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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

FEB 28 1966

SMITHSONIAN INSTITUTION
SCIENCE INFORMATION EXCHANGE

209 MADISON NATIONAL BANK BUILDING
1730 M STREET, N.W.
WASHINGTON, D. C. 20036

Telephone: 381-5511

MONROE E. FREEMAN, Ph.D., Director

24 February 1966

Professor David J. Rogers
Taxonomy Laboratory
Department of Botany and Plant
Pathology
Colorado State University
Fort Collins, Colorado 80521

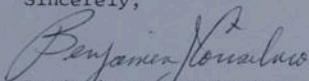
Dear Professor Rogers:

Thank you for your recent request for information on computer classification and taxonomy. Our search was directed toward the science of Botany; a few Notices relevant to the area of animal-biological taxonomy have been included, however.

The policies of the Exchange preclude the use of information on the Notices for publication or publication reference without permission of the principal investigators concerned.

We hope the Notices we are sending you will be useful, and if we can be of any assistance in the future, please do not hesitate to contact us.

Sincerely,



Benjamin J. Consilvio
Mathematics Branch
Physical Sciences Division

Enclosures

Refer to: SR 4516
Telephone: 381-5728

BJC/mm

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

OFFICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

SIE NO. GNE 172 C3

AGENCY NO. NR 104-624

RE-RUN

SUPPORTING AGENCY:

DEPARTMENT OF THE NAVY
OFFICE OF NAVAL RESEARCH

TITLE OF PROJECT:

Computers and Taxonomy.

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Rogers, D.

NAME AND ADDRESS OF INSTITUTION:

New York Botanical Garden
Bronx Park, Bronx, New York

SUMMARY OF PROPOSED WORK - (200 words or less.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This task is a study of the possible contributions of the mathematical approach to the separation of biological species. This separation is essential in identifying organisms encountered in hydrobiological studies since different organisms, even though closely related, may vary widely in their behavior and distribution.

Period for this SRF

12-64 to 11-65

mo yr mo yr

SIGNATURE OF
PRINCIPAL INVESTIGATOR _____

PROFESSIONAL SCHOOL
(medical, graduate, etc.) _____

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NATIONAL SCIENCE FOUNDATION

Biological & Medical Sciences

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

PROJECT NO. (Do not use this space)

GSB 1474

NSF-GB-3363

SUPPORTING AGENCY:

TITLE OF PROJECT:

Systematic Study of the Genus *Vibrio*

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Rita R. Colwell
Assistant Professor of Biology
Department of Biology
Georgetown University
Washington, D. C. 20007

NAME AND ADDRESS OF INSTITUTION:

Georgetown University
Washington, D. C. 20007

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information.

The primary objectives of this research are to establish a logical system of classification and a more complete description of the genus *Vibrio*, to determine the relationships (phenetic and genetic) between *Vibrio* and other genera such as *Spirillum*, *Pseudomonas*, *Enterobacter*, etc., to select a working neotype of *Vibrio* comma and of other *Vibrio* species obtained in cluster analysis by computer, and, finally, to measure quantitatively the relationship between the classical cholera vibrio, El Tor; the "non-agglutinable" (NAG) strains and the named *Vibrio* species.

Sufficient taxonomic data concerning the genus *Vibrio* will be obtained for the numerical taxonomy studies to provide a method of rapid diagnosis by high-speed electronic computer on the basis of the data stored and programmed for retrieval and to integrate information obtained by computer analysis with that of DNA base composition studies.

Period for this NRP

5-65 to 4-66

mo yr mo yr

Sub-group B I

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

Rita R. Colwell

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:

SCHOOL Georgetown University

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

PROJECT NO. (Do not use this space)

GSB 2013
NSF - GB - 3463

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

NATIONAL SCIENCE FOUNDATION

SUPPORTING AGENCY:

Biological & Medical Sciences

TITLE OF PROJECT:

Taxonomy of Non-Sporeforming Anaerobic Bacteria

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

W. E. C. Moore, Dept. Vet. Sci., Professor Vet. Sci., - Principal Investigator
Dr. Erwin Lessel, Curator of Bacteria, American Type Culture Collection --co-investigator
WASHINGTON DC

NAME AND ADDRESS OF INSTITUTION:

Virginia Polytechnic Institute BLACKSBURG VIRGINIA

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information.

The Our laboratory currently has the largest collection of non-sporeforming anaerobes (excluding vibrios and spirochetes) in this country. This collection is to be thoroughly characterized and redescribed. Neotype cultures will be designated for many species and relationships between species and genera established with computer techniques. The collection includes the holdings of the ATCC, the isolates of M. R. Bryant, A. R. Prevot, as well as primary isolates of this laboratory and cultures provided from many other laboratories. A uniform group of 160 coded characteristics will be determined and compared for each strain. Cooperative investigations with other laboratories for key strains will include guanine-cytosine determinations in DNA. Taxonomically significant strains will be maintained by the ATCC.

Period for this NRP

7-65 to 3-66
MO YR MO YR

Sub-group B I

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

W. E. C. Moore

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:
SCHOOL Virginia Polytechnic Institute

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE

SMITHSONIAN INSTITUTION

NATIONAL SCIENCE FOUNDATION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

PROJECT NO. (Do not use this space)

GSB 3145
NSF-GB-3456

SUPPORTING AGENCY:

Biological & Medical Sciences

TITLE OF PROJECT:

Physiological and Taxonomic Studies of the Bacterial Genus Flavobacterium

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

✓ Dr. O. B. Weeks, Research Professor, Research Center, Principal Investigator.

Dr. K. L. Krabbenhoft, Assistant Professor, Department of Biology, Faculty Associate.

DEPT. OF BIOLOGY

NAME AND ADDRESS OF INSTITUTION:

New Mexico State University, Box Y, University Park, New Mexico 88070

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information.

The investigation which has been proposed is a physiological and taxonomic study of pigmented bacteria which have been assigned to the genus Flavobacterium. The present generic concept is sufficiently inexact to have permitted a heterogeneous assemblage of organisms. An extensive lyophilized collection of named strains of Flavobacterium species as well as unstudied aquatic and terrestrial cultures have been accumulated and will be studied by taxonomic methods. Cultural properties will be arranged for computer analysis to establish intra- and intergroup relationships. Intragroup homogeneity will be tested further with analyses of deoxyribonucleic acid base ratios. Taxospecies and genospecies will be compared with genera such as Xanthomonas, Pseudomonas and Cytophaga to which the heterogeneous species of Flavobacterium now are thought to be related.

Period for this NRP

4-65 to 3-66

mo yr mo yr

Sub-group B E

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

O. B. Weeks

Identify the Professional School (medical, dental, public health, graduate,

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

PROJECT NO. (Do not use this space)

GSB4075C2

NSB-GS-4/60

(provided by 65568)

NATIONAL SCIENCE FOUNDATION

SUPPORTING AGENCY:

Biological & Medical Sciences

TITLE OF PROJECT:

Studies on the origins of certain cultivated plants of Latin America

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Dr. Charles B. Heiser, Jr. Professor of Botany

Mr. Donald L. Burton, Graduate Assistant in Botany

NAME AND ADDRESS OF INSTITUTION:

Indiana University, Bloomington, Indiana

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information.

It is proposed to make taxonomic and cytogenetic studies of certain Latin American cultivated plants and their wild relatives. The investigation will be devoted primarily to certain Andean plants: peppers (Capsicum spp.), quinoa (Chenopodium quinoa), chocho (Lupinus mutabilis), naranjilla (Solanum quitoense) and pepino (Solanum muricatum). It is hoped that such studies will contribute to a better understanding of the origin and development of the cultivated plant as well as result in improved classifications.

Period for this NRP
2-65 to 2-66
mo yr mo yr
sub-group B I

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

Charles B. Heiser, Jr.

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:
Graduate

SCHOOL

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

[AC I]
PROJECT NO. (Do not use this space)
GYZE 420063 - C3
AG-TEX-1609

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

United States Department of Agriculture
Cooperative State Experiment Station Service

SUPPORTING AGENCY:

TITLE OF PROJECT:

Improvement of certain characteristics of the southern pines

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

J. P. Van Buijtenen, Department of Plant Sciences

NAME AND ADDRESS OF INSTITUTION:

Texas A. and M. College
Agricultural Experiment Station
College Station, Texas

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

7. TITLE, PROJECT OBJECTIVES AND DESCRIPTION OF WORK PROPOSED

Title: IMPROVEMENT OF CERTAIN CHARACTERISTICS OF GROWTH, FORM, AND WOOD QUALITIES OF THE SOUTHERN PINES BY THE APPLICATION OF GENETIC PRINCIPLES WITH EMPHASIS ON LOBLOLLY PINE

63F2/37L

Objectives: To pool all of the quantitative genetic information gained in the Texas Forest Service Cooperative Tree Improvement Program and apply these data to the development of selection indexes and continuous breeding systems.

Description of Work: The analysis covered in the following outline will be made from measurements obtained on existing loblolly pine plantations of the Texas Forest Service Tree Improvement Program. The data will be processed by electronic computer. The programs will be developed in the FORTRAN automatic coding system, which is fairly widely adopted, and will be made available to the cooperators in the project. Models will be set up of breeding systems to compare their efficiency.

8. INDICATE TYPE OF PROJECT	9. MATCH	10. RRP	11. AMA	12. NON-FED.	13. NEW	14. REV.	15. MARKETING	16. DURATION	17. COOPERATION	18. APPROVAL DATES	19. FILE NO.
	X	S-23				X		20 yrs		6-10-55 4-25-63	63F2/37L
12. STATE	14. PROJ. NO.	15. DEPT.	16. ABBREV. TITLE		17. COOPERATION		18. APPROVAL DATES		19. FILE NO.		
Tex	1000	Pl Sci	Southern Pines		Improvement of Certain Characteristics of the /				63B2/368		

Period for this NRP

7-65 to 6-66

MO YR MO YR

Sub-group R Z

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified

NOT FOR PUBLICATION
OR PUBLICATION REFERENCE

VETERANS ADMINISTRATION

SIE Number

ZO 7410C7.

VA Project Number

TB4-254

Prepared for
Veterans Administration
and
Science Information Exchange
Smithsonian Institution

REPORT OF RESEARCH PROJECT

Number: 5104

Subject
Category

Ia

Cost
Center
106

Name and Address of Station
Veterans Administration Hospital
13000 Seyre Street, San Fernando, California

Title of Project

Characterization of Atypical Acid-Fast Microorganisms

Names, Official Titles, Departments & Academic Titles of all Professional Personnel

Lawrence G. Wayne, Ph.D., Chief, Bacteriology Research Laboratory, VAH.
Joseph R. Doubek, B.S., Medical Technologist, VAH.
Gilbert A. Diaz, M.S., Chemist, VAH.

Initial Rpt. Progress Rpt. Final Rpt. Thesis FIF-VA 2 No. of Related Projects 3 Estimated Time 3 Yrs.

Abstract (Should not exceed one page --see reverse side for details to be included)

New tests have been developed, and existing tests modified to provide data which can be coded for computer analysis. Among the tests which have been evaluated on between 500 and 900 cultures are niacin, urease, tween hydrolysis, nitrate and nitrite reduction, catalase, aryl sulfatase, opacity production in tween agar, oleate and nitrite tolerance, neutral red, cording, pigmentation, and susceptibility to 10 bacteriophages. These tests are being continued on the collection. In addition, we are evaluating tests for 5 amidases, temperature tolerance and iron uptake.

Carbohydrate fermentation tests have not been very definitive with slow growing mycobacteria, although some authors have found them useful with rapid growers. One difficulty is the failure of mycobacteria to accumulate intermediate (acid) products. We are considering development of tests for a) evolution of small amounts of CO₂ and b) disappearance of carbohydrate substrate from suspensions of bacilli. Preliminary studies indicate that too little CO₂ is evolved for conventional determination of gas evolution, but we have some trial studies on measurement of CO₂ by a diffusion technique.

PUBLICATIONS:

Wayne, L.G.: (Editorial) The mycobacterial mystique: Deterrent to taxonomy. Amer. Rev. Resp. Dis. 90, 255-257 (1964).

Wayne, L. G.: (Correspondence) Nomenclature of the mycobacteria. Amer. Rev. Resp. Dis. 90, 278-279 (1964).

Wayne, L. G., Doubek, J. R. and Russell, R. L.: Classification and identification of mycobacteria. I. Tests employing Tween^(R) 80 as substrate. Amer. Rev. Resp. Dis. 90, 588-597 (1964).

Wayne, L. G. and Doubek, J. R.: The role of air in the photochromogenic behaviour of *Mycobacterium kansasii*. Amer. J. Clin. Path. 42, 431-433 (1964).

Wayne, L. G. and Doubek, J. R.: Classification and identification of mycobacteria. II. Tests employing nitrate and nitrite as substrates. Amer. Rev. Resp. Dis. 91, 738-745 (1965). Active F. Y. 58

Thru FY 1966

Signature of Responsible Investigator

Lawrence G. Wayne

Period for this NRP

FY 65
mo yr mo yr

Sub-group AIA

Progress report will be submitted annually in month of: May

Date of this report: June 7, 1965

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

AT 05219-03

EM 5-R01

TITLE OF PROJECT

Quantitative taxonomy applied to bacteria

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

W. R. Lockhart, Prof & Chrmn, Dept of Bacteriology
P. A. Hartman, Prof, Dept of Bacteriology
R. J. Beers, Assoc Prof, Dept of Bacteriology

NAME AND ADDRESS OF APPLICANT INSTITUTION

Iowa State University, Ames, Iowa

SUMMARY OF PROPOSED WORK - (200 words or less - Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

New coding methods, criteria and computer programs for estimation of similarity and for formation of mutually similar groups of bacteria at various heirarchical levels will be tested and compared, using both actual isolates and published descriptions of a variety of taxa, with a view toward development of a generalized, quantitative scheme for classification and diagnosis of microorganisms.

Period for this NRP
G-65 to 5-66
mo yr mo yr
Sub-group R 11

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED
Sciences & Humanities

SIGNATURE OF PRINCIPAL INVESTIGATOR

WR Lockhart

DATE

8 Feb 65

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT
5 R01

AC 1
PROJECT NO. (DO NOT USE THIS SPACE)

GM 11208-03

COM

Submit with completed Application to: Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

TITLE OF PROJECT:

Use of Computers in Classification

Replaces GM 11208-03

Dates 1-3 July 1965

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS or PROJECT DIRECTORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project. Include day-month-year of birth of principal investigators.

David J. Rogers	Curator of Quantitative Taxonomy
Henry S. Fleming	Research Associate in Quantitative Taxonomy
Michael H. Levin	Research Assistant in Quantitative Taxonomy
Taffee T. Tanimoto	Consultant in Mathematics

10/19/18

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The New York Botanical Garden, Bronx Park, Bronx, New York 10458

SUMMARY OF PROPOSED WORK - (200 words or less - Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The attainment of the full potential of the taxonomic method has been seriously hampered by the sheer magnitude of the data to be correlated. With the advent of the electronic computer, there is the possibility of speeding up the taxonomic process--selection of the data, correlation of the data, the evaluation of the hierarchies, and the reporting of the findings. We hope to write a program in FORTRAN which will be flexible, inclusive, and at the same time specific to the job of classification of biological entities (species and higher categories). We further intend that the program will be advantageous to medical diagnosis, in the correlation of biochemical, biophysical and anatomical data with the time-honored morphology, and in similar areas where correlative endeavors are significant to understanding. We hope that one of the products of these investigations will be the establishment of a firmer mathematical base for a biological discipline notoriously lacking such foundation.

Period for this NRP
6-65 to 5-66
mo yr mo yr
sub-group B V

SIGNATURE OF David J. Rogers
PRINCIPAL INVESTIGATOR or PROJECT DIRECTOR
Identify * Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:

SCHOOL _____

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

PROJECT NO. (DO NOT USE THIS SPACE)

5 R01 GM 11935-02

NOTICE OF RESEARCH PROJECT

SSS

TITLE OF PROJECT

Research in Statistical Biology

Period for this NRP

9-65 to 8-66

mo yr mo yr

Sub-group R /

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Principal Investigator:

Dr. Robert R. Sokal, Professor of Statistical Biology,
Department of Entomology. 13 January 1926

Research Associate: Dr. F. J. Rohlf

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Kansas, Lawrence, Kansas

SUMMARY OF PROPOSED WORK - (200 words or less - Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Research is proposed in the following four fields:

1) Numerical Taxonomy: This will include studies of new taxonomic groups by numerical taxonomy as well as development of different methods of clustering, analyses of parallelism and convergence and tests of several of the principles of numerical taxonomy such as non-specificity and the matches-asymptote hypothesis. Correlations among characters will also be investigated.

2) Analysis of geographic variation: This will include continuation of my present work on Pemphigus, as well as studies on geographic variation of ticks and on the Culux pipiens complex. The emphasis in this work is on the variation and covariation of large suites of characters.

3) Factor analysis in biology: This will be applied to problems in several fields such as numerical taxonomy, geographic variation analysis, ecology and others. An experiment testing reification of factors in a known model will be undertaken with insects and/or humans using physiological variables.

4) Ecological genetics: This work investigates the ecological mechanisms of natural selection in populations of flour beetles and houseflies. Special emphasis will be paid to the ecology of natural selection of the black locus in Tribolium castaneum and of the brown body locus in house flies.

PROFESSIONAL SCHOOL (medical, dental, etc.) WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE

25 May 1965

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NOTICE OF RESEARCH PROJECT
5R01

AC 1
PROJECT: (DO NOT USE THIS SPACE)
GM 11208-03
COM

Submit with completed Application to: Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

TITLE OF PROJECT:

Use of Computers in Classification

Replaces GM 11208-03

Dates 13 July 1965

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS or PROJECT DIRECTORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project. Include day-month-year of birth of principal investigators.

David J. Rogers Curator of Quantitative Taxonomy
Henry S. Fleming Research Associate in Quantitative Taxonomy
Michael H. Levin Research Assistant in Quantitative Taxonomy
Taffee T. Tanimoto Consultant in Mathematics

10/19/68

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The New York Botanical Garden, Bronx Park, Bronx, New York 10458

SUMMARY OF PROPOSED WORK - (200 words or less - Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The attainment of the full potential of the taxonomic method has been seriously hampered by the sheer magnitude of the data to be correlated. With the advent of the electronic computer, there is the possibility of speeding up the taxonomic process--selection of the data, correlation of the data, the evaluation of the hierarchies, and the reporting of the findings. We hope to write a program in FORTRAN which will be flexible, inclusive, and at the same time specific to the job of classification of biological entities (species and higher categories). We further intend that the program will be advantageous to medical diagnosis, in the correlation of biochemical, biophysical and anatomical data with the time-honored morphology, and in similar areas where correlative endeavors are significant to understanding. We hope that one of the products of these investigations will be the establishment of a firmer mathematical base for a biological discipline notoriously lacking such foundation.

Period for this NRP
6 - 65 . 05 - 66
mo yr mo yr
Sub-group R 11

SIGNATURE OF David J. Rogers
PRINCIPAL INVESTIGATOR or PROJECT DIRECTOR
Identify * Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:

SCHOOL _____

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

C/A BM-65-116-M 1/65

PUBLICATION BY AEC
HEREBY AUTHORIZED

PROJECT NO. (Do not use this space)

GPE 266 C3

AT(30-1)2991

SUPPORTING AGENCY:

Division of Biology and Medicine
UNITED STATES ATOMIC ENERGY COMMISSION

NAME AND ADDRESS OF INSTITUTION: Please state also the Division, Department, or Professional School (medical, graduate, or other) with which this project should be identified:

Department of Limnology
Academy of Natural Sciences of Phila.
19th and The Parkway
Philadelphia 3, Pennsylvania

Period for this NRP

10-1-64 to 9-1-65
mo yr mo yr

TITLE OF PROJECT

An ecosystematic study of the fauna and flora of the Savannah River.

Sub-group A A

Give names, department, and official titles of PRINCIPAL INVESTIGATORS and OTHER PROFESSIONAL SCIENTIFIC PERSONNEL (not including graduate students) engaged on the project, and fraction of man-year devoted to the project by each person.

Dr. Ruth Patrick, Curator, Chairman, Department of Limnology
Dr. John Cairns, Jr., Curator, Department of Limnology
Dr. Charles W. Reimer, Curator, Department of Limnology
Dr. Selwyn S. Roback, Curator, Department of Limnology
Mr. John M. Bates, Invertebrate Zoologist, Dept. of Limnology

How many graduate students on project?

How many graduate student man-years?

SUMMARY OF PROGRESS WORK - (200 - 300 words. Omit confidential data.) Summaries are exchanged with government and private agencies supporting research, are supplied to investigators upon request, and may be published in AFC documents. Please make your summary SUBSTANTIVE, giving initially and for each annual revision the following: OBJECTIVE; scientific BACKGROUND or REASON for study; proposed PROCEDURE; TEST OBJECTS and AGENTS; and RESULTS TO DATE if any.

The purpose of this study is to prepare several papers on the ecology and taxonomy of the fauna and flora of the Savannah River in the vicinity of the Savannah River project. The bases of these studies are the collections and results of biological and chemical analyses made on river surveys of this area from 1951 through 1960. These studies were carried out by the Limnology Department of the Academy of Natural Sciences.

To date 1,500,000 bits of data have been submitted for computer analyses to answer the following questions:

1. What are the ranges of chemical and physical characteristics in which each species was found? Twenty-two chemical and physical characteristics have been considered for each species.
2. What is the similarity of species composition at each station to other stations on a given survey or study period?
3. At a given station or area what is the similarity in species composition over time? This included studying the similarity at a given season and at all seasons.
4. Are there groups of species which always occur together, and never occur in the absence of others of the group?
5. Are there a matrix of species which occur together more often than chance would indicate as possible?

During 1964-1965 the results of these various analyses and conclusions from studying these data will be presented in an ecological paper. Systematic papers on the diatom and

For Period: mollusca fauna will also be finished.

Env. Scs.	Program Category Number
Budget	
Primary	06 05 01 03

Signature of
Principal
Investigator

Ruth Patrick Date *20 Oct 1964*

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

PROJECT NO. (DO NOT USE THIS SPACE)
GS 4452 02
NSF-CB-1623

NATIONAL SCIENCE FOUNDATION

SUPPORTING AGENCY: Biological & Medical Sciences

TITLE OF PROJECT:
Studies on the classification and taxonomy of the Gram-negative bacilli derived chiefly from the marine environment

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Principal investigator:	Co-principal investigator:
Dr. Rita R. Colwell, Asst. Res. Prof.	Dr. John Liston, Assoc. Prof.
Food Science	Food Science
College of Fisheries	College of Fisheries
University of Washington	University of Washington
Seattle 5, Washington	Seattle 5, Washington

NAME AND ADDRESS OF INSTITUTION:
University of Washington, Seattle 5, Washington

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information.

Studies of marine bacteria are to be continued, in which marine isolates are examined by standard bacteriological methods, the taxonomic data coded and transferred to cards and, eventually, to magnetic tape and computations by electronic computer carried out. Species groups, established on the basis of over-all similarity computed from several hundred test results, will be described. The quantitative theory of bacterial species will be further developed. The theory provides a very useful method potentially for programming the electronic computer to handle taxonomic data in a completely automatic routine and anticipates the development of a simplified system for more general use. At present the formation of taxonomic units requires several manual steps, i.e., card sorting and data inspection between the initial calculations of similarities between "operational taxonomic units" and the final calculations of mean S-values, standard deviations and variances within and between taxons. The hypothetical median organism presents the best approach in terms of high speed computer programming, for group formation and data presentation, as well as for determining a simple manual system for rapid identification of bacteria. A new contribution to microbial taxonomy, the investigation of genetic, computer taxonomy and DNA composition relationships of several groups of microorganisms will be continued.

Period for this NRP
9-63 to 9-64
mo yr mo yr
Sub-group B-I

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

Rita R. Colwell

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified: Washington College of Fisheries University of

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION

NOT FOR PUBLICATION OR
PUBLICATION REFERENCE

PROJECT NO. (Do not use this space)

GS 5347

NSF GB 47

SUPPORTING AGENCY:

National Science Foundation

TITLE OF PROJECT:

Index of current research in plant taxonomy

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Raymond C. Jackson, Ph.D., Asst. Prof. of Botany, University of Kansas,
Lawrence, Kansas

4 - JAN 1963

NAME AND ADDRESS OF INSTITUTION:

Institute of the American Society of
Plant Taxonomists
Lawrence, Kansas

SUMMARY OF PROPOSED WORK - (200 words or less. Omit confidential data.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

NO SUMMARY HAS BEEN PROVIDED
FOR USE OF
SCIENCE INFORMATION EXCHANGE

SIGNATURE OF
PRINCIPAL
INVESTIGATOR

Identify the Professional School (medical, dental, public health, graduate,
or other) with which this project should be identified:

SCHOOL

Prepared for the Science Information Exchange.
Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE 5R01
NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

AI 04438-03

TMP

Submit with completed Application to: Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

TITLE OF PROJECT:

Numerical Taxonomy and Reclassification of Mosquitoes

Give names, departments, and official titles of PRINCIPAL INVESTIGATORS or PROJECT DIRECTORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Robert R. Sokal, Professor of Statistical Biology, principal investigator.

C. D. Michener, Professor of Entomology, acting principal investigator,
August 1963 - August 1964.

NAME AND ADDRESS OF APPLICANT INSTITUTION:

The University of Kansas, Lawrence, Kansas

SUMMARY OF PROPOSED WORK - (200 words or less - Omit Confidential data.)

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Purposes are to develop computer programs for numerical taxonomic work and to obtain further experience relating to the methodology and practicability of such work. Also, some of the basic tenets of numerical taxonomy are to be tested.

Mosquitoes are being used for such studies. The genus Psorophora is being investigated, together with its relationship to Aedes.

In addition, geographical and host variants of the rabbit tick are being investigated, using numerical methods among others.

Period for this NRP
<i>444 to 3-65</i>
mo yr mo yr
Sub-group

Acting

SIGNATURE OF

PRINCIPAL Charles D. Michener

INVESTIGATOR or PROJECT DIRECTOR

Identify the Professional School (medical, dental, public health, graduate, or other) with which this project should be identified:

SCHOOL Graduate