

SUSTAINABLE FISHERIES FOR ENHANCED WATER RESOURCES IN ARMENIA (SFEWRA) PROJECT

USAID PEER Program



TRIP REPORT

Trip to Virginia (US state)

Dates: 11th- 17th of September, 2016

Traveler(s):

Lusine Tadevosyan, Project coordinator, USAID PEER project
Natella Mirzoyan, Project expert, USAID PEER project
Narek Avetisyan, Project researcher, USAID PEER project

Institution(s): ICARE foundation, Armenia

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Introduction

Recent increase in groundwater-based aquaculture coupled with traditional low efficiency water usage technologies in Ararat Valley, Armenia, resulted in substantial decrease in artesian water levels in the area. To address this issue, Sustainable Fisheries for Enhanced Water Resources in Armenia (SFEWRA/USAID PEER) project aims at the improvement of water quality and efficiency in Ararat Valley through development of new and advanced fish farming models which can potentially increase discharge water distribution efficiency and enhance discharged water quality.

In the scope of the project, project Manager Lusine Tadevosyan, Expert Natella Mirzoyan and Researcher Narek Avetisyan, had a series of meetings with key faculty and staff members at Virginia Polytechnic Institute and State University (VT) involved with fisheries and recirculating aquaculture systems, and conducted visits to several private and governmental fish farms and hatcheries in the territory of Virginia during a business trip in September 11-17, 2016. The main purpose of the trip was to explore the impact of large and small-scale recirculating fish production systems on water quality and quantity in the State of Virginia, as well as to study current aquaculture approaches for low income communities.

The business trip was organized and accompanied by Angela Neilan, Director of InnovATE/Armenia project.

Description of Activities

SFEWRA team members spent a total of 7 days in the State of Virginia. In-detail activities conducted during the trip are presented below.

Sunday, September 11, 2016

Activities:

- Arrival to Blacksburg, VA, and walk tour in VT Campus

Description:

PEER team members arrived at Blacksburg, VA, and toured the VT campus accompanied by Angela Neilan and Maggie Bassett. The VT history, student's life, graduate programs, research activities were presented to the PEER team.



Monday, September 12, 2016

Activities:

- Meeting with Dr. Loy Van Crowder , Executive Director of Office of International Research, Education and Development (OIRE) and OIRE staff
- Meeting with the VT faculty



Description:

PEER team members met with Dr. Crowder, Executive Director of OIRE and discussed the PEER project, expectations from the US trip, and potential collaboration opportunities. Later, PEER team made a brief presentation about the project for faculty and staff.



Another meeting with several members of VT faculty, including Dr. Tom Hammett (Sustainable Biomaterials Department, PEER Project Sponsor), Dr. Stephen Schoenholtz (Virginia Water Resources Center, PEER Project Sponsor), Dr. Eric Hallerman and Dr. Brian Murphy (Department of Fish and Wildlife Conservation) was held in the afternoon.

The PEER project was presented during the meetings. Dr. Schoenholtz presented the current state of groundwater resources in Virginia State. Suggestions on the Projects' future works and directions were received. Current trends in water and environmental management were discussed with the VT faculty members.

Later, Dr. Schoenholtz accompanied the PEER team to the Water Resources Research Center laboratories and presented the research conducted under his supervision.



Tuesday, September 13, 2016

Activities:

- Tour to VT Conservation Aquaculture Facilities and Mussel Lab with Dr. Eric Hallerman, Dr. Jess Jones (Department of Fish and Wildlife Conservation), and Dr. David Kuhn (College of Agriculture and Life Sciences)

- Visit to the Wytheville Fish Hatchery of the Department of Game and Inland Fisheries (DGIF)

Description:

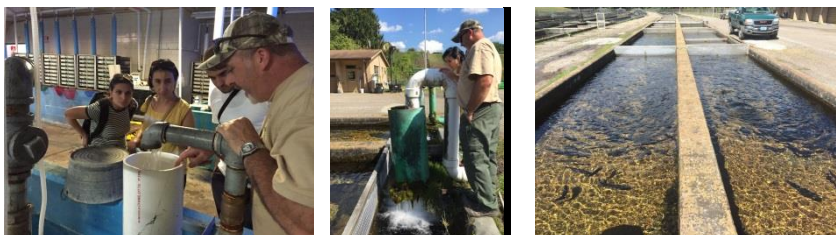
PEER project team had a trip to Freshwater Mollusk Conservation Center of the Department of Fish and Wildlife Conservation of VT. Along with the description of main research directions of the Center, aimed at the conservation of wild freshwater mollusk species, Dr. Hallerman and Dr. Jones described water recirculation system operating in the Center. Special attention was paid to the low-cost water aeration and nitrification units.



This tour was followed by a visit to the Population Genetics laboratory, where Dr. Hallerman described his research on laboratory bread fish varieties and use of population genetics methods for the conservation of wild aquatic species. PEER team members were also hosted by Dr. Kuhn at the Department of Food Science and Technology, where Dr. Kuhn presented the research of his laboratory on environmentally friendly and sustainable approaches of food fish production.



In the afternoon the PEER team made a visit to Wytheville Fish Hatchery, a subsidiary of the Department of Game and Inland Fisheries. The team was introduced to trout rearing techniques used to produce fish stocks for entertainment fishing. Mr. Tim Tilson explained the fish life cycle, incubation and growth stages, along with farm operational procedures. Specific attention was paid to the construction of low-investment packed reactor for water aeration, as well as solid waste utilization approaches.



Wednesday, September 14, 2014

Activities:

- Visit to Longwood University
- Visit to labs in Chichester, Longwood Campus
- Visit to the Blackwood fish farm

Description:

PEER team was hosted by the faculty of Longwood University, where the PEER Projects' aims and achievements were presented to the faculty of Longwood University. Dr. Sujan Henkanaththegedara hosted the team members in his lab and described his research on invasive crayfish species.



In the afternoon the PEER team was hosted by the owners of Blackwood fish farm: Lynn and Lori Blackwood. The farm is engaged in breeding catfish, tilapia, and trout fingerlings in artificial pond and net-pen systems. Farm owners shared their experience on rearing and raising different fish species in freshwater systems, the market for fresh and ready-to-consume fish products, and their cooperation with VT faculty members to solve problems arising during fish farming.



Thursday, September 15, 2016

Activities:

- Visit to Virginia State University(VSU)
- Visit to VSU Extension Aquaculture Facilities
- Visit to Carter Plantation for freshwater shrimp harvest

Description:

PEER team had a trip to Virginia State University and was hosted by Dr. Brian Nerrie, aquaculture extension specialist. The team made a short presentation about the project and later visited the VS Extension Aquaculture Facilities. Dr. Brian Nerrie introduced the team with the specifics of aquaculture for low-income communities, focusing in low investment fish production systems and aquaponics.

In the afternoon the team was hosted by Harris Carter of Shirley Plantation for freshwater shrimp harvesting. Here, Dr. Nerrie introduced freshwater shrimp production systems, a potentially suitable system for water reuse for Ararat Valley fish farms.



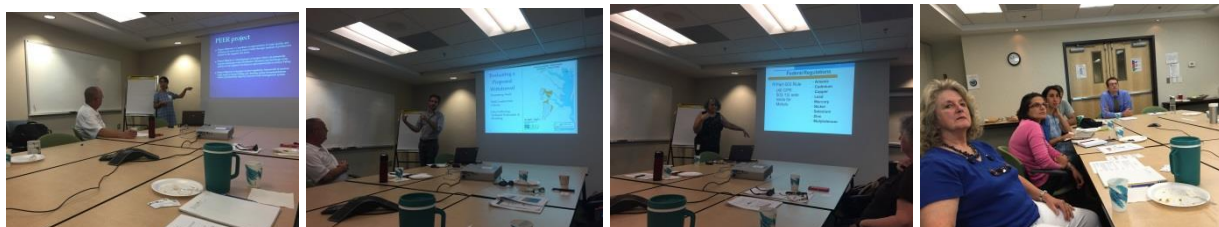
Friday, September 16, 2016

Activities:

- Meeting with Department of Environmental Quality experts
- Meeting with Department of Game and Inland Fisheries experts

Description:

PEER project had a meeting with the staff of the Department of Environmental Quality in Richmond, VA, hosted by Deborah DeBiasi. After the PEER presentation the DEQ officials made several presentations introducing the mission of the DEQ, water regulations in VA, as well as sharing their knowledge on water quality testing, environmental control, water permit granting procedures, etc.



Later the team visited Virginia Department of Game and Inland Fisheries, hosted by Susan Gilley. The team learned about expertise of the institution, including fish and wildlife programs.



Suggestions and Recommendations

The US trip was highly productive and beneficial for both the PEER project and ICARE. The in-depth knowledge and experience gained during the trip was greatly practical in terms of optimal water efficient reuse techniques with the focus on low-cost water aeration, treatment and recirculation approaches. The discussed specifics of the selection of marketable aquaculture species both for primary production and water reuse and selection of potential market for the produce was specifically beneficial. Additionally, the obtained knowledge on water regulatory framework sets fruitful grounds for the development of the more detailed and environmentally friendly regulations for groundwater use in aquaculture in Armenia. The connections established with different experts and officials will be of great help in successful completion of the PEER Project. Overall the trip was immensely productive. Only shortcoming in this case would be the lack of time in terms of getting more in depth practical skills.

List of Contacts Made

Name	Title/Organization	Contact Info
Van Crowder, PhD 	Executive director, OIRED/ Professor, Department of Agricultural, Leadership, and Community Education / Virginia Tech	526 Prices Fork Road (0378), Blacksburg, VA 540-231-9665 vcrowder@vt.edu
Stephen Schoenholtz, PhD 	Director, Water Center / Professor, Forest Hydrology and Soils, Department of Forest Resources and Environmental Conservation / Virginia Tech	210 Cheatham Hall, Virginia Tech, Blacksburg, VA 24061 540-231-0711 stephen.schoenholtz@vt.edu
Eric Hallerman, PhD 	Professor, Department of Fish and Wildlife Conservation / Virginia Tech	310 West Campus Drive, Virginia Tech, Cheatham Hall, Room 106 (MC 0321) Blacksburg, VA 24061 540-231-5573 ehallerm@vt.edu
Tom Hammett, PhD 	Professor of Sustainable Biomaterials; Director, InnovATE Project, OIRED; Associate Director, Conservation Management Institute / Virginia Tech	230 E Cheatham Hall, Virginia Tech, Blacksburg, VA 24061 540-231-2716 himal@vt.edu
Brian Murphy, PhD 	Diggs Teaching Scholar and CNRE Senior Faculty Fellow for Teaching & Learning / Virginia Tech	442 Latham Hall, Virginia Tech, Blacksburg, VA 24061 540-231-6959 murphybr@vt.edu
Jess Jones, PhD 	Restoration Biologist, U.S. Fish & Wildlife Service Co-Director, FMCC / Virginia Tech	106A Cheatham Hall, Virginia Tech, Blacksburg, VA 24061 540-231-2266/8865 jess_jones@fws.gov
David Kuhn 	Research Assistant Professor, Department of Food Science and Technology/ Virginia Tech	402-E HABB1 (0924) Virginia Tech, Blacksburg, VA 24061 540-231-8643 davekuhn@vt.edu

Patricia Lust		Professor; Voice, Music Education, Integrated Arts/Music Coordinator of Music Education and of the Graduate Program in Music / Longwood University	VSU, Petersburg, VA 23806 434-395-2049 lustpd@longwood.edu
Sujan M. Henkanaththegedara		Assistant Professor, Biology / Longwood University	Chichester 202/lab 216, Longwood University, Farmville, VA 23909 434-395-2731 henkanaththegedarasm@longwood.edu
Mark L. Fink		Assistant Professor, Biology, Department Chair Chichester Science Center / Longwood University	102B/204/lab 217, Longwood University, Farmville, VA 23909 434-395-2576 finkml@longwood.edu
Lynn Blackwood		Blackwood Aquaculture	blackwoodla@longwood.edu
Lori Blackwood		Blackwood Aquaculture	blackwoodla@longwood.edu
Brian Nerrie		Assistant Professor, Aquaculture Extension Specialist / Virginia State	VSU, Petersburg, VA 23806 804-524-5903 bnerrie@vsu.edu
Deborah DeBiasi		Environmental Specialist II, Pretreatment Program; Toxics Management Program (TMP); Emerging Contaminants / DEQ	629 East Main Street, Richmond, VA 23219 804-698-4028 deborah.debiasi@deq.virginia.gov
Neil Zahradka		Manager, Office of Land Application Programs / DEQ	629 East Main Street, Richmond, VA 23219 804-698-4102 neil.zahradka@deq.virginia.gov

Ryan Green	Permit writer, Water Withdrawal Permitting / DEQ	629 East Main Street, Richmond, VA 23219 804-698-4258 tim.green@deq.virginia.gov
Brian McGurk	Permit writer, Water Withdrawal Permitting; Water Resource modeller / DEQ	804-698-4180 Brian.mcgurk@deq.virginia.gov
Roger Stewart, II	Environmental Specialist II / DEQ	629 East Main Street, Richmond, VA 23219 804-698-4449 restewart@deq.virginia.gov
Suzie Gilley	Project WILD coordinator / Game and Inland fisheries (Virginia department)	7870 Villa Park Dr #400, Henrico, VA 23228 804-367-1000 suzie.gilley@dgif.virginia.gov
Robert Walker, Jr.	Game and Inland fisheries (Virginia department)	7870 Villa Park Dr #400, Henrico, VA 23228 804-367-0488 lee.walker@dgif.virginia.gov
Mike Hill	Game and Inland fisheries (Virginia department)	7870 Villa Park Dr #400, Henrico, VA 23228 804-367-8704 mike.hill@dgif.virginia.gov
Tim Tilson	Wytheville Fish Hatchery	tim.tilson@dgif.virginia.gov

Appendix:

Trip Log: (activities by day based on the trip Agenda)

The purpose of this visit is to meet with VA faculty and staff involved with fisheries and both semi-closed and closed recirculating water systems. More particularly to explore the impact of large and small scale recirculating fish production systems on water quality and quantity in Virginia

Sunday, Sept 11- Welcome to Virginia!

2:00 pm	Arrive at Roanoke airport-claim checked luggage; Meeting with Angela Neilan
3:30 pm	Check into Main Street Inn, Blacksburg VA
6:00 pm	Dutch Treat Dinner in Blacksburg and evening walking tour of VT Campus with Angela Neilan and Maggie Bassett
8:00 pm	Return to Main Street Inn

Monday, Sept 12- Blacksburg, VT Campus

8:30 am	Breakfast
9:00 am	Angela picked you up at Main Street Inn and drive you to the OIRED office
10:00 am	Meet with Director, Dr. Loy Van Crowder
11:00 am	“Meet and Greet” Reception at OIRED with brief visitor presentation and light refreshments
12:00 noon	Walk to lunch at Owens dining hall with locally sourced foods hosted by Johanna Criscenti
1:00 pm	Cheatham Hall Conference room 136B for afternoon with VT Experts hosted by Dr. Tom Hammett, Sustainable Biomaterials Department, PEER Project Sponsor Dr. Stephen Schoenholtz and staff, Virginia Water Resources Center, PEER Project Sponsor Dr. Eric Hallerman, Fish and Wildlife Conservation
5:00 pm	Return to Main Street Inn
6:00 pm	Dinner at Boudreaux’s with Tom Hammett and Angela Neilan

Tuesday, Sept 13-Blacksburg and Wytheville facilities tours

8:00 am	Angela picked up at Main Street Inn
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8:20 am	Meet Eric Hallerman, Professor- Department of Fish and Wildlife Conservation <i>Cheatham parking lot</i>
8:30 am	Tour of VT Conservation Aquaculture Facilities and Mussel Lab with Dr. Eric Hallerman, Dr. Jess Jones-Department of Fish and Wildlife Conservation, and Dr. David Kuhn- College of Agriculture and Life Sciences
12:00 am	Lunch at Preston's at the Inn at VT hosted by OIRED Director, Dr. Van Crowder
1:00 pm	Depart for Wytheville Fish Hatchery tour by Department of Game and Inland Fisheries (DGIF) Host- Butch Bates, DGIF Hatchery Manager
6:00 pm	Dutch Treat Dinner en route
9:00 pm	Return to Main Street Inn

Wednesday, Sept 14—Longwood University, Farmville, VA

8:00 am	Check out of Main Street Inn hotel, drive to Farmville, VA
11:00 am	Arrive at Longwood University and check into Hampton Inn Farmville
12:30 pm	Lunch Dr. Patricia Lust – Professor Emerita, Dr. Mark Fink – Associate Professor of Biology, Dr. Sujana Henkanaththegedara – Assistant Professor of Biology
1:00 pm	Tour of Longwood fishery and water quality facilities
2:00 pm	Visiting labs in Chichester, Longwood Campus Dr. Sujana Henkanaththegedara and Dr. David Buckalew – Associate Professor of Biology
3:30 pm	Tour of the Blackwood aquaculture project Ms. Lori Blackwood – Manager of Space and Real Estate Management, Dr. Lynn Blackwood – Licensed Clinical Psychologist and the Director of Piedmont Psychological Services, Dr. Patricia Lust, Dr. Mark Fink, Katie Register
6:00/6:30 pm	Dinner
10:00 pm	Return to hotel

Thursday, Sept 15-Petersburg, VA, Virginia State University

8:00 am	Angela picked you up at Hampton Inn for drive to Petersburg, VA
10:00 am	Arrive at Virginia State University Host-Dr. Brian Nerrie, Extension Aquaculture Specialist, Extension Aquaculture program and PEER project Sponsor
12:00 noon	Lunch in Petersburg with Dr. Nerrie

1:00 pm	Visit to Aquaculture field ponds and fresh water shrimp harvest
4:00 pm	Drive back to Farmville
6:00 pm	Dinner en route
8:00 pm	Return to Hampton Inn Farmville

Friday, Sept 16-Richmond, VA State Agency visits

8:00 am	Check out of hotel and drive to Richmond, VA State Capital
10:00 am	Meeting with Department of Environmental Quality Experts on VA water regulations - Host-Deborah DeBiasi
1:00 pm	Meeting with Department of Game and Inland Fisheries Experts on Fish and Wildlife programs- Host-Suzie Gilley
3:00 pm	Depart Richmond for Roanoke
6:00 pm	Dinner en route
9:00 pm	Arrive Roanoke and check into Hampton Inn Roanoke

Saturday, Sept 17-Bon Voyage!

10:00 am	Angela picked up at Hampton Inn Roanoke-Pack for departure, check out of hotel
10:30 am	Local shopping and visit to Roanoke sites
12:00 pm	Lunch in Roanoke
1:00 pm	To Roanoke airport
2:40 pm	Depart ROA on return flight to Yerevan