powder®, CFT Legumine®, Prentox® Prenfish™, Toxicant Liquid Emulsifiable Concentrate, Prentox® Rotenone Fish Toxicant Powder®, and Prentox® Synpren-Fish™ Toxicant; Chem Fish Regular®, Chem Fish Synergized®, Powdered Cube Root Manufacturing Concentrate®, and Chem-Fish Special® (rotenone)

Herbicides (http://aquanic.org/jsa/wgqaap/drugguide/drugguide.htm)
Copper sulfate and chelated copper compounds 2-4 D
Diquat dibromide
Endothall
Fluridone
Glyphosate
Imazapyr
Triclopyr

BAP: *Your suggestions are incorporated into the revised BAP standards. Also, references to other countries' lists of drugs and chemicals approved for use will be added.*

Paul Zajicek
Florida Department of Agriculture and Consumer Services
Division of Aquaculture
Tallahassee, Florida, USA

GENERAL COMMENTS:
Include the taxonomic nomenclature for channel catfish in the introductory paragraph: Ictularus punctatus. And I would like to see the word "channel" precede the word "catfish" throughout the BAP.

BAP: *The taxonomic nomenclature for channel catfish was added in the introductory paragraph. Additions were made for the word "channel" to precede the word "catfish" throughout the BAP standards.*

SPECIFIC COMMENTS:
Standard 1 -- Page 12
Implementation Section: Suggest changing "permits related to non-native species for aquatic plant control" to "non-native species permits." Since catfish are grown in cages and conceivably in other production systems in other countries (raceways, tanks, natural water bodies) I would think "production system design and operation permits or limitations" should be included on the list.

For Additional Information Section: I am surprised the EPA effluent limitation guidelines are cited because catfish pond production was not included in the guidelines and the Clean Water Act provides an exemption (for very good reasons) for catfish pond production. I would think you would cite the book edited by Tucker entitled, Channel Catfish Culture and the several SRAC publications that discuss channel catfish culture and/or pond management. Of course I might not understand what kind of information you want to cite here.

BAP: *Standard 1, page 12. Implementation section: Your "bullet" change was made.*

Standard 2 -- Page 13
You may wish to mention that right-to-farm legislation exists and that, similar to Standard 1, the farm should be aware of such legislation. The Florida law is not open-ended to allow a farm to go wild in their production of noise or odors, but does serve to provide Florida farms, established and operating, prior to the appearance of new residents, with protection from nuisance lawsuits. An Internet search turned up this analysis: http://www.farmfoundation.org/1998NPPEC/hipp.pdf.

Standard 4 -- Page 14
Reasons for Standard: Please include turbidity impacts on fishery resources. I would think that you would mention that pond-oriented production system does provide stormwater storage, waterfowl resting areas, riparian wildlife habitats, and other environmental benefits.

Standard 5 -- Page 15
Please add "effluent" to the table header (i.e., BAP Effluent Water Quality Criteria -- Channel Catfish Farms). These criteria would carry weight with the uninformed if you could provide a discussion/description of where they came from and how they were developed. At the very least, reference citations.
Page 16: It appears that GAA is advocating effluent sampling while the U.S. states and EPA have reasoned that the infrequent discharge from pond production does not have to be monitored. What is the rationale for monitoring?
Page 20: The term "ecological efficiency" is unfamiliar to me and I am wondering what is meant by that term? Ecology is the study of the biological and physical interactions of species (from one to many species) and their physical and chemical environment. Efficiently managing a pelleted feed to grow one species of fish would hardly seem to qualify for the term and may trigger some disbelief by the environmental community. You might consider substitute terms like "conservation efficiency," "environmental efficiency" or "production efficiency," but it seems to me you are overreaching with "ecological efficiency."

BAP: *Standard 5 -- Environment Effluent Management*
** A section on channel catfish cage culture is being added. Three publications by Tucker, Hargreaves and Boyd have been listed under For Additional Information. The table header on page 15 has "effluent" added to read: "BAP Effluent Water Quality Criteria -- Channel Catfish Farms." Comments have been added to further explain criteria. Page 16: These BAPs are being developed to apply to channel catfish culture worldwide. Page 20: Your comments for Standard 5 were applied to the "fish in:fish out" ratio with additional comments added for fishmeal use in channel catfish feed.*
(The initial release of the channel catfish standards is for pond culture systems only. In the near future, additional guidelines and standards criteria will be added to address other farm systems.)*

Standard 7
Florida places emphasis on surface water storage and management to conserve surface waters and manage surface water runoff to limit erosion, turbidity in receiving waters, loss of topsoil, etc. Salinity seems to be emphasized here and I kind of wonder if this text was influenced by the shrimp BAP. I really don't think of catfish ponds as a salinization threat and by focusing on salt a question is raised where none exists. I think you should focus on water conservation, storage and surface water management.

Standard 8
I would cut this discussion in half and drop the farm record requirement. Requiring a record contradicts the introductory rationale that states, "… there is no identifiable difference between genomes [wild or culture fish]…" I would appreciate citations here as I believe the statement "… a small number of consumers who eat genetically modified foods experience allergenic reactions…" is false because there are GMO meat proteins on the market and I have never read or seen this statement associated with GMO grains.

Standard 11
Within the Reasons for Standards, comment is made that pond construction on prior agricultural land may pose a hazard in that farm-related chemicals may be "… taken up by the fish in production ponds." I thought this issue was thoroughly investigated by CFA and discounted.

Standard 13
The information focuses on animal welfare (Standard 10) rather than food safety. Needs to be rewritten or moved.

Traceability
When catfish in being live hauled from a farm to a nearby processing plant, it would seem this level of record keeping should not be required.

Dr. Carole Engle

Director – Aquaculture/Fisheries Center
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GENERAL COMMENTS:
These standards are written for "channel catfish farms," but are written entirely for pond production. Channel catfish farms include cage farms. Much of the recent growth in channel catfish production in China is in cages. Nearly all of the channel catfish production in China is from surface waters. Will separate standards be written for channel catfish production in cages? What about surface water use and the potential for introducing contaminants of all sorts from surface waters that are also used heavily for transportation, industrial effluents, etc.? This is a critical issue that must be addressed in these standards. If not addressed, the certification program for channel catfish will be meaningless.

What standards will be developed for basa/tra? Will they be the same as these? These are different species, but if the standards are different, then the seal that is used in the marketplace will be

meaningless and there will be no incentive for farmers to abide by these.

I was unable to find a list of who is on the Technical Committee for the channel catfish standards. I would think that this should be public knowledge. The guidelines indicate that the Technical Committee is composed of technical experts and representatives of those groups interested in or affected by the standard. Who are these individuals? How were they selected? This should be made clear. I glanced at the web site and did not see that information available there, either.

It is disappointing that there does not appear to have been an attempt to work through the catfish industry associations. I have not seen an attempt to send drafts through either the national Catfish Farmers of America, or through the state catfish farming associations for comment, or to schedule workshops, booths at the annual meetings, trade show, etc., to gather input for this process. I urge GAA to take a few months to do this. There are a number of upcoming state association meetings and national meetings where someone could at least set up a table and talk with people about this process and what is going on. I have seen very little industry involvement in this effort.

BAP: *Thank you for responding to the request for public comments relative to the BAP standards for channel catfish farms. You should know that I have tremendous respect for your knowledge and contributions to our farm-raised catfish industry.*

** In response to your general comments, a section on channel catfish cage culture is being added under Standard 5 -- Environmental Effluent Management. Standards for basa/tra are being developed by other technical committees. I have faxed you a listing of the Channel Catfish Farm Technical Committee. As you can tell by the listing of committee members and their sponsors, the Catfish Institute, Catfish Farmers of Arkansas and Catfish Farmers of America are represented on the committee. In addition, I have been asked to give presentations at the upcoming National Association of State Aquaculture Coordinators and intend to be present at your meeting, the annual Catfish Farmers of Arkansas, the end of this month.*
(The initial release of the channel catfish standards is for pond culture systems only. In the near future, additional guidelines and standards criteria will be added to address other farm systems.)*

SPECIFIC COMMENTS:
Page 15. Chloride standard. There are catfish farms with salinity levels in the influent water that exceed this standard. If a farm's water supply has salinity levels higher than the standard, does that disqualify it? It would seem that these farms should not be disqualified based on the characteristics of their water supply.

BAP: *Your comments regarding salinity levels in the effluent water were given consideration and additional comments were added to Standard 5.*

Page 22. Statement related to requiring that carps used be triploid. This should be reworded for the use of exotic species to comply with state regulations and laws. Diploid grass carp have been stocked intentionally in many public waters in the Mississippi River drainage and are already an established part of the fauna. Farms should comply with state and federal regulations related to exotic species; that would be sufficient for these guidelines.

BAP: *Comments were added under Standard 8 that the U.S. Fish and Wildlife Service has listed Black Carp and Silver Carp as Injurious Wildlife Species with reference to the October 18, 2007 Federal Register notice.*

Page 26. Live transport of catfish in trucks should not take longer than 12 hours. I don't understand why the 12-hour limit. The critical factor is the condition and welfare of the fish. Certified salmon are transported up to 24 hours without difficulty. I would suggest removing the 12-hour limit and replacing it with specific water quality standards.

BAP: *Fish farmers have stated that the 12-hour live transport time limit should not be a problem.*

Walter Zambrano
M.S., Aquaculture
F. Villarreal University
Lima, Peru

GENERAL COMMENTS:
I think it is a good set of standards and doesn't need change.