

Society for the Study  
of Evolution

American Society  
of Naturalists

Bozeman, Montana  
June 21-24, 1987

# SCHEDULE OF EVENTS

## SUNDAY, JUNE 21

Registration	12:00-8:00	Strand Union
Reception	8:30-	Museum of the Rockies

## MONDAY, JUNE 22

Registration	7:30-12:00	Strand Union
Symposia	8:30-12:00	
Evolution of Developmental Systems		275/276 Strand Union
Variation in Male Fertility in Higher Plants		339 Leon Johnson Hall
Executive Committee, ASN	11:30	Garden Room
Business Meeting, SSE	12:00	Fireplace Room
ASN Presidential Address	1:00	339 Leon Johnson Hall

WYATT W. ANDERSON - A case study in evolutionary biology: inversions in Drosophila pseudoobscura.

Contributed Paper Session	2:00-5:15	
Reproductive Isolation/Speciation		275 Strand Union
Natural Selection/Population Ecology		276 Strand Union
Life Histories/Evolutionary Genetics		101 Reid Hall
Quantitative and Population Genetics		102 Reid Hall
Host-Parasite/Sex Allocation		103 Reid Hall
Plant Reproduction		104 Reid Hall
Molecular Evolution and Systematics		105 Reid Hall

Poster Session	2:00-5:00	Ballroom Area
Cash Bar	5:30	Strand Union
SSE Presidential Address	6:30	Ballrooms B, C, D

DOUGLAS J. FUTUYMA - Isolation and speciation in evolutionary biology.

ASN/SSE Banquet	7:30	Ballrooms, B, C, D
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## TUESDAY, JUNE 23

Symposia	8:30-12:00	
ASN Young Investigator's Symposium		Ballroom B
Sex Allocation Research		Ballroom C
Business Meeting, ASN	12:30	Fireplace Room
Symposia	1:00-4:40	
Evolution of Developmental Systems		Ballroom B
Variation in Male Fertility in Higher Plants		Ballroom C
Checkerspot Butterflies as a Model System		Ballroom A
Wilhemine Key Lecture, American Genetics Association	8:00 p.m.	Ballroom A

ROBERT W. ALLARD - Genetic changes associated with the evolution of adaptedness in cultivated plants and their wild progenitors.

What's Happening at NSF?	9:15 p.m.	276 Strand Union
Open Forum with MARK COURTNEY		

## WEDNESDAY, JUNE 24

Contributed Paper Sessions	8:30-12:00	
Population Structure		Exit Gallery
Life History Evolution/Development		275 Strand Union
Sociobiology/Behavior		276 Strand Union
Hybridization/Speciation		Ballroom A
Plant Population Biology		Ballroom B
Plant Reproduction		Ballroom C
Molecular Evolution/Heterozygosity		Ballroom D
Symposia	1:00-5:00	
Paleontological Approaches to Evolutionary Dynamics		Ballroom A
Cytoplasmic-Nuclear Interactions		Ballrooms B, C

(NOTE: Exit Gallery and Ballrooms A-D are in Strand Union.)



Monday Morning  
275/276 Strand Union

# EVOLUTION OF DEVELOPMENTAL SYSTEMS

Organizer: WILLIAM ATCHLEY

- 8:30 ATCHLEY, W., North Carolina State University  
Introductory Remarks
- 8:40 PAIGEN, K., University of California, Berkeley  
Evolution of gene regulation patterns.
- 9:25 CAVENER, D. Vanderbilt University  
Evolution of developmental expression.
- 10:10 Break
- 10:30 LUCCHESI, J., University of North Carolina, Chapel Hill  
On the mechanisms compensating for gene dosage differences in Drosophila.

(Continued Tuesday Afternoon)

Monday Morning  
339 Leon Johnson Hall

# VARIATION IN MALE FERTILITY IN HIGHER PLANTS

Organizers: JAMES D. THOMSON AND BERYL B. SIMPSON

- 8:30 THOMSON, J.D., SUNY, Stony Brook  
Introductory Remarks
- 8:40 ELLSTRAND, N., University of California, Riverside  
Long distance romances: the evolutionary significance of interpopulational gene flow.
- 9:25 SIMPSON, B.B., and J.L. NEFF, University of Texas, Austin  
Floral resources and insect foraging: implications for male function in plants.
- 10:10 Break
- 10:25 CHARLESWORTH, D., University of Chicago  
Effects on fitness of allocation to attractive structures.
- 11:10 THOMSON, J.D., and L. HARDER, SUNY, Stony Brook  
Pollen presentation and delivery as components of male reproductive success in Erythronium.

(Continued Tuesday Afternoon)

Monday Afternoon  
275 Strand Union

# REPRODUCTIVE ISOLATION/SPECIATION

Session Leader: J. FEDER

- 2:00 WIERNASZ, D., University of Washington  
Mate choice and species recognition in two sibling Pieris species (Lepidoptera).
- 2:15 KOEPFER, H.R., Queens College  
Mating behavior in five geographic strains of Drosophila mercatorum.
- 2:30 MILLER, D.R., Simon Fraser University  
Inter- and intrapopulation variation of the pheromone, ipsdienol, produced by male pine engravers, ips pini (Say) (Coleop.: Scolytidae).
- 2:45 CANE, J.H., Auburn University  
Antiquity of pheromonal cross-attraction among ips bark beetles (Coleoptera: Scolytidae).
- 3:00 FEDER, J., C.A. CHILCOTE, and G. BUSH, Michigan State University  
Genetic differentiation between sympatric host races of Rhagoletis pomonella (Diptera: Tephritidae).
- 3:15 BERLOCHER, S.H., University of Illinois  
Founder effects in walnut husk flies resulting from competition with congeners.
- 3:30 Break
- 3:45 MOORE, W.S., Wayne State University  
Species: the transmutation of a word.
- 4:00 WEST-EBERHARD, M.J., Smithsonian Tropical Research Institute  
Sympatric speciation in socially parasitic ants: facilitation by adaptive phenotypic plasticity.
- 4:15 ARMBRUSTER, W.S., University of Alaska  
The relationship between pollinator shifts and speciation in Dalechampia.
- 4:30 RICE, W.R., University of New Mexico  
Speciation via habitat specialization.

Monday Afternoon  
276 Strand Union

NATURAL SELECTION/POPULATION ECOLOGY Session Leader: R.T. JONES

- 2:00 SVENDSEN, G.E., Ohio University  
Breeding units, reproductive success and birth sex ratios: the beaver story.
- 2:15 SHERIDAN, M., Boston University  
The opportunity for selection among male and female meadow voles, Microtus pennsylvanicus.
- 2:30 GRAVES, J.L., Jr., Wayne State University  
The effects of selection for lifespan on flight duration in Drosophila melanogaster.
- 2:45 HUEY, R.B., F. VAN BERKUM, J. TSUJI, and T. GARLAND, JR., University of Washington  
Natural selection on locomotor performance in a lizard (Sceloporus occidentalis).
- 3:00 SCHEINER, S., Northern Illinois University  
Variable selection along a successional gradient.
- 3:15 CRESPI, B. J., University of Michigan  
A path-analytic model for the measurement of selection on morphology.
- 3:30 Break
- 3:45 JONES, R.T., and D.C. CULVER, Northwestern University  
Measuring selection in a cave population of the Amphipod Gammarus minus.
- 4:00 FRY, J.D., University of Michigan  
Trade-offs in adaptation to different hosts: evidence from a selection experiment with the phytophagous mite, Tetranychus urticae Koch.
- 4:15 STIRLING, G., York University  
Morphological heterogeneity in Daphnia galeata mendotae populations.
- 4:30 ASAMI, T., University of Virginia  
Ecological divergence between Mesodon andrewsae and Triodopsis albolabris (Pulmonata: Polygyridae).
- 4:45 DOUGLAS, M., Arizona State University  
Historical influences in community ecology.

Monday Afternoon  
101 Reid Hall

LIFE HISTORIES/EVOLUTIONARY GENETICS Session Leader: L.D. MUELLER

- 2:00 HOM, C. L. and A. M. HASTINGS, University of California, Davis  
Yet another general theory of life history evolution.
- 2:15 REZNICK, D., University of California, Riverside  
The influence of growth rate on age and size at maturity in male guppies (Poecilia reticulata): is plasticity adaptive?
- 2:30 SCRIBNER, K.T. and M.C. WOOTEN, Savannah River Ecology Laboratory  
Effects of environmental variability on genetic and life history differentiation of Hawaiian mosquitofish populations.
- 2:45 DORN, L., University of Illinois at Chicago  
The genetic effect of coexistence and competition on developmental time.
- 3:00 MUELLER, L. D., Washington State University  
Evolution of competitive ability by density-dependent natural selection.
- 3:15 VAWTER, A.T., Wells College  
Negative phototaxis in surface and cave populations of the Amphipod Gammarus minus.
- 3:30 Break
- 3:45 THOMPSON, J.N., Washington State University  
Genetics of swallowtail butterfly/plant interactions: heritable variation in host selection within populations.
- 4:00 ROSSITER, M., Pennsylvania State University  
Genetic and phenotypic variation in diet breadth in a generalist herbivore.
- 4:15 BURTON, R., University of Pennsylvania  
Biochemical genetic variation in osmotic response in a marine copepod.
- 4:30 STANHOPE, M.J., Simon Fraser University  
Convergence and divergence in life history traits of an estuarine amphipod: evidence from genomic DNA analysis.
- 4:45 LYDEARD, C., M.E. MULVEY, J.M. AHO, and M.H. SMITH, Savannah River Ecology Laboratory  
Micro- and macrogeographic variation in the liver fluke, Fascioloides magna, and its deer host.
- 5:00 AHO, J.M., M.E. MULVEY, C. LYDEARD, and M.H. SMITH, Savannah River Ecology Laboratory  
Demographic characteristics and genetic variation in whitetail deer and the liver fluke Fascioloides magna.



Monday Afternoon  
102 Reid Hall

QUANTITATIVE AND POPULATION GENETICS      Session Leader: D. HOULE

- 2:00 FONG, D.W., and D.C. CULVER, Northwestern University  
Quantitative genetic analysis of regressive evolution in the amphipod Gammarus minus.
- 2:15 THOMPSON, D., University of Iowa  
Geographic variation in the climbing behavior of Peromyscus maniculatus: constraints on the response to natural selection.
- 2:30 GARLAND, T., JR., University of Washington  
Quantitative genetics of speed, stamina, and antipredator displays in the garter snake Thamnophis sirtalis.
- 2:45 HOULE, D., SUNY, Stony Brook  
What genetic correlations are made of, and why it matters.
- 3:00 ZENG, Z.B., North Carolina State University  
Long-term correlated response and interpopulation covariation--stabilizing and directional selection approach.
- 3:15 GOODNIGHT, C.J., University of Illinois at Chicago  
Epistasis and the effect of founder events on the additive genetic variance.
- 3:30 Break
- 3:45 HEDRICK, P., University of Kansas  
Gametic disequilibrium measures: proceed with caution.
- 4:00 THOMPSON, E., University of Washington  
Gene extinction and allelic survival in genetic isolates.
- 4:15 WAPLES, R.S., Northwest and Alaska Fisheries Center  
Temporal stability of allele frequencies: testing the right hypothesis.
- 4:30 CAMPBELL, R.B., University of Northern Iowa  
Genetic variation under regular systems of inbreeding with mutation.
- 4:45 REGAL, P.J., University of Minnesota  
Evolutionary theory and the adaptability of genetically engineered organisms.

Monday Afternoon  
103 Reid Hall

HOST-PARASITE/SEX ALLOCATION      Session Leader: M.A. EBBERT

- 2:00 GORDON, I.J., University of Nairobi  
Male-killer cytoplasm and intra-genomic conflict in an african butterfly.
- 2:15 FRANK, S., University of Michigan  
The evolutionary dynamics of cytoplasmic male sterility in hermaphroditic plants.
- 2:30 HURLBUTT, B., Purdue University  
Sex ratio manipulation in response to host size by the parasitoid wasp Spalangia cameroni.
- 2:45 LIVELY, C.M., University of Canterbury  
Parasitism and the maintenance of sex in a freshwater snail.
- 3:00 AVILES, L., Harvard University  
Group selection and female biased sex ratios in social spiders.
- 3:15 EBBERT, M.A., Yale University  
Interaction of host and endoparasite genotype on population dynamics and individual fitness in the D. willistoni - spiroplasma symbiosis.
- 3:30 Break
- 3:45 KOHN, J., University of Pennsylvania  
Costs and benefits of gender in Cucurbita foetidissima.
- 4:00 ALLEN, G.A., and J.A. ANTOS, University of Victoria  
Factors affecting sex ratios in the dioecious shrub Oemleria cerasiformis.
- 4:15 BRUNET, J., SUNY, Stony Brook  
Variation in sex allocation in Aquilegia caerulea (Ranunculaceae).
- 4:30 YOUNG, H.J., University of California, Davis  
Sexual allocation versus fitness in a beetle-pollinated aroid.
- 4:45 DELPH, L.F., University of Canterbury  
The maintenance of females in a gynodioecious Hebe.



Monday Afternoon  
104 Reid Hall

PLANT REPRODUCTION

Session Leader: M.D. LOVELESS

- 2:00 NASON, J., University of California, Riverside  
Mating relationships in a population of wild radish.
- 2:15 STANTON, M., University of California, Davis  
Variation in floral characters and paternity success in wild radish.
- 2:30 SCHLICHTING, C.D., and A.G. STEPHENSON, Pennsylvania State University  
Factors affecting male reproductive success in zucchini.
- 2:45 WHEELER, N., Weyerhaeuser Research Center  
Genetic analysis of differential reproductive success in Douglas fir  
(*Pseudotsuga menziesii*).
- 3:00 HAMRICK, J.L., University of Georgia  
The mating system of *Tachigalia versicolor*: a monocarpic tropical tree.
- 3:15 RITLAND, K., University of Toronto  
Correlated matings in *Mimulus guttatus*.
- 3:30 Break
- 3:45 LOVELESS, M.D., University of Georgia  
Population phenology and breeding structure in *Erythrina costaricensis*.
- 4:00 HOLTSFORD, T., University of California, Riverside  
Variation in the mating system and population structure of *Clarkia tembloriensis*.
- 4:15 LYONS, E.E., Northwestern University  
Evolution of breeding systems in *Leavenworthia* - revisited.
- 4:30 CAMPBELL, D.R., University of Virginia  
Measuring selection through male and female functions in hermaphroditic plants.
- 4:45 WEBB, C.J., and M. McKONE, DSIR  
A pollen size difference between the male and hermaphroditic flowers of two species of *Apiaceae*.
- 5:00 CRUZAN, M. D., SUNY, Stony Brook  
Pollen size variation and pollen vigor in *Erythronium grandiflorum*.

Monday Afternoon  
105 Reid Hall

MOLECULAR EVOLUTION AND SYSTEMATICS

Session Leader: G.F. SHIELDS

- 2:00 GRANT, M.C., University of Colorado  
Oospore morphology--the key to successful study of the fossil Charophytes.
- 2:15 MODI, W.S., D. DERSE, W.G. NASH, J.S. MARTENSON, M. EICHELBERGER, S. CEVARIO, and S. J. O'BRIEN, National Cancer Institute  
Extensive linkage and syntenic homologies among three mammalian orders Primates, Rodentia and Carnivora: an evolutionary reconstruction.
- 2:30 SITES, J.W., Jr. and S.K. DAVIS, Brigham Young University  
DNA restriction site variation and phylogenetic relationships among chromosome races of the *Sceloporus grammicus* complex (Sauria, Iguanidae) in central Mexico.
- 2:45 SPICER, G., University of Chicago  
Phylogeny of some *Drosophila* species groups as indicated by two-dimensional electrophoresis.
- 3:00 ARCHIE, J., and C. SIMON, University of Hawaii  
A reexamination of the effects of sample size on the estimation of phylogenetic trees from electrophoretic data.
- 3:15 FELSENSTEIN, J., University of Washington  
Phylogenies from restriction sites: a likelihood approach.
- 3:30 Break
- 3:45 SHIELDS, G.F., University of Alaska  
Rates of molecular evolution in birds.
- 4:00 GRAUR, D., Tel Aviv University  
Allozymes: gradual versus rectangular evolution
- 4:15 POWELL, J.R., Yale University  
Rapid DNA divergence in *Drosophila*.
- 4:30 CACCONI, A., Yale University  
DNA-DNA hybridization and percent base pair mismatch: a calibration.
- 4:45 BERMINGHAM, E., National Marine Fisheries Service  
Mitochondrial DNA and protein divergence between animals separated by the Isthmus of Panama.
- 5:00 OLMSTEAD, R.G., University of Washington  
Biological and historical determinants of genetic diversity in the *Scutellaria angustifolia* complex (Labiatae).

Monday Afternoon  
Ballroom Area, Strand Union

POSTER SESSION

- ANTLFINGER, A., University of Nebraska, Omaha  
Density and competitive effects in experimental populations of two Andropogon prairie species.
- BOUMA, J.E., University of California, Irvine  
Evolution of a bacteria/plasmid system.
- CHAN, J., University of Pennsylvania  
The adaptive significance of ADH variants in Trifolium repens.
- CHINNICI, J. P., Virginia Commonwealth University  
Selection for increased resistance to aflatoxin B1 in Drosophila melanogaster.
- COTHRAN, E. G., University of Kentucky  
Analysis of electromorph frequency differences among subgroups by use of the weighted separation index.
- FULLER, K., Dalhousie University  
A survey of mtDNA length variation in natural populations of the sea scallop Placopecten magellanicus.
- GELLMAN, W.A., University of Montana  
Evolution of sex chromosomes in polyploid salmonid fishes.
- HAGEN, R.H., and J.M. SCRIBER, Michigan State University  
Genetic analysis of subspecies variation in the Tiger Swallowtail Butterfly, Papilio glaucus.
- HAZEL, W., DePauw University  
Why do they do it so long? prolonged copulation in the common milkweed bug.
- LEVERICH, W.J., St. Louis University  
Experimental studies on reproductive performance in Phlox drummondii.
- RODE, S.,  
Testing assumptions: inheritance of evolutionary rates in the planktonic foraminifera.
- ROSENZWEIG, R.F., University of Pennsylvania  
Physiological and fitness consequences of constitutively high levels of glycolytic enzymes in the yeast, Saccharomyces cerevisiae.
- SAKS, M., University of Texas, Austin  
The effect of male genotype on female reproductive traits.
- SCHEINER, S., R. CAPLAN, and R. LYMAN, Northern Illinois University  
Genetic correlations among life-history traits in Drosophila melanogaster.

POSTER SESSION (continued)

- SCHLESSMAN, M.A., and L.M. GRACEFFA, Vassar College  
Sex allocation in Rocky Mountain Apiaceae: variation in phenotypic gender among and within individuals.
- SMOUSE, P.E., University of Michigan  
Likelihood analysis of mtDNA restriction patterns and evolution of the human-chimpanzee-gorilla trichotomy.



Tuesday Morning  
Ballroom B, Strand Union

YOUNG INVESTIGATORS SYMPOSIUM

Organizer: AMERICAN SOCIETY OF NATURALISTS

- 8:30 ANDERSON, W., President, ASN  
Introductory Remarks
- 8:40 HOFFMANN, A.A., LaTrobe University  
Incompatibility in Drosophila populations.
- 9:25 SCHLICHTING, C.D., Pennsylvania State University  
Variation in phenotypic plasticity in Phlox.
- 10:10 Break
- 10:30 MAURER, B.A., Brigham Young University  
Macroecology: evolution and ecology of large scale ecological systems.
- 11:15 ORZACK, S., University of Chicago  
What is an optimal sex ratio?

Tuesday Morning  
Ballroom C, Strand Union

SEX ALLOCATION RESEARCH: IMPLICATIONS TO GENERAL QUESTIONS IN  
EVOLUTION

Organizer: JOHN H. WERREN

- 8:30 WERREN, J.H., University of Rochester  
Introductory Remarks
- 8:35 SEGER, J., University of Utah  
Sex allocation and the evolution of insect sociality.
- 9:10 WERREN, J.H., University of Rochester  
Levels of selection and sex allocation.
- 9:45 HERRE, A., University of Iowa  
Sex allocation in spatially structured populations.
- 10:20 Break
- 10:35 STUBBLEFIELD, W., Harvard University  
Evolutionary economics of bisexuality in plants.
- 11:10 MORAN, N., University of Arizona  
Sex allocation and parthenogenetic life cycles.
- 11:55 Discussion



Tuesday Afternoon  
Ballroom B, Strand Union

#### EVOLUTION OF DEVELOPMENTAL SYSTEMS

Organizer: WILLIAM ATCHLEY

- 1:00 KAUFMANN, T.C., Indiana University  
The Antennapedia gene complex in the ontogeny and phylogeny of Drosophila.
- 1:45 ATCHLEY, W., North Carolina State University  
Anatomy of a selection response.

Tuesday Afternoon  
Ballroom C, Strand Union

#### VARIATION IN MALE FERTILITY IN HIGHER PLANTS

Organizers: JAMES D. THOMSON AND BERYL B. SIMPSON

- 1:00 MEAGHER, T.R., Duke University  
Analysis of parentage in natural populations.
- 1:45 SCHOEN, D.J. and S.C. STEWART, McGill University  
Estimation of male fertility in plant populations.
- 2:30 Break
- 2:45 SCHAAAL, B.A., and K. HELENURM, Washington University  
Genotypic effects on reproductive success in Lupinus.
- 3:30 LLOYD, D., University of Canterbury  
Contrasts between male and female strategies.

Tuesday Afternoon  
Ballroom A, Strand Union

#### CHECKERSPOT BUTTERFLIES AS A MODEL SYSTEM IN POPULATION BIOLOGY

Organizer: PETER F. BRUSSARD

- 1:00 EHRLICH, P.R., Stanford University  
Checkerspot butterflies: an historical perspective.
- 1:40 BRUSSARD, P.F., Montana State University  
Genetic variation and systematic relationships.
- 2:20 MURPHY, D., Stanford University  
Microhabitat resources and metapopulation structure.
- 3:00 Break
- 3:20 BOWERS, D.M., Harvard University  
Secondary compounds and the coevolution of Euphydryas and its hostplants.
- 4:00 SINGER, M., University of Texas, Austin  
Behavioral aspects of Euphydryas-host plant coevolution.

Wednesday Morning  
Exit Gallery, Strand Union

# POPULATION STRUCTURE

Session Leader: C.J. WILLIAMS

- 8:30 SCHWARTZ, J.M., University of Tennessee  
Electrophoretic evidence of multiple paternity in natural populations of the eastern garter snake Thamnophis sirtalis.
- 8:45 WILLIAMS, C.J., University of Georgia  
Estimating the multiple paternity probability in a wild population of mallards with known maternal genotype.
- 9:00 McCracken, G.F., M.K. GUSTIN, and A.T. VAWTER, University of Tennessee  
Genetic structure in summer and winter colonies of the migratory bat Tadarida brasiliensis mexicana.
- 9:15 ROSENBERG, R.H., Cornell University  
The social and genetic organization of populations of Weidemeyer's admiral butterfly: genetic differentiation among populations.
- 9:30 QUELLER, D.C. and K. GOODNIGHT, Rice University  
Estimation of genetic relatedness from allozyme data.
- 9:45 BALL, R.M., JR., University of Georgia  
The continental distribution of Redwing Blackbird mtDNA genotypes.
- 10:00 Break
- 10:15 POWERS, T.O., University of Nebraska-Lincoln  
Mitochondrial DNA evolution and soybean cyst nematode distribution.
- 10:30 LAUSHMAN, R., A. SCHNABEL, and J.L. HAMRICK, University of Georgia  
Genetic structure of an old-field population of Maclura pomifera.
- 10:45 LYMAN, J.,  
The ecological and genetic correlates of marginal and central populations of Oxytheca.
- 11:00 TONSOR, S.J., Michigan State University  
The phenology of genetic neighborhood size in Plantago lanceolata.
- 11:15 STEWART, S.C., McGill University  
Inbreeding population structure of natural populations of Impatiens pallida.
- 11:30 SCHNABEL, A. and J.L. HAMRICK, University of Georgia  
Multiple paternity and gene flow in Gleditsia triacanthos L.

Wednesday Morning  
275 Strand Union

# LIFE HISTORY EVOLUTION/DEVELOPMENT

Session Leader: A.J. ZERA

- 8:30 MOUSSEAU, T., McGill University  
A quantitative genetic view of life history adaptations of a cricket to clinal variation in season length.
- 8:45 ZERA, A.J., University of Texas, Austin  
Variation in the developmental profile of JH-esterase activity controls wing polymorphism in Gryllus rubens.
- 9:00 ETGES, W.J., University of Arizona  
Inheritance of life history patterns in Drosophila mojavensis: influences of host cacti on gene expression.
- 9:15 SERVICE, P.M., E.W. HUTCHINSON, and M.R. ROSE, University of California, Davis and Dalhousie University  
Multiple genetic mechanisms for the evolution of senescence in Drosophila melanogaster.
- 9:30 NEWMAN, R.A., University of Pennsylvania  
Phenotypic plasticity and genetic variation in an uncertain environment: development of spadefoot tadpoles in desert ponds.
- 9:45 McLELLAN, T., University of California, Santa Barbara  
Development and evolution of leaf shape.
- 10:00 Break
- 10:15 McDONALD, M.A., Savannah River Ecology Laboratory  
Paedomorphosis in Hispaniolan Palm Tanagers: the genetic consequences.
- 10:30 SESSIONS, S.K., University of California, Irvine  
Development and evolution of the tetrapod limb.
- 10:45 LONG, C.A., University of Wisconsin  
Evolution and fractal development.
- 11:00 SENG, H.Y., Sichuan College of Education  
The dissipative structure in evolution.



Wednesday Morning  
Ballroom B, Strand Union

PLANT POPULATION BIOLOGY

Session Leader: A.A. SNOW

- 8:30 MCKONE, M., Carleton College  
"Masting" in Chionochloa pallens, a perennial tussock-grass: the consequences of consecutive flowering years.
- 8:45 SCHUSTER, W., University of Colorado  
Significance of cotyledon number in the genus Pinus.
- 9:00 STRATTON, D., SUNY, Stony Brook  
The importance of the seedling stage for selection in a winter annual.
- 9:15 SNOW, A.A., Smithsonian Environmental Research Center  
Field and laboratory tests for gametophytic selection in wild radish (Raphanus raphanistrum).
- 9:30 COCHRAN, M.E., University of Georgia  
Life cycle models of the pink lady's slipper, Cypripedium acaule: analyzing the consequences of temporal variability.
- 9:45 COLEMAN, J., University of Texas, Austin  
Patterns of morphological and life history variation in a population of Cynodon dactylon, in response to a mine-site edaphic gradient.
- 10:00 Break
- 10:15 MITCHELL-OLDS, T., University of Washington  
Life histories and disease resistance in Wild Turnip.
- 10:30 KLINGER, T., University of California, San Diego  
Phase-specific patterns of reproductive effort in brown seaweeds with complex life-histories.

Wednesday Morning  
Ballroom C, Strand Union

PLANT REPRODUCTION

Session Leader: J. D. KARRON

- 8:30 RICHARDSON, T., Pennsylvania State University  
Factors affecting staminate and pistillate durations in Campanula rapunculoides.
- 8:45 MUENCHOW, G., Ohio University  
The evolution of dioecy from distily - evaluating the "loss of the long-tongued pollinator" hypothesis.
- 9:00 BULT, C.J., University of New Hampshire  
Where have all the flowers gone? reproductive efficiency in the wild soybean, Glycine soja.
- 9:15 SAKAI, A.K. and S. G. WELLER, University of Chicago, University of Illinois, Chicago  
Sex expression in Schiedea globosa, a subdioecious species.
- 9:30 KAROLY, K., University of Chicago  
Inbreeding depression in Schiedea globosa (Caryophyllaceae).
- 9:45 KARRON, J.D., University of Colorado  
Breeding systems and inbreeding depression in locally endemic and geographically widespread species of Astragalus (Fabaceae).
- 10:00 Break
- 10:15 NEWPORT, M.A. and C. GALEN, Bowling Green University  
Effect size and optimal outbreeding in Polemonium viscosum.
- 10:30 WALLER, D., University of Wisconsin  
Fitness consequences of outcrossing in Impatiens capensis: a test of the sib competition model.
- 10:45 LINHART, Y. and J. KARRON, University of Colorado  
Factors producing differences in outcrossing rates among individual Ponderosa Pines.
- 11:00 WASER, N. M., University of California, Riverside  
Optimal outcrossing effects on offspring fitness in perennial wildflowers.
- 11:15 SCHEMSKE, D.W., University of Chicago  
Breakdown in protandry promotes selfing in a neotropical tree: fitness consequences.



Wednesday Morning  
276 Strand Union

SOCIOBIOLOGY/BEHAVIOR

Session Leader: P. KUKUK

- 8:30 NONACS, P., Simon Fraser University  
Queen number in colonies of social hymenoptera as a kin-selected adaptation.
- 8:45 OWEN, R.E., University of Calgary  
Genetic models of colony-level selection in the social hymenoptera.
- 9:00 STRASSMANN, J., Rice University  
An experimental study of predation and the evolution of group living in social wasps.
- 9:15 KUKUK, P., Cornell University  
Queen-worker conflict in a primitively eusocial sweat bee.
- 9:30 WENZEL, J.W., University of Kansas  
Ontogeny and behavioral evolution: the nests of paper wasps.
- 9:45 HEYWOOD, J.S., University of Miami  
Sexual selection and the handicap principle revisited.
- 10:00 Break
- 10:15 MOORE, A.J., University of Colorado  
Morphological correlates of male success in intrasexual and intersexual selection in Libelula luctuosa.
- 10:30 HEDRICK, A., University of California, Davis  
Female choice and the heritability of attractive male traits: a case study using field crickets (Gryllus integer).
- 10:45 TURCHIN, P., University of Washington  
Aggregation in male Euphydryas anicia: an incidental effect of their mate-searching behavior.
- 11:00 ODENDAAL, F.J., P. TURCHIN, and F.R. STERMITZ, Duke University, University of Washington, and Colorado State University  
Resource distribution, male harassment and spatial patterns of female Euphydryas anicia (Nymphalidae).
- 11:15 BOGGS, C., Stanford University  
Time budgeting in insects as a dynamic process.
- 11:30 ADOLPH, S.C., University of Washington  
Habitat shifts by Sceloporus lizards: environmental influences and innate tendencies.

Wednesday Morning  
Ballroom A, Strand Union

HYBRIDIZATION/SPECIATION

Session Leader: A.P. PLATT

- 8:30 DUNCAN, K.E., University of Arizona  
Interspecific hybridization in Bacillus.
- 8:45 BAKER, R.J., S.K. DAVIS, R.D. BRADLEY, M.J. HAMILTON and R.A. VAN DEN BUSSCHE, Texas Tech. University, Washington University  
Ribosomal and mitochondrial DNA, chromosomal and electrophoretic studies on a contact zone in the pocket gopher, Geomys bursarius.
- 9:00 RAND, D., Yale University  
Mitochondrial, nuclear and reproductive differentiation by soil type in a mosaic cricket hybrid zone.
- 9:15 NOVAK, J.M., T. LAMB, and D.E. CASEY, Savannah River Ecology Laboratory  
Asymmetry and hybridization: a case study using hylid frogs.
- 9:30 PLATT, A.P., University of Maryland, Baltimore County  
Natural interspecific hybridization among admiral butterflies (Limenitis: Nymphalidae).
- 9:45 BERT, T. and R. G. HARRISON, Florida Department of Natural Resources and Cornell University  
Hybridization in western Atlantic stone crabs (genus Menippe): a comparison of two disjunct zones of variation.
- 10:00 Break
- 10:15 SCRIBER, M., R. LEDERHOUSE, and R. HAGEN, Michigan State University  
Hybrid zones and laboratory hybrids among the North American tiger swallowtail butterfly taxa (Papilio glaucus group/Papilio troilus group).
- 10:30 SPERLING, F., Cornell University  
Hybrid populations in the Papilio machaon group in western Canada.
- 10:45 CRONIN, M.A., Yale University  
Mitochondrial DNA variation in allopatric and sympatric populations of mule deer and white-tailed deer.
- 11:00 STINE, O.C., Johns Hopkins Medical Institutes  
A restriction analysis of mitochondrial DNA in the genus Partula (Gastropoda).



Wednesday Morning  
Ballroom B, Strand Union

PLANT POPULATION BIOLOGY

Session Leader: A.A. SNOW

- 8:30 McKONE, M., Carleton College  
"Masting" in Chionochloa pallens, a perennial tussock-grass: the consequences of consecutive flowering years.
- 8:45 SCHUSTER, W., University of Colorado  
Significance of cotyledon number in the genus Pinus.
- 9:00 STRATTON, D., SUNY, Stony Brook  
The importance of the seedling stage for selection in a winter annual.
- 9:15 SNOW, A.A., Smithsonian Environmental Research Center  
Field and laboratory tests for gametophytic selection in wild radish (Raphanus raphanistrum).
- 9:30 COCHRAN, M.E., University of Georgia  
Life cycle models of the pink lady's slipper, Cypripedium acaule: analyzing the consequences of temporal variability.
- 9:45 COLEMAN, J., University of Texas, Austin  
Patterns of morphological and life history variation in a population of Cynodon dactylon, in response to a mine-site edaphic gradient.
- 10:00 Break
- 10:15 MITCHELL-OLDS, T., University of Washington  
Life histories and disease resistance in Wild Turnip.
- 10:30 KLINGER, T., University of California, San Diego  
Phase-specific patterns of reproductive effort in brown seaweeds with complex life-histories.

Wednesday Morning  
Ballroom C, Strand Union

PLANT REPRODUCTION

Session Leader: J. D. KARRON

- 8:30 RICHARDSON, T., Pennsylvania State University  
Factors affecting staminate and pistillate durations in Campanula rapunculoides.
- 8:45 MUENCHOW, G., Ohio University  
The evolution of dioecy from distily - evaluating the "loss of the long-tongued pollinator" hypothesis.
- 9:00 BULT, C.J., University of New Hampshire  
Where have all the flowers gone? reproductive efficiency in the wild soybean, Glycine soja.
- 9:15 SAKAI, A.K. and S. G. WELLER, University of Chicago, University of Illinois, Chicago  
Sex expression in Schiedea globosa, a subdioecious species.
- 9:30 KAROLY, K., University of Chicago  
Inbreeding depression in Schiedea globosa (Caryophyllaceae).
- 9:45 KARRON, J.D., University of Colorado  
Breeding systems and inbreeding depression in locally endemic and geographically widespread species of Astragalus (Fabaceae).
- 10:00 Break
- 10:15 NEWPORT, M.A. and C. GALEN, Bowling Green University  
Effect size and optimal outbreeding in Polemonium viscosum.
- 10:30 WALLER, D., University of Wisconsin  
Fitness consequences of outcrossing in Impatiens capensis: a test of the sib competition model.
- 10:45 LINHART, Y. and J. KARRON, University of Colorado  
Factors producing differences in outcrossing rates among individual Ponderosa Pines.
- 11:00 WASER, N. M., University of California, Riverside  
Optimal outcrossing effects on offspring fitness in perennial wildflowers.
- 11:15 SCHEMSKE, D.W., University of Chicago  
Breakdown in protandry promotes selfing in a neotropical tree: fitness consequences.

Wednesday Morning  
Ballroom D, Strand Union

MOLECULAR EVOLUTION/HETEROZYGOSITY      Session Leader: J. AJIOKA

- 8:30      BAIRD, V., University of Georgia  
            The actin supergene family in Petunia hybrida 'Mitchell'.
- 8:45      McLEAN, M., University of Georgia  
            Genetic analysis of the actin gene family of Petunia hybrida.
- 9:00      BROWN, C., University of Georgia  
            Evolution of the amylase multigene family in Drosophila pseudoobscura.
- 9:15      WICHMAN, H.A. and C.T. PAYNE, University of Missouri-Kansas City  
            Phylogenetic screening of the Zebra genome.
- 9:30      JEFFERY, D.E., Brigham Young University  
            Conservation of the chromosomal elements of Drosophila melanogaster and  
            D. virilis analyzed by in situ hybridization.
- 9:45      AJIOKA, J., SUNY, Stony Brook  
            The tip of the X-chromosome in D. melanogaster: a black-hole for  
            P-elements?
- 10:00      Break
- 10:15      EAMES, W., SUNY, Stony Brook  
            The fitness effects of P-element insertion in Drosophila melanogaster.
- 10:30      McDONALD, J. H., SUNY, Stony Brook  
            Selection components analysis of the mannose-6-phosphate isomerase  
            locus in the amphipod Platorchestia platensis.
- 10:45      NORMAN, R., Arizona State University  
            Evolution of dosage compensation for amylase in Drosophila miranda.
- 11:00      KOEHN, R.K., SUNY, Stony Brook  
            Heterozygosity and growth rate: who's at the controls?
- 11:15      MITTON, J.B., T.D. KOCHER, and J. COELHO, University of Colorado  
            Relationships of the ADH polymorphism to hemoglobin function, oxygen  
            consumption and growth rate in tiger salamanders.
- 11:30      LEDBERG, P., Savannah River Ecology Laboratory  
            Heterozygosity and deer fetal growth: overdominance or inbreeding  
            depression?
- 11:45      BUSH, R., University of Michigan  
            The relationship between heterozygosity and growth rate in pitch pine.

Wednesday Afternoon  
Ballroom A, Strand Union

PALEONTOLOGICAL APPROACHES TO EVOLUTIONARY DYNAMICS

Organizer: JENNIFER A. KITCHELL

- 1:00      BELL, M.A., SUNY, Stony Brook  
            Bridging the gap between population biology and paleobiology in  
            Stickleback fish.
- 1:40      LOHMANN, G.P., Woods Hole Oceanographic Institution  
            Ontogeny, ecophenotypy, and evolution in planktonic foraminifera.
- 2:20      LAZARUS, D., Woods Hole Oceanographic Institution  
            Speciation in the pelagic realm.
- 3:00      Break
- 3:20      STANLEY, S.M., Johns Hopkins University  
            Evolutionary stasis in multilineages of Neogene bivalves.
- 4:00      KITCHELL, J., University of Michigan  
            Stasis and change: the nature of coevolutionary dynamics.



Wednesday Afternoon  
Ballrooms B, C, Strand Union

# CYTOPLASMIC-NUCLEAR INTERACTIONS

Organizer: JONATHAN ARNOLD

- 1:00      ARNOLD, J., University of Georgia  
            Introductory remarks.
- 1:10      LANSMAN, R.A., University of British Columbia  
            Molecular mechanisms for mitochondrial-nuclear interactions.
- 1:50      ASMUSSEN, M.A., University of Georgia  
            Cytonuclear associations: models and measures of disequilibria.
- 2:30      CLARK, A.G., Pennsylvania State University  
            Mitochondrial-nuclear interactions in experimental populations. I.
- 3:10      Break
- 3:25      MACRAE, A.F., University of Georgia  
            Mitochondrial-nuclear interactions in experimental populations. II.
- 3:45      AVISE, J.C., University of Georgia  
            Mitochondrial-nuclear interactions in hybrid zones.
- 4:25      LEVINGS, S., North Carolina State University  
            Molecular evolution of plant mtDNA in concert with the nuclear genome.

## ASN/SSE Annual Meeting

### CHANGES IN THE PROGRAM

The following contributed papers have been canceled:

GORDON, I. J., "Male-killer cytoplasm...." Monday, 2:00 P.M.

LYMAN, J., "The ecological and genetic...." Wednesday 10:45 A.M.

ODENDAAL, F.J. et al, "Resource distribution...." Wednesday 11:00 A.M.

Please note that the sessions in which these talks were scheduled will not be changed except to take a 15 minute break during the time when the talks were to be given.

The following errors in or additions to the program should be noted:

GRAVES, J.L. "The effects of selection...." Monday, 2:30 P.M. L. Luckinbill should be listed as second author.

CACCONE, A., "DNA-DNA hybridization..." Monday, 4:30 P. M. The affiliation should be Yale University and University of Rome, Tor Vergata.