Field Manual For The Investigation of Fish Kills

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BOOK REVIEW . . .

Field Manual For The Investigation of Fish Kills, Fred P. Meyer and Lee A. Barclay, editors. United States Department of the Interior, Fish and Wildlife Service/Resource Publication 177, Washington, DC 20401, USA. 1990. 120 pp. $23.00 US. Copies of this publication may be purchased from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, or from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20401, stock number 024-010-00685-4.

This book focuses primarily on fish kills in natural bodies of water and gives much attention to legal procedures to follow in order to qualify investigative evidence for use in court. The title, in fact, should probably include "In Natural Waters." This type of material usually is not covered in aquaculture-oriented fish disease courses, so it is recommended reading for all fish disease specialists. Fish pathologists working almost exclusively with infectious pathogens and water quality problems associated with metabolic wastes (aquaculture situations) would benefit from this manual to organize their approach for investigating fish kills in large natural bodies of water.

The text contains 13 chapters: (1) Introduction by Fred P. Meyer; (2) Planning, Joseph B. Hunn; (3) Interpreting the Scene, Fred P. Meyer and Roger L. Herman; (4) Toxic Substances, Joseph B. Hunn and Rosalie A. Schnick; (5) Fish Kills Due to Natural Causes, Roger L. Herman and Fred P. Meyer; (6) The Role of Infectious Agents in Fish Kills, Roger L. Herman; (7) Quality Assurance and Rules of Evidence, Rosalie A. Schnick; (8) Where to Send Samples for Analysis, Rosalie A. Schnick; (9) How to Ship Samples, Lee A. Barclay; (10) Writing the Report, Fred P. Meyer and Bernard L. Berger; (11) Preparing for Testimony, Lee A. Barclay; (12) Equipment Needed for Field Assessments, Georginia R. Ardinger; and (13) Test Your Skill, Fred P. Meyer. The appendices include water quality standards, formulae for solutions used in fish kill investigations, examples of chain-of-custody records, and available fish disease diagnostic services.

Although the manual is a composite of articles written by different authors, it is well edited and coordinated and includes many cross-references among chapters. The manual contains 45 high-quality color photographs in addition to black-and-white photos. The whole manual has glossy pages which will add to the durability, and the print is very readable (*not* camera-ready computer print).

The "Source of Toxicity Information" section (page 28) provides many valuable references at a glance. Good references to obtain lists of laboratories are also provided (chapter 8). Chapter 8 also includes a list of toxic substances and approximate prices for the tests used by certain chemical-testing laboratories. The listed high prices are useful information especially when dealing with novice fish producers who usually want "toxic chemicals" tested first if their fist experience any mortality! Other helpful information in the manual includes a check list of field and laboratory materials needed for complete fish-kill examinations (chapter 12) and copies of forms used for reporting cases involving pollution or disease (chapter 10).

The dichotomous key for fish kill investigations (chapter 9) is useful although sometimes redundant, and the diagnostic conclusion of "toxic algae bloom" in the key may be disputed by some phycologists. Chapter 13 provides excellent case examples presented in a manner that challenges the readers' investigative reasoning powers.

Appendix J provides a very convenient listing of fish disease diagnostic laboratories, but omits the Mississippi Cooperative Extension Service/College of Veterinary Medicine laboratories at Stoneville, Belzoni and Mississippi State University (examining approximately 3,000 cases/yr). In addition, a new disease lab at Kentucky State University in Frankfort, Kentucky has been established. These laboratories should be included in future editions of the manual.

I was in disagreement with a few opinions and terms found in the book. I do not agree with the statement (page 52) that fish iced for 4 hr or more are virtually useless. Distant fish disease diagnostic laboratories often must receive iced fish samples 25 to 30 hr after shipping. If sick fish are alive going onto the ice and arrive at the lab with ice still present in the shipping container, they usually prove to be useful in diagnosing the cause of mortality. These samples are better, in my opinion, than preserved ones.

I see a problem in the use of the title "diagnostician" used at a few places in the manual in referring to fish disease specialists. "Diagnostician" tends to narrow the responsibility, expertise, and experience required by the fish health specialist in accurately performing a fish

kill investigation. The required very extensive holistic approach goes beyond the scope of what the term "diagnostician" connotes.

In summary, the *Field Manual For The Investigation of Fish Kills* provides protocol that should be followed by those investigating fish kills, especially ones occurring in natural waters. It includes guidance for interpreting evidence to decide on the cause and necessary corrective actions as well as advice on how to prepare for appearing as a court witness. I recommend this book to my colleagues.

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