

B

ABSTRACTS

ABSTRACTS

3

PH. Agricultural Res-
tsville, MD--The
es

cept the biological
efined by Mayr (1963).
interbreeding natural
reproductively isolated
". A systematist uses
information when
intraspecific, but fre-
quently or morphological
able. When using mor-
phology, the systematist must
recognize that morphological
different gene pools.
be evaluated for their
own environmental
variability must be
intraspecific or inter-
specific theoretical con-
cepts added to the systema-
tist's species is still what
the systematist says that it
is. The systematist with
morphology is the most important
method of determination.
Examples of difficult species
are economically important
pests and food animals.

HOBERG, ERIC P. USDA, Agricultural
Research Service, Biosystematic
Parasitology Laboratory--Species and the
phylogenetic perspective.

Application of phylogenetic systematics has
resulted in a broadened view of species
that subsumes the Biological Species
Concepts (BSC) (Mayr, 1963). In particular,
the BSC while recognizing the importance of
species, has focused at the level of local
populations rather than taxa, is
nondimensional, and is only applicable to
sexually reproducing organisms. As such,
recognition of patterns of differentiation
and evolutionary history of discernable
populations is complicated by the
definition of composite species and
paraphyly. In contrast, the evolutionary or
phylogenetic species concept (ESC) of
Simpson (1961) and Wiley (1981) considers
species as recognizable historical entities
with continuity in time and linked by
common ancestry rather than by reproductive
isolation or the ability to interbreed.
Species are represented by terminal taxa
and species groups are monophyletic. Thus
the ESC reintroduces history, provides an
alternate means for determination of
species boundaries and constitutes a
definition that is nonarbitrary at the
supraorganismal level. These concepts will
be examined within the framework of
helminth systematics.

4

WALLER, DEBORAH A.¹ and ROBERT K.
VANDERMEER². Old Dominion
University¹ and USDA-ARS,
Gainesville, FL²--Biochemical
identification of fire ants in
Virginia.

Two species of fire ants were
introduced into the southeastern US
in the early 1900's. The red
imported fire ant, Solenopsis
invicta Buren, has expanded its
range northward through reproductive
flights and transport with nursery
stock. The black imported fire ant,
S. richteri Forel, remains
restricted to the border between
Mississippi and Alabama, but a
viable invicta x richteri hybrid has
colonized Alabama, Mississippi and
Georgia. It is unknown whether cold
northern temperatures will limit the
spread of S. invicta and/or the
hybrid. In the present study we
examined the species identity of
fire ants that have recently invaded
the Tidewater area of Virginia and
Richmond, the northernmost limit of
their range. Biochemical analyses
of venom alkaloids and cuticular
hydrocarbons were used to separate

S. invicta from the hybrid because
these ants are morphologically
identical. Information resulting
from this study will be useful in
tracking the movement and
establishment patterns of these
important pests.

5

WATTS, S.A.¹, G.A. HINES¹, J.B.
McCLINTOCK¹, K.R. MARION¹, and T.S.
HOPKINS². University of Alabama at
Birmingham¹ and University of Alabama²--
Chemical communication of echinoderms in
marine communities.

The abundance of echinoderms in near shore
and deep water communities has a highly
significant impact on community structure.
Understanding echinoderm intra- and inter-
species chemical communication will increase
our knowledge of processes which influence
community structure in marine ecosystems.
We have initiated studies to determine the
production and influence of hormones and
steroid-based pheromones from several species
of echinoderms in the Gulf of Mexico. We
have determined that: (1) echinoderms
produce a variety of steroid metabolic
products that are homologous to those found
in vertebrates (androgens and estrogens) and
that these hormones appear to regulate
physiological processes such as reproduction;
(2) several echinoderm species produce large
quantities of water-soluble steroid
conjugates that are considered to have
pheromonal activity in other vertebrates
(such as teleosts); and (3) some echinoderms
produce 11-oxy androgens, which were
previously found only in teleosts, suggesting
a biochemical evolutionary link among these
groups. These data suggest that these
chemical signals regulate physiological
processes within the organisms and influence
the interactions of organisms within and
among species. Knowledge of these
biochemical signals can be used: (1) to
predict and enhance mariculture production of
economically-important echinoderms; (2) to
chemically define developmental, reproductive
and growth processes in echinoderms; and
(3) to assess populations of organisms which
might be modified by anthropogenic effects,
including various sources of pollution.

6

ROWLEY, HEATHER J.,¹ BRENT
C. SHEALY,¹ IRENE KOKKALA,¹ and
ROBERT D. HOYT.² Furman University¹
and Western Kentucky University²--
Development of cephalic and lateral line
neuromasts of the fathead minnow,
Pimephales promelas.

Fathead minnows were reared from eggs,
and larvae were collected at regular intervals
over a 60 day period. The emergence and
distribution of free neuromasts in
prehatching and posthatching larvae was
determined with the use of scanning electron
microscopy. The first free neuromasts
appeared in the cephalic region of
prehatching larvae at approximately 60 hrs.
after fertilization. The supraorbital

infraorbital
mandibular
lines appear
fertilization
single neuromast
extended
proximal
the inco:
By 600
were observed
number
increase
neuromast
lateral line
associated
four, by
head beyond
of pores
regions.
lateral line
shown in

7

NORE
HERN
on Ma

This study
exposure
influence
in male
in the
monkeys
receptive
In a second
delayed
with fem
denied an
normal
declining
behavior
compare
postpone
testis size
the norm
begun in
levels of
underlying
monkeys

8

WIL
Uni
of
dic

The per
headed
fed ne
taeda,
was inv
conduct
and ter
were no
while
signif
CO2 gra
was str
(N) cor
increas
the hig
in par

ORIGINAL DOCUMENT

E S. Agricultural Res.
Beltsville, MD--The
Species

istics are employed
usually when
served characteristics
For diagnoses, or
specific genetic type,
traits may be determined
specialized knowledge
commonly used biochemi-
cal enzyme profiles and
determining DNA struc-
tures are considered
assessment of the
studies of DNA.
traits are applicable to
traits of an organism.
classification of species,
to evaluate biochemical
traits and dis-
criminate specific and inter-
specific. He must know the
the biochemical
traits of species level
variations. Various
DNA data will be
used and dis-
cussed.

ASB Bull. 40(2); 88 88 1493 54 can meet A SE