### THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED

THE SCIENCE OF CLASSIFYING ORGANISMS: UNDERSTANDING TAXONOMY AND ITS IMPORTANCE

THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED TAXONOMY. THIS FASCINATING FIELD SERVES AS THE FOUNDATION FOR ORGANIZING THE VAST DIVERSITY OF LIFE ON EARTH. WHETHER YOU'RE LOOKING AT TINY BACTERIA OR TOWERING TREES, TAXONOMY HELPS SCIENTISTS CATEGORIZE AND NAME LIVING THINGS IN A WAY THAT REVEALS THEIR RELATIONSHIPS AND EVOLUTIONARY HISTORY. IF YOU'VE EVER WONDERED HOW BIOLOGISTS DECIDE WHICH SPECIES BELONG TOGETHER OR HOW NEW SPECIES ARE IDENTIFIED, UNDERSTANDING TAXONOMY IS KEY.

### WHAT IS TAXONOMY AND WHY DOES IT MATTER?

AT ITS CORE, TAXONOMY IS THE BRANCH OF BIOLOGY CONCERNED WITH NAMING, DESCRIBING, AND GROUPING ORGANISMS BASED ON SHARED CHARACTERISTICS. THE TERM ITSELF COMES FROM THE GREEK WORDS "TAXIS" MEANING ARRANGEMENT, AND "NOMOS" MEANING LAW. THIS SCIENTIFIC DISCIPLINE PROVIDES A UNIVERSAL LANGUAGE FOR BIOLOGISTS WORLDWIDE, ENSURING THAT WHEN SOMEONE REFERS TO A SPECIES, EVERYONE KNOWS EXACTLY WHICH ORGANISM IS BEING DISCUSSED.

BEYOND SIMPLY NAMING ORGANISMS, TAXONOMY REVEALS PATTERNS OF EVOLUTIONARY RELATIONSHIPS. BY CLASSIFYING SPECIES INTO GROUPS SUCH AS GENUS, FAMILY, ORDER, AND BEYOND, RESEARCHERS CAN TRACE HOW LIFE FORMS HAVE DIVERGED FROM COMMON ANCESTORS OVER MILLIONS OF YEARS. THIS UNDERSTANDING OF BIODIVERSITY IS CRUCIAL NOT JUST FOR ACADEMIC PURPOSES BUT ALSO FOR CONSERVATION EFFORTS, AGRICULTURE, MEDICINE, AND MANY OTHER FIELDS.

## THE ROLE OF SYSTEMATICS WITHIN THE SCIENCE OF CLASSIFYING ORGANISMS

CLOSELY RELATED TO TAXONOMY IS SYSTEMATICS, WHICH FOCUSES ON THE EVOLUTIONARY RELATIONSHIPS AMONG ORGANISMS. WHILE TAXONOMY IS ABOUT CLASSIFICATION AND NAMING, SYSTEMATICS USES DATA FROM GENETICS, MORPHOLOGY, AND FOSSIL RECORDS TO BUILD "FAMILY TREES" OR PHYLOGENIES THAT DEPICT HOW SPECIES ARE RELATED.

Systematics has revolutionized the science of classifying organisms by introducing molecular techniques like DNA sequencing. These tools have refined traditional classification systems, often leading to the reclassification of species and a better understanding of biodiversity.

### HISTORICAL DEVELOPMENT OF THE SCIENCE OF CLASSIFYING ORGANISMS

THE PRACTICE OF CLASSIFYING ORGANISMS DATES BACK TO ANCIENT TIMES, BUT THE MODERN FRAMEWORK OF TAXONOMY WAS ESTABLISHED BY CARL LINNAEUS IN THE 18TH CENTURY. LINNAEUS INTRODUCED THE BINOMIAL NOMENCLATURE SYSTEM, WHERE EACH SPECIES IS GIVEN A TWO-PART LATIN NAME CONSISTING OF ITS GENUS AND SPECIES IDENTIFIERS—FOR EXAMPLE, \*HOMO SAPIENS\* FOR HUMANS.

THIS SYSTEM REPLACED THE CUMBERSOME AND INCONSISTENT NAMING CONVENTIONS THAT CAME BEFORE, MAKING SCIENTIFIC COMMUNICATION MORE EFFICIENT. SINCE LINNAEUS, TAXONOMY HAS EVOLVED THROUGH THE INCORPORATION OF NEW DATA AND TECHNOLOGIES, SHIFTING FROM PURELY MORPHOLOGICAL OBSERVATIONS TO GENETIC AND MOLECULAR ANALYSES.

### BINOMIAL NOMENCLATURE: THE NAMING CONVENTION THAT CHANGED BIOLOGY

One of the most enduring contributions to the science of classifying organisms is Linnaeus's binomial nomenclature. This naming system provides a standardized way to name species and reduces confusion caused by common names that vary across languages and regions.

THE TWO-PART NAME INCLUDES:

- GENUS: THE FIRST PART, CAPITALIZED, INDICATING A GROUP OF CLOSELY RELATED SPECIES.
- SPECIES EPITHET: THE SECOND PART, LOWERCASE, IDENTIFYING THE SPECIFIC SPECIES WITHIN THE GENUS.

FOR EXAMPLE, THE DOMESTIC DOG IS NAMED \*CANIS LUPUS FAMILIARIS\*, HIGHLIGHTING ITS RELATIONSHIP TO THE GRAY WOLF (\*CANIS LUPUS\*).

## MODERN TECHNIQUES IN THE SCIENCE OF CLASSIFYING ORGANISMS

ADVANCEMENTS IN TECHNOLOGY HAVE DRAMATICALLY CHANGED HOW SCIENTISTS CLASSIFY ORGANISMS. TRADITIONAL TAXONOMY RELIED HEAVILY ON PHYSICAL TRAITS LIKE SHAPE, SIZE, AND COLOR, BUT THESE METHODS SOMETIMES LED TO MISCLASSIFICATION DUE TO CONVERGENT EVOLUTION OR PHENOTYPIC PLASTICITY.

TODAY, MOLECULAR BIOLOGY PROVIDES POWERFUL TOOLS TO ANALYZE GENETIC MATERIAL, OFFERING MORE PRECISE INSIGHTS INTO RELATIONSHIPS BETWEEN SPECIES.

### DNA BARCODING AND MOLECULAR PHYLOGENETICS

DNA BARCODING IS A TECHNIQUE WHERE A SHORT GENETIC MARKER FROM AN ORGANISM'S DNA IS USED TO IDENTIFY IT AS BELONGING TO A PARTICULAR SPECIES. THIS METHOD IS ESPECIALLY USEFUL FOR IDENTIFYING SPECIES AT DIFFERENT LIFE STAGES OR THOSE THAT ARE MORPHOLOGICALLY SIMILAR.

MOLECULAR PHYLOGENETICS USES DNA SEQUENCES TO CONSTRUCT EVOLUTIONARY TREES, HELPING SCIENTISTS UNDERSTAND HOW SPECIES ARE RELATED OVER TIME. THESE TOOLS HAVE LED TO A MORE DYNAMIC AND ACCURATE CLASSIFICATION SYSTEM, OFTEN RESHAPING TRADITIONAL TAXONOMIC CATEGORIES.

### INTEGRATIVE TAXONOMY: COMBINING MULTIPLE LINES OF EVIDENCE

INTEGRATIVE TAXONOMY IS AN APPROACH THAT COMBINES MORPHOLOGICAL DATA, MOLECULAR GENETICS, ECOLOGICAL INFORMATION, AND SOMETIMES BEHAVIORAL TRAITS TO CLASSIFY ORGANISMS. THIS HOLISTIC PERSPECTIVE REDUCES ERRORS THAT CAN ARISE WHEN RELYING ON A SINGLE TYPE OF DATA.

FOR EXAMPLE, TWO POPULATIONS MIGHT LOOK IDENTICAL BUT HAVE DISTINCT GENETIC DIFFERENCES, INDICATING THEY ARE SEPARATE SPECIES. CONVERSELY, ORGANISMS THAT APPEAR DIFFERENT MIGHT BE GENETICALLY THE SAME SPECIES EXHIBITING VARIATION DUE TO ENVIRONMENTAL FACTORS.

# APPLICATIONS OF THE SCIENCE OF CLASSIFYING ORGANISMS IN EVERYDAY LIFE

WHILE TAXONOMY MIGHT SEEM LIKE A PURELY ACADEMIC PURSUIT, IT HAS PRACTICAL IMPLICATIONS THAT TOUCH MANY ASPECTS OF DAILY LIFE AND GLOBAL CHALLENGES.

### CONSERVATION AND BIODIVERSITY MANAGEMENT

ACCURATE CLASSIFICATION HELPS CONSERVATIONISTS IDENTIFY SPECIES THAT ARE ENDANGERED OR AT RISK OF EXTINCTION. Understanding the relationships between species can inform strategies to preserve ecosystems and maintain biodiversity.

### MEDICINE AND AGRICULTURE

In medicine, classifying pathogens correctly is essential for diagnosing diseases and developing treatments. Similarly, in agriculture, identifying pest species and their natural predators can guide sustainable pest management practices.

### ENVIRONMENTAL MONITORING AND ECOLOGICAL RESEARCH

TAXONOMY ALLOWS SCIENTISTS TO MONITOR CHANGES IN ECOSYSTEMS BY TRACKING SPECIES COMPOSITION. THIS CAN REVEAL THE IMPACTS OF CLIMATE CHANGE, POLLUTION, OR HABITAT DESTRUCTION.

### CHALLENGES IN THE SCIENCE OF CLASSIFYING ORGANISMS

DESPITE ADVANCES, TAXONOMY FACES SEVERAL CHALLENGES. ONE MAJOR ISSUE IS THE SHEER NUMBER OF SPECIES YET TO BE DISCOVERED AND DESCRIBED. ESTIMATES SUGGEST THAT MILLIONS OF SPECIES REMAIN UNDOCUMENTED, ESPECIALLY IN BIODIVERSITY-RICH BUT UNDERSTUDIED REGIONS LIKE TROPICAL RAINFORESTS AND DEEP OCEANS.

ANOTHER CHALLENGE IS THE ONGOING DEBATE OVER SPECIES CONCEPTS—DEFINING WHAT EXACTLY CONSTITUTES A SPECIES IS COMPLEX AND VARIES DEPENDING ON CRITERIA SUCH AS REPRODUCTIVE ISOLATION, MORPHOLOGY, OR GENETIC DIVERGENCE.

FURTHERMORE, THE FIELD SUFFERS FROM A SHORTAGE OF TRAINED TAXONOMISTS, OFTEN REFERRED TO AS THE "TAXONOMIC IMPEDIMENT," WHICH CAN SLOW DOWN THE PROCESS OF DISCOVERING AND CATALOGING LIFE FORMS.

### ADDRESSING THE TAXONOMIC IMPEDIMENT

EFFORTS TO OVERCOME THESE CHALLENGES INCLUDE TRAINING NEW GENERATIONS OF TAXONOMISTS, DIGITIZING COLLECTIONS, AND USING CITIZEN SCIENCE INITIATIVES TO GATHER DATA. TECHNOLOGICAL TOOLS LIKE AT AND MACHINE LEARNING ARE ALSO BEING EXPLORED TO ASSIST IN SPECIES IDENTIFICATION.

## THE FUTURE OF THE SCIENCE OF CLASSIFYING ORGANISMS

AS THE WORLD FACES UNPRECEDENTED ENVIRONMENTAL CHANGES, THE SCIENCE OF CLASSIFYING ORGANISMS WILL BECOME EVEN MORE VITAL. INTEGRATING BIG DATA, GENOMICS, AND BIOINFORMATICS PROMISES TO ACCELERATE DISCOVERIES AND IMPROVE OUR UNDERSTANDING OF LIFE'S COMPLEXITY.

MOREOVER, GLOBAL COLLABORATION AND OPEN-ACCESS DATABASES WILL DEMOCRATIZE TAXONOMY, ALLOWING SCIENTISTS FROM ALL OVER THE WORLD TO CONTRIBUTE TO AND BENEFIT FROM THIS COLLECTIVE KNOWLEDGE.

In essence, taxonomy is not just about labels; it's about unveiling the intricate web of life that connects every organism on our planet. Through the continued evolution of this science, we gain tools to better protect and appreciate the natural world around us.

## FREQUENTLY ASKED QUESTIONS

### WHAT IS THE SCIENCE OF CLASSIFYING ORGANISMS CALLED?

THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED TAXONOMY.

### WHY IS TAXONOMY IMPORTANT IN BIOLOGY?

TAXONOMY IS IMPORTANT BECAUSE IT HELPS SCIENTISTS ORGANIZE AND UNDERSTAND THE DIVERSITY OF LIFE BY CATEGORIZING ORGANISMS BASED ON SHARED CHARACTERISTICS.

### WHO IS KNOWN AS THE FATHER OF MODERN TAXONOMY?

CARL LINNAEUS IS KNOWN AS THE FATHER OF MODERN TAXONOMY FOR DEVELOPING THE BINOMIAL NOMENCLATURE SYSTEM.

## WHAT ARE THE MAIN HIERARCHICAL LEVELS USED IN THE CLASSIFICATION OF ORGANISMS?

THE MAIN HIERARCHICAL LEVELS ARE DOMAIN, KINGDOM, PHYLUM, CLASS, ORDER, FAMILY, GENUS, AND SPECIES.

### HOW HAS MOLECULAR BIOLOGY INFLUENCED THE SCIENCE OF CLASSIFYING ORGANISMS?

MOLECULAR BIOLOGY, THROUGH DNA SEQUENCING AND GENETIC ANALYSIS, HAS REVOLUTIONIZED TAXONOMY BY PROVIDING MORE ACCURATE INFORMATION ABOUT EVOLUTIONARY RELATIONSHIPS AMONG ORGANISMS.

## ADDITIONAL RESOURCES

THE SCIENCE OF CLASSIFYING ORGANISMS: EXPLORING TAXONOMY AND ITS ROLE IN BIOLOGY

THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED TAXONOMY, A FUNDAMENTAL DISCIPLINE WITHIN BIOLOGICAL SCIENCES THAT ORGANIZES THE VAST DIVERSITY OF LIFE INTO STRUCTURED CATEGORIES. THIS SYSTEMATIC CLASSIFICATION NOT ONLY AIDS SCIENTISTS IN IDENTIFYING AND NAMING SPECIES BUT ALSO REVEALS EVOLUTIONARY RELATIONSHIPS AND ECOLOGICAL CONNECTIONS ACROSS THE TREE OF LIFE. AS BIODIVERSITY CONTINUES TO EXPAND WITH NEW DISCOVERIES, UNDERSTANDING TAXONOMY'S PRINCIPLES AND METHODOLOGIES BECOMES INCREASINGLY CRUCIAL FOR RESEARCH, CONSERVATION, AND EDUCATION.

# UNDERSTANDING TAXONOMY: THE BACKBONE OF BIOLOGICAL CLASSIFICATION

AT ITS CORE, TAXONOMY PROVIDES A UNIVERSAL FRAMEWORK FOR NAMING, DESCRIBING, AND GROUPING ORGANISMS BASED ON SHARED CHARACTERISTICS. DEVELOPED OVER CENTURIES, THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED TAXONOMY BECAUSE IT ENCOMPASSES THE METHODOLOGIES AND RULES THAT GOVERN THE ASSIGNMENT OF ORGANISMS INTO HIERARCHICAL RANKS SUCH AS KINGDOM, PHYLUM, CLASS, ORDER, FAMILY, GENUS, AND SPECIES. THIS HIERARCHY REFLECTS DEGREES OF SIMILARITY AND EVOLUTIONARY DESCENT, FACILITATING COMMUNICATION AMONG SCIENTISTS GLOBALLY.

THE MODERN SYSTEM OF TAXONOMY TRACES ITS ORIGINS TO CARL LINNAEUS IN THE 18TH CENTURY, WHO INTRODUCED BINOMIAL NOMENCLATURE—A TWO-PART NAMING SYSTEM THAT ASSIGNS EVERY SPECIES A GENUS AND SPECIES NAME. THIS INNOVATION STANDARDIZED SPECIES IDENTIFICATION AND REMAINS THE CORNERSTONE OF TAXONOMY TODAY. ADVANCES IN MOLECULAR BIOLOGY AND GENETIC SEQUENCING HAVE SINCE TRANSFORMED TAXONOMY, ALLOWING CLASSIFICATIONS TO INCORPORATE GENETIC DATA ALONGSIDE TRADITIONAL MORPHOLOGICAL TRAITS.

### THE ROLE OF TAXONOMY IN BIOLOGICAL RESEARCH

TAXONOMY SERVES MULTIPLE PURPOSES BEYOND MERE CATEGORIZATION. IT ENABLES SCIENTISTS TO:

- IDENTIFY AND DESCRIBE NEW SPECIES WITH PRECISION.
- UNDERSTAND EVOLUTIONARY RELATIONSHIPS THROUGH PHYLOGENETIC ANALYSES.
- INFORM CONSERVATION STRATEGIES BY RECOGNIZING BIODIVERSITY HOTSPOTS AND ENDANGERED SPECIES.
- FACILITATE COMMUNICATION ACROSS DISCIPLINES BY PROVIDING UNIVERSALLY ACCEPTED NAMES AND CLASSIFICATIONS.

WITHOUT TAXONOMY, THE SCIENTIFIC COMMUNITY WOULD STRUGGLE TO ORGANIZE BIOLOGICAL KNOWLEDGE EFFICIENTLY OR COMPARE FINDINGS ACROSS DIFFERENT REGIONS AND TIME PERIODS.

## KEY CONCEPTS AND METHODS IN THE SCIENCE OF CLASSIFYING ORGANISMS

THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED TAXONOMY, BUT IT RELIES ON SEVERAL INTERCONNECTED CONCEPTS AND APPROACHES THAT DEFINE ITS PRACTICE.

### HIERARCHY AND RANKS

BIOLOGICAL CLASSIFICATION IS INHERENTLY HIERARCHICAL. ORGANISMS ARE GROUPED INTO PROGRESSIVELY NARROWER CATEGORIES BASED ON SHARED TRAITS:

- 1. DOMAIN: THE BROADEST CATEGORY, DIVIDING LIFE INTO BACTERIA, ARCHAEA, AND EUKARYA.
- 2. KINGDOM: GROUPS SUCH AS ANIMALIA, PLANTAE, FUNGI, PROTISTA, AND MONERA.
- 3. PHYLUM: MAJOR GROUPS WITHIN KINGDOMS BASED ON BODY PLANS OR ORGANIZATION.
- 4. CLASS, ORDER, FAMILY, GENUS, SPECIES: INCREASINGLY SPECIFIC LEVELS THAT REFLECT FINER DISTINCTIONS.

THIS STRUCTURE ALLOWS FOR AN INTUITIVE UNDERSTANDING OF BIOLOGICAL DIVERSITY, WHERE CLOSELY RELATED ORGANISMS SHARE MORE RANKS.

### MORPHOLOGICAL VS. MOLECULAR TAXONOMY

TRADITIONALLY, TAXONOMY RELIED HEAVILY ON MORPHOLOGICAL CHARACTERISTICS—OBSERVABLE PHYSICAL TRAITS SUCH AS SHAPE, SIZE, AND ANATOMY. HOWEVER, MORPHOLOGICAL CONVERGENCE AND VARIABILITY SOMETIMES OBSCURED TRUE EVOLUTIONARY RELATIONSHIPS. THE INTEGRATION OF MOLECULAR TAXONOMY, WHICH ANALYZES DNA, RNA, AND PROTEIN SEQUENCES, HAS REVOLUTIONIZED CLASSIFICATION BY PROVIDING OBJECTIVE GENETIC MARKERS.

MOLECULAR DATA OFTEN REVEAL CRYPTIC SPECIES THAT LOOK SIMILAR BUT DIFFER GENETICALLY OR CLARIFY MISCLASSIFICATIONS BASED ON MORPHOLOGY ALONE. DESPITE ITS ADVANTAGES, MOLECULAR TAXONOMY REQUIRES SOPHISTICATED TECHNOLOGY AND EXPERTISE, WHICH CAN BE LIMITING IN SOME CONTEXTS.

### PHYLOGENETICS AND EVOLUTIONARY CLASSIFICATION

Phylogenetics, the study of evolutionary relationships, is closely linked to taxonomy. By constructing phylogenetic trees, scientists visualize how species diverged from common ancestors. This approach has shifted taxonomy from static categorization to dynamic reflection of evolutionary history.

CLADISTICS, A METHOD WITHIN PHYLOGENETICS, CLASSIFIES ORGANISMS BASED ON SHARED DERIVED CHARACTERISTICS (SYNAPOMORPHIES), EMPHASIZING MONOPHYLETIC GROUPS—CLADES THAT INCLUDE AN ANCESTOR AND ALL ITS DESCENDANTS. THIS EVOLUTIONARY PERSPECTIVE HELPS REFINE TAXONOMIC CLASSIFICATIONS AND RESOLVE AMBIGUITIES.

## APPLICATIONS AND IMPACTS OF THE SCIENCE OF CLASSIFYING ORGANISMS

THE PRACTICAL IMPLICATIONS OF TAXONOMY EXTEND INTO VARIOUS FIELDS, DEMONSTRATING ITS CONTINUED RELEVANCE.

### CONSERVATION BIOLOGY

ACCURATE CLASSIFICATION IS ESSENTIAL FOR BIODIVERSITY CONSERVATION. KNOWING WHICH SPECIES EXIST AND HOW THEY RELATE HELPS PRIORITIZE EFFORTS TO PROTECT ENDANGERED ORGANISMS AND HABITATS. TAXONOMY ALSO INFORMS LEGAL FRAMEWORKS FOR SPECIES PROTECTION AND ENVIRONMENTAL POLICIES.

### MEDICINE AND AGRICULTURE

IN MEDICINE, TAXONOMY AIDS IN IDENTIFYING PATHOGENS AND UNDERSTANDING THEIR RELATIONSHIPS, WHICH IS CRITICAL FOR DISEASE CONTROL AND DRUG DEVELOPMENT. AGRICULTURAL SCIENCES BENEFIT FROM TAXONOMY BY DISTINGUISHING PEST SPECIES AND IMPROVING CROP BREEDING PROGRAMS THROUGH KNOWLEDGE OF RELATED SPECIES.

### ENVIRONMENTAL MONITORING AND ECOLOGY

ECOLOGISTS RELY ON TAXONOMIC KNOWLEDGE TO ASSESS ECOSYSTEM HEALTH, TRACK INVASIVE SPECIES, AND STUDY SPECIES INTERACTIONS. THE SCIENCE OF CLASSIFYING ORGANISMS ENABLES CONSISTENT MONITORING AND COMPARISON OF DATA ACROSS REGIONS AND TIME.

## CHALLENGES AND FUTURE DIRECTIONS IN TAXONOMY

DESPITE ITS FOUNDATIONAL ROLE, TAXONOMY FACES SEVERAL CHALLENGES:

- Species Delimitation: Defining species boundaries remains contentious, especially with hybridization and genetic variation.
- TAXONOMIC IMPEDIMENT: A SHORTAGE OF TAXONOMISTS AND FUNDING HAMPERS THE DESCRIPTION OF EARTH'S ESTIMATED MILLIONS OF UNDISCOVERED SPECIES.
- DATA INTEGRATION: COMBINING MORPHOLOGICAL, MOLECULAR, ECOLOGICAL, AND BEHAVIORAL DATA INTO COHERENT CLASSIFICATIONS IS COMPLEX.

EMERGING TECHNOLOGIES LIKE ENVIRONMENTAL DNA (EDNA) SAMPLING, ARTIFICIAL INTELLIGENCE, AND GLOBAL DATABASES PROMISE TO ENHANCE TAXONOMIC RESEARCH. COLLABORATIVE INTERNATIONAL EFFORTS, SUCH AS THE CATALOGUE OF LIFE AND THE BARCODE OF LIFE PROJECT, AIM TO COMPILE COMPREHENSIVE TAXONOMIC INFORMATION ACCESSIBLE WORLDWIDE.

THE SCIENCE OF CLASSIFYING ORGANISMS IS CALLED TAXONOMY, AND IT CONTINUES TO EVOLVE AS NEW SCIENTIFIC TOOLS AND CONCEPTS EMERGE. ITS INTEGRATION OF CLASSICAL METHODS WITH CUTTING-EDGE MOLECULAR TECHNIQUES ENSURES TAXONOMY REMAINS AN INDISPENSABLE DISCIPLINE FOR UNDERSTANDING LIFE'S DIVERSITY AND GUIDING SUSTAINABLE STEWARDSHIP OF THE NATURAL WORLD.

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