

*Title of project:* **International Summer Institute  
for Genetic Resources Conservation  
of Animals and Plants**

*US AID Project Number:* 936-4200

*US AID Grant Number:* DAN-4200-G-00-1124-00

*Principal Investigator:* Patrick E. McGuire, [REDACTED]  
Assistant Director  
Genetic Resources Conservation Program  
University of California  
Davis, California  
(916) 757-8923, FAX: (916) 757-8755

*Report to:* Jay M. Bergman, Grant Officer  
Chief, Food and Agriculture Branch  
A.I.D./W Projects Division  
Office of Procurement  
US Agency for International Development  
Washington, DC 20523

***Quarterly Performance Report  
Jan. 1 to March 31, 1992***

  
\_\_\_\_\_  
Principal Investigator

Activities in this period included the distribution of course brochures to established mailing lists and to individuals requesting them. (Copies of the brochures are enclosed.) Initial contacts were made with some potential lecturers and lab presenters. Suggestions for other personnel to be contacted were solicited from steering committee members and other individuals. Announcements seeking candidates for the logistics coordinator positions, one for each course, were distributed on the UC Davis campus (copy enclosed). Interviews were held in late March. Melanie L. Adams was hired for the animal course, to begin work in May.

A meeting of the plant course steering committee was held in January to discuss the course topics and possible presenters. Another meeting, to review scholarship applications was set for April. A meeting of the animal course steering committee was held in March to review the course topics and to evaluate and rank applicants for the scholarship awards. The course leader of the animal course will be Professor David Woodruff, Dept. of Biology, University of California, San Diego.

By the scholarship application deadline of March 15, 66 applications for the plant course and 36 for the animal course had been received and evaluated. At the March meeting of the animal course steering committee, the 36 applications were ranked into those who would be offered scholarships, those who would be considered alternates, and those who would not be offered scholarships.

No significant deviations from the workplan have been necessary to this point.

Following is a listing of the activities proposed and accomplished (in italics) for this quarter in the workplan.

### **Progress on activities proposed for second quarter in workplan**

#### Institute Development

Advertising of Institute ..... 10/1/91-4/30/92

*Brochures were mailed on request and to previously established mailing lists. Jan. and Feb.*

*Article announcing the Institute prepared for the journal Diversity appearing in vol. 7 no. 4 in February.*

Course content development ..... 10/1/91-6/30/92

*GRCP staff proposed outlines of topics for lectures, labs, case studies, and tours and field trips for each course, and the respective steering committees evaluated these and made additional suggestions at their meetings during this period.*

AGR steering committee meetings

*Second meeting was held. 3/31/92*

PGR steering committee meetings

*First meeting held. 1/30/92*

*Second meeting scheduled (4/16/92)*

Fund development for student support..... 12/1/91-4/30/92

*Two additional proposals for support went to organizations suggested by committee members and others.*

Course brochure development ..... 10/1/91-1/31/92

*Brochures were received from printer. 1/3/92*

Contact with prospective lecturers and hosts ... 12/1/91-6/30/92

*Preliminary contacts were made with some potential lecturers and lab presenters for both courses.*

Evaluation of applicants for support ..... 3/15/92-5/31/92

*GRCP staff organized applications, with UNEX staff communicated to applicants to obtain complete applications, and prepared summaries of applications for review by steering committees. 3/15/92-3/31/92*

*AGR steering committee reviewed and ranked scholarship applications for the AGR course. 3/31/92*

Logistic arrangements for participants ..... 1/1/92-6/30/92

*Since no awards were made during this quarter, no arrangements were made at this time.*

Logistic arrangements for Institute activities .... 10/1/91-6/30/92

*As a better estimate of class sizes became available at the end of the quarter, preliminary reservations for course facilities, transportation, and lodging were revised.*

Hiring of course-specific staff ..... 3/1/92-6/30/92

*Positions of Logistics Coordinator for each class were developed and advertised on the Davis campus. 2/17/92-3/15/92*

*Interviews with candidates were held. 3/26/92*

*Melanie L. Adams was hired as Logistics Coordinator for the AGR course to begin work on 5/1/92. 3/30/92*

*Title of project:* **International Summer Institute  
for Genetic Resources Conservation  
of Animals and Plants**

*US AID Project Number:* 936-4200

*US AID Grant Number:* DAN-4200-G-00-1124-00

*Principal Investigator:* Patrick E. McGuire, [REDACTED]  
Assistant Director  
Genetic Resources Conservation Program  
University of California  
Davis, California  
(916) 757-8923, FAX: (916) 757-8755

*Report to:* Jay M. Bergman, Grant Officer  
Chief, Food and Agriculture Branch  
A.I.D./W Projects Division  
Office of Procurement  
US Agency for International Development  
Washington, DC 20523

***Quarterly Performance Report  
April 1 to June 30, 1992***

  
\_\_\_\_\_  
Principal Investigator

Activities in this period included the continuing development of the course content and continuing contacts with potential lecturers, case study presenters, tour hosts, and lab presenters and the development of a working schedule for each course. A copy of the working course topic list and working schedule for each course developed during this quarter is enclosed.

Bonnie J. Furman was hired as the logistics coordinator for the plant course in April, to begin work in May.

A meeting of the plant course steering committee was held in April to review course topics and to evaluate and rank scholarship applicants. Applications were ranked into those who would be offered scholarships, those who would be considered alternates, and those who would not be offered scholarships. Award letters to all scholarship recipients for both courses were distributed in April.

As acceptance messages for the scholarships were received in late April and May, the logistics coordinators arranged their air travel and accommodations. Other activities of the coordinators in this period included reserving housing for the term of both courses on the Davis, Berkeley, Riverside, and San Diego campuses and in public accommodations for the travel portions of the course, reserving classroom space, and arranging for transportation for course travel.

The only deviation from the workplan necessary to this point was to reduce enrollment expectations from the initial estimate of 60 for the animal course and 30 for the plant course to about 25 for each. By the end of the quarter, the confirmed registrations totalled 24 for the animal course and 18 for the plant course.

Following is a listing of the activities proposed and accomplished (in italics) for this quarter in the workplan.

**Progress on activities proposed for second quarter in workplan**

Institute Development

Advertising of Institute ..... 10/1/91-4/30/92

*No further advertising was done in this quarter.*

4

Course content development ..... 10/1/91-6/30/92

*Further discussion of the PGR course content was held at the PGR steering committee meeting during this period.*

*Working outlines of topics for both courses were developed and followed as contacts with teaching participants were made. Modifications to these working outlines were made as availability of appropriate speakers and logistic considerations warranted.*

PGR steering committee meetings

*Second meeting held. 4/16/92*

Fund development for student support..... 12/1/91-4/30/92

*\$5,000 was awarded for scholarship support from the Wallace Genetic Foundation, Inc. and \$500 for a travel scholarship for a Mexican participant was awarded by the University of California MEXUS program.*

*Applications for financial support to the Rockefeller Foundation, Pioneer Hi-Bred Seed Foundation, the Margoes Foundation, DeKalb Plant Genetics, and IBPGR were unsuccessful.*

Contact with prospective lecturers and hosts ... 12/1/91-6/30/92

*Contacts were made to arrange lecturers, lab presenters, case study presenters, and tour and field trip hosts for both courses. By the end of June a working schedule was developed for each course.*

Evaluation of applicants for support ..... 3/15/92-5/31/92

*PGR steering committee reviewed and ranked scholarship applications for the PGR course. 4/16/92*

*Award letters were mailed or faxed throughout April.*

Logistic arrangements for participants ..... 1/1/92-6/30/92

*As scholarship acceptance was confirmed, air travel arrangements for all scholarship participants were made and tickets were expressed to participants. Airport pickup arrangements were made for all participants.*

Logistic arrangements for Institute activities .... 10/1/91-6/30/92

*Reservations for facilities, transportation, and lodging for both courses were made and changed as required by the developing course schedule.*

Hiring of course-specific staff ..... 3/1/92-6/30/92

*Bonnie J. Furman was hired as Logistics Coordinator for the AGR course to begin work on 5/1/92. 4/1/92*

# Animal Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

<b>7/6 Monday</b>	<b>Reception, introduction, lectures and orientation in 3 Kleiber; Evening reception in Leach Hall</b>
8:00-8:30	Reception (Coffee/tea)
8:30-9:00	Welcome, introductions, orientation (P. McGuire, C. Turbitt)
9:30-10:25	Lecture: UN Conference on Environment and Development—Earth Summit (J. Ives)
10:30-11:30	Lecture: Biodiversity: Threats and value (F.T. Ledig)
1:30-2:25	Lecture: Options for maintaining biodiversity (H. Koopowitz)
2:30-3:25	Lectures: US AID Project Noah (D. Janczewski) and Role of the journal <i>Diversity</i> in genetic resources communication (D. Strauss)
3:45-5:00	Orientation for AGRC class
7:30-9:00	Dessert reception at North Room, Leach Hall
<b>7/7 Tuesday</b>	<b>Lectures and case studies in 148 Physics/Geology</b>
8:30-10:00	Lecture: The concept of livestock breed and its relationship to developing countries (G.E. Bradford)
10:30-12:00	Lecture: Genetic principles of conservation biology (D.S. Woodruff)
1:30-3:00	Lecture: Measures of genetic variability (O.A. Ryder)
3:30-5:30	Tour: Introduction to the Biological-Agricultural Reference services at Shields Library—half the class at 3:30, the other half at 4:30
7:30-9:00	Case study: Conservation management of Przewalski's horse (O.A. Ryder)
<b>7/8 Wednesday</b>	<b>Lectures and case studies in 148 Physics/Geology</b>
8:30-10:00	Lecture: Evolutionarily significant units for conservation: Species, subspecies, varieties, & hybrids (D.S. Woodruff)
10:30-12:00	Lecture: Significance of estimating relatedness of individuals and populations (O.A. Ryder)
1:30-3:00	Discussion session I
3:30-5:00	Tour: Open-air bus tour highlighting campus service and recreation facilities
7:30-9:15	Class presentation period I
<b>7/9 Thursday</b>	<b>Morning lectures in 148 Physics/Geology; Afternoon lecture &amp; case study in 2 Wellman</b>
8:30-10:00	Lecture: Development and funding of an international conservation biology program for megavertebrates, emphasizing reproductive technologies (M. Schiewe)
10:30-12:00	Lecture: Conservation of wild cattle species indigenous to Southeast Asia: Experimental plan and potential regional benefits (M. Schiewe)
1:30-3:00	Lecture: Biotechnology and the detection of genetic variation in the biosphere (C. Orrego)
3:30-4:30	Case study: Population survey of wild orangutans (D. Janczewski)
7:30-9:15	Class presentation period II
<b>7/10 Friday</b>	<b>Lectures and case studies in 148 Physics/Geology</b>
8:30-10:00	Lecture: Population management strategies (G.A.E. Gall)
10:30-11:30	Case study: California Golden trout—Kern Basin (G.A.E. Gall)
1:30-3:30	Lecture: Legal issues in germplasm movement - CITES & other regulations (S. Pearson)
4:00-5:00	Discussion session II
<b>7/11 Saturday</b>	<b>Tour to UC Berkeley and San Francisco</b>
8:00	Board bus
9:30-12:00	UC Berkeley Museum of Vertebrate Zoology
1:30-5:30	California Academy of Sciences
9:30	Board bus for return to Davis

# Animal Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

- 7/13 Monday Lectures in 223 Olson; Symposium at Capitol Holiday Inn in Sacramento**  
8:30-10:00 To be announced  
10:30-11:30 To be announced  
1:00-5:00 Possible visit to Biodiversity in Managed Landscapes Symposium—Genetic diversity session
- 
- 7/14 Tuesday Symposium at Capitol Holiday Inn in Sacramento**  
8:30-4:40 Possible visit to Biodiversity in Managed Landscapes Symposium—Species, community & landscape diversity sessions
- 
- 7/15 Wednesday Activities in 223 Olson**  
8:30-12:00 Class presentation period III  
1:30-3:00 Discussion session III, Orientation for tour  
3:30-5:00 To be announced
- 
- 7/16 Thursday Symposium at Capitol Holiday Inn in Sacramento**  
8:30-2:50 Possible visit to Biodiversity in Managed Landscapes Symposium—Management strategies
- 
- 7/17 Friday Lectures and case studies in 223 Olson**  
8:30-10:00 *Lecture: Overview of US Fish & Wildlife Service Forensics Lab (K. Goddard)*  
10:30-12:00 *Lecture: DNA analysis for monitoring and tracking endangered species (S. Fain)*  
1:30-2:30 *Lecture: Role of pedigree analysis in captive breeding (D. Smith)*  
2:45-3:45 *Case study: Curly horse population genetics (A. Bowling)*  
4:00-5:00 *Case study: Molecular markers for DNA fingerprinting and sexing (J.A. Halverson)*
- 
- 7/18 Saturday Departure for tour to southern California**  
8:00 Board bus  
11:30 Arrive in Monterey  
1:00 Meet host, **Dr. Michelle Staedtler** at Monterey Bay Aquarium  
1:00-5:30 Tour of aquarium
- 
- 7/19 Sunday Travel continuing to San Diego**

# Animal Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

<b>7/20 Monday</b>	<b>Travel to San Diego; Check in at dorms; Afternoon lectures and case studies in the Rondeval Room at San Diego Zoo; Evening meeting in the Center for Molecular Genetics Conference Room on the UCSD campus</b>
8:00	Board bus
8:00-11:30	Travel to UCSD
11:30	Check-in at dorms
1:00	Board bus for travel to zoo
1:30-2:15	<i>Lecture:</i> The role of zoos in the conservation of genetic diversity (O.A. Ryder)
2:30-4:00	Presentations by zoo research personnel Monitoring of ovulation in pregnancy in zoo and wild mammals (N. Czekala) Difficulties and achievements in semen freezing for diverse species (N. Pratt) Are cheetahs really so poor at breeding in captivity? (D. Lindberg) Disease challenges to endangered species conservation (M. Worley)
7:30-9:00	<i>Case study:</i> Breeding of the Chacoan giant peccary (K. Benirschke)
<hr/>	
<b>7/21 Tuesday</b>	<b>Tours to San Diego Zoo and Sea World</b>
8:00	Board bus
9:00-1:30	<i>Tour:</i> San Diego Zoo Greeting and introduction to zoo (O. Ryder)
2:00	Board bus
2:45-9:00	<i>Tour:</i> Sea World
<hr/>	
<b>7/22 Wednesday</b>	<b>Morning lectures and case studies at the National Marine Fisheries Southwest Fisheries Center; Afternoon case studies at UCSD CMG Conference Room</b>
8:30-12:00	Lecture and case study presentations by National Marine Fisheries Program research personnel
1:30-5:00	Case study presentations by UCSD Dept. of Biology research personnel on molecular genetic aspects of endangered species conservation
7:30-8:30	Dessert social at Woodruff home
<hr/>	
<b>7/23 Thursday</b>	<b>Check out of dorms; Wild Animal Park; Begin travel north</b>
7:30-8:00	Check out of dorms
8:15	Board bus
9:00-12:30	<i>Tour:</i> Wild Animal Park
1:00	Board bus for travel north
<hr/>	
<b>7/24 Friday</b>	<b>Travel to Mammoth Lakes</b>
	Stops to be announced
<hr/>	
<b>7/25 Saturday</b>	<b>Travel to Davis; Closing dinner at UC Davis</b>
	Stops to be announced
6:30-9:00	Dinner and closing

# Animal Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

**7/27 Monday Laboratories**  
PCR lab I at UC Berkeley  
Monitoring reproductive status lab at UCD  
Wildlife capture and restraint lab at UCD  
Long-term cell culture lab at UCD

---

**7/28 Tuesday Laboratories**  
PCR lab I at UC Berkeley  
Monitoring reproductive status lab at UCD  
Wildlife capture and restraint lab at UCD  
Long-term cell culture lab at UCD

---

**7/29 Wednesday Laboratories**  
PCR lab I at UC Berkeley  
Monitoring reproductive status lab at UCD  
Wildlife capture and restraint lab in Rancho Cordova  
Long-term cell culture lab at UCD

---

**7/30 Thursday Laboratories**  
PCR lab I at UC Berkeley  
Monitoring reproductive status lab at UCD  
Long-term cell culture lab at UCD

---

**7/31 Friday Laboratories**  
PCR lab I at UC Berkeley  
Monitoring reproductive status lab at UCD  
Long-term cell culture lab at UCD

---

**8/1 Saturday**  
Activities to be announced

# Animal Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

**8/3 Monday Laboratories**  
PCR lab II at UC Berkeley  
Karyotyping lab at UCD  
Isozyme lab at UCD  
Embryo transfer lab at UCD

---

**8/4 Tuesday Laboratories**  
PCR lab II at UC Berkeley  
Karyotyping lab at UCD  
Isozyme lab at UCD  
Embryo transfer lab at UCD

---

**8/5 Wednesday Laboratories**  
PCR lab II at UC Berkeley  
Karyotyping lab at UCD  
Isozyme lab at UCD  
Embryo transfer lab at UCD

---

**8/6 Thursday Laboratories**  
PCR lab II at UC Berkeley  
Karyotyping lab at UCD  
Isozyme lab at UCD  
Embryo transfer lab at UCD

---

**8/7 Friday Laboratories**  
PCR lab II at UC Berkeley  
Karyotyping lab at UCD  
Isozyme lab at UCD  
Embryo transfer lab at UCD

---

**8/8 Saturday Departure of participants at various times**

---

# AGR Conservation Short Course—Working Topic List

LECTURES	SPEAKERS
<i>Genetics, evolution, and biodiversity</i>	
Biodiversity: Threats and value	F. Thomas Ledig
Options for maintaining biodiversity	Harold Koopowitz
The concept of livestock breed and its relationship to GR conservation	G. Eric Bradford
Genetic principles of conservation biology	David S. Woodruff
Measures of genetic diversity	Oliver A. Ryder
Evolutionarily significant units for conservation: Species, subspecies, varieties, & hybrids	David S. Woodruff
Significance of estimating relatedness of individuals and populations	Oliver A. Ryder
Conservation of wild cattle species indigenous to Southeast Asia: Experimental plan and potential regional benefits	Mitch Schiewe
{Population viability analysis	Barbara Taylor}
Role of pedigree analysis in captive breeding	David G. Smith
<i>Management</i>	
Population management strategies	Graham A.E. Gall
The role of zoos in the conservation of genetic diversity	Oliver A. Ryder
<i>Techniques/Technologies</i>	
Biotechnology and the detection of genetic variation in the biosphere	Cristián Orrego
Molecular markers for DNA fingerprinting and sexing	Joy A. Halverson
DNA analysis for monitoring and tracking endangered species	Steve Fain
Monitoring of ovulation in pregnancy in zoo and wild mammals	Nancy Czekala
Difficulties and achievements in semen freezing for diverse species	Nancy Pratt
Are cheetahs really so poor at breeding in captivity?	Don Lindberg
Disease challenges to endangered species conservation	Mike Worley
<i>Organizations</i>	
US AID Project Noah	Dianne Janczewski
<i>Diversity</i> magazine	Deborah Strauss
Overview of US Fish & Wildlife Service Forensics Lab	Ken Goddard
{Center for Reproduction of Endangered Species	Werner Heuschele}
<i>Legal issues, policy</i>	
UN Conference on Environment and Development—Earth Summit	Jack Ives
Development and funding of an international conservation biology program for megavertebrates, emphasizing reproductive technologies	Mitch Schiewe
Legal issues in germplasm movement - CITES & other regulations	Scott Pearson
<b>CASE STUDIES</b>	<b>SPEAKERS</b>
Conservation management of Przewalski's horse	Oliver A. Ryder
California Golden trout—Kern Basin	Graham Gall

# AGR Conservation Short Course—Working Topic List

CASE STUDIES (cont.)	SPEAKERS
Population survey of wild orangutans	Dianne Janczewski
Curly horse population genetics	Ann Bowling
Monitoring of ovulation in pregnancy in zoo and wild mammals	Nancy Czekala
Difficulties and achievements in semen freezing for diverse species	Nancy Pratt
Are cheetahs really so poor at breeding in captivity?	Don Lindberg
Disease challenges to endangered species conservation	Michael Worley
Breeding of the Chacoan giant peccary	Kurt Benirschke
{(Pedigree analysis and taxonomy of chimpanzees)}	Phillip Morin}
{Dolphin management by population rather than by species}	Andy Dizon}
{Fish genetics}	Carol Stepien}
{Saudi Arabian gazelles}	Marc Vassert}
{Birds}	Adam Richard}
{Gibbons}	Carlos Garza}
{{Genetic diversity and population genetics of gorilla}}	Karen Garner}
{California Condor Program?}	Bill Toon?}
LABORATORIES	INSTRUCTORS
Karyotype (1 lab, 5 days)	James D. Murray Ann T. Bowling
Cell & tissue culture (1 lab, 5 days)	James D. Murray Ann T. Bowling
Monitoring reproductive status (1 lab, 5 days)	William F. Lasley et al.
DNA analysis-PCR (2 labs, 5 days each)	Cristián Orrego
Wildlife capture & restraint (1 lab, 3 days)	Thierry Work
Isozyme analysis	Boyd Bentley
Embryo transfer	Gary Anderson
AI/Embryo monitoring lab (Avian)	(Abbott/Abplanalp?)
TOURS	LEADERS/HOSTS
Biological-Agricultural Reference services at Shields Library UCD	John Sherlock
UCD campus services & facilities tour	Campus hosts
UC Berkeley Museum of Vertebrate Zoology	(Cristián Orrego?)
California Academy of Sciences	(staff??)
Monterey Bay Aquarium	Michelle Staedler
San Diego Zoo	(Oliver A. Ryder?)
Sea World Hubbs Research Institute	(staff)
San Diego Wild Animal Park	(staff)
(SD Zoo Vet Hospital?)	(staff?)

12

# AGR Conservation Short Course—Working Topic List

## CLASS PRESENTATION PERIODS

---

I 7:30-9:15, 7/8, 7 slots  
II 7:30-9:15, 7/9, 7 slots  
III 8:30-12:00, 7/15, 12 slots

## DISCUSSION SESSIONS

---

I 1:30-3:00, 7/8  
II 4:00-5:00, 7/10  
III 1:30-3:00, 7/15

# Plant Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

- 7/6 Monday Reception, introduction, and lectures in 3 Kleiber; Afternoon orientation in 203 Surge IV; Evening reception in Leach Hall**
- 8:00-8:30 Reception (Coffee/tea)  
8:30-9:00 Welcome, introductions, orientation (P. McGuire, C. Turbitt)  
9:30-10:25 *Lecture:* UN Conference on Environment and Development—Earth Summit (J. Ives)  
10:30-11:30 *Lecture:* Biodiversity: Threats and value (F.T. Ledig)  
1:30-2:25 *Lecture:* Options for maintaining biodiversity (H. Koopowitz)  
2:30-3:25 *Lectures:* US AID Project Noah (D. Janczewski) and  
Role of the journal *Diversity* in genetic resources communication (D. Strauss)  
3:30-5:00 Group photo, Move to 203 Surge IV for orientation for PGRC class  
7:30-9:00 Dessert reception at North Room, Leach Hall
- 
- 7/7 Tuesday Lectures and meetings in 203 Surge IV**
- 8:30-10:00 *Lecture:* Components of a crop genetic resources program (T.T. Chang)  
10:30-12:00 *Lecture:* Gene bank management (T.T. Chang)  
1:30-3:30 Open  
3:30-5:00 *Tour:* Open-air bus tour highlighting campus service and recreation facilities  
7:30-9:00 Mini-seminar session
- 
- 7/8 Wednesday Lectures and meetings in 203 Surge IV; Tour begins at Arboretum Headquarters**
- 8:30-10:00 *Lecture:* Crop plant evolution (S.K. Jain)  
10:30-12:00 *Lecture:* Importance of systematics for germplasm utilization (J. Dvorak)  
1:30-3:00 Agricultural biotechnologies for sustainable production (D. Janczewski)  
3:30-5:00 *Tour:* UCD Arboretum (M.T. Burke, W.S. Roberts)  
7:30-9:00 Class presentation period I
- 
- 7/9 Thursday Morning activities in 203 Surge IV; Afternoon lecture in 2 Wellman; Library tour meets at Shields Library**
- 8:30-10:15 Class presentation period II  
10:30-12:00 *Lecture:* Management practices (T.T. Chang)  
1:30-3:00 *Lecture:* Biotechnology and the detection of genetic variation in the biosphere (C. Orrego)  
3:30-5:30 *Tour:* Introduction to the Biological-Agricultural Reference services at Shields Library  
—half the class at 3:30, the other half at 4:30
- 
- 7/10 Friday Lectures and case study in 203 Surge IV**
- 8:30-10:00 *Lecture:* Ecological parameters of genetic diversity (S.K. Jain)  
10:30-12:00 *Lecture:* Optimum sample size and strategies for regenerating outcrossing crops (J. Crossa)  
1:30-2:30 *Case study:* To be announced  
2:30-5:00 Open time for library
- 
- 7/11 Saturday Tour to Institute of Forest Genetics**
- 8:15 Board bus  
8:30-10:00 Travel to Placerville  
10:00 Arrive at Institute of Forest Genetics (Host: T. Ledig)  
5:30-7:00 Barbecue at Placerville  
7:00 Bus departs for Davis
-

# Plant Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

- 7/13 Monday Lectures in 203 Surge IV; Symposium at Capitol Holiday Inn in Sacramento**
- 8:00-8:50 *Case study:* A computer program for estimating sample size for germplasm conservation (J. Crossa)  
9:00-10:20 *Lecture:* *In vitro* conservation (L. Withers)  
10:30-11:50 *Lecture:* Integrated conservation strategies (L. Withers)  
1:00-5:00 Possible visit to Biodiversity in Managed Landscapes Symposium—Genetic diversity session
- 
- 7/14 Tuesday Symposium at Capitol Holiday Inn in Sacramento**
- 8:30-4:40 Possible visit to Biodiversity in Managed Landscapes Symposium—Species, community, & landscape diversity sessions  
7:30-9:15 Class presentation period III
- 
- 7/15 Wednesday Morning tour; Afternoon meetings in 203 Surge IV**
- 8:15 Board bus  
8:30-11:30 *Tour:* National Germplasm Repository for Fruits and Nut Crops (Host: K. Rigert)  
11:30 Bus returns to campus  
1:30-2:30 *Case study:* C.M. Rick Tomato Genetics Resource Center (C.M. Rick)  
2:45-3:45 *Case study:* To be announced  
4:00-5:00 Discussion session I
- 
- 7/16 Thursday Symposium at Capitol Holiday Inn in Sacramento**
- 8:30-2:50 Possible visit to Biodiversity in Managed Landscapes Symposium—Management strategies
- 
- 7/17 Friday Lectures and lab introduction in 203 Surge IV**
- 8:30-10:00 *Lecture:* Seed preservation technologies (T.T. Chang)  
10:30-12:00 *Lecture:* Special problems of clonally propagated crops (D.E. Parfitt)  
1:30-2:30 *Lecture:* Basic theory and practice of cryopreservation applied to plant germplasm conservation (D.E. Parfitt)  
3:00-5:00 *Lab:* Introduction to isozyme analysis (M. Sun)
- 
- 7/18 Saturday Tour to UC Berkeley and San Francisco**
- 8:00 Board bus  
9:30-12:00 UC Berkeley Botanical Garden  
1:30-5:30 California Academy of Sciences  
9:30 Board bus for return to Davis
-

# Plant Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

- 7/20 Monday Isozyme lab, section A, in 139 Briggs Hall; Case study and presentation period in 203 Surge IV**
- 8:00-12:00 *Lab: Isozyme lab Section A, Session 1: Pouring and loading gels (M. Sun)*
- 1:30-2:30 *Case study: Use of Brassica genetic stocks in biotechnology (C.F. Quiros)*
- 2:30-3:30 *Open*
- 3:30-5:00 *Class presentation period IV*
- 7:30-9:00 *Lab: Isozyme lab Section A, Session 2: Staining gels (M. Sun)*
- 
- 7/21 Tuesday Lecture in 203 Surge IV; Isozyme lab, section A, in 139 Briggs Hall**
- 8:30-10:30 *Lecture: Database development for plant genetic resources (E. Bird)*
- 11:00-12:00 *Open*
- 1:00-3:00 *Lab: Isozyme lab Section A, Session 3: Scoring gels (M. Sun)*
- 4:00-5:30 *Discussion session II*
- 
- 7/22 Wednesday Isozyme lab, section B, in 139 Briggs Hall; ELISA lab at Hopkins tract field facility**
- 8:00-12:00 *Lab: Isozyme lab Section B, Session 1: Pouring and loading gels (M. Sun)*
- 1:15 *Board bus at dorm*
- 1:30-5:30 *Lab: Demonstration of ELISA and its application to maintain virus-free plants (A. Rowhani)*
- 7:30-9:00 *Lab: Isozyme lab Section B, Session 2: Staining gels (M. Sun)*
- 
- 7/23 Thursday Morning activity in computer lab, location to be announced; Isozyme lab, section B, in 139 Briggs Hall; PCR lab meeting and tour orientation in 203 Surge IV**
- 8:30-12:00 *Lecture and analysis: Statistical analysis of a durum wheat database (P. Spagnoletti-Zeuli)*
- 1:00-3:00 *Lab: Isozyme lab Section B, Session 3: Scoring gels (M. Sun)*
- 4:00-5:00 *Lab: PCR DNA analysis – introduction (V. Llaca)*
- 7:30-8:30 *Orientation for southern California tour*
- 
- 7/24 Friday Isozyme lab, both sections, in 203 Surge IV; PCR lab in 139 Briggs**
- 8:00-12:00 *Lab: Isozyme lab, both sections, Session 4: Zymogram interpretation and data analysis (M. Sun)*
- 1:15-5:15 *Lab: PCR DNA analysis (V. Llaca)*
- 
- 7/25 Saturday Tour to southern California begins**
- 7:30 *Board bus*
- 7:45-6:00 *Travel, scenic stops to be announced*
- 
- 7/26 Sunday Travel continuing to Riverside, CA**
-

# Plant Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

**7/27 Monday Morning: Field visits and lectures at UC Riverside; Afternoon visit to the National Germplasm Repository**

- 8:30-9:30 Case study: Guayule germplasm (A. Estilai)  
10:30-11:30 Case study: Jojoba/New crops (I. Ting)  
10:30-12:00 Case study: Evaluation and characterization of citrus germplasm (M. Roose)  
1:30--5:00 Tour: National Germplasm Repository (T. Williams)  
Demonstration: PCR analysis for disease detection (T. Williams)
- 

**7/28 Tuesday Lectures and case studies at UC Riverside**

- 8:30-10:30 Tour: UCR Botanical Garden (S. Morgan)  
10:30-12:00 Lecture: Genetic resources of tropical fruit: species of Brunei (S. Tinggal)  
1:30-2:15 Case study: Cherimoya (J. Clegg)  
2:15-2:45 Case study: Avocado species (R. Scora)  
3:00-3:45 Avocado cultivar identification with molecular markers;  
DNA sequence diversity in pearl millet (M. Clegg)  
3:45-5:00 Case study: Wheat/beans (B. Ehdai, D. Barnhart)
- 

**7/29 Wednesday Travel to South Coast Field Station; Travel to Irvine**

- 8:00 Dorm checkout  
8:30 Board bus  
10:30-3:00 Tour: South Coast Field Station  
Citrus relatives collection (C. Corbett),  
Avocado species collection tour (G. Martin)  
Strawberries, Legumes, Cereals  
3:00 Board bus  
3:15 Travel to motel
- 

**7/30 Thursday Visit to UC Irvine Arboretum; Begin travel to northern California**

- 8:00 Board bus  
8:30-12:00 Tour: UC Irvine Arboretum (Host H. Koopowitz)  
1:30-6:00 Travel to motel
- 

**7/31 Friday Travel, stops en route**

- 8:30 Board bus  
8:30-12:00 Travel  
1:30-3:00 Tour: University of California Kearney Agricultural Center  
3:30 Travel to motel
- 

**8/1 Saturday Travel, Arrive back in Davis**

- 8:30 Board bus  
8:30-12:00 Travel to Davis
-

# Plant Genetic Resources Conservation Short Course

Working Schedule of Events \* July 6 to August 7, 1992

---

- 8/3 Monday Lectures and case studies in 203 Surge IV**
- 8:30-10:00 *Lecture:* US National Plant Germplasm System (**H.L. Shands**)  
10:30-11:30 *Case study:* US National Seed Storage Laboratory (**P. Stanwood**)
- 1:30-3:00 *Lecture:* Cryopreservation technology for seeds: application to conservation (**P. Stanwood**)  
3:30-5:00 *Case study:* International rice germplasm network and other international networks (**T.T. Chang**)  
7:30-9:00 Discussion session III
- 
- 8/4 Tuesday Lectures and case studies in 203 Surge IV**
- 8:30-10:00 *Lecture:* Characterization and evaluation of genetic variability in crops (**C.O. Qualset**)  
10:30-12:00 *Lecture:* Genetic variability in natural populations (**F.T. Ledig**)
- 1:30-2:30 *Case study:* Genetic Conservation Areas (**C.I. Millar**)  
2:45-3:45 *Case study:* Conservation of native California species: *Clarkia* (**L.D. Gottlieb**)  
4:00-5:00 *Case study:* To be announced
- 
- 8/5 Wednesday Tour to Petoseed in morning**
- 7:45 Board bus at dorm  
8:15-10:15 *Tour:* Petoseed, Inc., Woodland, CA (Host **B. Sanders**)  
10:30 Board bus  
11:00-12:00 Open  
1:30-5:00 Tour to be announced
- 
- 8/6 Thursday Lectures and case studies in 203 Surge IV; walk to Parsons Building for afternoon tour**
- 8:30-12:00 *Lectures:* To be announced  
1:00--5:00 Open
- 
- 8/7 Friday Lectures and case studies in 203 Surge IV**
- 9:00-10:00 *Lecture:* To be announced  
10:30-11:30 *Lecture:* To be announced
- 1:30-2:30 *Case study:* Genetic resources of common bean (**P. Gepts**)  
2:45-3:45 *Case study:* Role of genetic resources in walnut improvement (**G. McGranahan**)  
3:30-5:00 Open  
6:30-10:00 Dinner and closing
- 
- 8/8 Saturday Departure of participants at various times**

# PGR Conservation Short Course—Working Topic List

<b>LECTURES</b>	<b>SPEAKERS</b>
<i>Genetics, evolution, and diversity</i>	
Biodiversity: Threats and value	F. Thomas Ledig
Options for maintaining biodiversity	Harold Koopowitz
Crop plant evolution	Subodh K. Jain
Importance of systematics for germplasm utilization	Jan Dvorak
Ecological parameters of genetic diversity	Subodh K. Jain
Genetic variability in natural populations	F. Thomas Ledig
<i>Management</i>	
Components of a crop genetic resources program	T.T. Chang
Genebank management	T.T. Chang
Management practices	T.T. Chang
Optimum sample size and strategies for regenerating outcrossing crops	José Crossa
Conservation strategies	Lyndsey A. Withers
Database development for plant genetic resources	Ed Bird
<i>Techniques/Technologies</i>	
Agricultural biotechnologies for sustainable production	Dianne Janczewski
Biotechnology and the detection of genetic variation in the biosphere	Cristián Orrego
Seed preservation technologies	T.T. Chang
<i>In vitro</i> conservation	Lyndsey A. Withers
Special problems of clonally propagated crops	Dan E. Parfitt
Basic theory and practice of cryopreservation applied to plant germplasm conservation	Dan E. Parfitt
Cryopreservation technology for seeds: application to conservation	Phillip Stanwood
<i>Organizations</i>	
US AID Project Noah	Dianne Janczewski
US National Plant Germplasm System and international programs	Henry L. Shands
US National Seed Storage Laboratory	Phillip Stanwood
<i>Diversity</i> magazine	Deborah Strauss
<i>Legal issues, policy</i>	
UN Conference on Environment and Development—Earth Summit	Jack Ives
<b>LABORATORIES</b>	<b>INSTRUCTORS</b>
Isozyme analysis	Mei Sun
PCR analysis	Victor Llaca
ELISA and its role in maintaining virus-free plants	Adib Rowhani
Plant health—PCR for disease detection	Timothy E. Williams

# PGR Conservation Short Course—Working Topic List

TOURS	LEADERS/HOSTS
UCD campus services & facilities tour	Campus hosts
UC Davis Arboretum	Mary T. Burke Warren G. Roberts
Biological-Agricultural Reference services at Shields Library UCD	John Sherlock
USFS Institute of Forest Genetics, Placerville	F. Thomas Ledig
National Germplasm Repository—Davis	Kathleen S. Rigert
UC Berkeley Botanical Garden	Holly Forbes Robert Ornduff
California Academy of Sciences—Museum & herbarium	Frank Almeda
National Germplasm Repository—Riverside	Timothy E. Williams
UCR Botanical Garden	Steve Morgan
UC Irvine Arboretum	Harold Koopowitz
Foundation Seed & Plant Materials Service	Susan Nelson-Kluk
Petoseed, Inc.	Brett Sanders
CASE STUDIES	SPEAKERS
A computer program for estimating sample size for germplasm conservation	José Crossa
C.M. Rick Tomato Genetics Resource Center	C.M. Rick
Use of <i>Brassica</i> genetic stocks in research and biotechnology	Carlos F. Quiros
Statistical analysis of a durum wheat database	Pierluigi Spagnoletti Zeuli
Guayule genetic resources	Ali Estilai
Jojoba/New crops	Irwin Ting
Evaluation and characterization of citrus germplasm	Mikeal Roose
Genetic resources of tropical fruit: species of Brunei	Serudin Tinggal
Cherimoya	Janet Clegg
Avocado species	R. Scora
Avocado cultivar identification with molecular markers;	Michael Clegg
DNA sequence diversity in pearl millet	
Genetic diversity in wheat and beans	Bahram Ehdai, D. Barnhart
International Rice Germplasm Network	T.T. Chang
Genetic Conservation Areas	Connie I. Millar
Conservation of native California species— <i>Clarkia</i>	Leslie D. Gottlieb
Genetic resources of common beans	Paul Gepts
Role of genetic resources in walnut improvement	Gale McGranahan
CLASS PRESENTATION PERIODS	DISCUSSION SESSIONS
I 7:30-9:00, 7/8	I 4:00-5:00, 7/15
II 8:30-10:15am, 7/9	II 4:00-5:30, 7/21
III 7:30-9:15, 7/14	III 7:30-9:00, 8/3
IV 3:30-5:00, 7/20	
Mini-seminar session 7:30-9:00, 7/7	