

Lesson Plan



Table-Top Simulation for Aquaculture Emergency Management: **What Goes Around...**



SART Training Media



What Goes Around...

Aquaculture Table-Top Simulation -- Lesson Plan

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Other Aquaculture training units are available. All SART Training Media are available for download from the Florida SART Web site <www.flsart.org>.

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About Florida SART

SART is a multiagency coordination group consisting of governmental and private entities dedicated to all-hazard disaster preparedness, planning, response, and recovery for the animal and agriculture sectors in the state of Florida.

SART operates at the local level through county SART organizations.

SART utilizes the skills and resources of many agencies, organizations and individuals with its multiagency coordination group structure.

SART supports the county, regional, and state emergency management efforts and incident management teams.

SART Mission

Empower Floridians through training and resource coordination to enhance all-hazard disaster planning and response for animals and agriculture.

SART Goals

- Promote the active engagement of each county coordinator who is responsible for animal and agricultural issues
 - Provide assistance in the development and writing of county ESF-17 plans
 - Promote the establishment of a county SART to work as a multiagency coordination group to support emergency management and incident management teams
 - Provide training for all SART and animal and agriculture personnel
 - Identify county resources available for an emergency or disaster
 - Work to comply with the National Incident Management System (NIMS) document
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Subject: This activity provides an opportunity to analyze a fictional emergency management and quarantine situation at an aquaculture facility. Participants can enhance their knowledge and critical thinking skills needed to assist in an emergency situation.

Introduction

This table-top simulation is designed to complement the SART training unit for Aquaculture entitled *Emergency Management and Quarantine of Aquaculture Facilities*. This lesson plan guides the instructor in conducting a table-top simulation activity.

This table-top activity begins with reading a narrative. It describes an emergency scenario at a fictional aquaculture facility. Participants may then be guided through one or both of two exercises: a set of discussion questions and a biosecurity protocol design activity. The Discussion Questions should be allocated 45 minutes to one hour to complete. The Biosecurity Protocol Design should be allocated one hour, minimum. Please allow at least two hours to complete both exercises. Total time, including the reading of the narrative, will range between one and a half and two and a half hours, depending on the exercise(s) chosen.

NOTE: The narrative in this simulation is a work of fiction. Any resemblance to any person, business, place or situation is completely coincidental.

Time for the program will vary. A minimum of 1 hour 30 minutes should be allocated.

Session Outline

Part 1—Beginning the Workshop	5 minutes
Part 2—Activity	20 - 30 minutes
Part 3—Exercise(s)	1 - 2 ½ hours
Part 4—Summary and Wrap-Up	15 minutes

Purpose of the Table-Top Simulation

The table-top simulation is an educational tool intended to provide participants an opportunity to apply knowledge gained from the SART aquaculture modules through formal discussion of a fictional scenario. To apply this knowledge, participants will have to think through a series of situations by making decisions based on information in the simulation and their knowledge.

Table-tops are useful tools to test participants' skills and knowledge when hands-on activities may be impractical to conduct or impossible to come by. The table-top provides a fictional situation in an interactive learning environment within the classroom providing a useful and manageable experience for any number of participants. While hands-on experience in the midst of an emergency is high stress, table-tops provide a low-stress atmosphere more conducive for understanding and discussion. By getting involved, participants reduce or eliminate uncertainty about an emergency before the emergency happens.

The Federal Emergency Management Agency (FEMA) maintains a list of independent study courses on many disaster and emergency topics. Two such independent study courses may be helpful to those planning to conduct this table-top simulation: An Orientation to Community Disaster Exercises (IS-120) and Exercise Design (IS-139) may be accessed on-line at <<http://training.fema.gov/EMIWeb/IS/crslist.asp>>. Florida SART has a publication, *Toolkit for Planning a Community-Based SART Training Event*, which may also be helpful. It is available at the Florida SART Web site, <www.flsart.org>.

Learning Environment/Aids

To complete this lesson plan, you will need:

- Optional: *What Goes Around* Table-Top Simulation Participant Workbook

To conduct this training unit, you will need:

- Sufficient seating for all participants
- Spaces for break-out groups may also be needed, depending on the size of the group

Each participant will need:

- A pen or pencil
 - Participant workbook or paper for notes
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Before the Workshop

On the day of the workshop, check that all equipment needed is in place. Double-check that electronic media works on the equipment you have. Also, make certain that any materials for participants, such as paper, workbooks and pens/pencils, are available in sufficient numbers.

Part 1: Beginning the Workshop

Time: 5 minutes

Focus: Prepare participants for the topic and activity

Once all participants have taken their seats and have settled down, welcome them to the Emergency Management and Quarantine of Aquaculture Facilities Table-Top Activity workshop. Thank them for attending and congratulate them on taking the time to test their aquaculture knowledge and develop their critical thinking skills. Remind them that the best way to respond to an aquaculture emergency is to have a foundation of knowledge and skills.

This particular exercise can be used with agricultural and non-agricultural audiences. Remind attendees that the reason they are attending the workshop is because they realize the value of being prepared by having a disaster plan in place. The information they gain in this workshop will enhance their professional performance.

This introduction should not extend past five (5) minutes. This is a time when the audience is getting comfortable with the workshop they have decided to attend, the surroundings and you, the presenter. At the same time, the presenter is getting comfortable with the audience, the material to be presented and being a presenter. Pay close attention to time; you may find yourself a bit nervous getting started. These “nerves” can make people ramble or talk faster or slower, while others may forget the time and forget to move on. Even if your audience is enjoying what they are doing, they will appreciate your discipline when the workshop ends on time.

Part 2: Narrative: *What Goes Around...*

Time: 20-30 minutes

Focus: The narrative provides participants with essential background for the exercise

[The following is the narrative for presentation to the participants. Depending on the size and background of the group, you may choose to let participants work individually or in small groups. If you select the small group method, sections of the narrative may be assigned to each group for them to analyze. Small group work may be a solution if the activity must be completed in a shorter amount of time.]

Bill's headlights illuminated words on a sign — Exotic Ornamentals, Inc. — as he pulled through the entrance to his family's business. Bill arrived at work especially early since he had additional shipments and receivables to process today. The hours were long with the family business. He began his routine by walking around the outdoor ponds at their facility near Ruskin, Florida. The facility dog, Buster, greeted him as he stepped out of his truck and then ran off to chase birds and cats away from the ponds.

Like most ornamental aquaculturists, the family specialized in several types of high-dollar fish. Exotic Ornamentals specialized in goldfish and had the largest koi facility in the United States. They made good money, with more than \$4 million in sales annually, but the competition was intense. Bill was mentally reviewing his task list for the day when he spotted some ripped anti-bird netting above the ponds. He wondered when he would have the time to repair them. There always seemed to be something needing repairs; the netting did not seem to be an urgent problem since he had never seen a bird feeding on their valuable stock.

He continued by collecting water samples to evaluate pond aeration and other water quality measures in both the production ponds and holding tanks. All measurements were in the acceptable range for each species, although he noted mentally that the tank water temperature was cooler than the ponds by a few degrees. The tank water temperatures ranged between 64 and 67 ° Fahrenheit (17.7 to 19.4 ° Celsius). Completing his rounds of the farm, he returned to the main office to rendezvous with his father, Edward. The lists of tasks to complete today continued to multiply in his mind as he walked. He needed to prepare tanks 10 through 25 for the new incoming

shipment, clean the outgoing-shipment tanks, treat the female breeders with hormones, fill out the shipment documents and prepare a copper sulfate bath for a sickened batch of koi. He knew he should consult with a veterinarian prior to treating, but he did not have the time to do that now. How would he get everything done?

As he drank his coffee, he discussed the actionable items with Edward. The work was good for his father, but Bill felt guilty that his father had continued to work into his seventies to help support the family. Edward had become tired and a little forgetful in his old age. Bill decided to ask his father to prepare the tanks for the new shipment and he would begin filling out the necessary paperwork to sell fish to their primary customer, Pet Super-Duper World.

The morning chores progressed as usual. Bill bleached and rinsed the tanks that would contain the day's outgoing shipments until bagging and shipping. They constantly battled diseases and had developed an unwritten protocol based on what seemed to work in the past to prevent outbreaks. Bill and Edward had never kept daily logs of water quality or chemical treatments. After all, it was just the two of them, and if there was a problem, they dealt with it that day. Besides, there was already plenty of paperwork competing with real work for his time. He had become highly successful doing things this way and saw no sense in tasks that did not have immediate financial rewards.

The newest koi shipment from Asia arrived about 12 noon. Edward went to meet the delivery truck and Bill reminded his father, "Make sure you put the new batches in tanks 10 through 25 since they are on the same pump." Edward nodded. Bill, feeling Edward had the situation under control, walked away to start harvesting the koi for this afternoon's outgoing shipment.

Bill tugged the net across the pond to harvest the newest crop of koi. He quickly did the math in his head. 20,000 koi at \$3.00 per fish would fetch about \$60,000 from Pet Super-Duper World. After he got all the koi loaded, Bill drove the collection truck from the outdoor fields into the shipment facility located in the receiving building. Thankfully, it was late January and air temperatures were cooler so he was not worn out by the typical central Florida heat.

The day was almost complete when Bill noticed something of concern. The koi in tank 26 were swimming erratically. Had either he or his father placed koi in tank 26? Silently, he hoped his father had not confused the tank numbers again. Just to be extra cautious, he would put copper sulfate in the tank before the shipment left the building. Suddenly, he wished that he used separate nets and equipment for each of the ponds and had spent the extra

money to build separate quarantine and shipment facilities. He reassured himself that there had never been any problems in the past and to not worry about this.

As the sun dipped below the horizon, the final bag of koi was boxed and loaded and the last document signed. The shipment was bound for 100 stores across the United States to Pet Super-Duper World customers eagerly awaiting koi. Edward and Bill discussed the tasks for tomorrow and finally parted ways to head home. Bill started thinking about the items that needed to be addressed tomorrow morning as he navigated the truck up the driveway.

The phone rang about 7:00 AM. A manager Bill knew from a nearby Pet Super-Duper World was on the other line. Bill rubbed his eyes and responded groggily, "Hi, Helen, what seems to be the problem?" When Bill heard the answer, he nearly dropped the receiver in disbelief.

"Your fish arrived, but we noticed several bags had sick fish. We called in the vet. Based on the clinical signs we decided to submit samples from two bags for SVC detection at the state lab." Helen sounded angry and concerned.

Bill was speechless. The disease, SVC, or Spring Viremia of Carp, was frequently fatal to koi. The disease had wiped out entire koi operations. Ironically, this was the same disease that had allowed Exotic Ornamentals and other Florida facilities to become very profitable after it was detected in another production area. Any detection of SVC required immediate quarantine and culling of exposed fish. The disease was the worst-case scenario for any carp and goldfish aquaculturist and would likely result in the loss of all his customers, especially Pet Super-Duper World, and his family's aquaculture operation.

Bill contacted a local veterinarian and asked him to come as quickly as he could. The vet's arrival was too little too late. Nearly all the koi in the indoor tanks were swimming erratically and the new arrivals from the previous day were floating on the surface of their tanks. Then Bill noticed the root of the problem. Only tanks 16 through 20 contained fish from the incoming shipment from Asia. Edward had counted incorrectly and placed the new stock in the shipment system where all the water was shared and had circulated through all the facility's tanks. This had happened before.

The veterinarian asked to see the log books, but Bill explained that they had never kept written records. The vet began to look very concerned as he observed the sloppy biosecurity around the facility. The ripped nets, spotted the day before, had allowed several birds into the outdoor ponds. They were now hungrily feeding on the sickened and dying koi. The vet silently watched as

the family dog vaulted into pond after pond, chasing the birds before asking, “Don’t you have any records besides the shipment papers?”

Bill shook his head. The biosecurity protocols recommended by aquaculture epidemiologists, industry specialists and government had seemed so useless and excessive in the past. He now desperately wished that he had heeded the advice.

The next day the Florida state veterinarian’s office imposed a farm quarantine freezing all fish movement on or off the farm. The USDA recommended that Pet Super-Duper World destroy the koi from the shipment that had not already died and establish quarantine of the six facilities that had received fish from the infected shipment. In addition, the six facilities would be under quarantine until disease testing was negative for SVC.

Within one week of the confirmation of SVC in the shipment, all the ponds and tanks at Exotic Ornamentals were drained and the stock euthanized. By the end of the same month, the doors were closed to business and their reputation in the koi industry was tarnished forever.

EPILOGUE

A month after shutting down Exotic Ornamentals, Bill received a new issue of FishTODAY magazine. He thumbed to an article about how Asia’s thriving koi industry was absorbing the demand from Florida’s shutdown facilities. Bill wondered if the tainted shipment from Asia had been pre-planned, but how could he be sure?

Part 3: Exercises

Time: 1 - 2 ½ hours

Focus: Promote critical thinking about a situation through written answers and verbal discussion

Once all participants have read the narrative, it is now time to evaluate and discuss the situation. Two different exercises accompany this lesson plan. Both exercises can be completed or only one. Time allotment suggestions follow with each exercise description.

QUESTIONS FOR DISCUSSION

The first exercise available is the Questions for Discussion worksheet. These questions were developed to assist participants in analyzing the key elements of the situation. The time allotment for this exercise alone should be anywhere between 45 minutes and one hour, including discussion of the answers. Participants may work on this exercise individually or remain in their previously assigned groups from the reading of the narrative.

Encourage all participants to answer the questions completely. Ask that answers be written in the spaces provided in the workbooks (or on the worksheets provided if workbooks are not being used). This allows participants to keep their answers and discussion suggestions for future reference. Assure participants that incorrect written answers or answers shared openly will not be held against them.

Group work on this exercise may reduce the amount of time required to complete it. Each group member should be assigned questions to complete. Once the groups are finished, each group should present their questions and answers to the audience. Each group member is responsible for presenting their question(s); an effort should be made so that all members of the group have the opportunity to speak at least once.

Should the workbooks not be used, participant versions of the narrative and Questions for Discussion worksheets are provided in the Resources section for reproduction. Sufficient space for answering the questions is provided on the

front and back of the worksheet; additional paper will not be necessary. An answer key is provided in the Resources section of this publication

BIOSECURITY PROTOCOL DESIGN

The second exercise option for this table-top further emphasizes the critical thinking component by instructing participants to design a biosecurity protocol based on the narrative and additional assumptions. The time allotment for this exercise alone should be anywhere between one hour and one hour and 30 minutes, including discussion of designs created. Participants may work on this exercise individually or remain in their previously assigned groups from the reading of the narrative.

This exercise is ideal for a take-home exercise. Participants can read the scenario during the session, be assigned the Biosecurity Protocol Design and complete the design at home. Be sure to set a date and time for all participants to return with their work for group discussion and sharing of the designs everyone produced on their own in groups.

Group work on this exercise may reduce the amount of time required to complete it and promote teamwork among the audience members. Group members should work cooperatively to develop a biosecurity protocol for their group; each member should contribute to the project. Once the groups are finished, each group should present their design to the audience. Each group member is responsible for presenting at least one part of their group's protocol.

Encourage all participants to consider all assumptions and details of the narrative prior to starting their protocols. Should the exercise be assigned to take home, the Internet can be utilized for more background information and planning. Ask that as much of the proposed design as possible be copied in the spaces provided in the workbooks. This allows participants to keep their designs and design suggestions for future reference. Assure participants that incorrect or incomplete aspects of this exercise written or shared openly will not be held against them.

Should the workbooks not be used, participant versions of the narrative and Biosecurity Protocol Design worksheets are provided in the Resources section for reproduction. Multiple sheets of paper for each participant will be needed to effectively complete this exercise; be sure to include this paper requirement in your preparations and set-up for this session. An answer guide for the protocol is located in the Resources section as well.

Part 4: Summary and Wrap-Up

Time: 15 minutes

Focus: Review with participants what they have learned and encourage a commitment to SART

Before closing the workshop, provide a summary to the participants of what they just learned through the exercise(s) completed after reading the scenario:

- Common biosecurity practices, violations and the cost for simple biosecurity measures
- Mistakes made by the owner of the fictional operation and the liabilities that the business faces
- How this situation could have been avoided
- Information that would have been helpful to the veterinarians
- Agencies that respond to a disaster of this type
- Alternative outcomes to the situation given various changes to the story
- How the participants view security issues at their own farms
- Suggestions and examples of biosecurity protocols for the aquaculture facility described in the narrative

Thank the audience for their attention and participation. Congratulate them for their commitment to the SART endeavor and on their desire to be part of the solution.

A content-specific Evaluation is provided in the Resources section of this manual. The generic Evaluation available in the *Toolkit for Planning a Community-Based SART Training Event* can be utilized as well. You as the presenter should decide which evaluation best fits the needs of your situation. Please have participants complete an evaluation at the conclusion of this workshop. Encourage participants to be as honest and forthright as possible as it helps you, the presenter, make adjustments as necessary for future presentations which in turn benefits future participants.

Table-Top Simulation Discussion Questions

These questions are intended to help you analyze the narrative you have just read. Answer the questions to the best of your ability and be prepared to discuss these answers. Use more pages if additional space is needed.

1. What biosecurity practices could or should be adopted at Exotic Ornamentals?

2. In your opinion, what was Bill's biggest mistake?

3. List the biosecurity breaches that Bill and Edward committed.

4. How could the situation have been avoided?

5. What information would have been helpful to the veterinarians involved on both sides?

6. How much would simple biosecurity measures have cost?

7. What liabilities could Bill and Edward face?

8. What agencies would respond to this situation?

9. What was the source of infection in the fish that were shipped to Pet Super-Duper World?

10. Provide at least one alternative outcome to this incident.

11. How has this activity changed your view of security where you work? Are any changes in order?

Table-Top Simulation Discussion Questions – Answer Key

1. What biosecurity practices could be adopted? Answers will vary: Establish closed systems; Monitor disease vectors; Do not move equipment from one closed system to another; Assume anything new placed in the system is contaminated until disinfected; Have separate quarantine facilities; Keep bleach mats at entrances and exits; Keep water quality logs; Document biosecurity protocols; or any others that qualify.
 2. What was Bill's biggest mistake? Failing to implement biosecurity protocols.
 3. List the biosecurity violations that Bill and Edward committed. Answers will vary: No quarantine of new fish; No disinfection; No tank/pond isolation; Assuming nothing was going to happen because it had not in the past; Dog moving from pond to pond; or any others that qualify.
 4. How could the situation have been avoided? Answers will vary: Establish written biosecurity protocol; Keep written records; or any others that qualify.
 5. What information would have been helpful to the veterinarians involved on both sides? Answers will vary: Water quality statistics – oxygen level, nitrate level, ammonia level, etc.; Historical diseases; Temperature; Turbidity; Times of measurement readings; or any others that qualify.
 6. How much would simple biosecurity measures cost? Zero dollars.
 7. What liabilities could Bill and Edward face? Answers will vary: Lawsuit from Pet Super-Duper World; Lawsuits from the ornamental fish industry; Costs of veterinary services; Costs of business loss; or any others that qualify.
 8. What agencies would respond to this situation? Florida state veterinarian's office and the USDA
 9. What was the source of infection in the fish that got shipped to Pet Super-Duper World? Answers will vary: Key point is that no one can know for sure. SVC was likely introduced from previous imports previous to this scenario and Bill probably brought more infected fish on the farm with the recent shipment from Asia.
 10. Provide at least one alternative outcome to this incident. Answers will vary: Bill could establish and use quarantine facilities thus eliminating the spread of disease through all his stock; Asian suppliers would be shut down until the disease was eradicated; or any others that qualify.
 11. How do you view security issues at your facility after completing this exercise? What changes do you intend to make? Answers will vary.
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Table-Top Simulation -- Biosecurity Design Protocol

This exercise is designed to further your understanding of biosecurity protocol for an aquaculture facility. Following the guidelines provided below, please prepare a complete biosecurity protocol for Exotic Ornamentals, Inc. This activity will test your knowledge of aquaculture facility management. Additional paper for this exercise is available.

1. Given the time requirement for this activity, a full economic analysis is not necessary, however economics should still be considered when and where possible. Make sure to explain if a decision or assumption is made for economic reasons.
 2. Include a facility schematic to make your security planning easier. Be sure to illustrate exit routes, loading and unloading areas, slippery spots, locations for chemical storage, disinfection stations, feed storage, quarantine/acclimation/isolation areas, etc. Multiple schematics may be used to illustrate different items. Make sure to note why these areas are important in biosecurity planning.
 3. Design mortality, treatment, water quality and visitor logs. These need not be lengthy, just enough to show their proper use. Remember to include all areas that may be needed for sufficient documentation of the facility's management. Explain why each log's use is significant and how you designed it.
 4. Describe the biosecurity/safety culture at the facility. A culture is the environment at a place of business that governs and describes the feelings and actions of all employees from top administration to floor workers and laborers. The biosecurity culture described in the narrative was one of indifference, denial and avoidance; a true "It-won't-happen-to-me" mentality. Cultures are difficult to change. With the implementation of your biosecurity protocol explain how you will attempt to change the culture to better suit the business and its goals.
 5. Include instructions for dip-changes, equipment sharing, worker disinfection (i.e. washing hands, dipping shoes, clothes changes, etc.) and any other biosecurity practices you wish to implement with the biosecurity protocol that you feel are important. If you choose to include additional practices, make sure to fully describe them and explain why they are important to your biosecurity plan.
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Description of Exotic Ornamentals

- There are five employees, including the owner, Bill, and his father, Edward.
 - The entire facility sites on 10 acres.
 - There are 18 ponds with a total of two acres of surface water.
 - There are three buildings, each with systems of ten 20-gallon tanks.
 - The only fish being raised are goldfish and koi.
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Participant’s Evaluation of *What Goes Around...* Table-Top Simulation

Please circle the number that best expresses your opinions about the following statements.

		FULLY DISAGREE	DISAGREE	NEUTRAL	AGREE	FULLY AGREE
1.	The table-top’s format was appropriate.	1	2	3	4	5
2.	The information presented was useful to me.	1	2	3	4	5
3.	The time it took to complete this unit was acceptable.	1	2	3	4	5
4.	The discussion questions and/or protocol design were appropriate exercises.	1	2	3	4	5
5.	As a result of this exercise, I have a better understanding of aquaculture biosecurity practices.	1	2	3	4	5
6.	I understand how the situation described in the narrative could have been avoided.	1	2	3	4	5
7.	Sufficient time was allotted to discuss all issues.	1	2	3	4	5

8. What changes to your operation do you fully intend to make after attending this workshop?

9. We welcome your comments about this program:

Please use the back of this sheet for any further comments.

Thank you for your time!