

EVOLUTIONARY BIOLOGY



EVOLUTIONARY BIOLOGY'S CONTRIBUTIONS TO SOCIETY

H H M

Genetic Diseases
Infectious Diseases
Mental Disease
Normal Physiological Functions

E C

Conservation Biology
Effects on an Ecosystem with the Introduction of New Organisms

A N R

Plant and Animal Breeding
Using Biodiversity
Pest Management
Genetic Engineering
Forestry and Fisheries

U H

Human History
Variations with and among Populations
Human Nature
Models of Cultural Change
Comparison to Non-human Primates and other Species

F U N P

Fossil Fuels
Microorganisms



GOALS OF EVOLUTIONARY BIOLOGY

DISCOVER THE HISTORY OF LIFE ON EARTH

- Determine ancestor-descendant relationship among all species that have ever lived (phylogeny)
- Determine times of species' origin and extinction
- Determine the rate, course of change, and origin of each lineage's characteristics
- Determine the timing of major genomic rearrangements and the origin of new genetic information

UNDERSTAND THE CAUSAL PROCESSES OF EVOLUTION

- How hereditary variations originate
- How various processes act to affect the fate of hereditary variations
- How natural selection, mutation, genetic drift, gene flow, diverse molecular, anatomical, behavioral and other co-acting processes cause evolution
- How populations of one species become different species