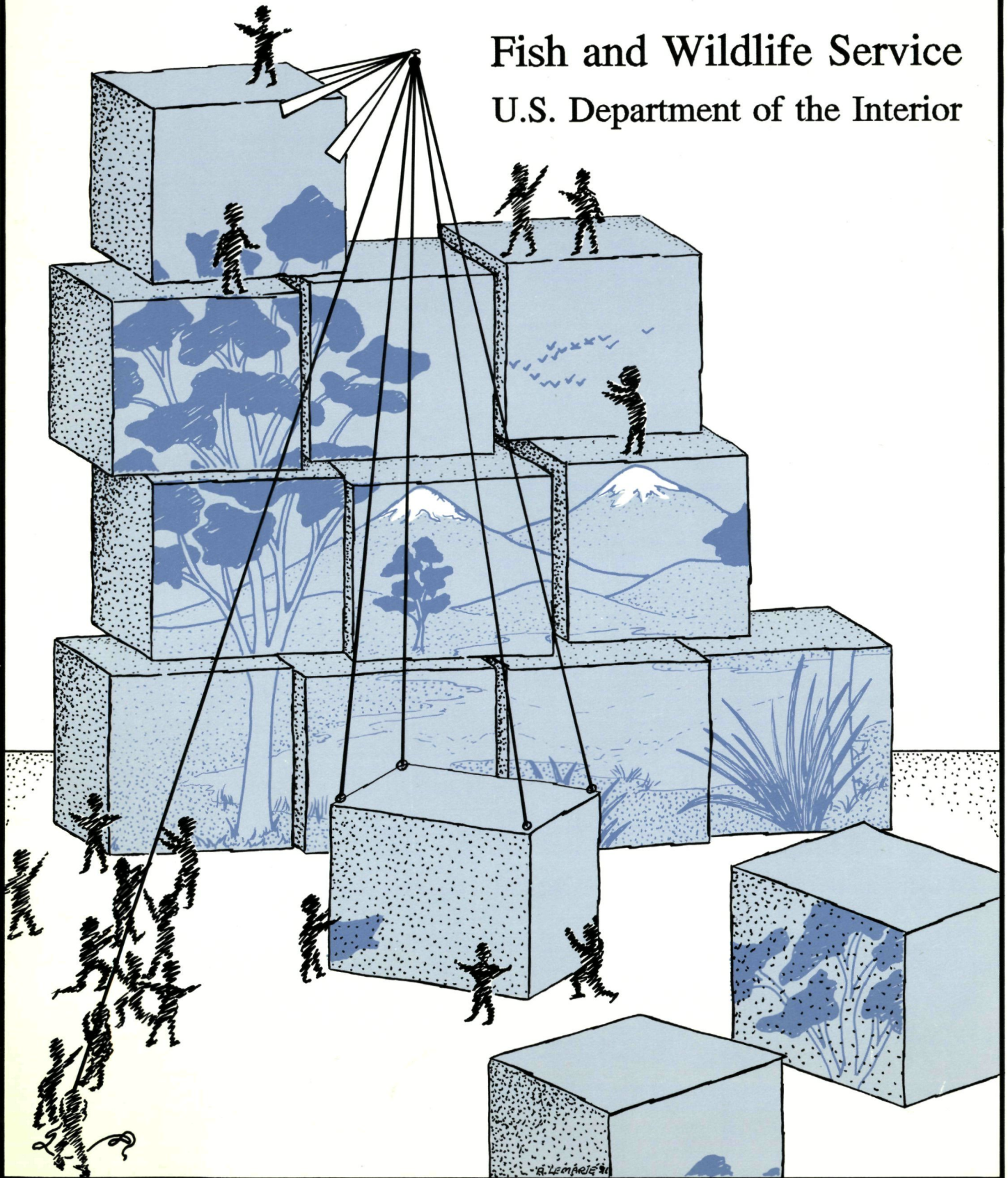


# FY 1992 Catalog of Training

Fish and Wildlife Service  
U.S. Department of the Interior



R. LEONARIE '91

# *In Memory*

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Irene E. Magyar  
1951-1991

Irene began her career in the Service with the Division of Hatcheries and Fishery Resources in 1979, after having spent several years with the Smithsonian Institution. She transferred to the Division of Refuge Management in 1982 to coordinate the Services's Volunteer Programs. Later she worked as a planner in the Washington Office and transferred back to Fisheries at the Fisheries Academy, as Chief of Fish Management Training, in 1987. The design of this catalog is an example of the fine work she produced while in that position. She will be remembered as a dedicated supporter of conservation issues and as a good friend.

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# Table of Contents

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<b>A Message from the Director</b> .....	1
<b>Office of Training and Education</b> .....	3
Servicewide Training .....	6
Orientation .....	6
Availability of Other Training .....	6
How to Apply for Servicewide or Management Development Courses .....	6
<b>Management Development</b> .....	7
Management Development Programs .....	10
Upper Level Management Development Program (ULMDP) .....	10
Departmental Manager Development Program (DMDP) .....	10
Mid-Level Management Development Program (MLMDP) .....	10
Course Descriptions, FY 1992 .....	11
Departmental Manager Development Program .....	11
Upper Level Management Development Program .....	11
Mid-Level Management Development Program .....	12
The Legis Fellows Program or Executive Development .....	13
Women's Executive Leadership (WEL) Program .....	13
<b>The Fisheries Academy</b> .....	15
Fisheries Training Programs .....	18
Fisheries Program and Operations Orientation .....	18
Technical Skills Development .....	18
Long Term Training .....	18
Fisheries Academy Courses .....	19
Customized Courses .....	19
Course Locations .....	19
How to Apply for a Course .....	19
Costs .....	20
Cancellation .....	20
Continuing Education Units .....	20
Other Services .....	20
Course Descriptions, FY 1992 .....	21
Introduction to Fish Health .....	21
Fish Tracking Techniques .....	21
Coldwater Fish Culture .....	22
Fish Genetics and Broodstock Management .....	22
Piscicide Applications .....	23
Warmwater Fish Culture .....	23
Principles & Techniques of Electrofishing .....	24
Fish Passageways & Diversion Structures .....	25
Instructor Training .....	25
Fish & Wildlife Management Planning .....	26
The Advocacy Role of Managers .....	26
Basic Biology for Technicians .....	27
Biostatistics .....	28

# Table of Contents, cont.

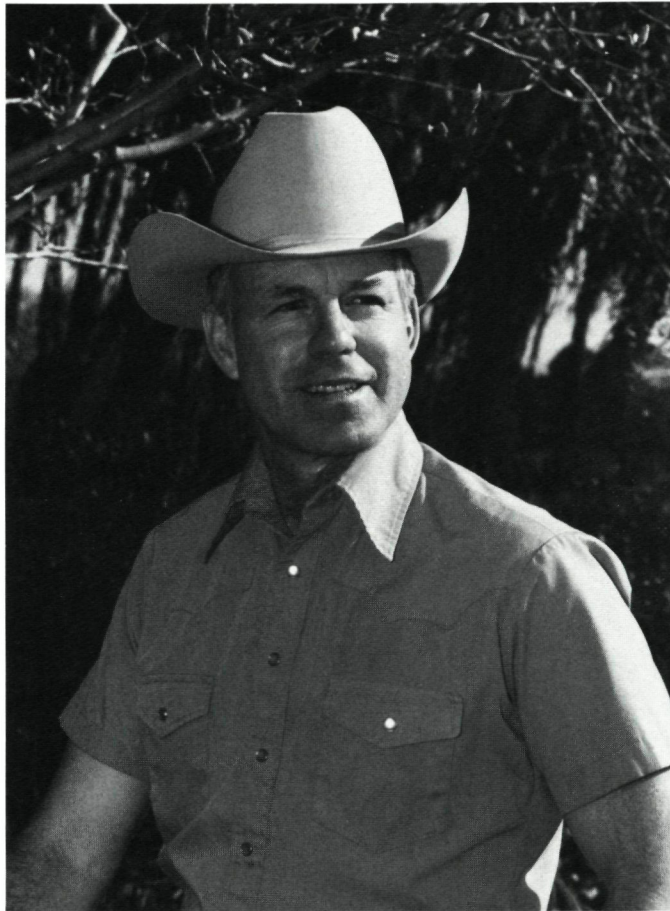
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Fisheries Program and Operations Orientation .....	29
Introduction to USFWS Fisheries Program (Module I) .....	29
USFWS Fisheries Operations (Module II) .....	30
Application .....	31
Year at a Glance .....	32
Other Academy Courses .....	34
One Day Courses .....	38
Audio-Visual Training Courses .....	39
Videotape Order Blank .....	41
<b>Law Enforcement</b> .....	<b>43</b>
Course Descriptions, FY 1992 .....	45
Undercover Operations Seminar .....	45
<b>National Ecology Research Center</b> .....	<b>47</b>
National Ecology Research Center Courses .....	50
How to Apply for a Course .....	50
Additional Course Information .....	51
Course Descriptions, FY 1992 .....	52
Habitat Evaluation Procedures .....	52
Classroom Courses .....	52
Habitat Evaluation Procedures .....	52
Executive HEP Briefing .....	52
Using HEP and HSI Software .....	53
Advanced Recreation Economic Techniques .....	53
HEP Refresher .....	54
Correspondence Courses .....	54
Habitat Evaluation Procedures (HEP) Accounting Program .....	54
Habitat Suitability Index (HSI) Modeling System .....	54
Instream Flow .....	55
Basic Instream Flow Courses .....	56
Executive IFIM Briefing .....	56
Designing and Negotiating Studies Using IFIM .....	56
Problem Analysis and Negotiating Solutions Using the IFIM Model Output ..	56
Data Collection, Analysis, and Skill Building Courses .....	57
Expert Witness Seminar .....	57
Field Techniques for Stream Habitat Analysis .....	57
Using the Computer Based Physical Habitat Simulation System (PHABSIM) ..	58
Stream Network Temperature Model (SNTEMP) .....	58
Specialty Courses .....	59
Wetlands Training .....	59
Correspondence Courses .....	59
Regional Subdivisions of National List of Plant Species That	
Occur in Wetlands Data Base .....	59
An Automated Wetland Creation/Restoration Bibliographic Data Base .....	60

## Table of Contents, cont.

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Classroom Course .....	60
Wetland Classification Training .....	60
Data Base Management .....	61
Data Base Management Techniques .....	61
Application .....	63
Year at a Glance .....	64
<b>Refuge Management .....</b>	<b>67</b>
How to Apply for a Course .....	69
Course Descriptions, 1992 .....	70
Refuge Management Training Academy .....	70
Fire Management for Line Officers .....	70
Basic Fire Management Training .....	71
Fire Ecology/Fire Effects .....	72
<b>Other Available Courses .....</b>	<b>73</b>



**John F. Turner**  
**Director**  
**U.S. Fish and Wildlife Service**

The Fish and Wildlife Service is the world's leading wildlife resource agency. To sustain this leadership position, we must invest in our own resources -- you, the Service employee.

The 1990's will see a greater demand for us to respond to growing environmental awareness among our many constituents. To help meet that demand, I have established the Office of Training and Education which will guide the Service's training and development programs. Training gives us the ability to develop the skills and expertise needed to meet the challenges of this decade and into the next century. The new office will play a key role in ensuring Service employees have the tools they need to meet the Service's goals, and to grow as professionals.

The most challenging undertakings of the Office of Training and Education will be coordinating Service training programs and launching the new, state-of-the-art National Education and Training Center. I expect these efforts to build on the successes of our past training programs and develop innovative ideas to help us meet the challenges of the future.

Each of us has a responsibility to renew our commitment to the resources we serve and guarantee a better tomorrow. I encourage everyone to become familiar with the training programs offered by the Service, to make suggestions for improvement, and participate enthusiastically. After all, this is your training program.

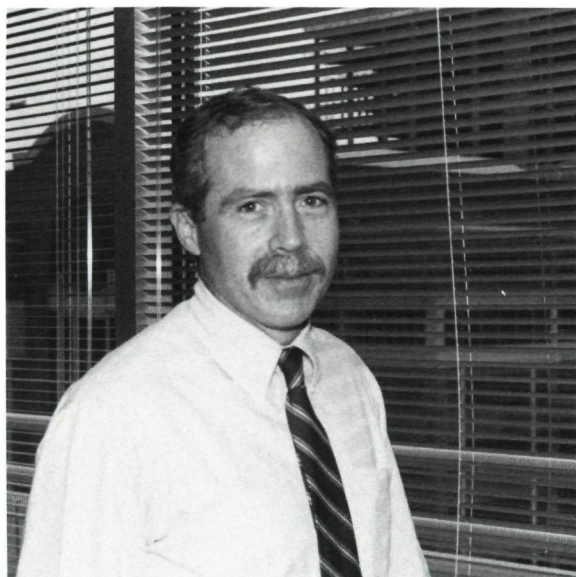
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# *OFFICE OF TRAINING AND EDUCATION*



# OFFICE OF TRAINING AND EDUCATION

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Developing and maintaining a well-trained and productive workforce is critical to the Fish and Wildlife Service's (Service) ability to accomplish its mission. The Office of Training and Education (OTE) is committed to developing and implementing an effective training and employee development program. Our goal is to increase organizational effectiveness through training. Employees will be empowered to accomplish the resource objectives to which they have dedicated their careers. We will deliver a management curriculum for executives, managers and supervisors; tailor technical training and development courses to unique Service specifications; and provide an opportunity for individuals to assess their skills, career goals and motivators.

This catalog is the first attempt by the Service to provide a consolidated list of training opportunities. It is the result of a joint effort by OTE, Law Enforcement, the Refuge Academy, the Fisheries Academy and the National Ecology Research Center. While it is not intended to be all inclusive, it includes many technical and managerial training courses that are available.

An effective training and employee development program will require the cooperation and support of all Service employees. If you have any suggestions for new courses or recommendations to improve our existing programs, please contact me or any member of the OTE staff. If we can provide any assistance, please call (703) 358-1781 or FTS 921-1781. We look forward to working with you -- our most valuable resource.

John R. Lemon  
Chief, Office of Training and Education



# *Servicewide Training*

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## **Orientation** (new employees)

The Service's orientation program consists of three parts. Upon entry into the Service, employees receive an employee handbook that describes many of the basic policies of the Federal Government and the Service. A video-tape is available to describe the mission of the various organizational entities within the Service. In addition, each Regional Office is asked to conduct a two day orientation course each year.

## **Availability of other Training**

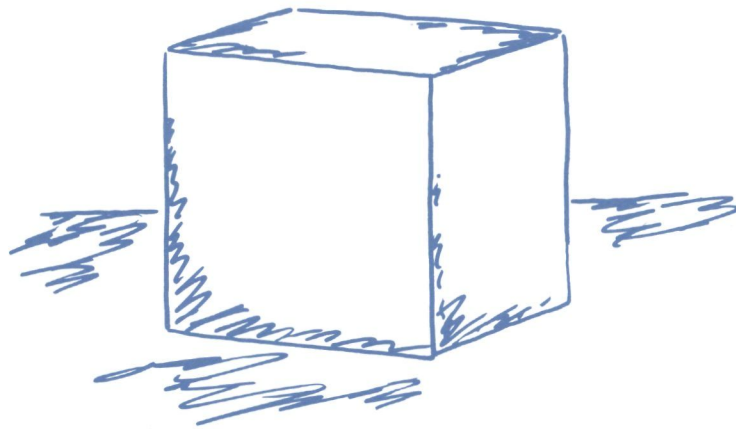
The Service, with the Office of Training and Education serving as the focal point of coordination, participates in many training programs sponsored by the Department, other Federal agencies and offices, universities and the private sector. There are hundreds of courses readily available in various formats, times, locations, and costs. They cover a variety of clerical, administrative, technical, supervisory and managerial subjects appropriate for the full grade range of Service employees. Interest in any of these courses should always be discussed with one's supervisor.

## **How to Apply for Servicewide or Management Development Courses**

Service employees should submit any training forms required by their agencies to the appropriate office within that agency. Refer to the specific announcement for program costs.

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# *MANAGEMENT*



# *DEVELOPMENT*

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# Management Development

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Many of the management skills that we need to successfully manage a complex organization are not necessarily skills that come naturally to us or that we learned in school. The Office of Training and Education provides management development training to Service employees to foster management excellence by establishing programs where it is developed, recognized and rewarded. We use a variety of

approaches and strategies in these programs, including: formal training, coaching, rotational assignments, special work projects, and Hill assignments, which focus on management issues, concerns, skills and competencies needed by Service managers. Each program targets a specific level of manager and is closely coordinated to provide consistency, build on a common competency base, and minimize overlap.

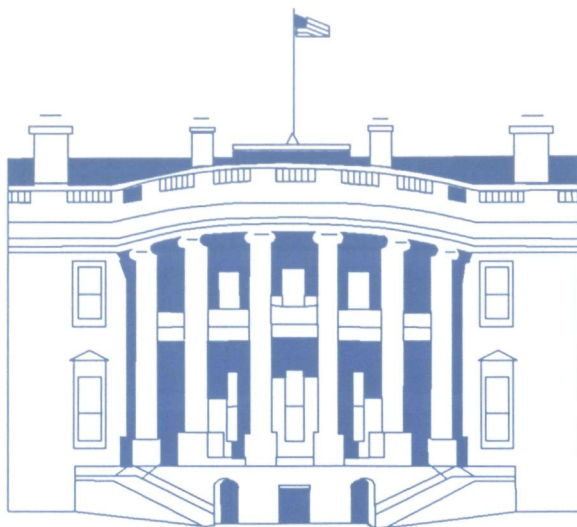


# Management Development Programs

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## Upper Level Management Development Program (ULMDP)

This program was specifically developed in response to a 1987 report on the Service's career development and training program that indicated potential significant mid- and upper level management vacancies by 1992. The ULMDP is designed to enhance skills in communications, negotiations, political and budget processes, and interpersonal skills, and to provide a better understanding of how the Service functions within a broader conservation, economic, and political framework. The program involves approximately two months of work over a one year period. Primarily GS/GM-13 and 14 employees Servicewide are eligible. (High potential GS-12's may be considered.)



## Departmental Manager Development Program (DMDP)

The Service participates in the DMDP, sponsored by the Department of the Interior. The DMDP is designed to give managers a broader view of resource and management issues and an opportunity to enhance management skills through course work and extensive developmental assignments in the Executive and Legislative branches of government in Washington. All Service employees GS/GM 12 through 14 are eligible.



## Mid-Level Management Development Program (MLMDP)

This two week program was developed to train high-potential employees in the knowledge, skills, and abilities identified as being essential for mid-level managers. All GS-11 and 12 Service employees are eligible.

# Course Descriptions, FY 1992

## **DEPARTMENTAL MANAGER DEVELOPMENT PROGRAM (DMDP)**

**DATE AND LOCATION:** Begins in August of a given year and ends in June of the following year; Washington, D.C. (Usually announced in June)

**AUDIENCE:** All GS/GM-12, 13, and 14 Employees Servicewide.

**PROGRAM DESIGN:** This program begins in Washington, D.C. with Service orientation in late August and Departmental orientation in early September. Beyond the initial orientation phase, the program consists of:

1. Rotational Work Assignments
2. Management Training Seminars
3. Bi-Monthly Meetings
4. Formal Course Work
5. Seminar on Natural Resources
6. Counseling

### **Goals:**

The goals of the program are to:

- ⇒ *Ensure that the Service has a sufficient number of highly qualified employees to meet its present and future middle and senior level management needs.*
- ⇒ *Foster an awareness and understanding of the missions of the Service and provide experience with relationships both within the Department and with other agencies Governmentwide.*
- ⇒ *Provide opportunities for career employees to undertake a planned*

*program of individual assignments designed to improve their leadership capabilities.*

- ⇒ *Identify and stimulate the growth of promising Service employees by exposing them to a broad and diverse range of activities designed to enlarge their perspective, sharpen their judgement, and enhance the abilities needed for managerial positions.*

## **UPPER LEVEL MANAGEMENT DEVELOPMENT PROGRAM (ULMDP)**

**DATE AND LOCATION:** Begins in October of a given year and ends in June of the following year; Washington, D.C., Leesburg and Arlington, Virginia are primary locations. Other locations may be used depending on program design. (Usually announced in April)

**AUDIENCE:** Primarily GS/GM-13 and 14 Employees Servicewide. (High potential GS-12's may be considered.)

**PROGRAM DESIGN:** The program consists of three (3) modules:

Module 1. Basic two-week training. (October Session)

Module 2. Consists of three one-week seminars.

- Seminar 1 - Usually in December
- Seminar 2 - Usually in Feb.-March
- Seminar 3 - Usually in April-May

Module 3. Rotational assignments ranging from 30-45 days up to six months, depending on the nature of the assignment.

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All modules of the program are designed to provide participants with managerial skills and experiences in the areas of oral and written communications; interpersonal skills; problem solving, negotiations, and conflict resolution; political processes; and external awareness of economic, political, and social factors that shape natural resource policy.

**Goals:**

The goals of the program are to:

- ⇒ *Provide Service employees with significant managerial skills and developmental experiences to enable them to manage more effectively in their current positions.*
- ⇒ *Provide high potential employees with the necessary skills and developmental experiences to prepare for positions of increased management responsibility.*
- ⇒ *Create a cadre of highly qualified employees to staff short-term assignments, task forces, and study teams.*

**MID-LEVEL MANAGEMENT DEVELOPMENT PROGRAM (MLMDP)**

**DATE AND LOCATION:** Usually during the month of March; Washington, D.C. and Arlington, Virginia. (Usually announced in November)

**AUDIENCE:** GS-11 and 12 Employees Servicewide

**PROGRAM DESIGN:** This program consists of a two-week formal course and a two-week developmental assignment.

**Two-week formal course:** Provides participants with supervisory and managerial knowledge, skills and abilities in the areas of positive communication and interpersonal skills, Congressional operations and interrelationships between Congress and the Executive Branch, as they pertain to the Service.

**Two-week development assignment:**

Provides participants with an assignment during which they will use those knowledge, skills, and abilities acquired during the formal course.

**Goals:**

The goals of the program are to:

**Week 1 - Interpersonal Relationships - Communication Skills**

- ⇒ *Identify trainees' supervisor/managerial strengths and assist trainees in applying those strengths in the workplace for maximum efficiency.*
- ⇒ *Improve and assess trainees' interpersonal communication skills for the purpose of dealing more effectively with others as individuals or as a cohesive team.*

**Week 2 - Congressional Briefings**

- ⇒ *Increase the participant's knowledge and understanding of the functions, organization, and multiple activities of the Legislative Branch.*
- ⇒ *Explore facets of Congressional operations and interrelationships between the Congress and the Executive Branch.*
- ⇒ *Discuss the social, political, and economic factors influencing legislative actions.*
- ⇒ *Provide a realistic perspective of Executive-Legislative relations.*

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## **THE LEGIS FELLOWS PROGRAM FOR EXECUTIVE DEVELOPMENT**

**DATE AND LOCATION:** As announced by the Office of Personnel Management (One full year session beginning in January and ending in December; two sessions which are six months long, beginning in January and June.); Washington, D.C. (Usually announced in July)

**AUDIENCE:** Primarily designed for executives and candidates in the Senior Executive Service and for managers in agencies' developmental program. Secondarily designed for GS/GM-14 or equivalent positions. Participants at the GS/GM-13 level may be accepted in special circumstances.

**PROGRAM DESIGN:** Program Fellows, in all sessions, receive instructions and hands-on experience in a congressional office through training/developmental activities. These activities consist of three weeks of intensive briefings on the operations and organization of the Congress; a full-time staff assignment with a congressional member, committee, or support agency; and frequent seminars during the work assignment on Capitol Hill.

**Goal:**

The goal of the program is to:

⇒ *Provide assignments for Federal personnel whose current or prospective positions may require a working knowledge of the operations of Congress.*

## **WOMEN'S EXECUTIVE LEADERSHIP PROGRAM (WEL)**

**DATE AND LOCATION:** As announced by the Office of Personnel Management (12 months); Washington, D.C. (Usually announced in August)

**AUDIENCE:** Non-supervisory women and men or new supervisors with less than one year's experience at the GS-11 and 12 level.

The program consists of:

1. Orientation - 1 week
2. Core Training - 3 weeks
3. Development Work Assignments
4. Cluster Group Activities
5. Shadowing Assignment
6. Executive Interviews
7. Management Readings
8. Program Impact Paper

**Goal:**

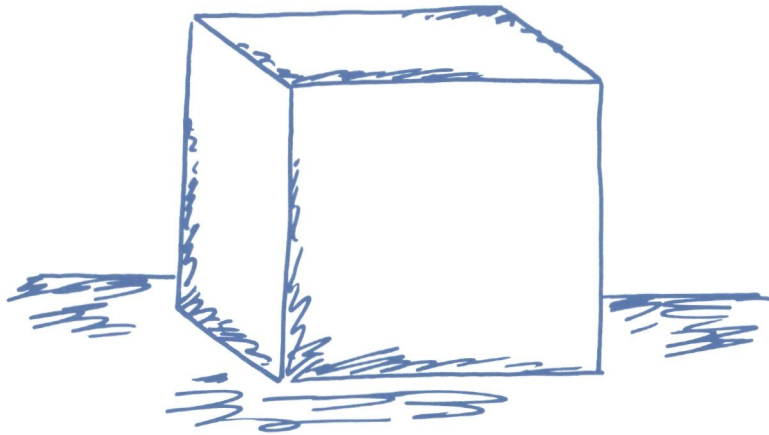
The goal of the program is to:

⇒ *Provide supervisory/managerial training development opportunities for high-potential Federal employees preparing them for future opportunities as supervisors and managers.*



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*FISHERIES*



*ACADEMY*

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# *The Fisheries Academy*

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Located 70 miles northwest of Washington, DC in Leetown, West Virginia, the Fisheries Academy offers courses to supplement and extend the experiences of people involved in fisheries management and aquaculture. Fisheries Academy courses are designed not only for people responsible for the day to day operation of fish production facilities, but also for those responsible for management. The Academy's instructors include world-known authorities in fish husbandry and production techniques, fish diseases, genetics, and aquaculture.

In today's technological society and with an increased need for people who are good managers as well as biologists, continuing education has become increasingly important. The Fisheries Academy provides a way for fisheries biologists, managers, and people working in the aquaculture industry to develop the necessary basic skills, keep abreast of the latest developments and technologies, and develop new skills in fisheries techniques and management.



The Fisheries Academy

# Fisheries Training Programs

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The following information describes the variety of training opportunities available to employees working in the fish and wildlife field. Although a few of the courses are limited to Service employees, most of them are open to all professional and/or technical personnel regardless of their employing organization.

## Fisheries Program and Operations Orientation (GS-5/7/9/11)

The following two courses are mandatory for Fishery Biologists who are permanently employed in the Service's Fisheries Program:

- "Introduction to U.S. Fish and Wildlife Service Fisheries Programs"
- "U.S. Fish and Wildlife Service Fisheries Operations"

It is recommended that they be completed during the first two years of employment.

## Technical Skills Development (GS-7/9/11/12)

Technical skills development training courses are designed to fulfill two job performance needs--developing basic skills and gaining knowledge of new technology. Employees moving into positions for which they need to acquire

new skills and employees whose understanding of an acquired skill needs to be brought up-to-date are the target audience. The majority of Fisheries Academy courses fall into this category. Mid-level fisheries biologists in the Service are expected to attend 40 hours of training at least once every three years.

## Long Term Training (GS-9/11)

### "Fish Health Management and Disease Diagnosis"

This special long term training course is offered in cooperation with the Fish Health Research Laboratory at Leetown, West Virginia. It is used to train experienced hatchery personnel for positions as fish health specialists in the hatchery system. The course is offered periodically to meet expressed workforce requirements within the Service. Individuals aspiring to embark on a career in fish health management should prepare themselves for the course by taking graduate or undergraduate courses in subjects such as parasitology, bacteriology, immunology, virology, and fish physiology.



# *Fisheries Academy Courses* ---

The courses in this catalog will be offered by the Fisheries Academy from October 1991 through September 1992. They are open to individuals from the Federal government, state governments, conservation groups, and private businesses.

Courses that are offered by the Academy, but which do not appear in this year's schedule, are briefly described beginning on page 34. Any of these courses can be offered on a cost-reimbursable basis as described below.

Customized courses can be developed in any area of fisheries biology. The Fisheries Academy will put together a course to suit your specific needs. The Academy will design customized courses for Federal, state, tribal, and county agencies on a cost-reimbursable basis. The Academy will also design courses for private organizations through a contract arrangement. To arrange for a customized course, write or call the Fisheries Academy and a staff member will be assigned to work with you to develop the course objectives, content, outline, and format.

Once these are established, the Academy will enlist the best possible instructors, prepare training materials and visual aids, arrange classroom and lodging facilities, oversee the presentation, and evaluate the program.

## **Course Locations**

The two mandatory training courses for entry level Service fisheries biologists are held at the Fisheries Academy in Leetown, West Virginia. Many of the other courses offered by the Academy are scheduled throughout the country. Customized courses are held at a time and location convenient to the client. The Fisheries Academy in Leetown, West Virginia, has modern facilities including classrooms; wet and dry laboratories; an audio-visual laboratory and darkroom; and easy access to stream, pond, river and lake environments. The facilities of the Academy are also available for customized courses.

An application for the courses scheduled for FY 1992 is contained in this catalog on page 31. Federal employees should also submit any training forms required by their agencies to the appropriate office within that agency. Applications from state and local government employees should be accompanied by a letter signed by an authorized official. Private citizens may use the application form in the catalog. Completed applications must arrive at the Academy at least eight weeks before the course begins. For additional information call 304/725-8461 or FTS 925-5239.

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## Costs

The training conducted by the Fisheries Academy is provided without charge to employees of the Service who are funded under the Fisheries Resources program or other programs providing direct support. A nominal fee, listed with the course descriptions, is charged to all other participants.

Applicants from the private sector must send payment along with their application. (NOTE: **DO NOT SEND CASH**. Checks or money orders should be made payable to the U.S. Fish and Wildlife Service.)

Participants from other government agencies (Federal, state, or local) will receive an invoice upon completion of the course. Please include a billing address on your application.

## Cancellation

Cancellations will be accepted up to two weeks prior to the course. After that date, applicants will be billed for the program whether or not they attend. Substitutions may be made at any time prior to the start of the course.

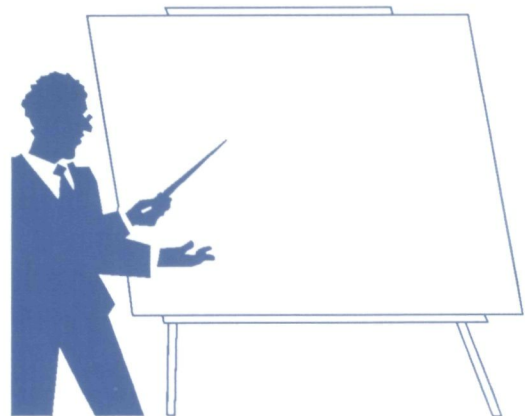
## Continuing Education Units

Continuing Education Units (CEU's) are awarded for the successful completion of Academy courses. A CEU is defined by the National University Extension Association as ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction and

qualified instruction. The Academy maintains a permanent record of CEU's earned by participants.

## Other Services

The Fisheries Academy has trained meeting facilitators on staff who can help you plan, organize, and run your meetings, workshops, or problem solving sessions. Meetings that are run well save both time and money and increase employee satisfaction. For more information on this service, contact the Superintendent of the Academy.



Several training courses are available on videotape and are sold by the Fisheries Academy. These tapes and their prices are listed beginning on page 39 of this catalog. Each year the Fisheries Academy compiles a list of other training sessions being held throughout the country that are of interest to fisheries biologists. This list, current as of press time, begins on page 73.

# Course Descriptions, FY 1992



Course #1104

## INTRODUCTION TO FISH HEALTH

### DATES AND LOCATIONS:

Feb. 3-7, 1992; LaCrosse, WI

Jun. 1-5, 1992; Syracuse, NY

Jun. 15-19, 1992; Olympia, WA

**TUITION:** \$350

**CEU's:** 3.6

This course is a beginning level, introductory program that familiarizes participants with the signs, causes, control and prevention of infectious and noninfectious fish diseases.

### Objectives:

After completion of the course, participants will be able to:

- ⇒ Recognize and identify the external or gross signs of the more common fish diseases and parasites.
- ⇒ Stain slides for preliminary identification of common disease organisms.
- ⇒ Isolate and culture some disease organisms.
- ⇒ Calculate dosages or treatment levels.
- ⇒ Recognize the need for professional help when the condition exists, and know where to go for that help.
- ⇒ Properly care for and package moribund or dead fish as specimens for shipment to diagnostic laboratories.
- ⇒ Maintain proper records.
- ⇒ Understand the causes and nature of fish diseases.

Course #2116

## FISH TRACKING TECHNIQUES

### DATE AND LOCATION:

Mar. 2-6, 1992; Albuquerque, NM

**TUITION:** \$350

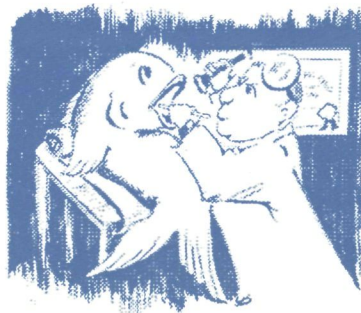
**CEU's:** 3.6

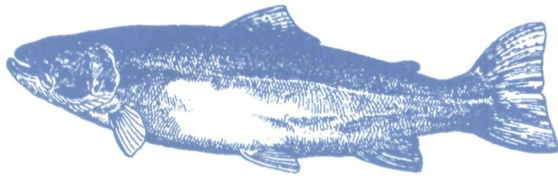
This course is designed for anyone with a need to track fish using tagging, radio, or acoustic devices, both internal and external. It is meant both for beginners in the area and those already using one technique, but who want to learn about others or about the newest available equipment.

### Objectives:

After completion of the course, participants will be able to:

- ⇒ List sources of fish tracking equipment and information.
- ⇒ Attach or implant tracking devices in fish.
- ⇒ List the limitations of various types of equipment.
- ⇒ Describe how the physical and chemical characteristics of water can affect acoustic or radio signals.
- ⇒ Properly record, analyze, and report tracking data.





X<sub>3</sub>

Course #1102

**FISH GENETICS AND BROODSTOCK  
MANAGEMENT**

**DATE AND LOCATION:**

Feb. 3-7, 1992; Norman, OK

**TUITION:** \$350

**CEU's:** 3.6

Designed for fisheries biologists, hatchery managers, program administrators, and commercial aquaculturists, this course presents an introduction to the basic principles of population genetics and how these principles may be applied to fish populations in both the hatchery and natural environments.

**Objectives:**

Graduates will be able to:

- ⇒ *Identify and discuss the relative merits of various breeding and selection techniques.*
- ⇒ *Understand and discuss the role of selection and hybridization in applied fish breeding programs.*
- ⇒ *Compare characteristics of existing fish strains for their relative suitability for various management uses.*
- ⇒ *Develop a breeding program to maintain fish strains without significant inbreeding or alteration of desirable genetic characteristics.*

X<sub>2</sub>

Course #1201

**COLDWATER FISH CULTURE**

**DATES AND LOCATIONS:**

~~Dec. 2-13, 1991; Sacramento, CA~~

Mar. 2-13, 1992; Bozeman, MT

**TUITION:** \$600

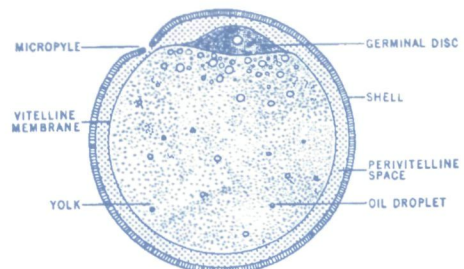
**CEU's:** 7.6

Upon completion of this course, participants will be familiar with the basic principles, concepts and techniques employed in coldwater fish husbandry.

**Objectives:**

Graduates of this course will be able to:

- ⇒ *Select good quality, ripe fish for broodstock.*
- ⇒ *Properly spawn and fertilize eggs.*
- ⇒ *Monitor and care for eggs during incubation.*
- ⇒ *Calculate feeding levels based on numbers and size of fry and fingerlings.*
- ⇒ *Calculate dosage levels for treatment of diseases, and administer disease treatments.*
- ⇒ *Determine levels of O<sub>2</sub>, pH and water hardness.*
- ⇒ *Maintain hatchery records.*
- ⇒ *Determine pond, raceway and distribution tank carrying capacities.*
- ⇒ *Transport fish to stocking or distribution points in good condition.*



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Course #4102

**PISCICIDE APPLICATIONS**

**DATE AND LOCATION:**

Jun. 8-12, 1992; Boise, ID

**TUITION:** \$350

**CEU's:** 3.6

This five day course will cover the chemicals used in the control of undesirable fish species, techniques for their application, and appropriate procedures before and after piscicide application. Students will participate in an actual fish control project.

**Objectives:**

Graduates will be able to:

- ⇒ *List the uses of piscicides in general fisheries management.*
- ⇒ *Obtain the proper approvals for a fish control project.*
- ⇒ *Avoid negative publicity of a reclamation effort.*
- ⇒ *List the chemicals used and discuss their advantages and disadvantages.*
- ⇒ *Identify the effects of piscicides on other organisms.*
- ⇒ *Calculate the amount of piscicide to use in both flowing and enclosed systems.*
- ⇒ *Discuss various methods of piscicide application.*
- ⇒ *Properly schedule piscicide applications.*
- ⇒ *Neutralize piscicides after application.*
- ⇒ *Properly dispose of fish that have died.*
- ⇒ *Revive fish that inadvertently were treated.*

Course #1103

**WARMWATER FISH CULTURE**



**DATE AND LOCATION:**

Jul. 22-26, 1992; Orangeburg, SC

**TUITION:** \$350

**CEU's:** 3.6

This five day course is designed to familiarize the participants with the basic principles, concepts and techniques currently in use for the production of warmwater fishes.

**Objectives:**

Upon completion of this course, participants will be able to perform the following hatchery tasks:

- ⇒ *Calculate the correct numbers of broodstock for a given pond.*
- ⇒ *Select good broodstock for stocking.*
- ⇒ *Determine whether organic or inorganic fertilizers should be used, depending on type of bloom desired.*
- ⇒ *Recognize common disease signs.*
- ⇒ *Calculate correct dosages for treatment of diseases.*
- ⇒ *Administer pond and tank treatments.*
- ⇒ *Perform water analysis to accurately determine levels of O<sub>2</sub>, pH and hardness.*
- ⇒ *Calculate feeding levels for the various species, weights and numbers of fry, fingerlings, and adults.*
- ⇒ *Calculate growth rates.*
- ⇒ *Maintain hatchery production records.*
- ⇒ *Harvest, hold and transport fish to stocking areas or distribution points in good condition.*

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Course #2101

**PRINCIPLES & TECHNIQUES OF  
ELECTROFISHING**

**DATES AND LOCATIONS:**

Oct. 16-18, 1991; Concord, NH

Oct. 21-23, 1991; Little Rock, AR

**TUITION:** \$275

**CEU's:** 2.4

This course illustrates the basic principles of electricity as applied to electrofishing. It discusses basic electrofishing techniques, with emphasis on the capabilities and limitations of electrofishing as a tool for sampling fish populations. Students will learn proper safety precautions to employ while using electrofishing equipment and first aid for related accidents.

**Objectives:**

Upon completion of the course, participants will be able to:

- ⇒ Describe the basic principles of electricity and transmission of current in water.
- ⇒ Calculate electrode drop size and arrays for the most efficient electrofishing depending on water conductivity.
- ⇒ List the types of electrofishing equipment that are currently available and discuss the capabilities, limitations and safety features of each.
- ⇒ Know the proper safety precautions to employ while using electrofishing equipment and the priorities for first aid in case of an accident.

- ⇒ Discuss the advantages and disadvantages of using a metal boat as a cathode.
- ⇒ Discuss the effect of electricity on aquatic organisms.
- ⇒ Apply effective electrofishing techniques for quantitative and qualitative sampling of fish populations.



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Course #2110

**FISH PASSAGEWAYS & DIVERSION  
STRUCTURES**

**DATES AND LOCATIONS:**

Jan. 13-17, 1992; Yakima, WA

Apr. 27-May 1, 1992; Turners Falls, MA

**TUITION:** \$350

**CEU's:** 3.6

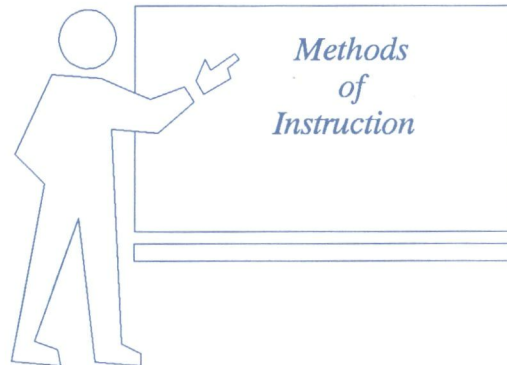
This course presents state-of-the-art information on fish passageways, fish ladders, fish diversion/guidance techniques, and equipment. It is intended to assist fisheries biologists, bio-engineering specialists, and others responsible for determining the need for, and the construction of, fish ladders, passageways and diversion screens that enhance the migration of various fish species.

**Objectives:**

Upon completion of the course, participants will be able to:

- ⇒ *Understand and discuss some of the problems involved in the migration of fish.*
- ⇒ *List and discuss the types of natural and man-made migratory barriers.*
- ⇒ *List fish species that have been hampered, restricted or endangered because of migratory barriers.*
- ⇒ *List and discuss the advantages and disadvantages of various fishways.*
- ⇒ *Select the best sites for construction of a particular fishway.*
- ⇒ *List and discuss various methods and equipment used in fish guidance systems.*

- ⇒ *Determine the best method and location for a fish guidance system.*



Course #5101

**INSTRUCTOR TRAINING**

**DATES AND LOCATIONS:**

Dec. 2-6, 1991; Atlanta, GA

Feb. 10-14, 1992; Phoenix, AZ

**TUITION:** N/A

**CEU's:** 3.6

This course is designed for people who are or may become regular instructors for Fisheries Academy courses. It will cover principles of adult learning and presentation skills for effective classroom instruction.

**Objectives:**

Graduates of this course will be able to:

- ⇒ *Establish an appropriate climate for learning.*
- ⇒ *Use trainer skills and techniques appropriate to specific groups, environments, and objectives.*
- ⇒ *Give and receive feedback.*
- ⇒ *Use evaluations to improve skills and abilities.*

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Course #2118  
**FISH & WILDLIFE MANAGEMENT  
PLANNING**

**DATE AND LOCATION:**

Apr. 6-10, 1992; Denver, CO

**TUITION:** \$350

**CEU's:** 3.6

**Objectives:**

Upon completion of this course, participants will be able to:

- ⇒ Describe the elements of a good plan.
- ⇒ Identify strengths and weaknesses of existing plans.
- ⇒ Identify resource problems to be addressed in a plan.
- ⇒ Be a participating partner in the development of a Fish and Wildlife Management Plan.
- ⇒ Describe the relationship between elements and sub-elements of a plan.
- ⇒ Describe the difference between objectives, goals, and strategies.
- ⇒ Allocate resources to the preparation of a plan.
- ⇒ Evaluate Fish and Wildlife Management Plans.



Course #5110  
**THE ADVOCACY ROLE OF  
MANAGERS**

**DATE AND LOCATION:**

Nov. 4-8, 1991; Minneapolis, MN

**TUITION:** \$350

**CEU's:** 3.6

This course provides field station personnel with an understanding of the advocacy role they must play in order to maximize public support for the development of fisheries programs. It also defines "limits" as they apply to the advocacy role and it clearly defines the limits of advocacy and the protocol essential to success. Methods and techniques for promoting desirable activities and programs will be discussed.

**Objectives:**

Upon completion of the course participants will be able to:

- ⇒ Identify markets and opportunities to capture them.
- ⇒ Identify "needs" within those markets.
- ⇒ Plan an effective marketing program.
- ⇒ List essential steps in initiating an advocacy project.
- ⇒ List the advantages and define the risk associated with "advocacy" projects.
- ⇒ Define leadership characteristics essential to conduct an "advocacy" program.
- ⇒ Use several techniques to build consensus and to develop partnerships with various groups.

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Course #1130

**BASIC BIOLOGY FOR TECHNICIANS**

**DATE AND LOCATION:**

Apr. 6-10, 1992; Marquette, MI

**TUITION:** \$350

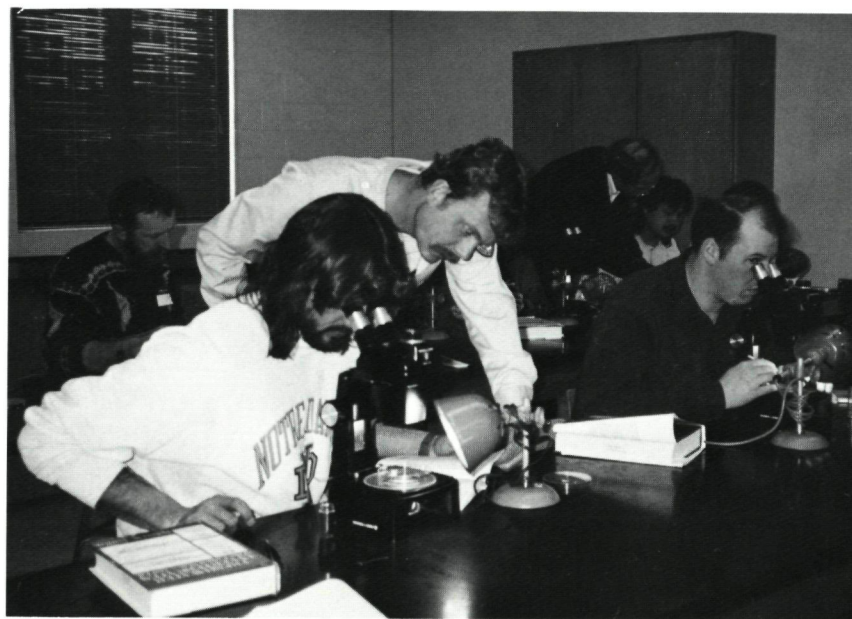
**CEU'S:** 3.6

This five day course will provide training in basic fishery field techniques to biological and physical science technicians, biological aids, and animal caretakers working in sea lamprey control, fish hatcheries, and fishery assistance offices. The course will cover the basics of fish identification and handling, habitat requirements of fish, population assessment techniques, water quality analysis, toxicology and contaminants, and pesticide application. The course information will be oriented toward the Great Lakes Region.

**Objectives:**

Upon completing this course, participants will be able to:

- ⇒ Identify common fish species and show how to use a key for identification.
- ⇒ Describe the preferred habitat of common sport fish, forage fish, and sea lamprey.
- ⇒ List the basic types of equipment used in fish population sampling along with their target species and efficiencies.
- ⇒ Describe the statistical tests used to analyze population data.
- ⇒ Measure water temperature, dissolved oxygen, pH, total alkalinity, hardness, and levels of ammonia and chlorine using meters and kits.
- ⇒ Estimate stream discharge volume.
- ⇒ Recognize stress in fish and correct factors that cause stress.
- ⇒ Properly transport, handle, and care for fish.
- ⇒ Describe the effects of pesticides on the environment and human health.
- ⇒ Properly handle pesticides and their application equipment.
- ⇒ Describe basic toxicity testing principles and the principles of contaminant uptake.



Course #5106  
**BIOSTATISTICS**

**DATE AND LOCATION:**

Jan. 27-31, 1992; Albuquerque, NM

**TUITION:** \$350

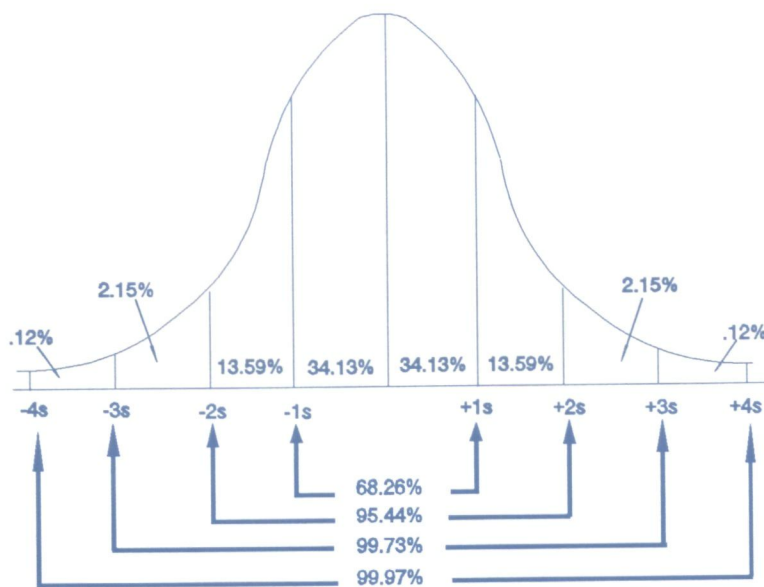
**CEU's:** 3.6

This course is designed as a refresher course for individuals with some familiarity with statistics. The emphasis will be on hypothesis testing techniques, measures of central tendency, and sampling techniques. A cookbook-type approach will be used to lead the participants through a variety of different situations where statistics are required to verify experimental results.

**Objectives:**

Upon completion of the course, participants will:

- ⇒ Use basic statistical terminology and concepts.
- ⇒ Use statistical measures of central tendency.
- ⇒ Use common frequency distributions (e.g. normal, Chi-square, Poisson, *t*-distributions, etc.).
- ⇒ Use inferential statistical methods, such as *t*-tests, *z*-tests, analysis of variance, analysis of covariance, regression, contingency tests, goodness of fit tests, etc.
- ⇒ Use data transformations properly.
- ⇒ Use a variety of distribution-free, nonparametric statistical tests (e.g. Mann-Whitney U, Kruskal-Wallis, Spearman Rank Correlations, etc.).
- ⇒ Discuss microcomputer software packages available for statistical analysis.



Normal Distribution

# Fisheries Program and Operations Orientation

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The following two courses were designed for entry level fisheries biologists in the Service. These courses will provide fisheries biologists at the GS-5/7/9/11 level with a background in the operation of the Service's fisheries programs. Each course runs from two to three weeks. Regions will be requested to submit nominees for each course through a special notice issued by the Fisheries Academy. (These courses are open to Service personnel only.)

## *Course #4204*

### **INTRODUCTION TO U.S. FISH AND WILDLIFE SERVICE FISHERIES PROGRAM (MODULE I)**

#### **DATES AND LOCATIONS:**

Oct. 21-Nov. 1, 1991; Leetown, WV  
Jan. 6-17, 1992; Leetown, WV

This course is designed to introduce employees to the Service's fisheries programs. Topics include the philosophy behind the Federal role in fisheries management, the organization and responsibilities of the various offices, basic legislative authorities, the budget process, the National Fish Hatchery Program, the Fish and Wildlife Assistance Program, safety and career development. Trainees will be introduced to key personnel within the Service, as well as encouraged to develop a network of relationships among themselves. Emphasis is placed on

providing a broad understanding of the functions and responsibilities of all the offices in Fisheries.

#### **Objectives:**

After completion of this course, participants will be able to:

- ⇒ *Explain the organization and responsibilities of the Washington Office, Regional Offices, and field projects in the Service's fisheries program.*
- ⇒ *Identify key personnel in the Service's fisheries program.*
- ⇒ *Explain the National Recreational Fisheries Policy.*
- ⇒ *Discuss the Service budget process and the legislation that directs the fisheries program.*
- ⇒ *Describe the function and role of the National Fish Hatchery Program.*
- ⇒ *Describe the functions and roles of Fisheries Assistance in the Service's fisheries program.*
- ⇒ *Apply basic safety procedures related to chemicals, equipment, electricity, and water activities.*
- ⇒ *Identify potential personal career pathways.*



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Course #4305

**U.S. FISH AND WILDLIFE SERVICE  
FISHERIES OPERATIONS (MODULE  
II)**

**DATES AND LOCATIONS:**

Apr. 27-May 1, 1992; Leetown, WV  
Aug. 10-28, 1992; Leetown, WV

This course is designed to provide an in-depth look at the Fisheries Program in the Service. The "Statement of Responsibilities and Role" along with other policy guidelines will be used as a guideline for understanding the National Fish Hatchery Program, the Fish Health Management Program, and the Fish and Wildlife Assistance Program. Trainees will be introduced to management plans and be given the opportunity to develop a plan in which they must consider hatchery production, fish disease problems and native stock protection. The course emphasizes the integration of the entire fishery resource and the necessity for cooperation between the various fisheries functions in order to achieve success.

**Objectives:**

After completion of the course, participants will be able to:

- ⇒ *Discuss and apply Service policies and Federal authorizations that serve as guidelines for the Service's fisheries program.*
- ⇒ *Coordinate a fisheries program with other Federal, state, tribal, and private user groups.*
- ⇒ *Develop a basic management plan for a fishery.*

- ⇒ *Describe the limitations of fish production at Service facilities and the new technologies that can be employed to increase production and quality.*
- ⇒ *Describe the Service Fish Genetics Policy.*
- ⇒ *Develop hatchery evaluation and wild stock evaluation programs.*
- ⇒ *Identify and outline corrective measures required to solve passage problems at various blocks to fish migration.*
- ⇒ *Apply fish health policies including the Service Policy and various Watershed Compacts.*
- ⇒ *Discuss the role of hatchery manager, management biologist, fish pathologist, associate manager, ARD, RD, and Director when fish disease outbreaks occur.*
- ⇒ *Apply basic fundamentals of scientific experimental design.*



# Application

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## GENERAL INSTRUCTIONS:

Please complete a separate application for each course. Applications must be received by the Academy no later than eight weeks prior to the scheduled starting date of the course. See "Year at a Glance" for closing dates. Applicants from the private sector must send payment with application. **DO NOT SEND CASH.** Checks or money orders should be made payable to the U.S. Fish and Wildlife Service. Mail applications to: Superintendent, Fisheries Academy, USFWS, Rt. 3, Box 49, Kearneysville, WV 25430.

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## COURSE INFORMATION:

Course # \_\_\_\_\_ Title \_\_\_\_\_

Date \_\_\_\_\_ Location \_\_\_\_\_

## APPLICANT INFORMATION: (business address/telephone preferred)

Name \_\_\_\_\_ Social Security Number\* \_\_\_\_\_

Business/Agency \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone ( ) \_\_\_\_\_ (business) ( ) \_\_\_\_\_ (home)

**CURRENT EMPLOYMENT STATUS:** Position: \_\_\_\_\_

\_\_\_\_ Federal      \_\_\_\_ Student      \_\_\_\_ Consultant      \_\_\_\_ Tribal

\_\_\_\_ State      \_\_\_\_ Private      \_\_\_\_ Other Public Agency

## BILLING INFORMATION:

Agency Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Attention \_\_\_\_\_ Telephone ( ) \_\_\_\_\_

\*Providing your SSN is voluntary. It will be used internally to verify training course attendance statistics. It will not be disclosed to other sources.

## YEAR AT A GLANCE

COURSE NUMBER	COURSE TITLE	DATE LOCATION	COURSE LEADER	CEU's	COST	CLOSING DATE
2101	Principles & Techniques of Electrofishing	Oct. 16-18, 1991 Concord, NH	TBA	2.4	\$275	09/04/91
2101	Principles & Techniques of Electrofishing	Oct. 21-23, 1991 Little Rock, AR	TBA	2.4	\$275	09/04/91
4204	Introduction to USFWS Fisheries Program (Module I)	Oct. 21-Nov. 1, 1991 Leetown, WV	Horsch	N/A	N/A	TBA
5110	The Advocacy Role Of Managers	Nov. 4-8, 1991 Minneapolis, MN	Lam	3.6	\$350	09/09/91
1102	Fish Genetics and Broodstock Management	Nov. 18-22, 1991 Syracuse, NY	TBA	3.6	\$350	09/23/91
5101	Instructor Training	Dec. 2-6, 1991 Atlanta, GA	Lam	3.6	N/A	10/07/91
1201	Coldwater Fish Culture	Dec. 2-13, 1991 Sacramento, CA	Horsch	7.6	\$600	10/07/91
4204	Introduction to USFWS Fisheries Program (Module I)	Jan. 6-17, 1992 Leetown, WV	Horsch	N/A	N/A	TBA
2110	Fish Passageways & Diversion Structures	Jan. 13-17, 1992 Yakima, WA	TBA	3.6	\$350	11/18/91
5106	Biostatistics	Jan. 27-31, 1992 Albuquerque, NM	Lam	3.6	\$350	12/02/91
1102	Fish Genetics and Broodstock Management	Feb. 3-7, 1992 Norman, OK	TBA	3.6	\$350	12/09/91
1104	Introduction to Fish Health	Feb. 3-7, 1992 LaCrosse, WI	Nelson	3.6	\$350	12/09/91

# YEAR AT A GLANCE

COURSE NUMBER	COURSE TITLE	DATE LOCATION	COURSE LEADER	CEU's	COST	CLOSING DATE
5101	Instructor Training	Feb. 10-14, 1992 Phoenix, AZ	Lam	3.6	N/A	12/16/91
2116	Fish Tracking Techniques	Mar. 2-6, 1992 Albuquerque, NM	TBA	3.6	\$350	01/06/92
1201	Coldwater Fish Culture	Mar. 2-13, 1992 Bozeman, MT	Horsch	7.6	\$600	01/06/92
1130	Basic Biology for Technicians	Apr. 6-10, 1992 Marquette, MI	Lam	3.6	\$350	02/10/92
2118	Fish & Wildlife Management Planning	Apr. 6-10, 1992 Denver, CO	TBA	3.6	\$350	02/10/92
2110	Fish Passageways & Diversion Structures	Apr. 27-May 1, 1992 Turners Falls, MA	TBA	3.6	\$350	03/02/92
4305	U.S. Fish and Wildlife Service Fisheries Operations (Module II)	Apr. 27-May 15, 1992 Leetown, WV	Horsch	N/A	N/A	TBA
1104	Introduction to Fish Health	Jun. 1-5, 1992 Syracuse, NY	Horsch	3.6	\$350	04/06/92
4102	Piscicide Applications	Jun. 8-12, 1992 Boise, ID	TBA	3.6	\$350	04/13/92
1104	Introduction to Fish Health	Jun. 15-19, 1992 Olympia, WA	Brunson	3.6	\$350	04/20/92
1103	Warmwater Fish Culture	Jul. 22-26, 1992 Orangeburg, SC	Horsch	3.6	\$350	04/27/92
4305	U.S. Fish and Wildlife Service Fisheries Operations (Module II)	Aug. 10-28, 1992 Leetown, WV	Horsch	N/A	N/A	TBA

# Other Academy Courses

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The following courses will not be offered during FY 1992. However, your organization can arrange for any of these courses to be offered on a cost reimbursable basis, as described on page 19. Contact the Superintendent for further details.

*Course #1107*  
**COOLWATER FISH CULTURE**

Participants learn the basic principles, concepts and techniques employed in the production of coolwater fishes.

*Course #3101*  
**HYDRAULICS & HYDROLOGY FOR FISHERY BIOLOGISTS**

Fishery biologists are concerned with determining the effects of habitat alteration on the aquatic biota. Application of fundamental hydraulics and hydrology will assist them in predicting the impact of various environmental modifications.

*Course #5107*  
**MANAGING PUBLIC AWARENESS PROGRAMS ON FIELD STATIONS**

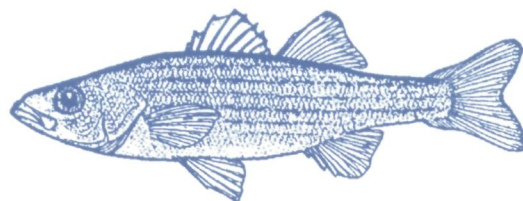
This course provides training in the management of public awareness and field station outreach programs aimed toward improved community-station relationships and increased local support for the Service's Fisheries or Wildlife Programs. The course can be adapted for other groups or businesses that deal with visitors and public outreach programs.

*Course #1122*  
**SELECTED TOPICS FOR FISH HATCHERY MANAGERS-- COLDWATER FISH CULTURE**

Participants discuss state-of-the-art fish cultural information with experts in the field. The course will consist of several topics selected for current interest.

*Course #1125*  
**STRIPED BASS CULTURE**

This basic course covers the principles, concepts and techniques used in striped bass and hybrid bass culture. Topics include broodstock collection and rearing, care and spawning of broodstock, egg care and hatching, feeds and feeding, physiology and stress, transportation and stocking, diseases and their treatments, tagging and marking, water quality, and pond maintenance.



*Course #4101*  
**CHEMICALS USED IN HATCHERY MANAGEMENT PRACTICES**

This one-week course familiarizes fishery biologists, technicians and management personnel with the chemicals (pesticides, insecticides, herbicides, fungicides, drugs and medications) currently used in fish husbandry and fishery management.

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*Course #1127*

***CULTURE AND MANAGEMENT OF STURGEON AND PADDLEFISH***

This course, designed for hatchery technicians and others involved in the production and management of sturgeon and paddlefish, will familiarize participants with the basic principles, concepts and techniques employed in sturgeon and paddlefish husbandry and management.

*Course #2102*

***FISHERY MANAGEMENT OF SMALL IMPOUNDMENTS***

This one-week course describes the principles involved in managing impoundments of 50 acres or less. The participants review past and future management strategies.

*Course #1128*

***ZOOPLANKTON SAMPLING AND ANALYSIS FOR INCREASED FISH PRODUCTION***

This two day course teaches the identification of major zooplankton groups that serve as food for fry of fish species such as striped bass and red drum. Through intensive hands-on experience, students learn proper zooplankton collecting techniques and several methods of sample preservation and counting. Instructors also discuss the relationship between zooplankton population numbers and fish production as well as things that can be done to influence zooplankton numbers and maximize your production.

*Course #1123*

***SELECTED TOPICS FOR FISH HATCHERY MANAGERS-- WARMWATER FISH CULTURE***

This two to five-day course provides participants with state-of-the-art fish cultural information. The course will consist of several topics selected for current interest. Topics and course duration can be modified to meet the training needs of the target audience.

*Course # 1131*

***WATER TREATMENT PROCESSES FOR HATCHERIES***

This course is designed to familiarize fisheries personnel with the technology used in the treatment of water for safe hatchery use and discharge in compliance with NPDES standards. Oxygen injection, ozonation, biofiltration, disease treatment delivery systems, and fish diet manipulation are among the topics covered.

*Course #2117*

***LARVAL FISH IDENTIFICATION***

This three day course is designed to improve larval fish sampling programs. In this course, participants will gain a basic understanding of larval fish ecology, the value of larval fish studies in fisheries research and management, and a working knowledge of larval fish sampling design, techniques, and gear.

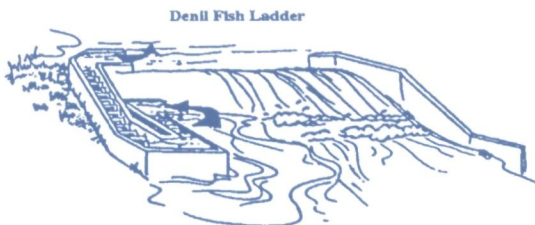
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*Course # 2115*  
**ISSUES IN FISHERIES RESOURCES  
MANAGEMENT**

This two day seminar is designed for people in upper level management (GS/GM-13/15, if Civil Service) who are responsible for major fisheries management decisions. The seminars address a subject area of current interest and with great or potentially great impact on the nation's fisheries resources. Seminar participants are provided with an overview of the problem, basic information that they will need in order to reach a sound management decision, an opportunity to consult with experts in the field, and time to discuss the impact of different management decisions with their peers.

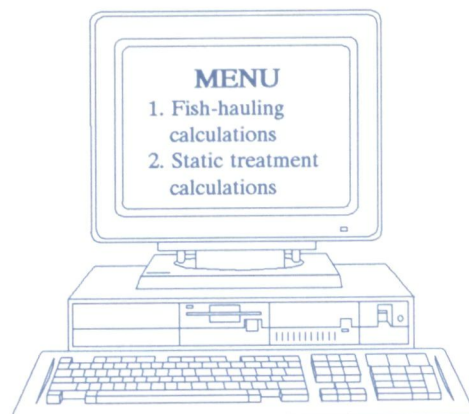
*Course # 1208*  
**PACIFIC SALMON CULTURE**

This basic course covers the principles, concepts and techniques employed in salmon culture. Topics include broodstock capture methods, selection, care and spawning; egg care and hatching; feeds and feeding; physiology and stress; diseases and their treatments; smoltification; tagging and marking; management of wild stocks; and other aspects of salmon culture.



*Course #1114*  
**COMPUTERS AS A TOOL IN  
FISHERIES AND/OR HATCHERY  
MANAGEMENT**

Both of these courses are designed for people already familiar with the basics of MS-DOS, spreadsheets, databases, statistical packages, and word processing. Participants will learn how to use existing commercial software for applications to hatchery or fisheries management problems. The courses will also cover available software that has been designed specifically for fisheries or hatchery applications, and list sources of this software. These are not introductory computer courses.



*Course #1110*  
**GAS SUPERSATURATION IN  
AQUATIC SYSTEMS**

This course acquaints fishery biologists with the basic concepts of gas supersaturation. Participants learn to use the saturometer and calculate percentage of total gases and nitrogen.

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*Course #1111*  
**THE USE OF HEMATOLOGICAL  
TECHNIQUES FOR THE  
PRESUMPTIVE DIAGNOSIS OF IHN  
VIRUS DISEASE**

This two day course familiarizes participants with certain hematological techniques that are useful for the presumptive diagnosis of IHN virus disease.

*Course # 1129*  
**INTERMEDIATE FISH HEALTH:  
(Various Topics)**

This series of courses is an intermediate level program for experience field personnel. It is designed to provide an in-depth look at select viral, bacterial, and parasitic fish diseases.



# One Day Courses

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The following is a list of one-day courses that are designed to be offered as part of, or in conjunction with, a scheduled meeting, conference or training program. They will be presented on a cost reimbursable basis.

*Course #1109*  
**FEEDS AND FEEDING**

This basic course covers various types of feed (pellets, moist, floating), feed composition, ingredients, feeding rate calculations, storage methods, and automatic feeders.

*Course #1113*  
**AQUATIC WEED CONTROL FOR HATCHERIES**

Students identify common pond weeds and algae, and learn methods for their control by mechanical, manual and chemical means. Students also learn a method for calculating pond volumes and for calculating dosages for treating aquatic weeds.

*Course #3104*  
**WATER QUALITY**

This course concentrates on those aspects of water quality that regulate the stability of water for holding and rearing fish. The information can be altered to address either coldwater or warmwater fish.

*Course #1112*  
**FISH TRANSPORTATION**

Transportation methods and equipment are discussed, along with the chemicals used as anesthetics and disease prophylactics, and the treatment levels used in transporting eggs, fry and adult fish.

*Course #1115*  
**AERATION/DEGASSIFICATION**

This course covers the various methods and equipment used in pond and raceway aeration, as well as methods for degassing water supersaturated with nitrogen.

*Course #1116*  
**FISH DISEASES**

Students are given in-depth coverage of two or three bacterial diseases prevalent in warm or cold water, depending on the interest of the group.

*Course #1117*  
**BAITFISH CULTURE**

This course covers various cultural methods used in rearing baitfish, both in a pond situation and in a small backyard operation. Diseases, feeding rates, and transportation will be covered.

# Audio-Visual Training Courses

The following tapes are available on VHS or 3/4" videotape. They may be ordered from the Academy using the order form found on page 41.

## ***FISH MARKING: PRINCIPLES & TECHNIQUES***

**Time:** 43.5 minutes

**Cost:** \$30.00

This program examines 37 ways to mark fish and assists fishery biologists in selecting the best method for marking. In addition to introducing fishery biologists to fish marking techniques, the program is ideally suited for college ichthyology or fisheries related courses and can provide background information for people from other fields.

The program divides the marking techniques into three general categories--biological, chemical, and physical--and discusses the advantages and disadvantages of each. Examples are also given on ways to mark clams, crustaceans, and turtles. Also included are sections on planning and conducting marking studies, and interpretation of retention and recovery rates.

## ***PREPARING FISH FOR SHIPMENT TO DIAGNOSTIC STATIONS***

**Time:** 16.5 minutes

**Cost:** \$30.00

This program examines four ways to successfully prepare fish for shipment to diagnostic laboratories. The information is presented in a "cookbook" fashion, using photographs of shipping procedures to enable the viewer to follow along step by step. The program is highly recommended for anyone involved in sending or receiving diseased fish samples.

## ***MEASURING POND VOLUME***

**Time:** 16.5 minutes

**Cost:** \$30.00

This program describes how to measure pond and tank volumes. The approach is simple, graphically illustrated and presented in a manner that is easily understood by the nonprofessional fish farmer. It's an excellent program for people who need to know volumes before applying chemicals for weed or disease control, or to determine fish stocking densities.



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## *CATFISH CULTURE*

Time: 43 minutes

Cost: \$30.00

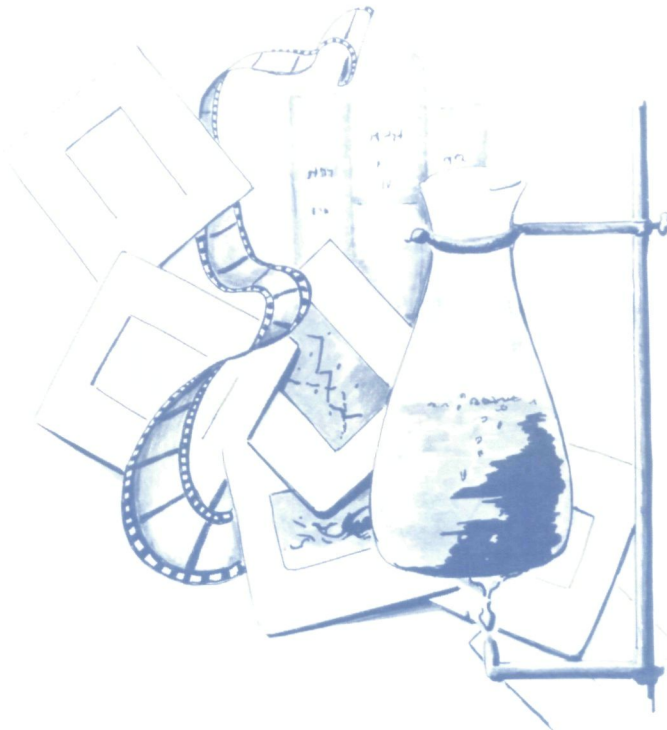
The currently acceptable methods of catfish culture are described in this "how-to-do-it" presentation, which graphically portrays topics such as the care and feeding of broodstock, the preparation of spawning facilities, harvesting, and transportation. New aquaculturists will find the information extremely helpful in getting started, and experienced fish farmers will find that it provides an excellent review of basic cultural practices.

## *ZOOPLANKTON SAMPLING TECHNIQUES*

Time: 30 minutes

Cost: \$30.00

Zooplankton are an important initial food source for fry of many fish species. Sampling the zooplankton population in rearing ponds is important to determine the optimal time for stocking fish into your rearing pond. This program shows the various methods used for sampling zooplankton populations and discusses their relative advantages and disadvantages. It also shows how to preserve your zooplankton sample for later analysis, calculate the number of organisms per liter, identify the organisms present, and use this information to properly time the stocking of your rearing ponds.



# Videotape Order Blank ---

To order, send order blank and payment to: Fisheries Academy, Rt. 3, Box 49, Kearneysville, WV 25430. **NOTE: DO NOT SEND CASH.** Checks or money orders should be made payable to the U.S. Fish and Wildlife Service.

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## Order Form

	Quantity	Price	Total
Fish Marking	_____	\$ _____	\$ _____
Preparing Fish For Shipment	_____	_____	_____
Measuring Pond Volume	_____	_____	_____
Catfish Culture	_____	_____	_____
Zooplankton Sampling Techniques	_____	_____	_____

(Check One: \_\_\_\_\_ VHS format or \_\_\_\_\_ 3/4" format)

Total number of programs ordered \_\_\_\_\_

Total amount enclosed \$ \_\_\_\_\_. **(DO NOT SEND CASH)**

Name \_\_\_\_\_

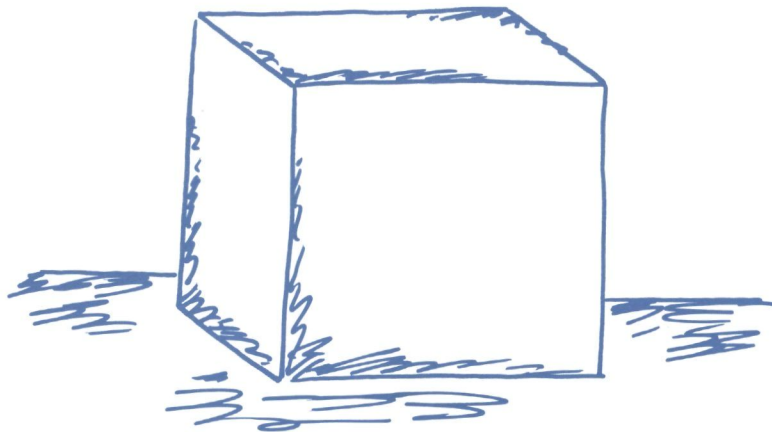
Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Telephone \_\_\_\_\_

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*LAW*



*ENFORCEMENT*

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# Law Enforcement

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The Federal Law Enforcement Center (FLETC) in Glynco, Georgia, is managed by the Department of the Treasury and serves as an interagency law enforcement training facility for approximately 60 Federal organizations, including the

Service. The Service retains a small resident staff of law enforcement personnel who serve as FLETC instructors and train Service law enforcement and refuge officers.

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## Course Description, FY 1992

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### *UNDERCOVER OPERATIONS SEMINAR*

**DATE AND LOCATION:** As announced (10 class days); Glynco, Georgia

**CEU's:** 7.6

**AUDIENCE DESIGNED FOR:**

Enrollment is limited to officers from state and foreign wildlife law enforcement agencies, and other U.S. Federal agencies (i.e. Park Service, Forest Service, BLM,...).

This course is designed to train wildlife law enforcement officers in the purposes and objectives of undercover investigations, as well as enable the officers to identify various types of covert operations. The course incorporates lectures, role-playing situations, and directed discussions. Instructors and students are encouraged to exchange information about their own experiences, thereby improving their individual techniques and identifying solutions to

problems and alternatives to actions. The officers receive information from technicians about the equipment useful in undercover operations and also receive instruction about the legal issues which surface throughout undercover operations.

**Objectives:**

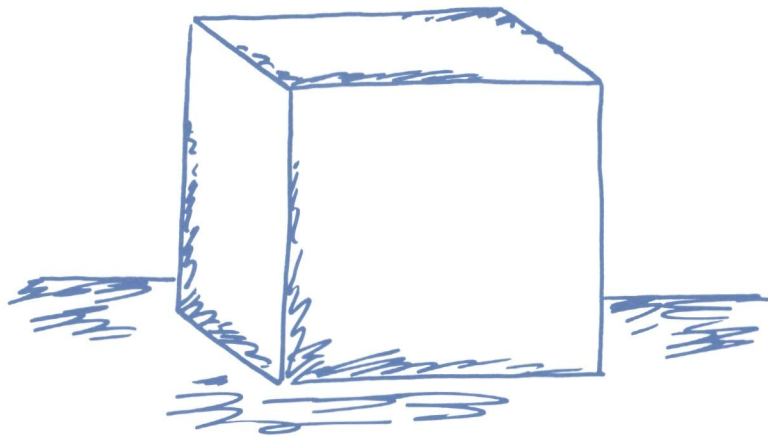
Upon completion of the course, officers will be able to:

- ⇒ *Name important considerations in the establishment of their undercover identities.*
- ⇒ *Identify the numerous areas in which preparation is necessary before operations can safely begin.*
- ⇒ *Discuss methods and effects of terminating undercover operations.*



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*NATIONAL ECOLOGY*



*RESEARCH CENTER*

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# National Ecology Research Center

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Natural resource biologists and managers need information and techniques to help them protect and enhance our Nation's resources. The National Ecology Research Center, located in Fort Collins, Colorado, helps to meet this need by offering a series of courses designed to provide current information on technologies for natural resource management. The courses are co-sponsored with Colorado State University and are offered on a cost-reimbursable basis to Service employees as well as other

Federal and State agencies, universities, and private organizations. The courses are categorized into four functional areas: Habitat Evaluation Procedures (HEP), Instream Flow Incremental Methodology (IFIM), Wetlands Training, and Data Base Management.



The Habitat Evaluation Procedures courses pertain to a state-of-the-art technique for impact assessment and resource management in both aquatic and terrestrial systems. The Instream Flow Incremental Methodology courses describe the various components of a riverine system simulation and an impact assessment methodology for resource management. The Wetlands courses relate to wetland classification, creation / restoration, and plant species, and the Data

Base management course contains information on a data management and reporting system called QUICKTEXT. All courses described in this catalog will be offered from October 1991 through September 1992.

# National Ecology Research Center Courses

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## How to Apply for a Course

To register for any of these courses, please contact Colorado State University:

Henrietta Cullinane  
Office of Conference Services  
Colorado State University  
Fort Collins, CO 80523  
(303) 491-7767

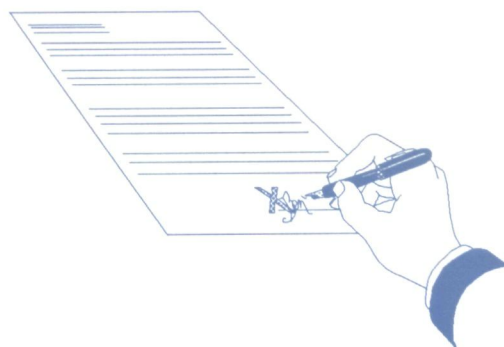
Registration should include the name, date, and location of the desired course as well as indication of the preferred method for payment. Please make all remittance payable to Colorado State University. Training forms or purchase orders should identify the Office of Conference Services, Colorado State University as vendor/contractor. Course confirmation and information will be sent with details on meeting location, lodging, and other course-related information. **IN THE EVENT THAT A MINIMUM NUMBER OF PARTICIPANTS IS NOT REGISTERED WITHIN TWO WEEKS OF THE COURSE DATE, THE COURSE MAY BE CANCELED.** Registrations should be made by phone or mail at the earliest possible date, as class size is limited.

There will be no cancellation fee assessed for registrations canceled two or more weeks prior to the course starting date. Thereafter, A \$50 **CANCELLATION FEE WILL BE ASSESSED. NO REFUNDS WILL BE MADE FOR ANY CANCELLATION**

**RECEIVED LESS THAN SIX WORKING DAYS BEFORE THE COURSE STARTING DATE.**

**RETURNED CHECKS WILL BE ASSESSED A \$15 FEE.**

Colorado State University is an equal opportunity/affirmative action institution and complies with all federal and Colorado state laws, regulations, and executive orders regarding affirmative action requirements in all programs. The Office of Equal Opportunity is located in Room 314, Student Services Building. In order to assist Colorado State University in meeting its affirmative action responsibilities, ethnic minorities, women, and other protected class members are encouraged to apply and to so identify themselves.



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## Additional Course Information

### HABITAT EVALUATION PROCEDURES:

U.S. FISH AND WILDLIFE SERVICE  
TERRESTRIAL ECOSYSTEMS  
BRANCH  
4512 McMurray Avenue  
Fort Collins, Colorado 80525-3400  
(303) 226-9311, FTS 323-5311

### INSTREAM FLOW:

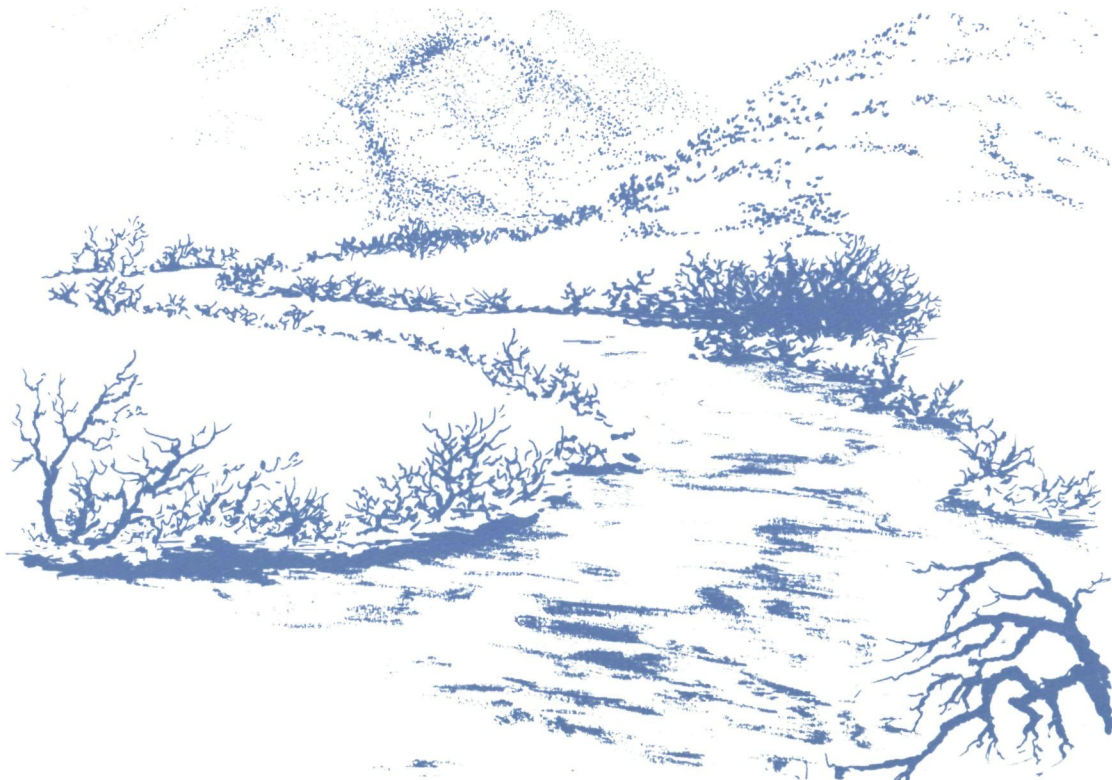
U.S. FISH AND WILDLIFE SERVICE  
RIVERINE AND WETLAND  
ECOSYSTEMS BRANCH  
4512 McMurray Avenue  
Fort Collins, Colorado 80525-3400  
(303) 226-9331, FTS 323-5331

### WETLANDS TRAINING:

U.S. FISH AND WILDLIFE SERVICE  
RIVERINE AND WETLAND  
ECOSYSTEMS BRANCH  
4512 McMurray Avenue  
Fort Collins, Colorado 80525-3400  
(303) 226-9390, FTS 323-5390

### DATA BASE MANAGEMENT:

U.S. FISH AND WILDLIFE SERVICE  
TERRESTRIAL ECOSYSTEMS  
BRANCH  
4512 McMurray Avenue  
Fort Collins, Colorado 80525-3400  
(303) 226-9337, FTS 323-5337



# Course Descriptions, FY 1992

## Habitat Evaluation Procedures

### Classroom Courses:

*Course #NR 561*  
**HABITAT EVALUATION PROCEDURES**

### **DATE AND LOCATION:**

Oct. 21-25, 1991: Harrisburg, PA  
Mar. 9-13, 1992; Jacksonville, FL  
Apr. 6-10, 1992; Seattle, WA  
Jul. 13-17, 1992; Fort Collins, CO

**TUITION:** \$520 (+\$56 if taken for graduate credit)

This 38-hour course is designed to introduce, describe, and demonstrate the Habitat Evaluation Procedures (HEP), a state-of-the-art technique for impact assessment and resource management. Emphasis is placed on the use of Habitat Suitability Index models to assist in problem analysis, development of management plans, and decision-making. This course is intended for: project leaders and others responsible for field work and data interpretation of water resource projects, permits, license applications, and environmental assessments/impact statements; wildlife resource managers, refuge managers, and personnel involved with development and implementation of wildlife, forest, or overall habitat management plans; and those involved with reviewing or making recommendations concerning

environmental assessments, habitat management, and mitigation. This course can be taken for two semester hours of graduate credit through Colorado State University.

Class Size: 30 maximum

Prerequisite: none



*Course #HEP 150*  
**EXECUTIVE HEP BRIEFING**

### **DATE AND LOCATION:**

Mar. 25-26, 1992; Las Vegas, NV  
Sept. 2-3, 1992; Concord, NH

**TUITION:** \$220

This 16-hour course covers the principles, concepts, and assumptions of HEP and their relation to the decision-making process. Emphasis is given to the use of HEP in the planning process and types of studies where it is applicable. It is intended for: project, study, and program managers; field office supervisors; state conservationists; regional foresters; refuge managers; and district or regional staff responsible for making recommendations on decisions regarding natural resources (i.e., impact assessment or management).

Class size: 25 maximum

Prerequisite: none

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*Course #HEP 300*  
**USING HEP AND HSI SOFTWARE**

**DATE AND LOCATION:**

Jul. 20-21, 1992; Fort Collins, CO

**TUITION:** \$300

This 16-hour course is designed to demonstrate and provide "hands-on" training in the use of the HEP and HSI software systems and to develop skills in data entry, file modification, and file management and analysis using microcomputers. The course is intended for: those persons responsible for designing and processing field data from a HEP study; those responsible for building or modifying HSI models; and those directly or indirectly involved in analyzing, interpreting, using, or defending the results of a HEP study. The course does not require computer background or a knowledge of programming. Software and user's manuals are provided.

Class size: 15 maximum

Prerequisite: NR 561 or permission of instructor.

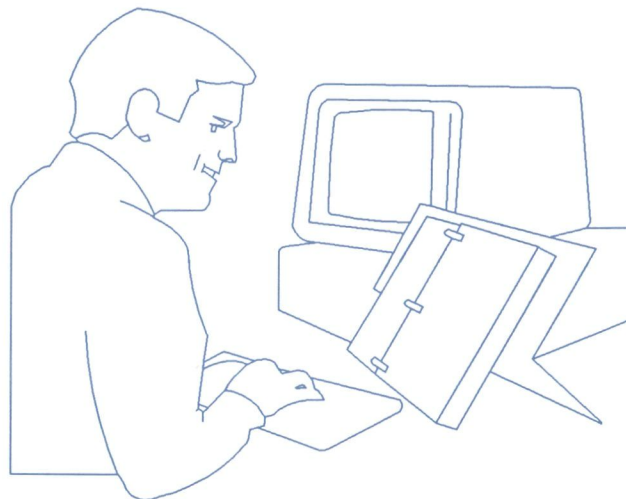
*Course #HEP 400*  
**ADVANCED RECREATION  
ECONOMIC TECHNIQUES**

**DATE AND LOCATION:**

Aug. 18-20, 1992; Fort Collins, CO

**TUITION:** \$330

This 24-hour course is designed to teach state-of-the-art techniques in recreation economics. This course is designed for economists, recreation planners, wildlife biologists, and other specialists responsible for participating in benefit-cost or other economic studies. The course includes a presentation of recreation evaluations and demand estimating methods such as Travel Cost Method and Contingent Value Method. Workbook exercises allow participants to estimate statistically and apply the two methods to typical projects. Case studies of small boat marinas, beach recreation, reservoir drawdown, and forest recreation are used to illustrate the widespread applicability of the methods. Class size: 20 maximum  
Prerequisite: none



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*Course #HEP 410*  
**HEP REFRESHER**

**DATE AND LOCATION:**

Feb. 12-13, 1992; Vero Beach, FL  
May 19-20, 1992; Boise, ID  
Aug. 25-26, 1992; Portland, OR

**TUITION:** \$220

This 16-hour course is designed for those who have taken NR 561 but have not used their training or applied HEP in the past 2-3 years. The course will include: a comprehensive summary of HEP; recent modifications and innovations in the area of modeling, software, and GIS's; case examples; and data analysis and interpretation. This course is recommended for biologists, resource specialists, and planners who will be involved in HEP studies in the near future or those who completed the HEP course in 1980-1983 and need an update. Class size: 25 maximum  
Prerequisite: NR 561 or permission of instructor

**Correspondence Courses:**

*Course #HEP 500 HEP Software*  
**HABITAT EVALUATION  
PROCEDURES (HEP) ACCOUNTING  
PROGRAM**

**TUITION:** \$50

The HEP accounting program uses the area of available habitat and Habitat Suitability Indices (HSI) to compute the values needed to use the Habitat Evaluation Procedures as described in the Ecological Services Manual (ESM 102) and the HEP training course (NR 561). The compiled program

requires two floppy disk drives or a fixed disk and 64 kilobytes of Random Access Memory (RAM).

*Course #HEP 500*  
**HABITAT SUITABILITY INDEX (HSI)  
MODELING SYSTEM**

**TUITION:** \$50

The HSI software is a system of programs that uses mathematical models to compute an HSI value for selected species from field measurements of habitat variables. The development and use of HSI models are described in the Ecological Services Manual (ESM 103) and the HEP training course (NR 561). Micro-HSI requires a fixed disk with at least 1 megabyte of mass data storage and a Microsoft compatible BASIC interpreter, such as BASIC, BASICA, or GWBASIC.



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## Instream Flow

The National Ecology Research Center has been offering instream flow courses since 1977. During that time, the Center has attempted to present an adequate base of knowledge to manage stream flows in a complex arena. The Center has again restructured its instream flow course offerings in response to student comments. This restructuring allows a student to select a package of courses best suited to individual needs. The philosophy of the Center is to strongly encourage everyone to take IF 200 and 201. These Basic Instream Flow Courses (200-level) are essential for any professional involved in instream flow work. The Data Collection, Analysis, and Skill Building Courses (300-level) are intended for those who are planning to conduct or direct IFIM studies. These 300-level courses are important for those who are hands-on data managers or who need to know these analytical techniques. The 400-level, Specialty Courses are for advanced users desiring to become skilled using IFIM in negotiating solutions to complex water management problems. Recommended course groupings for various users are suggested below:

Negotiator	IF200, IF201, IF400
Field Crew Supervisor	IF200, 201, IF305, and IF310 or IF312
Field Crew Member	IF200, IF305
Computer Analyst	IF200, IF310, IF312
Project Leader	IF200, IF201, IF305, and IF310 or IF312
Technical Policy Maker	IF200, IF201
General Policy Maker	IF100
Contract Officer	IF200, IF201, and the 300 level course that represents the skills to be contracted for.



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**Basic Instream Flow Courses:**

*Course # IF100*  
**EXECUTIVE IFIM BRIEFING**

**DATE AND LOCATION:**

TBA; Philadelphia, PA

**TUITION:** \$200

This 16-hour course covers the principles, concepts, limitations, and underlying assumptions of the Instream Flow Incremental Methodology. Emphasis is given to the use of IFIM in the water management decision-making process and the type of water development problems for which it is most applicable. It is intended for program managers, field office supervisors, state conservationists, regional managers, and staff responsible for making recommendations on the potential use of IFIM in impact assessment, licensing, or management issues.

Class size: 20-40 participants

Prerequisite: none

*Course #IF 200*  
**DESIGNING AND NEGOTIATING STUDIES USING IFIM**

**DATE AND LOCATION:**

Feb. 3-7, 1992; Madison, WI

**TUITION:** \$500

This 36-hour course provides training in the design and conceptual principles of Instream Flow Incremental Methodology (IFIM) applications. Its purpose is threefold: (1) it gives the professional the necessary background, application logic,

and specific skills to decide when, where, and how to use IFIM; (2) it gives the student the ability to participate competently in project scoping, study design, and negotiating objectives aimed toward problem solving where IFIM is used; introduces the basic model outputs; and explains the use of IFIM products; (3) it gives the student an understanding of the skills and training necessary for proficiency in IFIM. After taking the course, the participant should be able to direct or conduct project scoping, choose the appropriate mix of methods, prepare correct study design, understand habitat outputs based on IFIM and identify application logic and documentation needs for common applications. This course is highly recommended for persons who plan to review the plan of study and recommendations of others. Materials provided include a guide to stream habitat analysis and software for problem identification. IF200 is prerequisite to IF201, 305, 310, and 312. Class size: 40 maximum  
Prerequisite: none

*Course #IF 201*  
**PROBLEM ANALYSIS AND NEGOTIATING SOLUTIONS USING THE IFIM MODEL OUTPUTS**

**DATE AND LOCATION:**

Dec. 9-13, 1991; Minneapolis, MN

May 11-15, 1992; Fort Collins, CO

**TUITION:** \$550

This 40-hour course provides opportunities for performing complete problem analyses using the tools of IFIM. The course revolves around the primary uses of IFIM: (1) project

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impact analyses; and (2) negotiated operating rules for water management projects. A variety of problem solving techniques related to water management and fisheries biology are presented. New concepts are introduced by lecture and reinforced by a structured problem and follow-up discussion. Subjects include: problem identification; strategy-building using IFIM; interpretation of IFIM results; documentation of logic and assumptions; and the preparation and evaluation of data for recommendations and negotiations. The course is recommended for project leaders and others who are responsible for providing analyses and recommendations resulting from application of IFIM. Time series library software and documentation are provided.

Class size: 30 maximum

Prerequisite: IF 200

**Data Collection, Analysis, And Skill Building Courses:**

*Course #IF 300*

***EXPERT WITNESS SEMINAR***

**DATE AND LOCATION:**

Dec. 5-6, 1991; Merrimack, NH

Sept. 17-18, 1992; Denver, CO

**TUITION:** \$200

This 16-hour course is designed to teach natural resource professionals how to effectively work with lawyers. Led by an attorney who has extensive experience working with expert consultants, this course clarifies the concepts of the theory of the case, discovery, deposition, trial preparation, direct- and cross-examination. Wildlife and other natural resource professionals may be called

upon to serve as witnesses, litigation consultants, expert witnesses, or clients. The seminar explores each of these roles and offers concrete suggestions toward maximizing the effectiveness of the litigation team. Intended for people with limited trial experience, this course provides a road map of the legal process and offers suggestions for making the expert's participation both effective and less threatening. The Seminar is presented as a two-day course that combines lectures and examples to clarify concepts with direct, hands-on testimony experience for the participants.

Class size: 25-30 participants

Prerequisite: none

*Course #IF 305*

***FIELD TECHNIQUES FOR STREAM HABITAT ANALYSIS***

**DATE AND LOCATION:**

Aug. 24-28, 1992; Pingree Park, CO

Sept. 21-25, 1992; Ann Arbor, MI

**TUITION:** \$500

This 36-hour course provides training in field measurement techniques for collecting data required for use in the Physical Habitat Simulation System (PHABSIM) component of the Instream Flow Incremental Methodology (IFIM). Taught by NERC staff or experienced practitioners of the IFIM, the course includes both classroom and field application. The course is designed for project leaders and others primarily responsible for collecting or reviewing field measurements. **NOTE:** Introductory concepts, project scoping, river segmentation, study reach and site selection, and the uses of IFIM are covered in IF200. IF305 concentrates on

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defining the bounds of study sites, locating transects for measurement of hydraulic and habitat variables, and data collection. The course includes: (1) the conceptual linkages among field data, species criteria, hydrology, and hydraulic simulation within the PHABSIM system model; (2) field data needs, differences, compatibilities, and compliments of the various hydraulic models; (3) the basic concepts and training in locating and establishing single and multiple transect study sites; (4) the concepts of the field measurement process and training in the use of surveying and flow measurement instruments; (5) training in use of cover and substrate codes; (6) training in collecting data and compiling a complete set of field notes by measuring a multiple-cross-section stream reach; and (7) training in organizing, checking, and reducing field data for processing through the PHABSIM and temperature models. Materials provided include a field technique manual and numerous handouts.

Class size: 24 maximum

Prerequisite: IF 200

*Course #IF 310*  
**USING THE COMPUTER BASED  
PHYSICAL HABITAT SIMULATION  
SYSTEM (PHABSIM)**

**DATE AND LOCATION:**

Apr. 13-17, 1992; Fort Collins, CO

Sept. 14-18, 1992; Logan, UT

**TUITION:** \$550

This 40-hour course provides "hands-on" training in use of the library of computer programs in the PHABSIM system. Activities are divided between morning lecture sessions and supervised afternoon

exercises on the computer. This course is intended for: persons responsible for processing field data through PHABSIM system models; project leaders and others primarily responsible for the field measurements required of a complete stream habitat analysis; and those responsible for quality control, or those directly or indirectly responsible for analyzing, interpreting, and defending the results of a study. Introductory concepts and use of IFIM are not covered.

Materials provided include the software and documentation for the PHABSIM system, detailed problem examples, and a primer on computer usage. Each class is limited to 20 students who are divided into groups to give everyone working experience with the computer. No prior computer experience is necessary.

Class size: 20 maximum

Prerequisite: IF 200 and 201

*Course #IF 312*  
**STREAM NETWORK TEMPERATURE  
MODEL (SNTEMP)**

**DATE AND LOCATION:**

Jan. 14-17, 1992; Fort Collins, CO

**TUITION:** \$550

This 40-hour course concentrates on the theory and application of water temperature modeling. Over the five days, course participants will develop a knowledge of stream geometry, hydrology, and meteorology related to the understanding and prediction of stream temperatures. Topics covered include the models' assumptions and limitations, calibration and verification, trouble shooting, field data collection, parameter estimation, handling missing data, quality control, and linkage to

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other IFIM programs. Small group, hands-on exercises are used to reinforce the concepts learned in lectures. Software and documentation are provided.

Class size: 18 maximum

Prerequisite: IF 200

### Speciality Courses:

The IF400 series consists of special courses for the experienced IFIM user. The focus is on improving user skills and on developing the ability to do specialized analysis using IFIM.

Workshops may be set up for exchange of ideas among researchers or experienced users. With at least 2 months advance notice, specialty courses will be conducted upon request and availability of instructors.

Prerequisite: IF 200 and 201

## Wetlands Training

### Correspondence Courses:

*Course #WE 101*

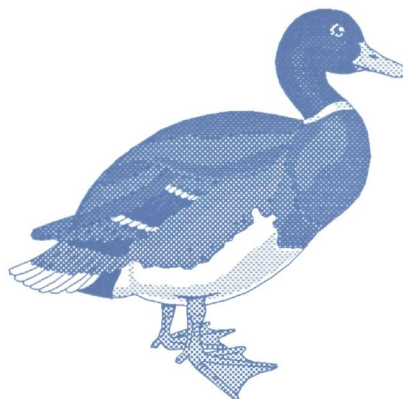
**REGIONAL SUBDIVISIONS OF NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS DATA BASE**

**TUITION:** \$175/regional subdivision

This computer-based tutorial includes: (1) a data base handbook; (2) records containing information about wetland plants occurring in a specific geographic region; and (3) a copy of QUICKTEXT data base management software which can be used to store and manipulate the plant records. The version of QUICKTEXT included here is identical

to that available separately as QT 100. The plant records can be exported from QUICKTEXT to some other data base management system if you prefer. QUICKTEXT runs in a DOS environment. Both the plant records and QUICKTEXT are distributed on 360 kilobyte, DOS-formatted, floppy disks. Information about each wetland plant includes scientific and common names, characteristics and life form, geographical distribution, and wetland indicator status. Together, the 13 regional subdivisions (listed below) contain over 6,700 plant species.

Course	Title
101.1	Northeast
101.2	Southeast
101.3	North Central
101.4	North Plains
101.5	Central Plains
101.6	South Plains
101.7	Southwest
101.8	Intermountain
101.9	Northwest
101.10	California
101.11	Alaska
101.12	Caribbean
101.13	Hawaii



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*Course #WE 102*  
***AN AUTOMATED WETLAND  
CREATION/RESTORATION  
BIBLIOGRAPHIC DATA BASE***

**TUITION:** \$175

This computer-based tutorial is an annotated bibliography of the published literature concerning wetland creation and restoration. Included are: (1) a user's handbook; (2) records containing information about each publication; and (3) a copy of QUICKTEXT data base management software which can be used to store and manipulate the bibliographic records. The version of QUICKTEXT included here is identical to that available separately as QT 100. The bibliographic records can be exported from QUICKTEXT to some other data base management system if you prefer. QUICKTEXT runs in a DOS environment. Both the bibliographic records and QUICKTEXT are distributed on 360 kilobyte, DOS-formatted, floppy disks. Information about each publication includes citation, project description (objectives, actions taken, responses measured, and duration), wetland type and location, significant plant species, and a brief annotation summarizing the publication. Over 1,200 publications are represented in the data base. Depending on demand and resources, annual updates may be available for previous registrants in WE 102. Updates may be obtained by written request at a cost of \$25.

**Classroom Course:**

*Course #WE 200*  
***WETLAND CLASSIFICATION  
TRAINING***

**DATE AND LOCATION:**

Nov. 18-22, 1991; St. Petersburg, FL  
May 4-8, 1992; St. Petersburg, FL

**TUITION:** \$550

This 40-hour course is intended to train participants in the wetland classification system described in Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979) and in the use of National Wetland Inventory maps which are based on this classification system. The wetland classification system, National Wetland Inventory maps and mapping conventions, and the development of National lists of wetland plants and hydric soils are presented through illustrated lectures and field exercises. Introductory and final examinations, as well as short quizzes given throughout the course, are used as teaching tools. This course is not a course in wetland ecology, although this subject plays an important role in the course. All students should have had previous training and work experience in wetland ecology and be currently involved in some form of wetland research, management, or evaluation activity. Registrants may purchase a regional plants list data base for microcomputers (WE 101) for \$75 each.  
Class size: 25 maximum  
Prerequisite: none

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## Data Base Management

Course #QT 100

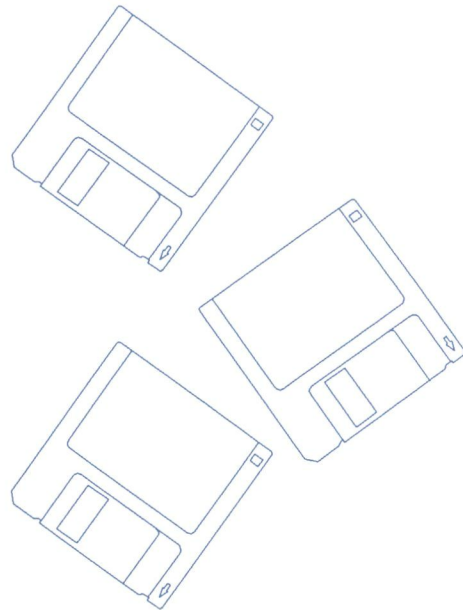
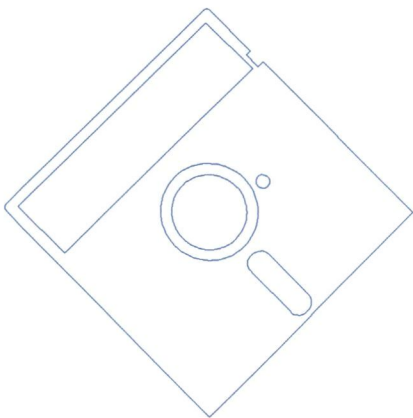
### **DATA BASE MANAGEMENT TECHNIQUES**

**TUITION:** \$50

This course is offered as a self-directed study package; you use your own personal computer and learn at your own pace. It emphasizes information management for fish and wildlife professionals.

Course materials include a fully operational data base management and reporting system called QUICKTEXT packaged with a complete user's manual and sample data bases. QUICKTEXT was chosen because it is specifically designed to handle information characteristic of resource management activities; that is, information having a

high probability to change either in substance or organization. For the person new to data base management, the course will be valuable regardless of what data base management system might be used. Users of other data base management systems will find QUICKTEXT's ability to handle non-routine tasks a refreshing change from the rigidly-structured applications most other systems require. Users of the Service's MANAGE, a mainframe data base management system, are already familiar with the concepts, terms, and data structures used in QUICKTEXT. These users will also learn how to move data bases between mainframes and personal computers to other data base management systems. The course is offered for a wide variety of personal and professional computers using PC-DOS™ or MS-DOS™. It requires 128 kilobytes of memory and at least two floppy disk drives.



# Application

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**PLEASE RETURN REGISTRATION INFORMATION TO:**

National Ecology Research Center Courses  
Office of Conference Services  
Colorado State University  
Fort Collins, CO 80523  
(303) 491-7767

**COURSE INFORMATION:**

Course # \_\_\_\_\_ Title \_\_\_\_\_

Date \_\_\_\_\_ Location \_\_\_\_\_

**APPLICANT INFORMATION: (business address/telephone preferred)**

Name \_\_\_\_\_

Agency \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_

**BILLING INFORMATION:**

Agency Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Attention \_\_\_\_\_ Telephone \_\_\_\_\_

**METHOD OF PAYMENT:**

Training Form/Purchase Order # \_\_\_\_\_

Check \_\_\_\_\_

Credit Card:

MasterCard \_\_\_\_\_ Visa \_\_\_\_\_

Credit Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

**NOTE: A cancellation charge of \$50 will be assessed if cancellation is made after two weeks before the scheduled start of any course.**

## YEAR AT A GLANCE FY 1992

COURSE NUMBER	COURSE TITLE	DATE	LOCATION	TUITION
<b>CLASSROOM COURSES</b>				
NR 561	Habitat Evaluation Procedures (HEP)	Oct. 21-25, 1991	Harrisburg, PA	\$520*
WE 200	Wetland Classification Training	Nov. 18-22, 1991	St. Petersburg, FL	\$550
IF 300	Expert Witness Seminar	Dec. 5-6, 1991	Merrimack, NH	\$200
IF 201	Problem Analysis and Negotiating Solutions Using the IFIM Model Outputs**	Dec. 9-13, 1991	Minneapolis, MN	\$550
IF 312	Stream Network Temperature Model (SNTEMP)	Jan. 14-17, 1992	Fort. Collins, CO	\$550
IF 200	Designing and Negotiating Studies Using IFIM	Feb. 3-7, 1992	Madison, WI	\$500
HEP 410	HEP Refresher	Feb. 12-13, 1992	Vero Beach, FL	\$220
NR 561	Habitat Evaluation Procedures (HEP)	Mar. 9-13, 1992	Jacksonville, FL	\$520*
HEP 150	Executive HEP Briefing	Mar. 25-26, 1992	Las Vegas, NV	\$220
NR 561	Habitat Evaluation Procedures (HEP)	Apr. 6-10, 1992	Seattle, WA	\$520*
IF 310	Using the Computer Based Physical Habitat Simulation System (PHABSIM)**	Apr. 13-17, 1992	Fort Collins, CO	\$550
WE 200	Wetland Classification Training	May 4-8, 1992	St. Petersburg, FL	\$550
IF 201	Problem Analysis and Negotiating Solutions Using the IFIM Model Outputs**	May 11-15, 1992	Fort Collins, CO	\$550
HEP 410	HEP Refresher	May 19-20, 1992	Boise, ID	\$220
NR 561	Habitat Evaluation Procedures (HEP)	Jul. 13-17, 1992	Fort Collins, CO	\$520*

\* Plus optional academic credit of \$56.

\*\*Software and manuals are provided to registrants in these courses.

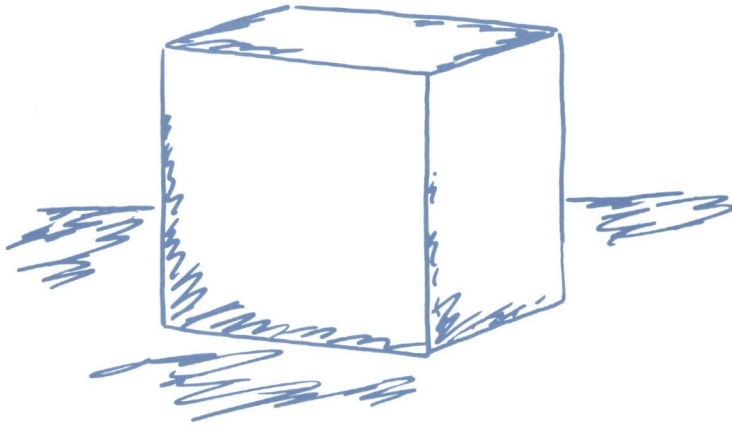
# YEAR AT A GLANCE FY 1992

COURSE NUMBER	COURSE TITLE	DATE	LOCATION	TUITION
<b>CLASSROOM COURSES</b>				
HEP 300	Using HEP/HSI Software**	Jul. 20-21, 1992	Fort Collins, CO	\$300
HEP 400	Advanced Recreation Economic Techniques	Aug. 18-20, 1992	Fort Collins, CO	\$330
IF 305	Field Techniques for Stream Habitat Analysis	Aug. 24-28, 1992	Pingree Park, CO	\$500
HEP 410	HEP Refresher	Aug. 25-26, 1992	Portland, OR	\$220
HEP 150	Executive HEP Briefing	Sept. 2-3, 1992	Concord, NH	\$220
IF 310	Using the Computer Based Physical Habitat Simulation System (PHABSIM)**	Sept. 14-18, 1992	Logan, UT	\$550
IF 300	Expert Witness Seminar	Sept. 17-18, 1992	Denver, CO	\$200
IF 305	Field Techniques for Stream Habitat Analysis	Sept. 21-25, 1992	Ann Arbor, MI	\$500
IF 100	Executive IFIM Briefing	TBA	Philadelphia, PA	\$200
<b>CORRESPONDENCE COURSES</b>				
HEP 500	Habitat Evaluation Procedures (HEP) Accounting Program	N/A	N/A	\$50
HEP 500	Habitat Suitability Index (HSI) Modeling System	N/A	N/A	\$50
QT 100	Data Base Management Techniques	N/A	N/A	\$50
WE 101	Regional Subdivisions of National List of Plant Species that Occur in Wetland Data Base	N/A	N/A	\$175
WE 102	An Automated Wetland Creation/Restoration Bibliographic Data Base	N/A	N/A	\$175

\*\*Software and manuals are provided to registrants in these courses.

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# *REFUGE*



# *MANAGEMENT*

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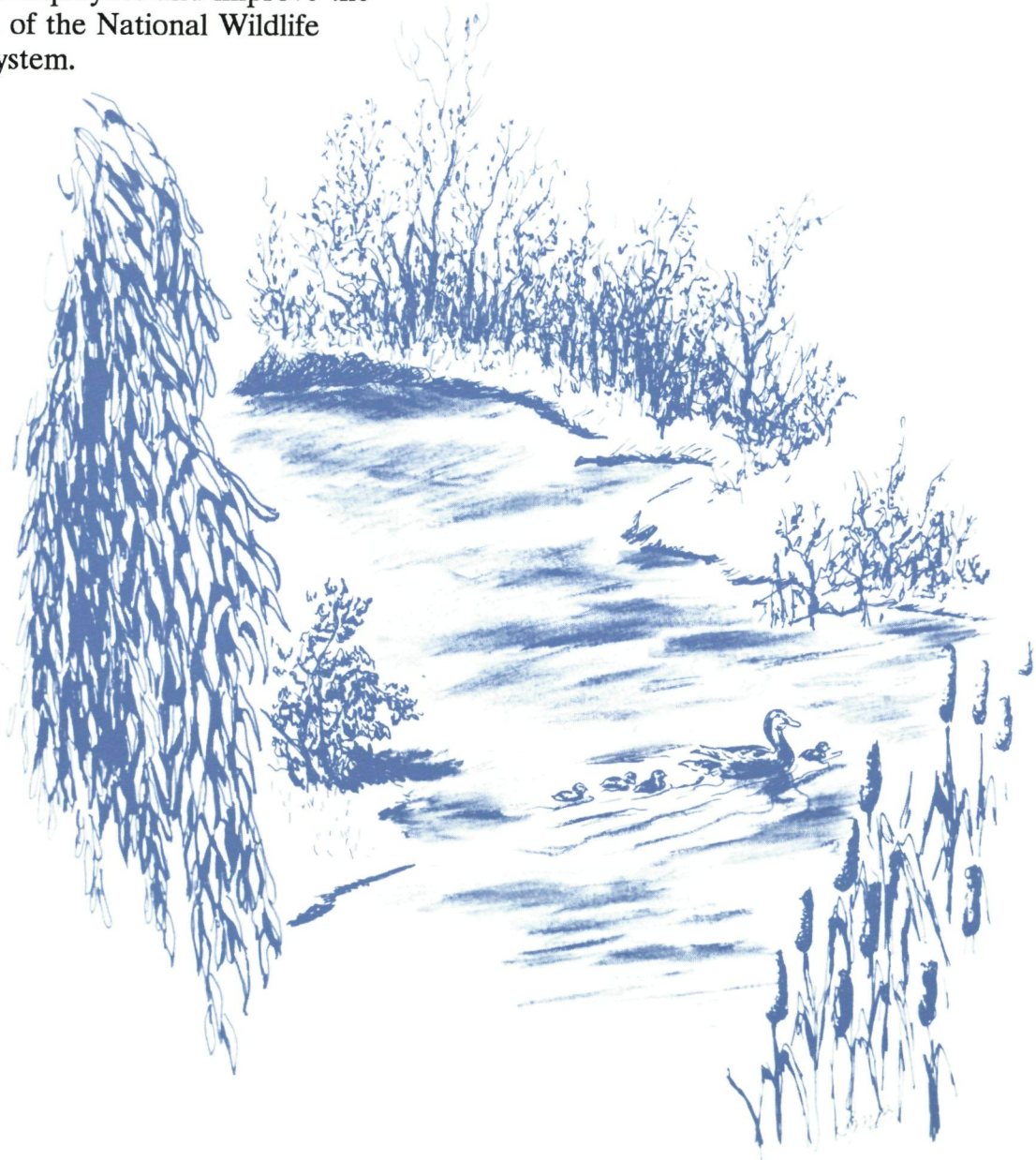
# Refuge Management

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These courses are basically designed for people involved in the day-to-day operations of National Wildlife Refuges. Course instructors include experts in wildlife management, fish and wildlife biology, fire ecology and public use. Refuge Management courses enhance basic technical and management skills of individual employees and improve the operation of the National Wildlife Refuge System.

## How to Apply for a Course

Federal employees should submit any training forms required by their agencies to the appropriate office within that agency.



# Course Descriptions, FY 1992

## REFUGE MANAGEMENT TRAINING ACADEMY

### DATE AND LOCATION:

TBA - Usually held in late April - early May

**AUDIENCE:** Employees who are relatively new to the Refuge System (1-5 years)

The course will provide refuge employees at the GS-5/7/9 level with a background of the many issues facing refuge managers. Major topic areas include: budget/administration, communications, compatibility, cultural resources, environmental education/interpretation, personnel management, and wildlife management.

### Objectives:

After completion of this course, participants will be able to:

- ⇒ *Recall the budget process ranging from field station budgets to the formulation of the Service budget.*
- ⇒ *Discuss means of improving the effectiveness of their oral communication skills with the public and within the Service.*
- ⇒ *Identify compatibility issues at local and Servicewide levels.*
- ⇒ *Discuss pertinent laws and regulations governing antiquities on Federal lands.*
- ⇒ *Describe Service goals for environmental education, interpretation and volunteer programs.*
- ⇒ *Describe career development possibilities within the Service.*
- ⇒ *Discuss Service philosophy, policy, legal mandates and goals of wildlife management.*

## FIRE MANAGEMENT FOR LINE OFFICERS

### DATE AND LOCATION:

TBA (3 DAYS)

**CEU's:** 2.4

This course provides the refuge manager with the information needed to make informed and safe decisions in fire management. Course content covers fire management policy, appropriate public involvement, and operating guidelines for important aspects of fire programs including fire suppression, prescribed fire, fire evaluation and safety, civil and criminal liability, and fire financing.

### Objectives:

Upon completion of the course, participants will be able to:

- ⇒ *Describe Department and Service fire management policy and operating guidelines and be able to apply these requirements to safe and effective refuge management.*
- ⇒ *Describe and apply the principles, methods, techniques and information making up the practice of fire management in the National Wildlife Refuge System and more safely and efficiently manage a Refuge Fire Management Program.*
- ⇒ *Describe the roles, responsibilities and accountability of Refuge Managers in fire management financing, hiring and managing personnel, public involvement, and making decisions where civil and/or criminal liability is a*

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*decision factor; and to safely perform these responsibilities as part of managing a Refuge in the National Wildlife Refuge System.*

- ⇒ *Describe when and under what circumstances, non-Refuge or non-Agency specialists may be ordered and assigned to refuge fire management activities and describe the criteria measuring effective cooperative effort.*
- ⇒ *Work and interact with a team as a team member and learn the critical importance of teamwork in safe and effective fire management. The student will apply the principle of teamwork as part of refuge management activities.*
- ⇒ *Perform the job(s) of a Refuge Manager in reviewing Fire Management Plans, and carry out refuge management objectives while transitioning into, and operating within, an extended fire situation.*

### **BASIC FIRE MANAGEMENT TRAINING**

#### **DATE AND LOCATION:**

TBA (1 WEEK)

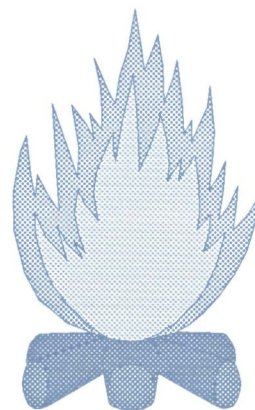
**CEU's:** 3.6

This course covers basic technical and safety training in fire behavior, prescribed fire operations and the initial attack level of fire suppression. This course may replace and provides certification for the NWCG courses S-130 Basic Firefighting/S-190 Introduction to Fire Behavior. Test burns are conducted in order to provide hands-on instruction.

#### **Objectives:**

Upon completion of the course, participants will be able to:

- ⇒ *Locate fire management policy statements in the Refuge Manual 6 RM 7 regarding fire use, wildfire suppression, and personnel safety.*
- ⇒ *Express the relationship of fire to the environment. List three ways fire may affect wildlife habitat, and two results of total fire exclusion on wetland vegetation.*
- ⇒ *List and describe the four basic elements of the fire environment that affect the start and spread of wildfire. Show three ways fire behavior knowledge is applied to prescribed burning and wildfire suppression.*
- ⇒ *List and describe the key factors of area, weather, fuels, and environment relating to prescribed fire planning.*
- ⇒ *List and describe the key factors relating to firing patterns, control measures and pre-fire preparations.*
- ⇒ *Describe the methods, tools and equipment used in controlling a wildfire, from initial attack to full control.*
- ⇒ *List three life threatening fire situations and describe ways of preventing or avoiding them.*



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## *FIRE ECOLOGY/FIRE EFFECTS*

### **DATE AND LOCATION:**

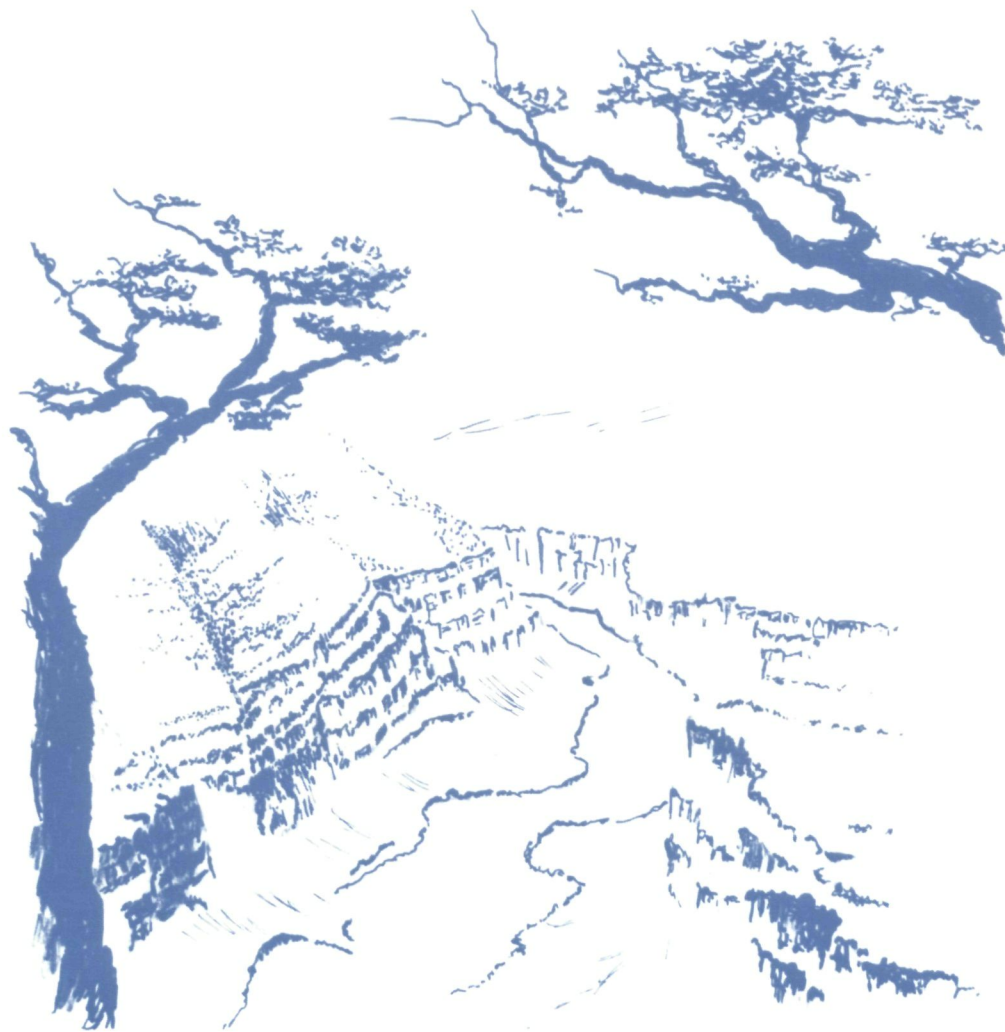
TBA (3-5 DAYS)

This course will provide the resource manager with a basic understanding of fire ecology and fire effects. In addition, it will allow the manager to determine if fire is the correct management tool and, if selected, the evaluation and monitoring techniques needed to determine if the desired effects were achieved.

### **Objectives:**

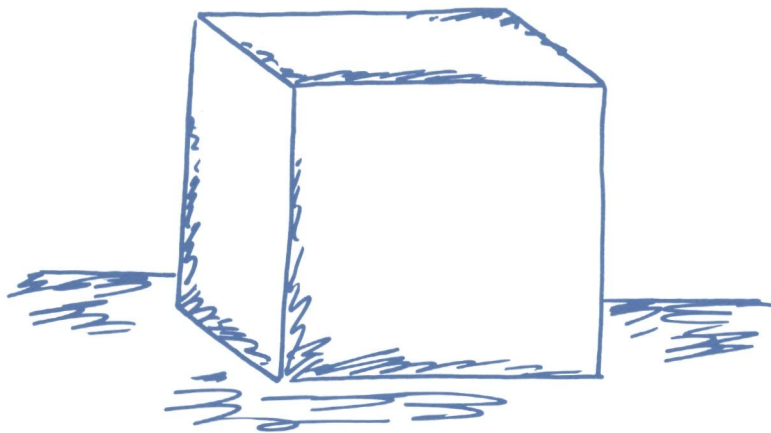
Upon completion of the course, participants will be able to:

- ⇒ *Enumerate the principles and processes that influence the effects of fire on biotic and abiotic resources.*
- ⇒ *Associate fire behavior and other environmental conditions with specific fire effects.*
- ⇒ *Provide methods for monitoring and evaluating fire treatments and the resulting effects.*
- ⇒ *Describe additional sources of fire effects information.*



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*OTHER AVAILABLE*



*COURSES*

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# Other Available Courses ---

The following is a partial list of fisheries related courses being offered by other organizations throughout the country. The list was current as of the time of printing.

## *VIMS AQUACULTURE METHOD FOR GROWING HARD CLAMS*

**Contact Person:**

Nancy Lewis  
Virginia Institute of Marine Science  
P.O. Box 350  
Wachapreague, VA 23480

**Audience Designed For:** Watermen

**Length:** 3 days

**Date:** Approximately the last week of May

**Location:** Wachapreague, VA

**Cost:** \$45.00

**Course Description:** The course consists of a series of lectures and demonstrations on methods of spawning clams, counting and handling eggs and larvae, growing larvae to setting, and post set handling field planting and grow out methods.

## *FISHERIES HYDROACOUSTIC ASSESSMENT TECHNIQUES I*

**Contact Person:**

Lori Lodzinski  
3670 Stone Way North  
Seattle, WA 98103  
(206) 634-0123

**Audience Designed For:** Fisheries scientists, environmental consultants, administrators, field technicians, and hydropower relicensing managers.

**Length:** 5 days

**Date:** November 4-8, 1991 and January 13-17, 1992

**Location:** Seattle, WA

**Cost:** \$900 payable in advance. It includes tuition and all course materials. A 20% discount is available for a company or agency group of three or more persons.

**Course Description:** This intensive course focuses on the use of hydroacoustics for data collection and data processing. It provides an excellent opportunity to learn about and apply the latest techniques and instrumentation for hydroacoustic fisheries resource assessment and management. The course includes lectures, laboratory demonstration, and a field survey all with an emphasis on hands-on training.

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## **ADVANCED ECHO SIGNAL PROCESSING**

**Contact Person:**

Lori Lodzinski  
3670 Stone Way North  
Seattle, WA 98103  
(206) 634-0123

**Audience Designed For:** ESP owners and other experienced fisheries acousticians who have used scientific fisheries acoustic gear or have attended BioSonics' week-long "Fisheries Hydroacoustic Assessment Techniques" course. Computer literacy is assumed, especially familiarity with Microsoft Windows™ and MS-DOS.

**Length:** 2 days

**Date:** November 12-13, 1991 and  
January 21-22, 1992

**Location:** Seattle, WA

**Cost:** \$500 payable in advance. It includes tuition and all course materials. A 20% discount is available for a company or agency groups of three or more persons.

**Course Description:** The course covers the design and application of the ESP, although its main emphasis is hands-on operation. Students use the ESP to analyze previously collected data employing both echo integration and dual-beam processing techniques.

## **FISHERIES TECHNIQUES**

**Contact Person:**

David Potter  
Environmental Science Center  
Unity College  
Unity, ME 04988

**Audience Designed For:** Undergraduate college students

**Length:** 14 weeks;  
M-W-F 11:00 a.m. - 12:00 p.m.  
M or W 12:30 p.m. - 2:15 p.m.

**Date:** September 4, 1991 - December 11, 1991

**Location:** Unity College

**Cost:** N/A

**Course Description:** Field techniques for collection, identification, population and community analysis, and age determination.

## **SALMONID DISEASE**

**Contact Person:**

Dr. Robert Olson  
OSU Hatfield Marine Science Center  
2030 Marine Science Drive  
Newport, OR 97365  
503/867-0251

**Audience Designed For:** Fish Health Professionals

**Length:** 10 days

**Date:** Summer 1992 - Dates to be announced

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**Location:** Oregon State University  
Hatfield Marine Science Center

**Cost:** To be announced.

**Housing:** Available at HMSC

**Course Description:** This workshop is designed for professionals working in the fish health field and will include lectures and laboratory sessions on the following topics:

Viral, Bacterial and Parasitic Pathogens; Cell Culture and Viral Diagnosis; Immunology; Histopathology; Disease Control and Diseases; and Net-Pen Culture.

### **GENETICS IN FISHERIES AQUACULTURE**

**Contact Person:**

Dr. Robert Olson  
OSU Hatfield Marine Science Center  
2030 Marine Science Drive  
Newport, OR 97365  
503/867-0251

**Audience Designed For:** Professional Fisheries Scientists, Managers, and Technicians

**Length:** 5 days

**Date:** Summer 1992 - Dates to be announced

**Location:** Oregon State University  
Hatfield Marine Science Center

**Cost:** To be announced.

**Housing:** Available at HMSC

**Course Description:** The following topics in contemporary fish genetics will be addressed in lectures, demonstrations and laboratory sessions:

Selective Breeding; Stock Identification; Chromosome Manipulation; Transgenic Fish; and Conservation Genetics.

### **TEXAS SHRIMP FARMING**

**Contact Person:**

Granvil Treece  
Sea Grant College Program  
Texas A&M University  
1716 Briarcrest, Suite 702  
Bryan, TX 77802  
409/845-7527 or FAX# 409/845-7525

**Audience Designed For:** Individuals who are actively involved in shrimp farming as well as potential aquaculture entrepreneurs and investors who are considering opportunities in the commercial culture of shrimp.

**Length:** 10 days (Every September)

**Date:** September 11-20, 1991

**Location:** Port Aransas, Texas

**Cost:** \$900 (Includes room at nearby condominium, food, education materials, manuals, reference library, field trips to farms and hatchery, and transportation to and from airport.)

**Course Description:** This short course is a 10 day program with approximately 20 different instructors which will provide a

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good perspective of the industry and will provide in-depth shrimp farming information and practical training in the latest shrimp culture methods.

The course will be taught by internationally experienced instructors with commercial, research and extension backgrounds, and will include the following topics:

Pond design and construction; hatchery design and operation; maturation and spawning technology; life history and biology of penaeid shrimp; larval rearing; culture of larval food; Nauplii and post-larval shipping, stocking and nursery techniques; management alternatives for growout; Economics; diseases; processing; marketing; site selection; permits, regulations; Water quality and management; closed systems.

#### *DIAGNOSIS AND TREATMENT OF DISEASES OF WARMWATER FISH*

**Contact Person:**

Dr. Ruth Francis-Floyd  
IFAS Extension Veterinarian for  
Aquaculture  
7922 NW 71st Street  
Gainesville, Florida 32606  
Phone 904-392-9617

**Audience Designed For:** The course is open to students, veterinarians, fisheries biologists, and aquaculturists (limited to 24 participants).

**Length:** 2 weeks

**Date:** July 20-31, 1992 - Deadline for receipt of letter of application April 15, 1992.

**Location:** University of Florida;  
Gainesville, Florida

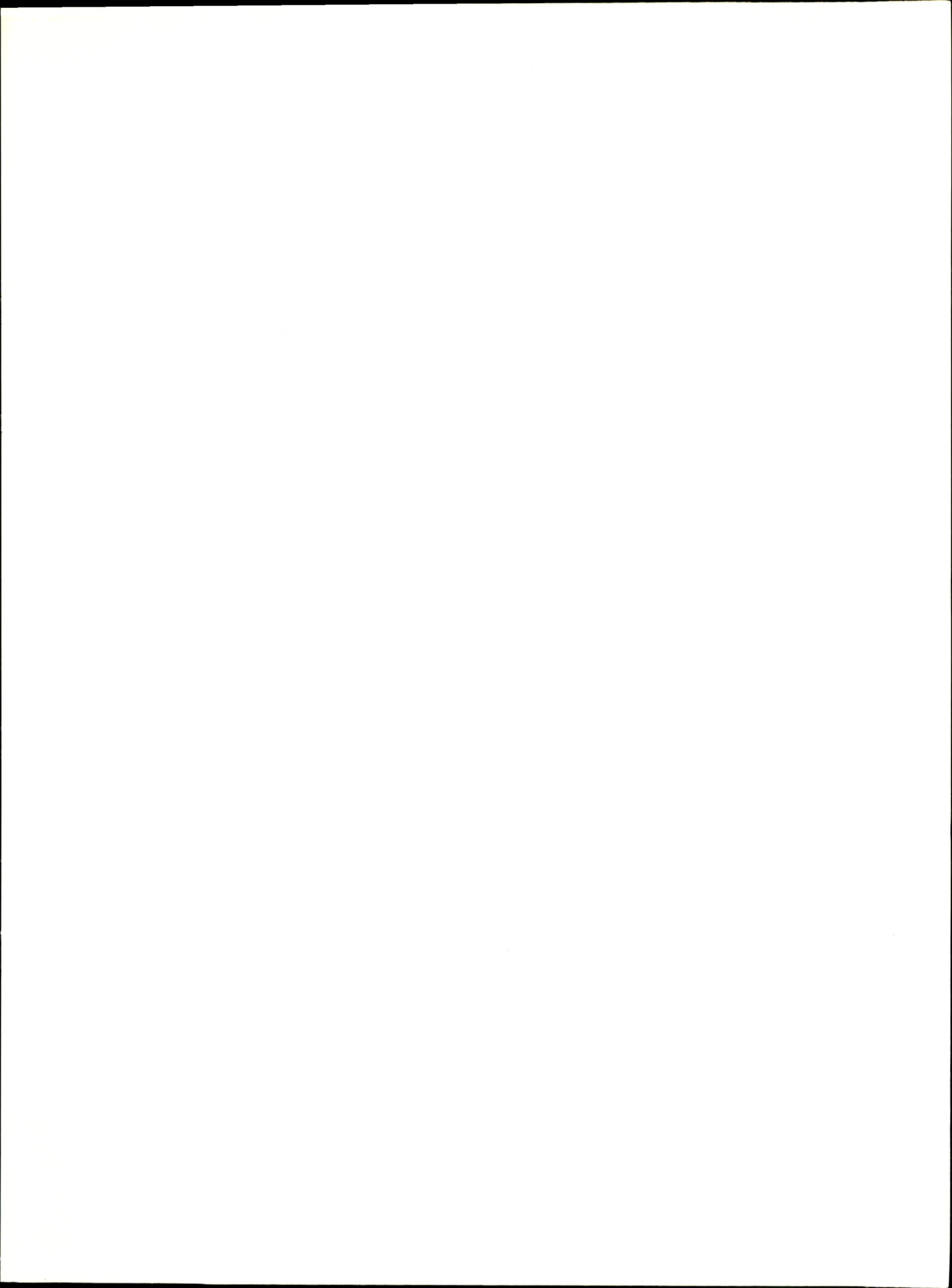
**Cost:** Tuition for Florida residents is \$70.70\* per credit hour. For non-residents tuition is \$205.65\* per credit hour. (Four hours of college credit is available to graduate and undergraduate students.) Those wishing to receive continuing education credit in lieu of college credit are invited to participate by paying a \$250.00 registration fee in place of tuition.

**Course Description:** This short course is designed to provide instruction in the methodology of diagnosis and treatment of parasitic, bacterial, viral, nutritional, and environmental diseases of warm water food fish, as well as aquarium species. Students will be expected to provide their own compound microscope and dissecting kit for use in the laboratory. A limited number of microscopes will be available for those people who do not have access to one.

Instructors: Dr. Ruth Francis-Floyd, Extension Veterinarian for Aquaculture, Department of Large Animal Clinical Sciences and Department of Fisheries and Aquaculture

Dr. Thomas L. Wellborn, Jr, Professor Emeritus, Department of Fisheries and Aquaculture, University of Florida

\*1990 Tuition figures. May be slightly increased for 1992.



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally-owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.



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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE

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