

Monday PM

at or near 30 grams in late March or early April, well up in the river system to ensure residence through April 11th when migratory readiness for this stock probably occurs.

- (54) **Barbour, Stephen S., D. L. Morantz, and R. K. Sweeney** (Fisheries and Oceans, Fish Habitat Protection Section, P.O. Box 550, Halifax, Nova Scotia B3J 2S7). **Habitat use by feral coho salmon and Atlantic coast salmonids in a Nova Scotia river.**

Microhabitat use by four salmonid species (Atlantic salmon, brown trout, speckled trout, and feral coho salmon) was assessed by direct observation and the development of habitat suitability curves. Of these species, coho were the most active and mobile, were found higher in the water column, and occupied deeper water where velocities were lower. Atlantic salmon were territorial, cryptic and hugged the substrate under shallow, high velocity water. Brown and speckled trout were intermediate in their habitat choice with brown trout tending to Atlantic salmon type habitat and speckled trout preferring quieter water. All species except Atlantic salmon preferred some type of overhanging cover. Very little interspecific agonistic behavior was observed within any combination of the four species. Intraspecific agonism was common in coho and Atlantic salmon, but rarely seen in brown or speckled trout.

- (55) **Fawcett, Robert S.** (New Hampshire Fish and Game Department, 34 Bridge Street, Concord, NH 03301), **Stephen E. Barbour** (Fisheries and Oceans, Halifax, Nova Scotia), **Philip J. Sawyer** (Sea Run Inc., Kennebunkport, ME), **Leslie R. Wedge** (New York State Department of Environmental Conservation, Cortland, NY), and **Kenneth Reback** (Massachusetts Division of Marine Fisheries, Sandwich, MA). **Panel Discussion: The introduction of Pacific salmon to the Northeast.**

With William J. McNeil's salmon recipe of 1 part science, 2 parts technology, 3 parts economics, and 10 parts politics in mind, the panel will focus on the smallest ingredient: the best scientific information available. There will be a brief update of information followed by an attempt to answer a series of questions related to problems and issues from a biological perspective. (1) What are the effects of the introduction of Pacific salmonids on native fisheries? (Are interspecific competition, disease, or other problems important?) (2) Is the introduction of these exotics worth the cost? (3) Who decides the answer to question (2)? This will then lead into a discussion of problems and issues from a non-biological perspective.

-----SESSION 10H: IBI (S)-----

- (56) **Karr, James R.** (Smithsonian Tropical Research Institute, Balboa, Panama). **Assessment of biological integrity: Theoretical underpinnings.**

The ability of a water resource to sustain a balanced biological community is one of the best indicators of the potential for beneficial use. Assessment of biological integrity in water resource systems has been hampered by (1) lack of methodologies suitable for evaluating biological conditions in an integrative fashion and (2) uncritical acceptance of chemical surrogates for assessment of biological integrity. Historical approaches to evaluation of biotic integrity (indicator species, diversity indexes, habitat measures such

Monday PM

as HEP) are inadequate because they evaluate only a limited array of causes of degradation or they involve ill-defined theoretical underpinnings. The recently developed Index of Biotic Integrity reduces that problem by integrating responses of biotic communities through an examination of patterns and processes from individual, population, community, and ecosystem levels. IBI is an aggregate of several independent and overlapping metrics. Values of each metric are compared with values expected at sites of similar stream size and regional location with minimal human influence. The strongest arguments for monitoring fish using IBI are that (1) conventional chemical monitoring does not ensure biotic integrity of water resources and (2) a broadly-based and straight-forward index is now available. However, additional evaluation of IBI is required to improve it for uses outside the region in which it was developed and for other than running water ecosystems.

- (57) O'Bara, Christopher S., Ann M. Foster, and R. Don Estes (Tennessee Cooperative Fishery Research Unit, Tennessee Technological University, Cookeville, TN 38505). **The effect of natural factors on the application of the index of biotic integrity in southeastern United States streams.**

Fish community composition and structure were evaluated within a variety of geologic and geographic regions to determine the natural diversity in the ichthyofaunal communities of southeastern lotic systems. Communities were influenced by river drainage, physiographic regions, stream dendritic pattern, elevation, gradient, aquatic ecoregion, and accessibility to large rivers and reservoirs. The complexity of the fish communities was greater in the Piedmont, Coastal and Interior Basin Physiographic Regions as compared to the Appalachian Plateau and Ridge and Valley Physiographic Regions. Within physiographic regions, watershed area had the greatest effect on the fish community. The index of biotic integrity (IBI) compares the values of 12 expected fish community based metrics to actual values in an attempt to determine lotic condition. Because the IBI is based on this comparison, the influence of natural factors must be established if the methodology is to be used effectively and confidently with a given region.

- (58) Schrader, Lynn H. and Kurt D. Fausch (Department of Fishery and Wildlife Biology, Colorado State University, Ft. Collins, CO 80523). **Testing the index of biotic integrity in the South Platte River basin of northeastern Colorado.**

Despite a depauperate fish fauna comprised of many tolerant species, the index of biotic integrity (IBI) was applied to the South Platte River basin with relatively few modifications. Four of the original IBI metrics were changed because the region has few specialized insectivores or piscivores, and several taxa have few species. New metrics are number and identity of cyprinid species, proportion of individuals as white suckers, proportion of individuals as specialized invertebrate feeders, and proportion of individuals as introduced species. Maximum species richness lines for the basin did not vary with altitude or gradient in the plains and transition zone regions, and were similar to other Great Plains rivers. The IBI was calculated for an independent data set spanning 5 years at 18 sites on three transition zone rivers. Values of the IBI and component metrics were then related to flow variability, water quality, and physical habitat, to test whether the index was related to environmental variables. These relationships indicate mechanisms affecting biotic integrity in the three rivers.

Monday PM

- (59) **Thompson, Bruce A. and Gary R. Fitzhugh** (Coastal Fisheries Institute, Center for Wetland Resources, Louisiana State University, Baton Rouge, LA 70803)
Application of the index of biotic integrity concept to estuarine systems: Formulation and limitations.

The concept of an Index of Biotic Integrity (IBI) was introduced by Karr for evaluating conditions in midwestern streams, using structure and makeup of fish assemblages. This concept has attracted attention for its potential use in assessing the overall health of a broad range of aquatic habitats. The importance of estuarine systems has been widely discussed and continued human and natural impacts on these ecosystems makes it imperative that methods such as the IBI be developed for assessing relative health trends in estuarine environments. Karr's three main categories: species composition, trophic composition, and fish condition can essentially be retained as originally developed; however, dynamic conditions in estuaries and dissimilar ecological functions and bioturbation precludes the use of most of the original 12 metrics. Several factors differ substantially between estuarine areas and freshwater streams. Karr's metrics were determined from single point-in-time collections, but the seasonal changes in fauna in estuaries dictate that temporal sampling be incorporated into an estuarine index. Percent similarity between seasons would be an important metric in evaluation of estuarine health. Other metrics under consideration include total number of species, number of truly estuarine species, number of marine species, proportion of individuals as bay anchovies (a representative abundant species), number of species it takes to make up 90% of the community, proportion of individuals as benthic feeders, plankton grazers, and top carnivores. Problems exist with including metrics that incorporate specific groups of estuarine fishes such as sciaenids that can be useful on a local basis, but change with zoogeography. An overall, prototype estuarine IBI will be presented and evaluated. Support for this research was provided by the Louisiana Department of Environmental Quality-Water Pollution Control Division.

- (60) **Miller, David L.** (Northrop Services Inc., 200 SW 35th Street, Corvallis, OR 97333), **Robert A. Daniels** (New York State Museum, Albany, NY), **David B. Halliwell** (Massachusetts Division of Fisheries and Wildlife, Westborough, MA)
Development of the index of biotic integrity for Atlantic slope drainages of the northeastern United States.

The recently developed index of biotic integrity (IBI; Karr 1981) was applied to stream fish collection data from the Mohawk (New York), Merrimack (New Hampshire, Massachusetts), and Connecticut (NH, MA) river drainages. Our objectives were (1) to determine if the IBI can be used in this region, and (2) if so, will one IBI suffice? Because several fish taxa are depauperate in this region, several of the original metrics of the IBI need to be modified. However, all replacement metrics followed the rationale behind the use of each of the original metrics. An IBI developed for use in both the Merrimack and Connecticut drainages required development of several replacement metrics. Fewer replacement metrics were required for the Mohawk drainage. Additionally, the relationship between fish density and watershed area was used to provide a more objective and quantitative method for evaluating the number of individual metrics. Irrespective of the modifications, the basic theoretical underpinnings of the IBI remain unchanged. It is encouraging that while regional modification may be necessary, the theoretical integrity of the IBI need not be sacrificed.

Monday PM

- (61) Hughes, Robert M. (Northrop Services Inc., 200 SW 35th Street, Corvallis, OR 97333) and J. R. Gammon (Depauw University, Greencastle, IN). **Evaluation of the indices of biotic integrity and well being for use on a large Oregon river.**

The objectives of this paper are to (1) offer modifications of the IBI to make it more applicable to large western rivers and (2) compare changes in the Index of Biotic Integrity (IBI) and Index of Well Being (IWB) calculated from data collected at 26 sites along 176 miles of river. The number of native centrarchid or salmonid species and the percents of green sunfish, piscivore, and hybrid individuals were considered less appropriate than the number of native cyprinid species and the percents of common carp, catchable salmonid, and introduced individuals. The modified IBI was more closely correlated with changes in fish and habitat quality than either the IBI or IWB. The IWB was sensitive to the several-fold increases in biomass unlike the IBI. Because of the great ranges in fish sizes, addition of a biomass metric to the IBI is recommended for its use on large rivers.

- (62) Angermeier, Paul L., Paul M. Leonard, and Donald J. Orth (Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061). **Application of the index of biotic integrity in some Appalachian streams.**

The applicability of Karr's Index of Biotic Integrity (IBI) was tested in mountain and piedmont streams of Virginia and West Virginia. Maximum species-richness lines (based on stream order) for these regions were assembled and indicate that stream gradient should also be considered during development of expectations for species-richness metrics. The IBI was useful in identifying stream degradation due to mine drainage and domestic sewage, but the metrics that were sensitive to this degradation differed from those sensitive to habitat degradation in Illinois streams. Sampling effort (the number of "passes" through a sample-reach or the length of the sample-reach) can significantly affect IBI assessments. Assessments also are affected by whether or not young-of-year (YOY) are included in the analysis. Inclusion of YOY inflates IBI during seasons and years when YOY are especially abundant. Although the IBI appears to be a useful tool for quality assessment of Appalachian streams, further testing and refinement will enhance its applicability.

- (63) Moyle, Peter B. (Department of Wildlife and Fisheries Biology, University of California, Davis, CA 95616). **Problems with the development and application of indices of biotic integrity to California streams.**

A number of factors make it difficult to apply the Index of Biotic Integrity (IBI) as conceived by J. R. Karr and associates to western streams. (1) There are usually less than 10 species of fish native to any given stream. (2) The amount of local endemism is high. (3) The absence of a species from a stream may be due to zoogeographic barriers or past natural conditions, rather than to present conditions. (4) Most stream fish communities have been altered by water development and the introduction of new species. To overcome these problems, a separate index has to be developed for each major drainage, as we did for three major drainages in California (Sacramento-San Joaquin, Lahontan, North Coast). The indices are weighted heavily on the abundance and diversity of native species, especially salmonids. For coastal streams, one of the metrics

Monday PM

used was based on a of the aquatic comm if they do not ma drainages can be c streams were found for documenting cha

- (64) Miller, D. C.,
Research
of pH, t
fishes a

This paper examine factors: pH, teme and 4-week chronic Cyprinodon variegat Ammonia toxicity is because the unioniz effects. Changes in not. Mysids and lar lower acute toxicity by as much as a fa animals, where NH Increasing temperat the range of 13 to 33 influence of salinity slightly, but not sig context of the deriv

- (65) Tomasso, J. R.
78666).

In this study I dete investigate the unc toxicity among spec whereas the channe correlated significat form and plasma r correlated significat increase the tolera catfish. These res determinant of the various species depe gills which ordinari

- (66) Niimi, Arthur J.
Ontario
dioxins



United States Department of the Interior

FISH AND WILDLIFE SERVICE

75 SPRING STREET, S.W.
ATLANTA, GEORGIA 30303

August 10, 1981

MEMORANDUM

To: Speakers and Organizers, Wild Trout II

From: Frank Richardson, The Chairman

Subject: The Publication

It is with great pleasure, unsurpassed relief, and genuine satisfaction that I transmit to you the publication Wild Trout II. As most of you know, getting something done by goodwill, contributions of others, and the lack of adequate funds usually takes much longer than originally planned.

Several people whom most of you are not aware of contributed to the work of editing, make-up, and all the final tasks of putting a manuscript in order and ready to be published. My secretary, Onnie Pepper; an office associate (Public Affairs Officer), Don Pfitzer; Mike Riedel, FFF member from California; and most of all Chuck Nelson, immediate Past President of FFF and carrier of the ball the final tough yards, are those who made those last important contributions in the effort to get Wild Trout II published.

And then there must be a special thanks to Mike, Gardner, Pete, John, John and Willis, the Program Team, for without their effort and support Wild Trout II would still be unpublished.

Both the FFF and TU will have Wild Trout II available at \$6.00 per copy. All profits are programmed to resource-oriented projects and programs of the two organizations. In fact, significant seed money is being escrowed for Wild Trout III. Hope to see all of you in Yellowstone then.

Frank

Enclosure

7 Rinnu Aprudu tmet

MEMORANDUM
TO: [Illegible]
FROM: [Illegible]
SUBJECT: [Illegible]

[Illegible text]

[Illegible text]

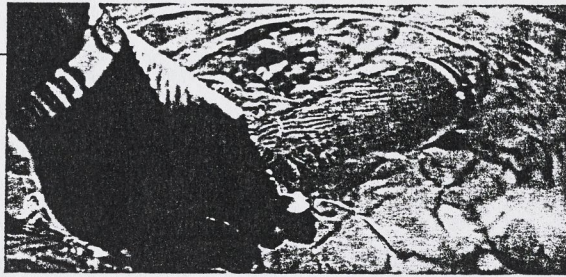
[Illegible text]

[Illegible text]

[Illegible text]

[Illegible text]

[Illegible text]

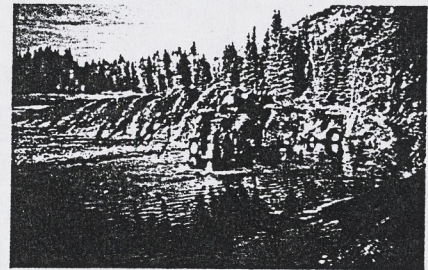


THE SYMPOSIUM

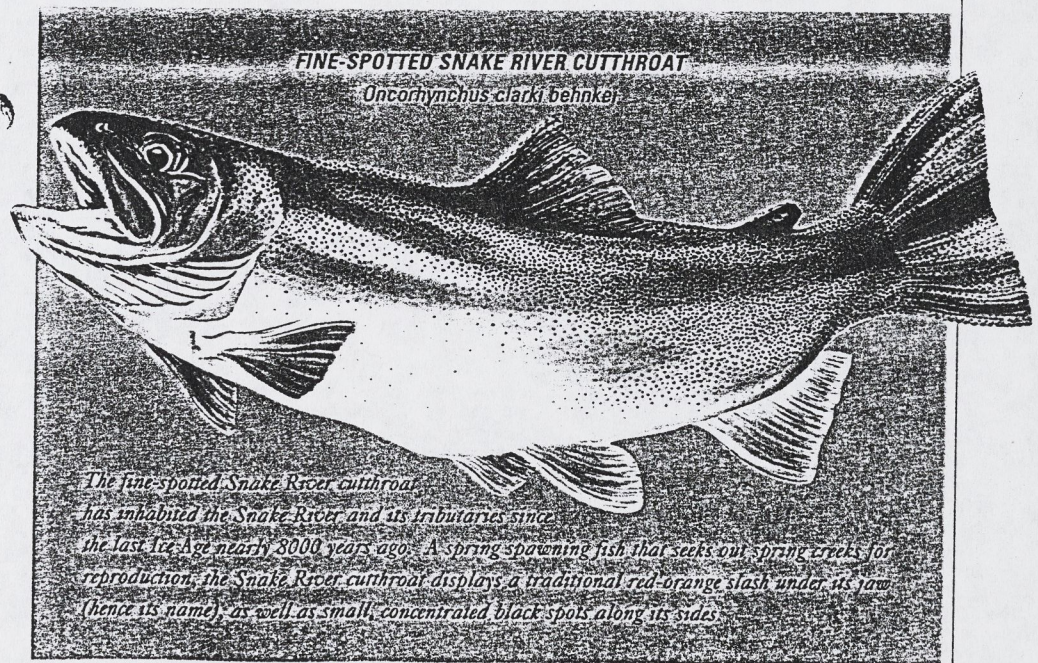
Hosting and moderating the event's symposium will be the Colorado-Wyoming Chapter of the American Fisheries Society.

Planned topics for discussion will include:

- 1:00 pm *Keynote Address* from the Chief of the USDA/Forest Service, Mike Dombeck
- 1:30 pm *Classification: Taxonomy and Status of Native Cutthroat Trout*, Bob Behnke-Colorado State University
- 1:50 pm *Genetics: Cutthroat Trout Genetic Identification*, Dennis Shiozawa and Paul Evans, Brigham Young University
- 2:10 pm *Native Cutthroat Trout Habitat: Its Status and Management*, Don Duff, USDA/Forest Service and Trout Unlimited
- 2:30 pm *Native Cutthroat Trout Management in Wyoming*, Ron Remmick, Wyoming Game and Fish Department
- 2:50 pm *Conflicts: Is It Really Non-Native Trout vs. Native Cutthroat Trout?*, John Varley, Yellowstone National Park
- 3:10 pm *Angler Harvest Regulations and Their Impacts*, Dick Vincent, Montana Department of Fish, Wildlife and Parks
- 3:30 pm *Public/Private Partnerships*, Dave Nolte, Trout Unlimited and Bureau of Land Management
- 3:50 pm *A Partnership Example—LaBarge Creek Project in Western Wyoming*, Kurt Nelson and George Walker, USDA/Forest Service, and Ron Remmick, Wyoming Game and Fish Department
- 4:10 pm *Fine-Spotted Snake River Cutthroat Trout—A Local Management Example*, John Kiefling, Wyoming Game and Fish Department
- 4:30-5:00 pm *Symposium Summary and Wrap-Up*, Paul Bruun, fly-fishing guide and journalist



It is the hope of Mitsubishi Motors, FIPS-Mouche, Team-USA, Halliburton Company, the USDA/Forest Service and the fly-fishing industry that, through this advanced education, contestants will return to their countries with an expanded knowledge of our area, and the inspiration to see similar projects completed in their homelands.



SESSION III - THE CUATROCIENEGAS OF COAHUILA, MEXICO.** 2:30 p.m.

Chairman: W.L. Minckley, Arizona State University.

- Crustaceans.
G.R. Cole, Flagstaff, Arizona.
- Fishes.
W.L. Minckley, Arizona State University.
- Flora.
Donald J. Pinkava, Arizona State University.
- Herpetology.
C.J. McCoy, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.
- Gastropods.
Robert Hershler, Roselle, New Jersey.
- Environmental impacts.
Salvador Contreras-Balderas, Director, Escuela de Graduados, Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo Leon, Monterrey, México.
- Summary.
James E. Johnson, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

** Note: The above symposium was arranged and coordinated by Paul C. Marsh, Center for Environmental Studies, Arizona State University.

SESSION IV - BARBECUE, ET AL., AND INFORMAL CONTINUATION OF DISCUSSIONS.

Friday, November 19. 8:00 a.m.

SESSION V - RESEARCH AND MANAGEMENT PAPERS.

Chairman: Phil Pister, California Department of Fish and Game, Bishop.

- Reproductive biology of longfin dace (Agosia chrysogaster) in a Sonoran Desert stream, Arizona.
W.G. Kepner and W.L. Minckley, Arizona State University, Tempe.
- Evolutionary ecology of three Mexican pupfishes (Cyprinodon eximius complex): preliminary studies of life histories and thermal tolerances.
D.L. Soltz, California State University, Los Angeles; and C.R. Feldmeth, Joint Science Department, Claremont Colleges, Claremont, California.
- The role of predation in desert aquatic communities: problems and perspectives.
Gary Meffe, Arizona State University, Tempe.
- Movement of energy by predation in spatially intermittent streams.
M. Busdosh and R. Freeman, Woodward-Clyde Consultants, San Diego.
- Ecology of the Nevadan relict dace, Relictus solitarius (Hubbs and Miller).
Steven Vigg, Desert Research Institute, University of Nevada System, Reno.

- Reseña sobre los estudios de los peces de aguas continentales en Baja California, con especial referencia en la trucha de San Pedro Mártir.
Carlos Yruretagoyena U., Dirección de Pesca, Ensenada, Baja California, México.
- Estudio preliminar de la Pesquería de la Laguna Salada, Baja California.
G. Compeán J. y O. Baylón G., Secretaria de Pesca, Recursos Pesqueros, Ensenada, Baja California.
- Threatened and endangered freshwater mollusks of western North America that are associated with threatened and endangered fish.
J.J. Landye, Bio-Geo Southwest, Inc., Flagstaff, Arizona.
- Sexual dimorphism in the Utah chub, Gila atraria (Girard).
Arcadio Valdes G. and Rex Herron, Utah State University, Logan.

SESSION VI - MISCELLANEOUS ITEMS. 10:45 a.m.

Chairman: James E. Johnson, U.S. Fish and Wildlife Service, Albuquerque, N.M.

- The Desert Fishes Council's endangered species committee.
Jack Williams, U.S. Fish and Wildlife Service, Sacramento, California.
- "Exotic Species"
W.R. Courtenay, Jr., Florida Atlantic University, Boca Raton.
- Ash Meadows update.
Cindy Williams, Barbara Kelley, Tasker & Beula Edmiston, Ash Meadows Task Force; Don Sada, U.S. Fish and Wildlife Service, Reno, Nevada.

SESSION VII - RESEARCH AND MANAGEMENT PAPERS (CONTINUED). 1:00 p.m.

- The life history and recovery of the Cui-ui (Chasmistes cujus).
Gary Scopettone, U.S. Fish and Wildlife Service, Reno, Nevada.
- Phototaxis in the Devils Hole pupfish, Cyprinodon diabolis Wales.
T.M. Baugh, University of Nevada, Las Vegas.
- Gila topminnow introductions on four Arizona national forests.
Kenneth Byford and Gary Bell, Tonto National Forest, Phoenix, Arizona.
- Livestock and riparian habitat management - why not?
Jerry W. Davis, Tonto National Forest, Phoenix, Arizona.
- Evolutionary genetics of the Gambusia nobilis species group, including G. longispinis, a Cuatrociénegas endemic.
Anthony A. Echelle and Alice F. Echelle, Oklahoma State University, Stillwater.
- Fish fauna of the Rio Sonoyta, Sonora, Mexico.
Thomas E. McMahon, University of Arizona, Tucson; and Robert Rush Miller, Museum of Zoology, University of Michigan, Ann Arbor.

- Cyprinodon diabolis at the Hoover Dam Refugium: facultative or genetic change?
Astrid Kodric-Brown, Department of Ecology and Evolutionary Biology,
the University of Arizona, Tucson.
- Relationships between recruitment of woundfin and stream flow in the
Virgin River, 1977-82.
James E. Deacon, University of Nevada, Las Vegas.
- Application of a physical habitat usability model to the fish community in
a spring-fed desert stream.
T.B. Hardy, C.G. Prewitt and K.A. Voos, University of Nevada, Las Vegas.
- The status of Lahontan cutthroat trout (Salmo clarki henshawi).
Don Sada, U.S. Fish and Wildlife Service, Reno, Nevada.
- Area cladograms for western North American fish faunas.
D.A. Hendrickson and W.L. Minckley, Arizona State University.
- Ciénegas - endangered habitats of the Southwest.
W.L. Minckley and D.A. Hendrickson, Arizona State University.
- The first U.S. Fish and Wildlife Service National Fish Refuge: the
San Bernardino Ranch.
Gerald L. Burton, U.S. Fish and Wildlife Service, Phoenix, Arizona.
- Records for native southwestern fishes transplanted in Arizona.
W.L. Minckley, Arizona State University; and J.E. Brooks, Arizona Game and
Fish Department, Phoenix.
- Thermal ecology of the native and introduced fishes of the Virgin River
(Utah, Arizona, Nevada).
P.B. Schumann, Office of Environmental Science and Engineering, U.C.L.A.;
E.L. Stuenkel, Pacific Biomedical Research Center, University of Hawaii, Manoa;
J.E. Deacon, Department of Biological Sciences, University of Nevada, Las Vegas.

SESSION VIII - BUSINESS MEETING. 7:30 p.m.

Chairmen: James E. Johnson, Chairman, Desert Fishes Council; and
Salvador Contreras-Balderas, Chairman-elect, Desert Fishes Council.

- Old and new business.
- Constitution and bylaws.
- Resolutions.
- Treasurer's report.
- Announcement of nominating committee.
- Installation of new Chairman.

Saturday, November 20. Several field trips will be conducted. Details will be announced.

Papers, abstracts, and inquiries concerning the symposium and activities of the Desert Fishes Council should be directed to:

E.P. Pister, Executive Secretary
Desert Fishes Council
407 West Line Street
Bishop, CA 93514
Phone: (619) 872-1171

[13th Annual Symposium]

Members of Glacier's Science Council
as of August 24, 1988

Dr. Jack Stanford, Bierman
Professor and Director
Flathead Lake Biological Station
311 Bio Station Lane
Polson, Montana 59860
Phone: (406) 982-3301

Dr. Peter Brussard
Professor and Head
Dept of Biology
Montana State University
Bozeman, Montana 59717
Phone: (406) 994-4548

Dr. J. Baird Callicott
Dept of Philosophy
University of Hawaii) address good from 8/15 - 12/15/88
2530 Doyle Street
Honolulu, Hawaii 96822
Phone: (808) 948-8410

or

5934 Ayala Ave
Oakland, California 94609) address good after 12/15/88
Phone: (415) 547-6665

Dr. Robert Behnke
Professor, Fishery Biology
Dept of Fishery & Wildlife Biology
Colorado State University
Fort Collins, Colorado 80523
Phone:

Dr. Jerry Franklin
College of Forest Resources, AR-10
University of Washington
Seattle, Washington 98195
Phone:

Dr. Stephen R. Kellert
Professor, School of Forestry and
Environmental Studies
Yale University, Sage Hall
205 Prospect Avenue
New Haven, Connecticut 06511
Phone:

Dr. Val Geist, Faculty of Environmental
Design, University of Calgary
2920 24 Ave NW
Calgary, Alberta, Canada T2N 1N4
Phone:

Dr. Gary E. Davis, Research Marine Biologist
National Park Service, Channel Islands Nat'l Park
1901 Spinnaker Drive
Ventura, California 93001
Phone: (805) 644-8157

Dr. James W. Whipple, Geologist
US Geological Survey, Central Mineral Resources
Rm 656, US Courthouse
W 920 Riverside Ave
Spokane, Washington 99201
Phone:

Dr. Benjamin C. Dysart III
Box 122
Clemson, South Carolina 29633
Phone:

Dr. Dale R. McCullough, Professor of
Wildlife Biology and Management
College of Natural Resources
University of California
145 Mulford Hall
Berkeley, California 94720
Phone: (415) 642-3765

Dr. Bruce Wilcox, Center for
Conservation Biology
Stanford University
Palo Alto, California 94305
Phone:

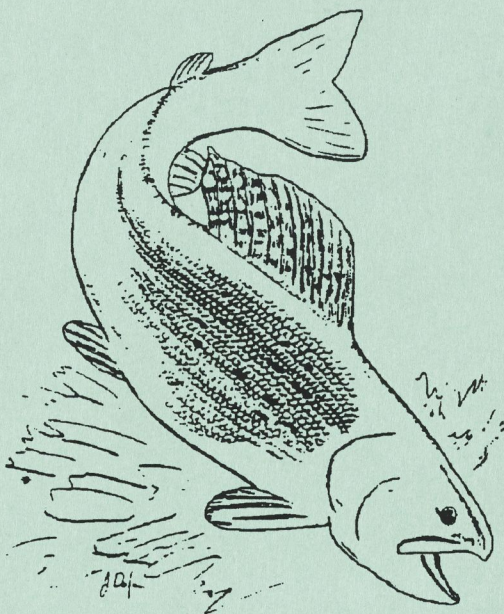
Dr. Philip Rundel, Professor and
Chief of Environmental Biology
Laboratory of Biomedical and Env Sciences
University of California, L. A.
900 Veteran Avenue
Los Angeles, California 90024
Phone:

Dr. Dennis Murphy
Department of Biological Sciences
Stanford University
Stanford, California 94035
Phone: (415) 725-1852

Dr. Hank Shugart
Dept of Environmental Sciences
University of Virginia
Charlottesville, Virginia 22903
Phone: (804) 924-7642

WILD TROUT V
YELLOWSTONE NATIONAL PARK

September 26 & 27, 1994



SPONSORED BY:

Trout Unlimited

Federation of Fly Fishers

**U.S. Department of the Interior
Fish and Wildlife Service
National Park Service**

**U.S. Department of Agriculture
Forest Service**

Environmental Protection Agency

American Fisheries Society

WILD TROUT IN THE 21st CENTURY

MONDAY, SEPTEMBER 26

8:00 a.m.

INTRODUCTIONS:

Symposium Moderator: Roger Barnhart, CA
Yellowstone Host: Joe Alston, YNP

KEYNOTER: The Honorable Bruce Babbitt,
Secretary of the Interior

9:10 a.m. - 12 noon

SESSION I - WILD TROUT IN NORTH AMERICA: REGIONAL PERSPECTIVES

Session Leader: Jim Lyons, DC
Angler's Viewpoint: Bill Bakke, OR
State Perspective East: Del Graff, PA
State Perspective Mid-US: Bob Hunt, WI
State Perspective West: Jim Martin, OR
British Columbia Perspective:
Gerry Taylor, BC
USFS Perspective: Harv Forsgren, DC
Native American Perspective:
Dick Baldes, WY

12:00 noon LUNCHEON

Speaker: Chas Gauvin, VA

1:30 p.m. - 5:30 p.m.

SESSION II - HABITAT PROTECTION & WILD TROUT

Session Leader: Steve Moore, TN
Protection & Restoration in a Watershed
Context: Jack Imhof, Ontario
W Coast Salmonid Habitat: Bill Shake, OR
FERC Relicensing & Habitat Council:
Mona Janopaul, VA
Rehab, Natural Processes & Wild Trout:
Jim Nankervis, CO & Mike Young, WY

SESSION III - ROLE OF ENDANGERED SPECIES ACT IN WILD TROUT MANAGEMENT

Session Leader: Suzanne Van Gytenbeek, CO
ESA; Status & Future: Nancy Kaufmann, DC
Impacts of Listing Pacific Salmon:
Steve Huffaker, ID
Listing Atlantic Salmon: Jerry Marancik, ME

7:30p.m.

Film: A RIVER RUNS THROUGH IT

TUESDAY, SEPTEMBER 27

8:00 - 11:45 a.m.

SESSION IV - WHAT IS A WILD TROUT?

Session Leader: Eric Loudenslager, CA
Geneticist's View: Ken Currens, OR
Fish Culturist's View: Nick Parker, TX
Fish Manager's View: Ron Remmick, WY
Why Wild Trout Matter: Ray White, WA

SESSION V - ROLE OF RESEARCH IN WILD TROUT MANAGEMENT

Session Leader: Spencer Turner, MO
Angling Experiences vs. Satisfaction:
John Deinstadt, CA
Impacts on Distribution: Andy Dolloff, VA
DNA Identification: Dennis Shiozawa, UT &
Paul Evans, UT
Conflicts in Allocation: Russ Thurow, ID &
Dan Schill, ID

12:00 noon LUNCHEON

Speaker: Jay Hair, DC

1:45 - 5:30 p.m.

SESSION VI - SOCIOECONOMICS OF WILD TROUT

Session Leader: Jim Borowa, NC
Demographics & Economics: Tony Fedler
Fishing Industry: Perk Perkins
Beyond the Pocketbook: Barb Knuth, NY

SESSION VII - THE FUTURE OF FISHING FOR WILD TROUT

Session Leader: Phil Hulbert, NY
PERSPECTIVES:
Animal Rights Movement: Steve Quinn, MN
Sport Fish Restoration: Joe McGurrin, MD
Native Trout Fishing: Dave Nolte, OR
State Perspective: Larry Peterman, MT

5:15 p.m.

SYMPOSIUM SUMMARY
Robert Martin, PA

6:00 - 7:00 p.m.

SOCIAL HOUR (No host)

7:00 - 9:00 p.m.

BANQUET
Speaker: Paul Brouha, MD

ORGANIZERS

Symposium Co-chairmen:

Roger Barnhart
Ron Jones

Program Committee:

Bill Shake, Chairman
Don Duff
Pam McClelland
Joe McGurrin
Steve Moore
Suzanne Van Gytenbeek
Phil Hulbert
Bob Wiley

A. Starker Leopold Award Committee:

Pete Van Gytenbeek, Chairman
Bob Behnke
Frank Richardson
Marty Seldon

Editorial Committee:

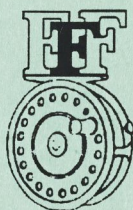
Bob Hamre, Chairman
Joe McGurrin

Proceedings Cover:

Jim Dolan
Frank Richardson

Local Arrangements:

Joe Alston
Lynn Kaeding
Sonya Anderson



staple

fold

Fish and Wildlife Reference Service
5430 Grosvenor Lane, Suite 110
Bethesda, Maryland 20814-2158

Place
Stamp
Here

fold

staple

Bulletin Board

The Fifth Annual Meeting of the Natural Resources Information Council (NRIC) will be held August 6-9, 1995 at Utah State University, Logan, Utah. Contact Carla Heister (801-797-4053 or email heister@cc.usu.edu) for program information. Registration information may be obtained at 801-797-0423

WETHings: Wetland Habitat Indicators for Nongame Species - Wetland-Dependent Amphibians, Reptiles, and Mammals of New England. WETHings consists of three components: Volume I provides instruction for using Wethings and includes directions for field data collection, use of the computer program, and analysis of results; Volume II contains a literature review and individual predictive models for each species; and the WETHings Software employs an expert system program to evaluate wetland habitat potential. Cost: \$75.00 (includes two volumes and software). For information, contact: The Environmental Institute, RE: Publication 94-1, Blaisdell House, Box 30820, University of Massachusetts, Amherst, MA 01003-0820. Telephone: (413) 545-2842.

"Bass Management In Ontario" Workshop Proceedings (3 October 1994, Queen's University Biological Station, Ontario, Canada). Single copy request (no charge) can be made by contacting Gail Coville, Ontario Ministry of Natural Resources, P.O. Box 605, Brockville, Ontario K6V 5Y8. Telephone: (613) 342-8524. FAX: (613) 342-7544.

Prevention and Control of Wildlife Damage: A Handbook for People Who Deal with Wildlife Damage Problems. S.E. Hygnstrom, R.M. Timm, and G.E. Larson (Eds.). Published by Univ. of Nebraska Cooperative Extension, Great Plains Agriculture Council-Wildlife Committee, and USDA-APHIS-Animal Damage Control. Costs (United States and Canada): book copies - \$40.00 + \$5.00 shipping; CD-ROM - \$40.00 + \$3.00 shipping; book plus CD-ROM - \$60.00 + \$5.00 shipping. To order or for information, contact: Wildlife Damage Handbook, 202 Natural Resources Hall, University of Nebraska, Lincoln, NE 68583-0819. Telephone: (402) 472-2188

A two-volume CD-ROM set on raptors, Know Your Birds of Prey Set, is available from Axia International Inc. Volume One: Know Your Owls, covers North American's 19 owl species. Volume Two: Know Your Birds of Prey - Vultures to Falcons, details the remaining raptors, 39 species ranging from vultures to falcons. Each volume contains color photos, text, range maps, illustrations, and full-motion video. For information, contact: Axia International Inc. Marketing Dept. 510, 840-6 Avenue S.W., Calgary, AB, Canada T2P 3E5. Telephone: 1-800-WOW-AXIA (969-2942). FAX: (403) 261-1675.

HUMAN DIMENSIONS



48. Beyond the Pocketbook: Held and Intrinsic Values Associated with Wild Trout. Knuth, B.A. Paper presented at Wild Trout V: Wild Trout in the 21st Century (Yellowstone National Park, 26-27 September 1994). 1994. 6 pp. /1 mf/. MIN 809510099

49. Public Attitudes Toward Wildlife and Its Accessibility: Urban and Suburban Attitudes Toward Deer Management. Stout, R.J.; Knuth, B.A.; Matfield, G.F.; Parsons, G.R. NYS DEC. Final Report. Cornell Univ., Human Dimensions Reserach Unit (HDRU) Series No. 95-1. "Effects of a Suburban Deer Management Communication Program, with Emphasis on Attitudes and Opinions of Suburban Residents". 1995. 156 pp. /2 mf/. MIN 319580047

50. Preliminary Insights about the Sociocultural Importance of Hunting and Trapping. Brown, T.L.; Decker, D.J.; Enck, J.W. Cornell Univ., Human Dimensions Research Unit. HDRU Series No. 95-2. 1995. 90 pp. /1 mf/. MIN 809580048

FISH AND WILDLIFE REFERENCE SERVICE STAFF

Paul Wilson.....Project Manager
Geoffrey Yeason.....Index. Spec./Search Analyst
Garvey J. Dyer.....Index. Spec./Search Analyst
Mary Ann Howde.....Production Clerk
M. Ariene Alford.....Production Clerk

The Fish and Wildlife Reference Service Newsletter is issued by the KRA Corporation. KRA operates this Service under a contract with the U.S. Fish and Wildlife Service. Contractual information can be obtained by calling Jim Beers, Project Officer at (703) 358-2156. This information retrieval system selectively covers the published and unpublished research reports resulting from the Federal Aid in Fish and Wildlife Restoration Program (Pittman-Robertson and Dingell-Johnson Acts), the Anadromous Sport Fish Conservation Program, the Endangered Species Grants Program and the Cooperative Fish and Wildlife Research Units.

The publication herein of material selected from sources outside the Fish and Wildlife Service is not to be construed as an endorsement thereof and does not necessarily reflect the views of the USFWS.

Please Circulate

Fish and Wildlife Reference Service Newsletter

Number 105
Summer 1995



Suite 110
5430 Grosvenor Lane
Bethesda, MD 20814-2158
800-582-3421
301-492-6403 Maryland
FAX (301) 564-4059

Operated by KRA Corporation
Silver Spring, MD

Teaming With Wildlife: A Natural Investment

A nationwide proposal to meet the critical needs of fish and wildlife has the support of more than 100 groups, from the Ruffed Grouse Society to the National Association for Interpretation, to the binocular companies Swarovski Optik and Swift Instruments. The official slogan for the Fish and Wildlife Diversity Funding Initiative is "Teaming with Wildlife: A Natural Investment." The funding will complement the successes of more than half a century of game species restoration made possible through the Sport Fish and Wildlife Restoration Acts. The International Association of Fish and Wildlife Agencies and a steering committee of seven conservation organizations are leading the effort.

Hunters and anglers have teamed up with industry for more than half a century, paying user fees on their equipment to generate funds for conservation. Now, as the stresses upon wildlife and the outdoors intensify, it becomes paramount that all who appreciate fish and wildlife must have some way to pay a small user fee, too.

The Fish and Wildlife Diversity Funding Initiative proposes to expand user fees to include a wide array of equipment that is part of the outdoor wildlife experience. This fee can never exceed 5 percent of the manufacturer's price, compared to the 10 percent fee paid on hunting and angling equipment. That comes only to \$2.50 on a \$100 pair of binoculars or 30 cents on a \$10 field guide. Manufacturers will be encouraged to display a green logo, identifying their product as part of the Teaming with Wildlife effort. Products under consideration include binoculars, film, bird seed, bird feeders, tents, backpacks, hiking boots, recreational vehicles and field guides.

An annual funding goal of \$350 million is to be distributed to state fish and wildlife agencies based on a formula of land base and population. The money will be dedicated to three purposes: wildlife conservation, recreation and education. States are forming their own "Team Wildlife" Coalitions to support the initiative and to gather ideas for the best uses of the funding in their respective states.

Most people, including many of the 160 million Americans participating in outdoor, wildlife-related recreation, are unaware that they are not paying for wildlife conservation. Efforts such as voluntary nongame tax check-offs have come up far short of meeting the needs of some 2,000 species. The Fish and Wildlife Diversity Funding Initiative would enable biologists to inventory, monitor and devise conservation plans for declining migratory songbirds, amphibians, and other nongame species. Part of the investment will help prevent the high cost of endangered species recovery.

Recreation funding will guarantee high quality experiences for wildlife watchers, from greater access to lands and waterways to more trails and backyard habitat assistance. The same lands and waters people seek for play are the very ones wildlife depend on.

Finally, funds will give states the ability to create and maintain nature centers, interpret watchable wildlife sites, and to meet the wildlife education needs of teachers, interpreters and community groups. The benefits are both immediate and long-term. For example, sandhill crane watching along the Platte River in Nebraska generates \$40 million in economic activity per year. By enhancing watchable wildlife sites and working with communities, there's a direct dollar connection to local economies. The long-term benefit of education can have a positive effect on the future of wildlife in America as well as participation in wildlife-associated recreation.

Broad support for the Funding Initiative will be needed when it goes to Congress. The user fee concept is a popular one and there's reason to be optimistic. The greatest challenge lies in communicating the need. Outdoor manufacturers, likewise, need to see that their customers are more than willing to pay a little more on products for a worthy investment in conservation education and wildlife-associated recreation.

To become involved in your state's Coalition, contact your state fish and wildlife agency headquarters. For other information, write to the International Association of Fish and Wildlife Agencies, 444 N Capitol St NW, Suite 544, Washington, DC 20001, or phone (202) 624-7890.

NEW REPORTS**MAMMALS** 

1. Seasonal and Circadian Activity Patterns of Female Fishers, Martes pennanti, with Kits. Paragi, T.F.; Arthur, S.M.; Krohn, W.B. *The Can. Field-Natural. Pub. No. 1819, ME Agric. and Forest. Exper. Sta. 1994. pp. 52-57 (6 pp.). Vol. 108 /1 mf/. MIN 189520123*

2. Spatiotemporal Patterns of Macrohabitat Use by Female Black Bears during Fall. Schooley, R.L.; McLaughlin, C.R.; Krohn, W.B.; Matula, G.J. *Int. Conf. Bear Res. and Manage. Pub. No. 1719, ME Agric. Exper. Sta. 1994. pp. 339-348 (10 pp.). Vol. 9, No. 1 /1 mf/. MIN 189520124*

3. Growth of Moose Calves Conceived During The First Versus Second Estrus. Schwartz, C.C.; Hundertmark, K.J.; Becker, E.F. *Alces. 1994. pp. 91-100 (10 pp.). Vol. 30 /1 mf/. MIN 509520125*

4. Mammalian Abundances on Forest-Farm Edges Versus Forest Interiors in Southern Illinois: Is There an Edge Effect? Heske, E.J. *J. of Mamm. 1995. pp. 562-568 (8 pp.). Vol. 76, No. 2 /1 mf/. MIN 129520126*

5. Wolf and Bear Predation on White-tailed Deer Fawns in Northeastern Minnesota. Kunkel, K.E.; Mech, L.D. *Can. J. Zool. 1994. pp. 1557-1565 (10 pp.). Vol. 27 /1 mf/. MIN 229520127*

6. Relations among Fishers, Snow, and Martens: Development and Evaluation of Two Hypotheses. Krohn, W.B.; Elowe, K.D.; Boone, R.B. *The Forestry Chronicle. 1995. pp. 97-105 (10 pp.). Vol. 71, No. 1 /1 mf/. MIN 189520128*

7. The Cumulative Effect of Consecutive Winters' Snow Depth on Moose and Deer Populations: A Defence. McRoberts, R.E.; Mech, L.D.; Peterson, R.O. *J. of Animal Ecology. 1995. pp. 131-135 (6 pp.). Vol. 64 /1 mf/. MIN 809520129*


8. Age Ratios and Age-specific Reproduction of Harvested Raccoons in North and South Missouri in 1992 and 1993. Hamilton, D.A.; Fantz, D.K. *MO Dept. of Conserv. Final Report. 1995. 22 pp. /1 mf/. MIN 249580036*

9. Wildlife Research and Management: Effects of Forest Fragmentation on Deer in Southeast Alaska. Kirchhoff, M.D. *AK Dept. Fish & Game. Final Report. 1994. 74 pp. /1 mf/. MIN 509580037*

10. Distribution and Movements of Caribou in Relation to Roads and Pipelines, Kuparuk Development Area, 1978-90. Smith, W.T.; Cameron, R.D.; Reed, D.J. *AK Dept. Fish & Game. Wildl. Tech. Bull. No. 12. 1994. 64 pp. /1 mf/. MIN 509580038*

11. Movements and Habitat Use of White-tailed Deer in the Northern Black Hills, South Dakota, 1990-1992. Griffin, S.L.; Kennedy, J.F.; Rice, L.A.; Jenks, J.A. *SD Dept. Game, Fish & Parks. Game Report No. 95-05. Compl. Report. 1995. 156 pp. /2 mf/. MIN 409580039*

12. Literature Summary and Habitat Suitability Index Model: Components of Summer Habitat for the Indiana Bat, *Myotis sodalis*. Romme, R.C.; Tyrell, K.; Brack, V. *IN Dept. of Nat. Res. Final Report. 1995. 190 pp. /2 mf/. MIN 139580040*

FISH 

13. Comparative Sensitivity of Rainbow Trout and Two Threatened Salmonids, Apache Trout and Lahontan Cutthroat Trout, to Ultraviolet-B Radiation. Little, E.E.; Fabacher, D.L. *Arch. Hydrobiol. Beih. 1994. pp. 217-226 (10 pp.). Vol. 43 /1 mf/. MIN 809510067*

14. Movements by Young-of-Year and Yearling Largemouth Bass and Their Implications for Supplemental Stocking. Copeland, J.R.; Noble, R.L. *N. Amer. J. of Fish. Manage. 1994. pp. 119-124 (6 pp.). Vol. 14, No. 1 /1 mf/. MIN 329510068*

15. Use of Otolith Microstructure to Distinguish Wild from Hatchery-Reared American Shad in the Susquehanna River. Hendricks, M.L.; Torsello, D.L.; Backman, T.W.H. *N. Amer. J. of Fish. Manage. 1994. pp. 151-161 (12 pp.). Vol. 14, No. 1 /1 mf/. MIN 379510071*

16. Quantifying Fish Habitat in Streams: Transect Spacing, Sample Size, and a Proposed Framework. Simonson, T.D.; Lyons, J.; Kanehl, P.D. *N. Amer. J. of Fish. Manage. 1994. pp. 607-615 (10 pp.). Vol. 14, No. 3 /1 mf/. MIN 489510080*

17. Hooking Mortality of Northern Pike Angled through Ice. DuBois, R.B.; Margenau, T.L.; Stewart, R.S.; Cunningham, P.K.; Rasmussen, P.W. *N. Amer. J. of Fish. Manage. 1994. pp. 769-775 (10 pp.). Vol. 14, No. 4 /1 mf/. MIN 489510086*

18. Larval Fish Distribution and Microhabitat Use in Free-Flowing and Regulated Rivers. Scheidegger, K.J.; Bain, M.B. *Copeia. Contrib. No. 8-912864P, Alabama Agric. Exper. Sta. 1995. pp. 125-135 (12 pp.). No. 1 /1 mf/. MIN 019510091*

19. Metal Concentration in the Gill, Gastrointestinal Tract, and Carcass of White Suckers (*Catostomus commersoni*) in Relation to Lake Acidity. Haines, T.A.; Brumbaugh, W.G. *Water, Air, and Soil Pollution. 1994. pp. 265-274 (10 pp.). Vol. 73 /1 mf/. MIN 189510092*

20. Ecological Attributes of Extinction-prone Species: Loss of Freshwater Fishes of Virginia. Andermeier, P.L. *Conserv. Biol. 1995. pp. 143-158 (16 pp.). Vol. 9, No. 1 /1 mf/. MIN 459510093*

21. A Lightweight, Inclined-Plane Trap for Sampling Salmon Smolts in Rivers. Todd, G.L. *AK Fish. Res. Bull. 1994. pp. 168-175 (8 pp.). Vol. 1, No. 2 /1 mf/. MIN 509510098*

22. Ozark Cavefish Genetics: The Phylogeny of Missouri's Ozark Cavefish (*Amblyopsis rosae*) and Southern Cavefish (*Typhlichthys subterraneus*). Bergstrom, D.E.; Noltie, D.B.; Holtsford, T.P. *MO Dept. of Conserv. Final Report. 1995. 42 pp. /1 mf/. MIN 249540081*

23. Statewide Fisheries Research: Salinity Responses of Paddlefish. Pitman, V.M. *TX Parks & Wildl. Dept. Final Report. 1994. 38 pp. /1 mf/. MIN 429540082*

24. The Instream Flow Incremental Methodology: A Primer for IFIM. Stalnaker, C.; Lamb, B.L.; Henriksen, J.; Bovee, K.; Bartholow, J. *Nat. Biol. Service. Biol. Report 29. Copies may be obtained from the Publications Unit, USFWS, 1849 C St., N.W., Mail Stop 130 Webb Bldg., Washington, DC 20240. 1995. 56 pp. /1 mf/. MIN 809540083*

25. Lake Stocking Manual for Nonanadromous Fisheries in Southcentral Alaska. Havens, A.; Bradley, T.; Baer, C. *AK Dept. Fish & Game. Spec. Pub. No. 95-2. 1995. 106 pp. /2 mf/. MIN 509540084*

26. Fish Attraction to Artificial Structure in Chena Lakes, Alaska. Viavant, T. *AK Dept. Fish & Game. Fishery Data Series No. 95-6. 1995. 20 pp. /1 mf/. MIN 509540085*

27. Summer Distribution and Condition of Striped Bass within Albemarle Sound, North Carolina. Haeseker, S.L. *M.S. Thesis. NC State Univ. 1995. 64 pp. /1 mf/. MIN 329550012*

BIRDS 

28. Declines in Organochlorines in Eggs of Red-breasted Mergansers from Lake Michigan, 1977-1978 Versus 1990. Heinz, G.H.; Miller, D.S.; Ebert, B.J.; Stromborg, K.L. *Environ. Monitor. and Assess. 1994. pp. 175-182 (8 pp.). Vol. 33 /1 mf/. MIN 809520130*

29. Decline of the Red-cockaded Woodpecker (*Picoides borealis*) in Southeastern Oklahoma. Kelly, J.F.; Pletschet, S.M.; Leslie, D.M. *Am. Midl. Nat. 1994. pp. 275-283 (10 pp.). Vol. 132 /1 mf/. MIN 359520131*

30. Conservation Reserve Program: Benefit for Grassland Birds in the Northern Plains. Reynolds, R.E.; Shaffer, T.L.; Sauer, J.R.; Peterjohn, B.G. *Trans. 59th No. Am. Wildl. & Natur. Resour. Conf. 1994. pp. 328-336 (10 pp.). /1 mf/. MIN 809520132*

31. Amino Acid Concentrations in Seed of Preferred Forages of Bobwhites. Boren, J.C.; Lochmiller, R.L.; Leslie, D.M.; Engle, D.M. *J. Range Manage. Journal Art. J-6241, Oklahoma Agric. Exper. Sta. 1995. pp. 141-144 (4 pp.). Vol. 48, No. 2 /1 mf/. MIN 359520133*

32. Bald Eagle Survival and Population Dynamics in Alaska after the Exxon Valdez Oil Spill. Bowman, T.D.; Schempf, P.F.; Bernatowicz, J.A. *J. Wildl. Manage. 1995. pp. 317-324 (8 pp.). Vol. 59, No. 2 /1 mf/. MIN 509520138*

33. Survival and Cause-Specific Mortality of Northern Bobwhite in Missouri. Burger, L.W.; Dailey, T.V.; Kurzejeski, E.W.; Ryan, M.R. *J. Wildl. Manage. Journal Series 12219, MO Agric. Exper. Sta. 1995. pp. 401-410 (10 pp.). Vol. 59, No. 2 /1 mf/. MIN 249520142*

34. How Much Habitat Management is Needed to Meet Mallard Production Objectives? Cowardin, L.M.; Shaffer, T.L.; Kraft, K.M. *Wildl. Soc. Bull. 1995. pp. 48-55 (8 pp.). Vol. 23, No. 1 /1 mf/. MIN 339520143*

35. Ecology of Greater Prairie-Chickens in Relation to Habitat Characteristics in Southwestern Missouri. Kckee, G.

M.S. Thesis. Univ. of MO-Columbia. 1995. 112 pp. /2 mf/. MIN 249530010

36. Disease Considerations for Waterfowl Managers. Friend, M. *National Wildlife Health Center. 1995(?). 78 pp. /1 mf/. MIN 809580041*

37. Nesting Success of Forest Songbirds in Northwestern Illinois. Robinson, S.K. *IL Nat. Hist. Survey. Final Report. 1994. 244 pp. /3 mf/. MIN 129580042*

38. Cattle Egret (*Bubulcus ibis*) Population Trends and Dynamics in Texas (1954-1990). Telfair, R.C. *TX Parks & Wildl. Dept. 1993. 56 pp. /1 mf/. MIN 429580043*

39. Reproduction and Distribution of Bald Eagles in Voyageurs National Park, Minnesota, 1973-1993. Grim, L.H.; Kallemeyn, L.W. *Nat. Biol. Service. Biol. Science Report 1. Copies may be obtained from the Publications Unit, USFWS, 1849 C St., N.W., Mail Stop 130 Webb Bldg., Washington, DC 20240. 1995. 36 pp. /1 mf/. MIN 229580044*

40. Small Game Research and Surveys: Breeding Chronology in Rio Grande Turkey Hens. Davis, B.D. *TX Parks & Wildl. Dept. Final Report. 1994. 192 pp. /2 mf/. MIN 429580045*

RECOVERY PLANS 

41. Texas Trailing Phlox (*Phlox nivalis* ssp. *texensis*) Recovery Plan. Warnock, M.J. *USFWS. 1995. 54 pp. /1 mf/. MIN 809580034*

42. Ozark Big-eared Bat (*Plecotus townsendii* ingens (Handley) Revised Recovery Plan. Hensley, S.; Scott, C.; Heflebower, C.; Puckette, B.; Clark, B. *Clark, B.; Harvey, M.; Tarlton, T.; Clawson, R. USFWS. 1995. 130 pp. /2 mf/. MIN 809580035*

43. Yaqui Fishes Recovery Plan. Cobble, K.S. *USFWS. 1995. 64 pp. /1 mf/. MIN 809540080*

44. Recovery Plan for the Virgin River Fishes. Lentsch, L.; Maddux, H.; Withers, D.; Stefferud, S.; Abarca, F.; Heinrich, J.; Hardy, T.; Douglas, R.; Burke, T. *USFWS. 1995. 54 pp. /1 mf/. MIN 809540079*

GENERAL 

45. Horvitz-Thompson Survey Sample Methods for Estimating Large-scale Animal Abundance. Samuel, M.D.; Garton, E.O. *Trans. 59th No. Am. Wildl. & Natur. Resour. Conf. 1994. pp. 170-179 (10 pp.). /1 mf/. MIN 809520144*

46. Have Desert Tortoises Undergone A Long-term Decline in Abundance? Bury, R.B.; Corn, P.S. *Wildl. Soc. Bull. 1995. pp. 41-47 (8 pp.). Vol. 23, No. 1 /1 mf/. MIN 809520145*

47. Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation. Noss, R.F.; LaRoe, E.T.; Scott, J.M. *Nat. Biol. Service. Biol. Report 28. Copies may be obtained from the Publications Unit, USFWS, 1849 C St., N.W., Mail Stop 130 Webb Bldg., Washington, DC 20240. 1995. 66 pp. /1 mf/. MIN 809580046*

(Continued on page 6)

Reader Service Slip

FWRS FAX (301) 564-4059

Please use this form to order from Newsletter 105

Circle the newsletter article number(s) of your choice from the New Reports Listings.

| DEFINITIONS | SERVICE | COOPERATORS | CLIENTS |
|--|-----------------------|--------------------------|-------------------------------------|
| COOPERATORS: Employees of U.S. State or Federal agencies and Native American Governments with an interest in natural resources. | Photocopy of reports | 100 pages or one report* | \$.10/page |
| | Microfiche of reports | 20 fiche* | \$.50/fiche |
| CLIENTS (MUST PREPAY): All other persons who have a need for or interest in Fish and Wildlife Reference Service Materials. | Literature search | No Charge | \$30 base |
| | Postage | No Charge* | \$2.50 - U.S. USERS ** - FOREIGN |

***ALL CANADIAN AND FOREIGN REQUESTS ARE CHARGED AIRMAIL FIRST CLASS POSTAGE. CONTACT FWRS PRIOR TO ORDERING, TO DETERMINE YOUR COST FOR POSTAGE.

*Cooperators may request **ONE REPORT** (i.e., single-document order) OR **20 FICHE** without charge. Cooperators requesting multiple documents will receive **100 PAGES** of the total pagination without charge and will be charged for every page over 100 pages at the client rate, plus \$2.50 postage.

Cooperator invoices are shipped with documents.
PLEASE PAY WITHIN 60 DAYS

MAILING ADDRESS INFORMATION

PLEASE CORRECT NAME ON THE MAILING LIST

PLEASE CORRECT ADDRESS ON THE MAILING LIST

PLEASE ADD MY NAME TO THE MAILING LIST, BUT DO NOT DELETE NAME ON LABEL

PLEASE REPLACE NAME ON LABEL WITH MY NAME

PLEASE REMOVE MY NAME FROM THE MAILING LIST

Payment enclosed (U.S. Dollars Only) include \$2.50 postage. I understand there may be charges. Please do not send cash.

Photocopies of this slip are acceptable. Please submit entire page, **cut slips will be returned.**

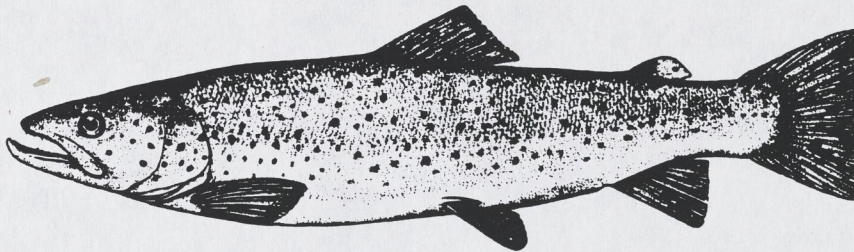
SUMMER NL 105

Fish and Wildlife Reference Service
5430 Grosvenor Lane, Suite 110
Bethesda, MD 20814-2158

Bulk Rate U.S. Postage PAID Suburban MD GMF Permit No. 4041

Robert Behnke 003904
Colorado State University
Dept. of Fishery & Wildlife Bio.
Ft. Collins, CO 80523

TROUT STREAM IMPROVEMENT WORKSHOP



SIXTH TROUT STREAM HABITAT IMPROVEMENT WORKSHOP

August 1-3, 1988

Saint Mary's College, Winona, Minnesota

Sponsored by the Minnesota Department of Natural Resources and the
Fisheries Management Section of the American Fisheries Society.

Two days of field trips

to streams in Minnesota and Wisconsin
with the biologists who designed and built the improvements,
to examine old and new improvement methods,
to study work in progress,
to see electrofishing demonstrations.

One day of panels, papers, and posters

A Decade of Change--invited papers reviewing changes in methods,
results, and finances of habitat improvement,
Pros and Cons of Beaver--a panel discussion,
papers on applicability of HSI and IFIM methods in habitat improvement,
and
general poster session.

REGISTRATION INFORMATION:

The greater emphasis on field trips at the sixth biennial workshop will require that registration be limited to about 110 people. Registration fees include transportation and lunches for field trips. You will be sent a confirmation note when your registration is received.

A lodging and meal package is available at Saint Mary's College for \$25 per day. Most rooms are in apartment suites.

Posters and papers will be accepted while space and time remain available.

BRING your waders, raincoats, and cameras.

Preliminary Schedule

Monday, August 1

Official "Welcome" - Richard Hassinger

History of past H I Workshops - Duff or Heaton

TROUT STREAM IMPROVMENT - A DECADE OF CHANGE

Minnesota

Wisconsin

Michigan

Ontario

U.S. Forest Service - Southeast Region

U.S. Forest Service - East Region

Pennsylvania

Trout Unlimited

Summary - Jack Heaton

Adverse effects of sand bed load on trout streams:
how to reduce them - Gaylord Alexander

The results and management implications of 30 years of trout
stream improvement in Wisconsin - Larry Claggett and Bob Hunt

Evaluation of habitat improvement for brown trout in
agriculturally damaged streams of southeast Minnesota - Bill Thorn

Improvement at salmonid spawning habitat on Hiawatha National
Forest - Chuck Bassett

Trout Habitat improvement adaptation and trout responses in
north central Wisconsin - Max Johnson

PROS AND CONS OF BEAVER - Max Johnson, Moderator

Intensive beaver dam removal and the response of the brook
trout population and sport fishery in northern Wisconsin
trout stream - Ed Avery

Good beaver-bad beaver in the western geomorphic-hydrologic
setting - Bill Platt

Registration form - Sixth Trout Stream Habitat Improvement Workshop

Name _____

Affiliation _____

Street Address _____

City _____ State _____ Zip _____

Daytime Phone (____) _____ Home Phone: (____) _____

_____ Registration Fee: \$40 Includes 2 field trips, buses, sack lunches.

_____ University lodging \$75 31 July-2 August \$75 (3 nights, 3 breakfasts,
Monday lunch, Monday and Tuesday supper)

_____ Wed Night \$25 (includes Wednesday supper, Thursday breakfast)

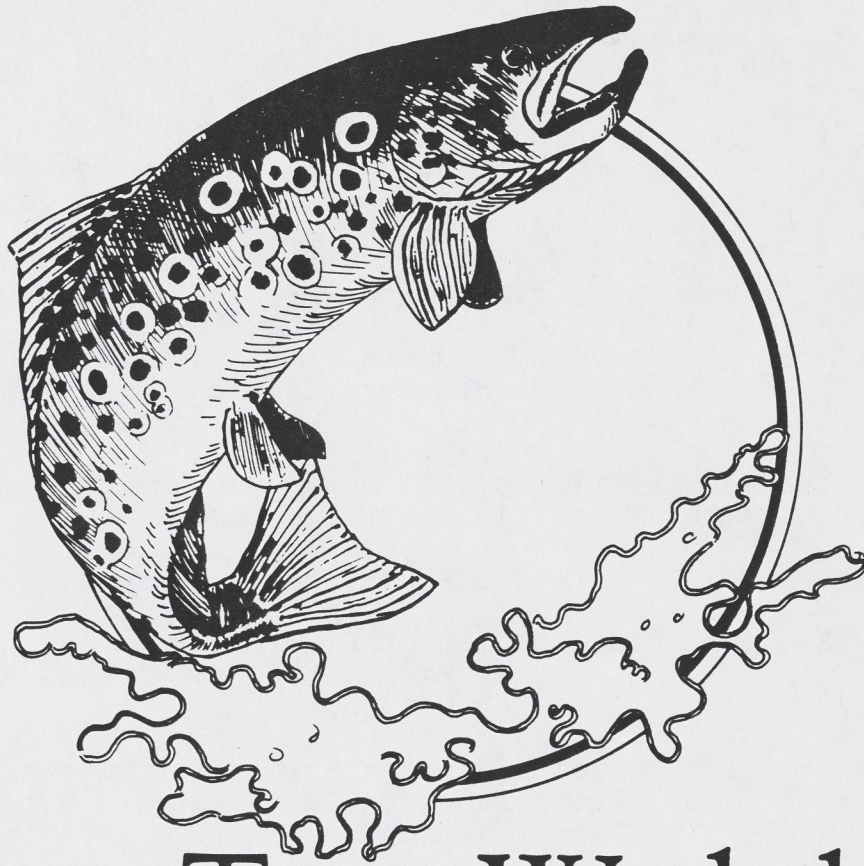
Male _____ Female _____ Smoking _____ Non Smoking _____

Names of 1-3 persons to share suite of rooms _____

Enclosed is a check or money order payable to Minnesota Trout Workshop
in the amount of \$ _____.

_____ Paper or _____ Poster submitted

Mail to: Mark Ebbers Phone: (612)297-2804
Minnesota DNR, Box 12
500 Lafayette Rd.
St. Paul, MN 55155-4012



Brown Trout Workshop

BIOLOGY & MANAGEMENT

Great Smokies Hilton
Asheville, N.C.
April 28-30, 1988

TROUT COMMITTEE, SOUTHERN DIVISION
AMERICAN FISHERIES SOCIETY
N.C. and GA. Trout Unlimited

Putting the Puzzle Together

Thursday 28 April

10:00 am - 5:00 pm Registration

1:00 pm - 1:30 pm Opening Remarks

T. Wayne Jones - N.C. Wildlife
Resources Commission - Organization,
facilities, messages, etc.
Mark Hudy - Trout Committee Chairman
Frank Smith - N.C. Trout Unlimited

1:30 pm - 1:50 pm Keynote Address -

Bob Behnke - Colorado State Univ.,
Dept. Fish and Wildlife Biology

The Roots, Origins, and Management of Salmo trutta,
Our Most Versatile Trout Species

Habitat Session - Jerry West, Moderator

1:50 pm - 2:15 pm Contribution of Riparian Vegetation to Trout
Cover in Small Streams. Thomas A. Wesche,
Univ. of Wyoming.

2:15 pm - 2:40 pm Modified Habitat Suitability Index Model for
Brown Trout in Southeastern Wyoming.
Thomas A. Wesche, Univ. of Wyoming.

2:40 pm - 3:05 pm Habitat Development Techniques Used to
Improve Brown Trout Fisheries in
Wisconsin. Robert L. Hunt. Wisconsin
Dept. of Natural Resources.

3:05 pm - 3:35 pm Break

3:35 pm - 4:00 pm Effects of Siltation and Temperature on
Brown Trout (Salmo trutta) in the Paint
Branch Watershed. James R. Hartzler,
Robert A. Bachman, Donald L. Baylor,
Robert L. Butler, and Kenneth Erbsbak.
Aquatic Resource Consulting.

4:00 pm - 4:25 pm Restoring Sediment Damaged Trout Habitat in
Hog Park Creek, Wyoming. N. Allen Binns.
Wyoming Game and Fish Dept.

4:25 pm - 4:50 pm Habitat Features Associated with Brown Trout
Abundance in Unimpacted Drainages on the
Medicine Bow National Forest. Steven J.
Kozel and Wayne A. Hubert. Univ. of
Wyoming; Mit G. Parsons, U.S. Forest
Service.

7:30 pm - 9:00 pm Comparative Behavior of Wild and Hatchery Brown Trout. An informal presentation with films of field observations by Robert Bachman, Fisheries Chief, Maryland Dept. of Natural Resources.

Friday 29 April

Habitat Session Continued - Jerry West, Moderator

8:30 am - 8:55 am Effects of Habitat Improvement and a Special Regulation on a Wild Brown Trout Population. William C. Thorn. Minnesota Dept. of Natural Resources.

8:55 am - 9:20 am Stream Habitat Effects on Reproductive Success and Juvenile Production of Brown Trout. Hugh R. MacCrimmon and Barra L. Gots, Univ. of Guelph.

9:20 am - 9:45 am Relationship Between Habitat and the Distribution of Wild Brown Trout in North Carolina Streams. Thomas J. Harshbarger.

9:45 am - 10:15 am Break

10:15 am - 11:30 am Habitat Panel Discussion
Monte Seehorn, Moderator

11:30 am - 1:00 pm Lunch (on your own)

Management Session - Mallory Martin, Moderator

1:00 pm - 1:25 pm An Evaluation of Five Strains of Brown Trout. Joseph Bergin. Massachusetts Division of Fisheries and Wildlife.

1:25 pm - 1:50 pm Field Evaluation of Domestic Versus 1/2-wild Brown Trout Fingerling Stockings. James C. Borawa. North Carolina Wildlife Resources Commission.

1:50 pm - 2:15 pm Evaluation of the Shuler Creek Renovation Project - Preliminary Findings. Bennett Wynne. North Carolina Wildlife Resources Commission.

2:15 pm - 2:40 pm Changes in Wild Brown Trout Standing Stocks After Termination of Stocking. Martin Marcinko, Richard D. Lorson, and Richard A. Snyder. Pennsylvania Fish Commission.

2:40 pm - 3:00 pm Break

- 3:00 pm - 4:15 pm Management (Administrative and Policy Perspective) Panel Discussion - James C. Borawa, Moderator.
- 4:15 pm - 5:30 pm Stocking Panel Discussion - Jeff Durniak, Moderator
- 6:30 pm - until - Pick Pickin (included with registration)
Dinner Speaker - Bob Butler - Aquatic Resource Consultants

"Kooks and Conventional Wisdom: The Dynamics of Creativity in Science"

Saturday 30 April

- Regulations Papers - Steve Moore, Moderator
- 8:30 am - 8:55 am Age and Growth Statistics Comparing Brown Trout Scales and Otoliths. Richard D. Lorson and Martin T. Marcinko. Pennsylvania Fish Commission.
- 8:55 am - 9:20 am Brown Trout Population Structure in White River Tailwaters Currently Managed Under No Special Regulations. Mark Hudy. Arkansas Game and Fish Commission.
- 9:20 am - 9:45 am A Review of Regulations and Angler Catch Characteristics on Selected Yellowstone National Park Brown Trout Streams. Ronald D. Jones. U.S. Fish and Wildlife Service.
- 9:45 am - 10:10 am Effects of Catch-and-Release Regulations on an Urban Wild Brown Trout Fishery. Craig W. Billingsly. Pennsylvania Fish Commission.
- 10:10 am - 10:40 am Break
- 10:40 am - Noon Regulations Panel Discussion - Larry Mohn, Moderator
- Noon - 12:15 pm Closing Remarks -
Mark Hudy - Trout Committee
Frank Smith - N.C. Trout Unlimited
- 1:00 - 6:00 pm Trout Unlimited Southeastern Regional Meeting

Sunday 1 May

- 8:00 am - 2:00 pm Trout Unlimited Southeastern Regional Meeting

*Symposium on the Fauna
Zoogeogr. of the Middle East*

Organizing Committee

R. Kinzelbach, G. Roth

TH Darmstadt

Institut für Zoologie

Schnittspahnstrasse 3

6100 Darmstadt - F. R. Germany

F. Krupp, W. Schneider

Universität Mainz

Institut für Zoologie

Saarstrasse 21

6500 Mainz - F. R. Germany

Sponsor

Deutsche Forschungsgemeinschaft (German Research Association)

Symposium Address

Personal mail of symposium members may be addressed to:

c/o Symposium on the Fauna and Zoogeography of the Middle East

FAVORITE Parkhotel GmbH

Karl-Weiser-Strasse 1

6500 Mainz 1 - F. R. Germany

Contents

| | |
|--|----|
| 1. Welcome Address | 1 |
| 2. Symposium Site | 2 |
| 3. Transportation | 2 |
| 4. Travel Documents | 4 |
| 5. Accommodation | 4 |
| 6. Meals | 5 |
| 7. Social Activities | 5 |
| 7.1 Welcoming Reception | 5 |
| 7.2 Tentative Program of other Social Activities | 5 |
| 8. Scientific Program | 5 |
| 8.1 Language | 5 |
| 8.2 Sessions | 5 |
| 8.3 Papers | 6 |
| 8.4 Symposium Proceedings | 6 |
| 8.5 Abstracts | 6 |
| 8.6 Workshops | 6 |
| Appendix | 7 |
| 9. Proceedings of the Symposium: Instructions to Authors | 7 |
| 10. Provisional List of Participants | 13 |
| 11. Tentative Symposium Schedule | 14 |

Enclosures:

Presentation Form
Accommodation Form
Abstract Form

Welcome Address

Dear Colleague,

We wish you a warm welcome to the 'Symposium on the Fauna and Zoogeography of the Middle East' in Mainz. This is the first meeting of its kind since 1952 when a symposium on this topic was held in Istanbul, organized by the late Prof. Dr. W. KOSSWIG.

The massive response to our first circular has been overwhelming and very encouraging. For technical reasons we had to change dates and site: The symposium will now be held from Saturday 28 September to Monday 1 October 1985 in Mainz. We sincerely hope that, in spite of this, all those who have responded will be able to participate.

The symposium will cover a wide range of zoological research in the Middle East, covering taxonomy and systematics, zoogeography and evolution of terrestrial and freshwater animals.

On the following pages you will find all the necessary information. We look forward very much to a busy and pleasant symposium of scientific and social activities.

The Organizing Committee

2. Symposium Site

Mainz, located at the junction of the Rhine and Main rivers, is the capital of the Federal State 'Rhineland Palatinate'. It has approximately 190,000 inhabitants.

Many of its sights date back to its Roman* and Ecclesiastical past, e.g. the cathedral, which, since 746 AD, has been the residence of the Archbishop of Mainz.

The university was founded in 1477 AD and named - after its reopening in 1946 - in honour of the city's famous son - JOHANNES GUTENBERG (1398 - 1468 AD) - the inventor of letterpress printing. Today the university houses 26 faculties with more than 22,000 regular students.

All regular symposium activities will be held in the 'FAVORITE Park-hotel' which is surrounded by the city park (see enclosed brochure). The hotel is named after the former electoral pleasure seat 'La Favorite' which was located nearby.

Mainz has a very mild climate and the weather in September and October is expected still to be warm. Nevertheless clothing against possible rainy and cold weather is recommended.

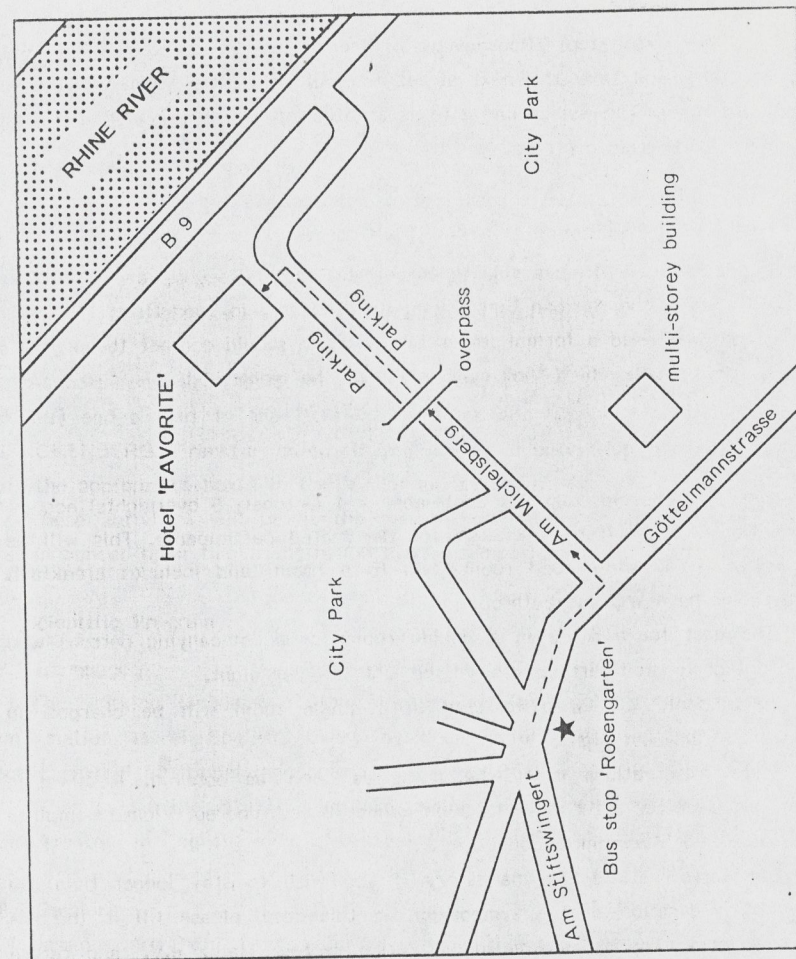
3. Transportation

By Air: You will arrive at Frankfurt International Airport and reach Mainz (Central Station = Hauptbahnhof) by train. The railway station is underneath the terminal (see enclosed airport guide) and there are direct and frequent connections to Mainz (direction Wiesbaden). Tickets may be obtained from automatic vending machines on the platforms and in front of the escalators descending to the underground railway station.

By car: See map in the hotel brochure.

By train: You will arrive at Mainz Central Station (Hauptbahnhof). There are exchange facilities in the Central Station (open Monday to Satur-

* 'Mainz' is derived from Latin Mogontiacum which originates in the name of Moggo, the Celtic goddess of light.



day: 7.30 - 12.00 & 12.30 - 19.15 h; Sunday: 10.00 - 13.45 h). Taxis are available just outside. Bus line 22 (direction Mainz-Weisenau) which stops in front of the station will take you to the symposium site. Get off the bus at the sixth stop ('Rosengarten'). Then cross the road, continue for about 50 m and take the next street to your left ('Am Michelsberg', see enclosed map). The symposium site is located on your left hand side just behind a pedestrian overpass.

4. Travel Documents

Participants requiring a visa to enter the Federal Republic of Germany should contact the German Embassy in their country in good time.

Those who need a formal letter of invitation should contact the organizers stating details which they consider should be mentioned.

5. Accommodation

During the symposium (28 September - 1 October, 5 overnights) accommodation will be free of charge for designated participants. This will be one bed in a twin-bedded room (two to a room) and includes breakfast. All rooms have WC and bathroom.

The cost for a place in a double room for accompanying persons who are not designated participants will be DM 76.- per night.

Participants who wish to stay in a single room will be charged an extra DM 36.- per night.

Hotel reservations should be made as early as possible. Reservation requests received later than 15 June cannot be considered. Please complete the attached 'Accommodation Form'.

Early reservations are mandatory if you wish to stay longer than the period of duration of the symposium. In this case, please fill in the enclosed form 'Tourist Information - Verkehrsverein Mainz e.V.' and return it to the organizers (W. SCHNEIDER) at your earliest convenience. Hotel reservations will be made in any hotel in Mainz in the category you have selected.

6. Meals

During the symposium, lunch will be offered free of charge at the symposium site. We will take care that neither pork nor meat with milk products will be served.

7. Social Activities

7.1 Welcoming Reception

On Friday evening, 27 September, from approximately 18.00 h onwards, an unofficial meeting is planned at the 'FAVORITE Parkhotel'.

7.2 Tentative Program of other Social Activities

During the symposium we are planning to offer a wine-tasting in a local winery.

As post-symposium tours we suggest a visit to the GUTENBERG-Museum (Mainz) and a visit to the Research Institute and Natural History Museum SENCKENBERG (Frankfurt a.M.). If you intend to participate, please check-off the appropriate boxes in the 'Accommodation Form'.

These activities will be at the expense of the participants. Rates will be announced upon final registration at the symposium site.

8. Scientific Program

8.1 Language

The working language of the meeting will be English. All symposium information is in English. Every symposium functionary does, however, speak several additional languages fluently or passably.

When out in the city on your own, many Germans you meet will manage conversation in English, some also speak French.

8.2 Sessions

Sessions are held from Saturday 21 September to Monday 1 October (see 'Tentative Symposium Schedule'). Each session is headed by a chairperson, invited by the organizers. We will do our best to arrange that topically related papers will be given in the same session.

8.3 Papers

The call for papers is included with this announcement. Oral presentation of papers will be scheduled to 25 minutes including discussion. Time limits will be strictly enforced. Presentation may include slide projections, over-head projections and 8 or 16 mm movie film. Please complete the enclosed 'Presentation Form' and return it to the organizers (W. Schneider) by 15 June.

8.4 Symposium Proceedings

Orally presented papers may be published in the Proceedings of the symposium but publication is not obligatory.

Manuscripts of papers submitted for publication in the Proceedings must be with the editors (R. Kinzelbach, F. Krupp & W. Schneider) by 31 October 1985 at the very latest. For detailed information on the preparation of manuscripts please consult the 'Instructions to Authors' (p. 7).

8.5 Abstracts

As mentioned in the First Circular we are planning to publish an Abstract Booklet of papers read at the symposium which will be handed out to participants upon arrival.

In case you have not received our First Circular we enclose once again the 'Abstract Form'. The deadline for receipt of abstracts is 15 June 1985. Abstracts typed on other than the official forms cannot be processed for publication in the Abstract Booklet. For typing please use a good black ribbon to give a clear copy.

Abstracts will be returned if:

- I. Not reproducible
- II. Not in English
- III. Containing Latin or latinized names of new taxa.

8.6 Workshops

We are planning two workshops on the following subjects: "Aquatic Fauna of Inland Waters of the Levant Province" (Monday 30 September, 19.00-21.00 h) and "Current Trends in Zoological Research on the Middle East" (Tuesday 1 October, 13.30 - 15.30 h). Each workshop will be prepared and headed by a co-ordinator invited by the organizers.

Appendix

9. Proceedings of the Symposium: Instructions to Authors

The organizers intend to publish a selection of papers in a symposium volume. Manuscripts will be evaluated on the basis of their contents. Priority will be given to papers dealing with general aspects of zoogeography, evolutionary history, systematics and phylogenetics of terrestrial and freshwater animals in the Middle East. The style of contributions submitted for publication does not necessarily have to be identical with the oral communication. Manuscripts must not exceed 15 typed pages.

THE DEADLINE FOR THE SUBMISSION OF MANUSCRIPTS IS 31 OCTOBER 1985.

1. Manuscript preparation.

1.1 Language: Manuscripts must be submitted in correct English. Non-native speakers are advised to consult a native speaker prior to the submission of their manuscripts.

1.2 Paper and typing: Manuscripts must be typewritten, double-spaced throughout, with wide margins at the top, bottom and sides, on one side of a sheet only. A4 (c. 210 by 297 mm) or equivalent size white bond paper should be used. Pages should be numbered consecutively.

1.3 Marking-up: Do not type title, subtitle, names of persons or any other part of the manuscript entirely in capital letters!

The use of small type face for passages within the text should be avoided. The author should underline the names of genera, species and subspecies with a waved line. All other indications meant for the printers should be left to the editors.

1.4 Further recommendations: All papers must conform to the latest issue of the "International Code of Zoological Nomenclature". Furthermore, authors are advised to prepare their manuscripts according to the "Council of Biology Editors style manual: a guide for authors, editors, and publishers in the biological sciences. 5th ed., rev. and expanded. Bethesda, MD: Council of Biology Editors, Inc.; 1983".

2. Title and name(s) of author(s): The title should be short and should

identify precisely the main topic of the article. If the name of a genus or species is included, the name of the systematic group to which it belongs should follow in parentheses. Initial(s) and name(s) of author(s) should come underneath the title.

3. Abstract: This is a very important portion of the article. The abstract should be concise, intelligible in itself and should draw attention to the significant contents of the paper and the author's main conclusions. It should normally not exceed 250 words and should contain no uncommon abbreviations or references to literature.

4. Keywords: Up to eight keywords should be suggested by the author.

5. Subject matter: The text of the manuscript is usually arranged in four main sections: Introduction, Materials and Methods (incl. a key to abbreviations used in the text), Results, and Discussion. Other subdivisions may be chosen depending on the material presented. Acknowledgements should be placed between the text and references.

5.1 Scientific names of animals: Scientific names of genera, species, and subspecies should be given at least once - usually when the respective taxon is first mentioned - including the name(s) of author(s) (spelled out in full!) and the year of publication. The use of parentheses must adhere strictly to the International Code.

5.2 Geographic names: Exact locality data (preferably including coordinates) should always be given. Transliteration of original Arabic, Hebrew, Persian etc. geographic names should follow the system adopted by the International Congress of Orientalists, Rome 1935. A table of transliteration for languages which are based on the Arabic alphabet is given below. Localities in Turkey must be referred to by modern Turkish standard names, including all diacritical marks. Authors who are unable to follow these rules are requested to give unequivocal locality data in order to enable the editors to insert standard toponyms.

5.3 Foot-notes and cross-references: Footnotes are to be kept to a minimum. They should be typed on a separate sheet and their position indicated in the text by use of consecutive numerals. Cross-references by page must be avoided.

6. References to literature: In both the text and the bibliography, the name-year-system must be used. The list of references should be placed at the end of the paper, alphabetically arranged according to authors' names. Only those publications referred to in the paper may be included. The author is urged to make sure that all references to literature mentioned in the text appear in the list of references. Foreign language references (Arabic, Cyrillic) should be given in normal English alphabetical order. Titles of journals are spelled out in full!

JOHNSON, R. 1964: *Lepidoptères nouvelles et peu connues.*- *Mémoires de la Société zoologique de France.* 17: 54-119. Paris.

BÜTTIKER, W. 1980: *Asir expedition 1979.*- *Fauna of Saudi Arabia* 2: 24-31. Basle and Jeddah.

BROWN, D.S. & C.A. WRIGHT 1980: *Freshwater molluscs.*- *Fauna of Saudi Arabia* 2: 341-358. Basle and Jeddah.

WALKER, T. 1969: *Butterflies of the Arabian Gulf Coast.*- 347 pp. London, Harding & Co.

CHAPMAN, R.W. 1978: *Geology.*- In: *Quaternary period in Saudi Arabia.* AL-SAYARI, S.S. & J.G. ZÖTL, eds: 4-19. Wien and New York, Springer.

7. Author's address: This is placed at the end of the manuscript and contains: Title, first name(s) and name(s) of author(s), place of work and address(es) for correspondence.

8. Illustrations: Line drawings and black-and-white photographs may be included. They should be numbered consecutively in Arabic numerals with small letters for their subdivision (e.g. 2b, 3a). They should be labelled with the figure/plate number and author's name in soft pencil on the back. Authors should identify the top edge and indicate in the margins of the manuscript the approximate position desired for the illustrations. Captions for illustrations should be grouped according to the arrangement of the figures/plates and typed on a separate sheet. The author should give direc-

tions for composing and mounting plates. Magnifications of illustrations must always be given. This is usually done by incorporating a scale line in a photograph or below a drawing.

9. Tables: Each table must be typed on a separate sheet of paper. Tables should be numbered consecutively in Arabic numerals and bear a legend at the top. They are to be attached to the end of the manuscript. In the text they are referred to as 'tab. 1' etc.

10. Submission of manuscripts: The manuscript should be submitted in the final, fully corrected form. Two copies should be sent together with the original illustrations by registered mail to one of the editors (R. Kinzelbach, F. Krupp or W. Schneider). Authors are advised to retain a copy for their own use.

11. Evaluation of manuscripts: Manuscripts will be evaluated by the editors and referees on the basis of their contents. Manuscripts that do not meet the standards of presentation required in these guidelines may be returned to the author(s) for formal revision before being reviewed. The editors reserve the right to refuse any manuscript submitted, whether on invitation or otherwise, and to make suggestions and modifications before publication. Papers are accepted on the understanding that they have not been and will not be published elsewhere.

12. Proofs and reprints: The author will receive galley proofs of his paper. Corrections should be indicated by proof-reader's marks which are generally accepted. Corrections in the text other than printers' errors must be kept to a minimum. The author will be charged for excessive corrections.

Twenty reprints of each paper and a copy of the volume will be provided free of charge. No additional reprints may be ordered.

Transliteration of Consonants
for Writings Based on the Arabic Alphabet

| Arabic | Persian | Pashtu |
|--------|---------|--------|
| ا, آ | o | o |
| ب | b | b |
| پ | p | p |
| ت | t | t |
| ث | - | ṭ |
| ج | ǰ | ǰ |
| ح | ħ | ħ |
| خ | χ | χ |
| د | d | d |
| ذ | - | ḡ |
| ر | r | r |
| ز | z | z |
| س | s | s |

ش
ب
ص
ض
ط
ظ
ع
س
ف
ق
ك
گ
ل
م
ن
ه
و
ي

| Arabic | Persian | Pashtu |
|--------|---------|--------|
| š | š | š |
| - | - | š |
| š | š | š |
| đ | ž | ž |
| đ | đ | đ |
| ž | ž | ž |
| c | c | c |
| ğ | ğ | ğ |
| f | f | f |
| v | - | - |
| q | q | q |
| k | k | k |
| - | g | g |
| l | l | l |
| m | m | m |
| n | n | n |
| - | - | ğ |
| h | h | h |
| w | v | w |
| y | y | y |

10. Provisional List of Participants

- | | |
|-------------------------------|---------------------------------------|
| 1. Al-Houty, W. (Kuwait) | 22. Kinzelbach, R. (Darmstadt) |
| 2. Alouf, N.J. (Beirut) | 23. Kiliç, A. (Heidelberg) |
| 3. Amr, Z. (Lowell) | 24. Krupp, F. (Mainz) |
| 4. Arnold, E.N. (London) | 25. Larsen, T.B. (New Delhi) |
| 5. Aspöck, H. (Wien) | 26. Malicky, H. (Lunz) |
| 6. Aspöck, U. (Wien) | 27. Moubayed, Z. (Toulouse) |
| 7. Bandel, K. (Berlin) | 28. Nader, I.A. (Abha) |
| 8. Baran, I. (Izmir) | 29. Niethammer, J. (Bonn) |
| 9. Böhme, W. (Bonn) | 30. Por, F.D. (Jerusalem) |
| 10. Büttiker, W. (Jeddah) | 31. Roth, G. (Darmstadt) |
| 11. Coad, B.W. (Ottawa) | 32. Schneider, W. (Mainz) |
| 12. Demirsoy, A. (Ankara) | 33. Schütt, H. (Düsseldorf) |
| 13. Disi, A. (Amman) | 34. Sipahiler, F. (Ankara) |
| 14. Dumont, H.J. (Gent) | 35. Spitzenberger, F. (Wien) |
| 15. Fishelson, L. (Tel Aviv) | 36. Talhouk, A.S. (Riyadh) |
| 16. Hamwi, A. (Damascus) | 37. Tortonese, E. (Genova) |
| 17. Heller, J. (Jerusalem) | 38. Villwock, W. (Hamburg) |
| 18. Jennings, M.C. (Burbage) | 39. Werner, Y. (Jerusalem) |
| 19. Joger, U. (Bonn) | 40. Wolfart, R. (Hannover) |
| 20. Kasparek, M. (Heidelberg) | 41. Vachon, M. (Paris) |
| 21. Kaszab, Z. (Budapest) | 42. Zur Strassen, R. (Frankfurt a.M.) |

11. Tentative Symposium Schedule

Friday 27 September

18.00 h Check-in
Welcoming Reception in the 'FAVORITE
Parkhotel'

Saturday 28 September

09.00 - 10.00 h Opening Session
10.00 - 10.30 h Coffee break
10.30 - 13.00 h Session
13.00 - 14.30 h Luncheon break
14.30 - 16.00 h Session
16.00 - 16.30 h Coffee break
16.30 - 18.00 h Session
19.30 h Symposium Dinner

Sunday 29 September

08.30 - 10.00 h Session
10.00 - 10.30 h Coffee break
10.30 - 12.30 h Session
12.30 - 14.00 h Luncheon break
14.00 - 15.30 h Session
15.30 - 16.00 h Coffee break
16.00 - 17.30 h Session

Monday 30 September

08.30 - 10.00 h Session
10.00 - 10.30 h Coffee break
10.30 - 12.30 h Session
12.30 - 14.00 h Luncheon break
14.00 - 15.30 h Session
15.30 - 16.00 h Coffee break

16.00 - 17.00 h Session
19.00 - 21.00 h Workshop

Tuesday 1 October

09.00 - 10.00 h Session
10.00 - 10.30 h Coffee break
10.30 - 12.00 h Session
12.00 - 13.30 h Luncheon break
13.30 - 15.30 h Workshop