

KNOWLEDGE AND SKILL GUIDELINES for AQUACULTURE TECHNICIANS

A different process was used to create the Knowledge and Skill Guidelines for Aquaculture technicians than was used for the other technician positions described in this book. Although readers will not find the same detail for this occupation, the information provided in the following pages is still extremely useful in describing the knowledge and skills required for this type of work.

BACKGROUND

An aquaculture technician modified DACUM was held at the Third Annual Rhode Island Aquaculture Conference in Warwick, Rhode Island on October 8, 1998. Seven panelists employed in the aquaculture industry were assembled and charged with developing an Aquaculture Technician job description, plus identifying general and specific competencies needed to be a successful aquaculture technician. Thirteen general areas were cited. "Laboratory skills" was envisioned as the most important general competency, and being able to monitor water quality was seen as the most important specific skill in this area. All general and specific skills are listed in this report.

The panelists, who were led by a trained DACUM facilitator, were first asked to reach a consensus on a statement that defines the aquaculture technician occupation. When a draft of the job description was completed, panelists began outlining general areas of competence they felt were needed for an aquaculture technician. Once general areas were listed, specific tasks were identified within each general area.

The panelists developed the following description of an aquaculture technician:

"An Aquaculture Technician is an accountable, resourceful person with a strong work ethic, responsible attitude, and good communication skills. A working knowledge in basic biology, computers, and the seafood industry is a must. The person in this position should possess competencies in the following areas: aquaculture equipment, pumps, plumbing, carpentry, electronics, basic business management, problem solving, and research applications. Previous experience with aquaculture technology and the aquaculture industry is a plus."

Of the seven panelists, four work in the grow-out phase of aquaculture, one owns an aquaculture supply business, one is a coastal restaurant owner, and one is the aquaculture coordinator for the state of Massachusetts. All seven panelists were active throughout the workshop, and, with the exception of the facilitator, remained the sole verbal contributors.

The resulting competency list is extensive and includes practical areas (e.g., laboratory skills, field experience) and academic knowledge (e.g., math skills, knowledge of biology). All panelists stressed the importance of hands-on internships.

Most panelists questioned the scheduling logistics needed to incorporate all the skills into a two-year degree. However, the panelists also recognized the overlap among many general and specific competency areas.

Knowledge and Skill Guidelines for Aquaculture Technicians

Workshop Participant List

Workshop Coordinator: Chuck Gregory
Southern Marine Technical College

Workshop Date: October 8, 1998

Panel of Aquaculture Technicians

Brian Bowes	Coastal Aquaculture Supply, Cranston, RI
Bob Burke	Pot Au Feu Restaurant, Providence, RI
Angela Caporelli	Rhode Island Seafood Council, Wakefield, RI
Jeff Gardner	Shellfish for U, Westerly, RI
Bill Silkes	American Mussel Harvesters, Inc., Narragansett, RI
Scott Soars	Massachusetts Department of Food and Agriculture, Boston, MA
Karen Tammi	The Water Works Group, Inc., Westport, MA

Competency Areas for Aquaculture Technicians

The following is a prioritized list of general and specific competency areas needed by aquaculture technicians. Priorities were determined based on the average ranking of five panelists who returned follow-up questionnaires.

A. LABORATORY SKILLS

1. Monitor water quality
2. Maintain good records/data
3. Use and maintain laboratory equipment
4. Practice safe work habits
5. Handle organisms
6. Apply aseptic techniques
7. Use hatchery lab skills
8. Use a microscope
9. Diagnose disease

B. MATH SKILLS

1. Use basic mathematics
2. Calculate rates
3. Calculate volumes
4. Calculate conversions
5. Apply statistics
6. Use algebra
7. Design research projects

C. KNOWLEDGE OF BASIC CHEMISTRY

1. Practice safety (e.g., OSHA)
2. Monitor water quality
3. Possess a working knowledge of environmental chemistry
4. Identify poisons
5. Identify toxins
6. Possess a working knowledge of basic chemistry (e.g., atoms, molecules)
7. Possess an awareness of chemical reactions/interactions
8. Make solutions

D. FIELD EXPERIENCE

1. Practice safety
2. Maintain equipment
3. Understand the natural environment
4. Handle organisms
5. Keep accurate records in the field
6. Possess seamanship skills with small boats
7. Conduct proper field sampling protocol(s)
8. Conduct on-site public relations

9. Practice good time management
10. Organize equipment
11. Improvise

E. KNOWLEDGE OF BASIC BIOLOGY

1. Manage water quality
2. Practice efficient and effective feed management skills
3. Practice animal husbandry skills (e.g., feed, harvest)
4. Possess a working knowledge of the anatomy and physiology of aquatic organisms
5. Manage brood stock
6. Possess a working knowledge of aquatic pathology
7. Possess a working knowledge of ecology
8. Possess a working knowledge of basic genetics
9. Possess a working knowledge of human pathology

F. MECHANICAL SKILLS

1. Maintain aeration equipment
2. Act in an innovative and resourceful manner
3. Maintain filters
4. Work with electrical systems
5. Work with piping
6. Work with/on electronics (e.g., instrumentation)
7. Work on boat engines and pumps
8. Perform basic carpentry
9. Drive and/or use non-traditional equipment
10. Tie knots and mend nets

G. COMMUNICATION SKILLS

1. Use good verbal communication techniques
2. Use good written communication techniques
3. Read and write technical information
4. Apply good people management skills (i.e., interpersonal relations)
5. Interpret/translate data to others
6. Practice good public relations
7. Practice social awareness (e.g., dress, how to address people)
8. Communicate using a second language
9. Present/speak in public
10. Practice good grant writing skills

H. ANALYTICAL SKILLS

1. Possess an awareness of regulations and statutes
2. Record and interpret data
3. Perform experiments
4. Use statistics
5. Design research projects

I. INTERNSHIP EXPERIENCE

1. Perform real-life experience(s)
2. Develop confidence
3. Practice career-related skills

J. TIME MANAGEMENT SKILLS

1. Make sound decisions
2. Meet deadlines
3. Schedule
4. Prioritize tasks
5. Delegate responsibility

K. COMPUTER SKILLS

1. Use word processing software
2. Use spreadsheet software
3. Use e-mail
4. Use the Internet
5. Apply statistics
6. Apply basic programming
7. Use graphics software
8. Create computer-assisted presentations
9. Work with various types of computer hardware (e.g., printers)

L. BASIC BUSINESS SKILLS

1. Write clearly
2. Maintain inventory records
3. Demonstrate business “street smarts”
4. Interpret accounting data
5. Calculate profit and loss
6. Make long-range plans
7. Assist in product development
8. Perform forecasting
9. Possess a working knowledge of economics
10. Provide input to marketing plans

M. STAYING UP-TO-DATE

1. Possess an awareness of regulations, statutes (e.g., permitting), and changes in them
2. Stay informed of aquaculture technology advances
3. Read trade journals
4. Participate in professional activities (e.g., conferences, workshops)
5. Know food safety and regulations
6. Apply vertical integration
7. Collect information from libraries
8. Maintain association memberships