Glossary – Taxonomy – with a focus on corals

Abiotic / biotic Function: Animated / non-animated form of existence that is part of a given environment.

Acolonial corals: Solitary individuals that do not form colonies.

Adaptability: Ecology, the capacity of an organism to adjust physiologically or behaviorally to changes in its environment.

Agglomeration: The process whereby individual points or objects are accumulated or clustered into a single group.

Adaptation: The fact of changing in response to some condition; specific uses include: Genetics, a particular development, behavioral, anatomical, or physiological change in a population of organisms, based on genetic changes and occurring as a result of natural selection. Evolution, the general capacity of a species to undergo evolutionary change in response to its natural environment, so as to enhance its ability to survive. Behavior, any change in behavior patters as an adjustment to environmental conditions. Physiology, the adjustment of the pupil of the eye to changes in light intensity. Neurology, a diminishing of sensitivity, such as a decrease in the frequency of neuron firing, in response to a repeated stimulus of constant intensity. Psychology, an individual's abil8ity to adjust to new experiences and accept new information; the process of cognitive growth.

Photo-A.: Adaptation of metabolic processes to changing light levels.

Adaptive Radiation: (see evolution).

Allele: A particular form of a gene at a particular locus.

Allopatric speciation (see speciation).

Allopatric species: Species that have arisen by allopatric speciation.

Allopatry: Ecology, at he occurrence of allopatric (geographically separated) organisms or species.

Allozymes: An allele of an enzyme.

Altruism: Behavior, a type of behavior in which an organism benefits another member of its species., without concern for its own welfare and often to its own detriment.

Amphitropical distributions: Where conspecific disjunctive distributions occur either side of the equator.

Anagenesis: Progressive evolution towards higher levels of organization or specialization, now generally used to describe directional evolution of a feature over an arbitrary short length of a lineage.

Aposematism: Biology, the protective coloration or structure possessed by certain species to warn potential predators of poisonous or distasteful defense mechanisms

Aposymbiotic corals: Corals that can live indefinitely with or without zooxanthellae (endosymbionts).

Attribute: One of a set of descriptive terms, a character.

Atoll: a roughly circular reef that encloses a central lagoon.

Bermann's Law: Differentiation between animals of the same species over geographical vast areas, following a north-south / east-west gradient, resulting into genetic incompatibility (cannot reproduce).

D: Innerhalb eines Verwandtschaftskreises findet man bei Säugern und Vögel in kälteren Gebieten oft grössere Arten (oder Rassen einer Art) als in wärmeren.

Bergmann's rule: Ecology, the principle that within a species of warm-blooded animals, those living in colder climates tend to be larger than those in warmer climates.

Binary data: Data in the form of two alternatives (+/-, 0/1, or presence/absence).

Binominal Nomenclature: Reference to a species by use of a combination of two names, a generic name plus a specific name. Used mostly in the negative, non-binominal and therefore not available, as for example, a name appearing in a work in which the author did not use binominal nomenclature.

Binomen: Combination of a generic and specific name of a species.

Vernacular name: A name proposed in a language used for general purposes as opposed to a name proposed only for zoological nomenclature. In the Catalog one finds the expression, "Not available, appeared as a French vernacular."

Biodiversity: The term has recently acquired many meanings, but can be considered synonymous with 'systematic diversity'. Biodiversity thus has the same relationship to taxonomic diversity as systematics has to taxonomy. Patterns of taxonomic diversity are indicative only of patterns of biodiversity.

Biogenetic Law: Biology, a theory claiming that the development of the animal embryo and young traces the evolutionary development of the species.

Biogeography: The study of the geographic distribution of life and the reasons for it. In practice, biogeography is divisible into observations of distributions and explanations of those observations.

Historical biogeography: The past history of present distributions. Usually, biogeography and historical biogeography are synonymous.

Biotope: A geographic area that is under the influence of environmental parameters, the dominant characteristics of which are homogeneous. Biotopes are generally the smallest ecological units that can be delimited by convenient boundaries and which are characterized by their biota.. In coral biology, an area with particular physical and biological features; *e.g.*, reef front, lagoon, back reef, exposed fore reef, etc.

Black-box: A functional unit or process of any nature, the external parameters of which are known, but the internal parameters are not known, e.g. the external environmental factors controlling the composition of a community may be known, but the internal process which governs that control may be an unknown black box.

Boreal: Pertaining to cool or cold temperate regions of the northern hemisphere.

Budding: Form of asexual reproduction in which clones are produces, vegetative reproduction.

Extratentacular (= intercalicular): Describing a form of asexual reproduction in corals in which a new mouth is produced from the edge zone or coenosarc and thus lies outside the parental ring of tentacles.

Intratentacular (= intracalicular): Describing a form of asexual reproduction in corals in which the oral disc invaginates to produce a new mouth within the parental ring of tentacles.

Carbonate compensation depth: The depth at which the rate of dissolution of calcium carbonate equals the rate of supply. This lies within the deep zone of undersaturation of various carbonates and below the saturated and supersaturated higher layers in all oceans.

Central American Seaway: A former seaway between north and south America, now closed by the Isthmus of Panama.

Character: A trait is a distinct variant of a phenotypic character of an organism that may be inherited, environmentally determined or somewhere in between. For example, colony color is a character or abstraction of an attribute, while blue, brown and hazel are traits.

Ancestral C.:

Derived C.:

C **Displacement**: Evolution, the observed character divergence in the sympatric populations of two species as compared to allopatric populations of the same two species, presumably as a result of the selective effects of competition for common food resources.

C. **Divergence**: Evolution, an evolutionary process in which two recently evolved species interact in such a way that each begins to resemble the other less and less in terms of on or more hereditary characters.

Clade: A phylogeny inferred to be monophyletic, a group of taxa sharing a closer common ancestry with one another than with members of any other clade.

Cladistics: System of arranging organisms following an analysis of their primitive and advanced features so that their phylogenetic relationships will be reflected accurately (see cladiogram).The study of clade relationships using a numerical method of grouping taxa by their shared derived characters.

Cladogram: (Gk. clado, branch) A classification system that gathers groups occupying all branches from one stem (compare dendrogram). It is a diagram, in the form of a tree, grouping taxa by their shared derived characters by cladistic methods.

Monophyletic: Sharing a single ancestral trait.

Paraphyletic: Some but not all of the descendants are of common ancestry.

Polyphyletic: Displaying hereditary characters from 2 /more distinct ancestral lineages as a result of convergent evolution.

Cline: Gradual sequential geographic change in morphological characters or genetic composition within species.

Clones: Asexually produced replicates of colonies.

Coenosteum: Thin horizontal skeletal plates between corallites.

Conservative characters: Characters of species that show relatively little environment-correlated and/or geographic variation.

Congeneric: Belonging to the same genus.

Conspecific: Belonging to the same species.

Contiguous distributions: Sequential distributions so that one area is immediately adjacent to the next.

Co-occurring colonies (co-occurrence): Colonies that occur together in the same biotope. Such colonies have minimal environment-correlated variation and thus variation between colonies is indicative of generic differences.

Corallite: The skeleton of an individual coral polyp / the skeletal parts deposited by a single polyp.

Axial: referring to the corallite formed at the tip of a branch.

Calice: The upper surface of a corallite to which the soft parts of an individual polyp are attached: i.e. the upper, open end of the corallite.

Cerioid: closely packed corallites with fused walls.

Colline: elongate wall or ridge formed between corallites or groups of corallites.

Columella: a skeletal structure that develops in the central axis of the calice. It is usually either styliform (rod-like), papillose, trabecular (both spongy in appearance) or lamellar (formed from a series of interconnecting vertical plates).

Costae: extension of the septa outside the corallite wall.

Edge zone: a horizontal fold of the polyp wall that extends over the corallite wall.

Exsert: a term used to describe septa that protrude above the top of the corallite wall.

Fossa: the central depression in a calice, usually partly filled by the columella.

Imperforate: referring to skeletal structures in corals *(e.g.*, walls, septa, coenosteum) that are solid rather than porous.

Immersed / Inserted C.: a term used to describe septa which do not protrude above the top of the corallite wall.

Paliform lobe: a vertical lobe-like protrusion formed at the inner end of a septum, adjacent to the columella.

Synapticulae: small bars that make lateral links between adjacent septa.

Septum: (pl. Septa): The calcareous, plate-like structures that radiate from the wall toward the center of the corallite. They are aligned vertically and alternate with the mesenteries.

Septal cycles: relating to the formation and arrangement of the septa. Septa are laid down in radial series or cycles, the first cycle consisting of six primary septa, the second of six secondary septa, the third of 12 tertiary septa, and so on,

Septal margin: the upper free edge of the septum.

Septal orders: relating to the size of septa. Equal sized septa form a single order; subequal or unequal septa form two or more orders. Orders do not necessarily correspond to cycles (see above).

Septocostae: extensions of the septa that unite adjacent calice centers. They are found in corals where the corallites lack walls and there is no clear distinction between septa and costae.

Corallum (plural coralla): The skeleton of a coral or coral colony.

Corals: For the specific purposes of this book, the term 'coral' is short for zooxanthellate (endo-symbiont containing) scleractinian corals. It is sometimes used in a wider sense; if so, the intended meaning should be clear from the context. Sometimes a qualifying term is added (e.g. non-scleractinian, rugose, azooxartthellate). 'Corals' is also frequently used in narrowed sense with the addition of a qualifier (e.g. colonial corals, free-living corals, askeletal corals); if so, the term 'coral' retains the above meaning unless this is also qualified (e.g. colonial azooxanthellate corals').

Ahermatypic C.: Corals that lack endosymbionts (zooxanthellae) and do not contribute to reef-building.

Colonial C.: Corals composed of many individuals - a group of polyps formed from a common parent by budding. There is no clear distinction (e.g. in fungiids) between single individuals with many mouths and colonies of individuals with single mouths.

Free-living C.: Corals that are not attached to the substrate.

Hermatypic C.: Corals that contain endosymboionts (see zooxanthellae) and contribute to the building of reefs. Literally 'reef building' but commonly used as a descriptor for marine invertebrates that have photosynthetic plants living symbiotically within their tissues. Because the word is a misnomer, several terms, including 'reef-building', 'symbiotic' and 'zooxanthellate', are used synonymously. Of these, the former two are ambiguous and the latter is restricted to extant corals and other taxa with zooxanthellae (see 'zooxanthellate corals').

Hydro-C.: Hydrozoan coelenterates that produce a calcareous skeleton.

Octo-C.: Alcyonarian coelenterates that producea calcareous skeleton.

Phototrophic C.: Corals that obtain metabolic energy from sunlight by photosynthesis of their endosymbonts (see zooxanthellae).

Rugose C.: A major group of corals which became extinct before the evolution of the *Scleractinia.*

Scleractinian: Stony or hard corals excluding the extinct rugose and tabulate corals. True or stony corals belonging to the Class Zoantharia; i.e. most 'hard' corals are Scleractinia (other orders may, however, have superficially similar colonial forms).

Soft C.: General term for askeletal; Anthozoa.

Solitary C.: referring to corals that grow as a single polyp with a surrounding skeleton.

Rugose C.: A major group of non-scleractinian corals that became extinct at the close of the Palaeozoic era.

Tabulate C.: A major group of non-scleractinian corals which became extinct at the close of the Palaeozoic Era and before the evolution of the *Scleractinia.*

Coral Morphology: Properties attributed to the skeleton of solitary and colonial corals.

Explanate CM.: Colony spreads out flat, plate-like or foliaceous.

Cerioid CM.: Massive corals that have corallites sharing common walls (e.g. the upper surface of the corallum).

Dendroid CM.: Corallum formed from spreading branches of single corallites.

Flabellate CM.: Colony in which the meanders arise from a common base but are free laterally. They may be relatively short (crescentic) or elongate and sinuous (flabello-meandroid).

Meandroid CM.: Massive corals that have corallite mouths aligned in valleys such that there are no individual polyps; i.e. in which the corallites are fused in longitudinal series to produce a pattern of valleys and ridges.

Phaceloid CM.: Corals that have corallites adjoined only towards their base; i.e. in which tall, separate corallites arise from the basal part of the corallum.

Phaceloid C.:

Plocoid CM.: Massive corals that have corallites with separate walls (c.f. cerioid corals): i.e. in which corallites are separate and well defined.

Thamnasterioid CM: A corallum in which corallite walls are indistinct and the septa run uninterrupted between calice centers.

Turbinate CM.: Colony haped like an inverted cone.

Trochoid CM.: Colony top shaped.

Community: A group of organisms of different species that co-occur in the same habitat or area and interact through trophic and spatial relationships. Communities are typically characterized by reference to one or more dominant species.

Corrigendum (pl. corrigenda): Note published by author, editor, or publisher expressly to cite and correct one or more errors in the work.

Cuvier, **Baron**: 1769-1832, French naturalist founder of comparative anatomy and of paleontology

Cyanobacteria: Photosynlhetic blue-green algae, intermediate between bacteria and higher plants.

Darwin, Charles (1809-1882), English naturalist; famous for highly influential theories of evolution and natural selection; a unit used to measure the rate of evolutionary change, given as the increase or decrease in any hereditary character multiplied by a factor of 2.7 per million years.

Dendrogram: (Gk. dendron, tree) A branching diagram used to show relationships between members of a group; a family tree with the ancestor at the base, and branches for various divisions of lineage (compare cladiogram). It can be envisages as a tree-like hierarchical classification with a single root and branches representing levels of dissimilarities of objects. E.g. dendrograms measure dissimilarities in coral species compositions.

Designation: Act of making a type fixation, e.g., type designated by Bleeker 1864. We also sometimes say "selected" or "established." (see also taxon)

Original D.: Designation of a type of a nominal taxon when the taxon was established.

Subsequent D.: Designation of a type subsequent to the date at which the taxon was established.

Derived characters: Non-ancestral characters.

Dermis: The soft tissue of corals – composed of three layers:

Ectodermis: the outer cell layer of the polyp body wall.

Gastrodermis: the inner cell layer of the polyp body wall.

Mesogloea: a non-cellular layer of the body wall between the ectodermis and gastrodermis.

Diagenesis: In coral, the processes by which loose aggregations of aragonitic calcium carbonate become transformed into calcite and thence dolomite. This transformation is greatly enhanced by water movement through porous structures.

Dimorphism: occurrence in two forms, the existence in the same species, or other natural group of several morphological types (the male's deer has tall horns, while the female has none)

Dinorphous: relating to or exhibiting dimorphism

Disjunct distributions: Non-continuous distributions between widely separated populations.

Dispersal: The process of movement of propagules resulting in dispersion. Synonymous with 'migration' except that the latter implies an undertaking specific in time or place.

Dispersion: Synonymous with 'spatial pattern' in ecology and biogeography indicating an achieved state, but often used synonymously with 'dispersal' (a process) in ordinary English. Dispersion range is sometimes used to denote distribution range plus additional area that can be potentially reached by propagules.

Displaced terrains: All crustal plates have been 'displaced' from original positions as continents 'drift'; displaced terrains, however, have 'drifted' relatively great distances. Some very large land masses are composed of aggregations of terrains that have very different geographic origins.

Disruptive selection: Evolution, a natural selection process in which extreme examples of character variation are selected for, while intermediate examples are selected against, resulting in accentuated polymorphism in the population.

Dominance: Ecology, the ability of a given species, because of its size, population density, or fitness, to predominate within a community and affect or control other species there. Behavior, a situation in which an individual animal has higher status in a group in terms of access to food, space, or mates, so that others consistently defer or give way to this individual. Genetics, the tendency of certain (dominant) alleles to mask the expression of their corresponding (recessive) alleles.

Dominance hierarchy: Behavior, a social ranking system within a group of animals of the same species, in which certain forms of status and privilege are held by those ranking at the top, usually the stronger or more aggressive members of the group.

Dominant: Behavior, having or showing dominance; being in a superior position in a group.

Ecomorphs: Morphological variants of species that may have an environmental and/or genetic origin. Most colonial coral species are divisible into many ecomorphs, each of which can be associated with a particular type of habitat or geographic location.

El Nino Southern Oscillation (ENSO): The occasional appearance of large masses of warm water (towards year ends), oil the coasts of Ecuador and northern Peru, where the water normally is cold. These appearances are linked to atmospheric changes around the world, leading to major climatic and oceanographic anomalies.

Electrophoresis: The migration of proteins under the influence of an electrical field. Data about isozymes and allozymes thus separated are generally considered to be closely linked to systematic affinities.

Endemic: Restriction of a species to a specified region.

Endosymbiotic algae: Symbiotic algae living within the cells of the host animal – see zooxanthellae.

Epigenous: Botany growing on the surface especially on the upper surface of a plant or plant part as fungus on a leaf.

Epicontinental sea: Seas that flood major continental areas at high stands.

Epigenetics: (Gk: epi- over, above) In biology, epigenetics is the study of changes in phenotype (appearance) or gene expression caused by mechanisms other than changes in the underlying DNA sequence, hence the name epigenetics. These changes may remain through cell divisions for the remainder of the cell's life (bookmarking) and may also last for multiple generations (paramutation). However, there is no change in the underlying DNA sequence of the organism; instead, non-genetic factors cause the organism's genes to behave (or "express themselves") differently. The best example of epigenetic changes in eukaryotic biology is the process of cellular differentiation. During morphogenesis, totipotent stem cells become the various pluripotent cell lines of the embryo which in turn become fully differentiated cells. In other words, a single fertilized egg cell – the zygote – changes into the many cell types including neurons, muscle cells, epithelium, blood vessels etc. as it continues to divide. It does so by activating some genes while inhibiting others.

Etymology: Pertaining to the formation and meaning of words.

Eustatic: Worldwide changes of sea level. These are primarily clue to the withdrawal and release of water by the growth and decay of polar ice caps and tectonic movements of the sea floor and landmasses (tectono-eustacy).

Evolution: Changes in gene frequencies in a population over time.

Adaptive Radiation: The evolution from a single ancestral species of a variety of species that come to occupy different habitats and exhibit different life styles.

Coevolution: The evolution of two species in close relationship to each other such that modifications in one species affect the evolution of the other, e.g., the structure of certain flowers and the proboscis of insects or animals that pollinate them.

Convergent E.: (L. convergere, to turn together) The evolution of similarities between two or more different species (or organs or molecules) resulting from their independent adaptation to similar circumstances rather than to their descent from a common ancestor.

Dichotomous E.: Evolution by the division of phylogenies.

Divergent E.: Evolutionary changes that lead to the division of one group into two or more lineages; the evolution in different directions of previously similar organisms, genes, or proteins that shared a common ancestor.

Macro-E.: A vague term for observable evolutionary change among species and higher taxon levels.

Micro-E.: A vague term for slight evolutionary change within species.

Parallel E.: The independent evolution of similarities between two or more closely related species as a result of selective pressures (selection).

Reticulate E.: Evolution dominated by sequential division and fusion (hybridization) of clades.

Extant: Now-living (c.f. extinct).

Extinct: No longer living (c.f. extant), also used in the context of a restricted area where there has been 'regional extinctions'.

Mass extinction: Extinction characterized by loss of many taxa in a geologically brief time period.

Pseudo-E.: Apparent extinction of a clade, but where a significant proportion of the genetic composition of the clade has been retained in another clade.

First reviser: The first person after the taxon was proposed to select one of the names over the other (or one nomenclatural act over another) when both names (or acts) were published at the same time. Also applies to first selection of multiple original spellings.

Fitness: The genetic constitution of an organism to future generations, relative to the contributions of organisms living in the same environment that have different genotypes. Medicine, a general state of health, characterized by the ability to distribute inhaled oxygen to muscle tissue during physical activity. Evolution, a measurement of the ability of a given population or organisms to respond to the pressures of natural selection; the number of offspring produced, related to the number needed to maintain a constant population, sometimes measured by the intrinsic rate of natural increase of a population or subpopulations. Ecology, the competition within a specific community that determines which individuals survive to propagate their genes.

Foraminifera: Protozoa of the order Foraminiferida which are abundant in the plankton and benthos of all oceans and which typically develop tests of microscopic size up to 50 mm diameter. Foraminifera are extensively used in dating of geological strata.

Founder effect: The principle that founders of a new population carry only a fraction of the genetic diversity of the parent population.

Form (Forma): A category below the species level; interpretation varies on the basis of date of use.

Gene flow: The sum of successful dispersal and breeding of individuals originating in one population but arriving in another.

Genetic distance: Any of several measures of the degree of genetic difference between populations, based on differences in allele frequencies.

Genetic drift: Random changes in the frequencies of two or more alleles or genotypes within a population.

Genetic plasticity: Where morphological variation is largely determined by physical environment, not genotype.

Genotype: The set of genes possessed by an individual organism.

Phenotype: The sum total of observable structural and functional properties of an organism; the product of the interaction between the genotype and the environment.

Geographic Province: Are geographic areas of different sizes are distinguished by use of the term, site to indicate an area of a few square kilometers, location to indicate a major group of reefs, region to indicate a continental coastline or the like, province to indicate major geographic subdivisions of the world and realm to indicate an entire ocean basin or area of similar size. The terms-isotope, population and community are used in an ecological or genetic context only, without geographic connotation.

Panbiogeography: A method of determining biogeographic patterns.

Phylogeography: The determination of geographic distribution of phytogenies.

Geological Time Scale: This time scale provides a system of chronologic measurement relating stratigraphy to time that is used by geologists, paleontologists and other earth scientists to describe the timing and relationships between events that have occurred during the history of the Earth.

Era	Period	Sub-Period	Epoch	yrs before present
Cenozoic	Quaternary		Holocene	0 - $0.01 \cdot E^6$
			Pleistocene	$0.01 - 1.6 \cdot E^6$
	Tertiary	Neogene	Miocene	$1.6 - 5.2 \cdot E^6$
			Pliocene	$5.2 - 24.0 \cdot E^6$
		Palaeogene	Oligocene	$24.0 - 37.0 \cdot E^6$
			Eocene	$37.0 - 55.0 \cdot E^6$
			Palaeogene	$55.0 - 67.0 \cdot E^6$
Mesozoic	Cretaceous			$67.0 - 140.0 \cdot E^6$

Jurassic	140.0 - 210.0·E^6
Triassic	210.0 - 250.0·E^6

Cenozoic The last era in geological time.
Cretaceous: A period in geological time.
Eocene: An epoch in geological time.
Holocene: The last epoch in geological time.
Jurassic: A period in geological time.
Mesozoic An era in geological time.
Miocene: An epoch in geological time.
Neogene: A period in geological time.
Oligocene: An epoch in geological time.
Palaeocene: An epoch in geological time.
Palaeogene: A period in geological time.
Pleistocene An epoch in geological time.
Pliocene: An epoch in geological time.
Quaternary: A period in geological time.
Tertiary: A period in geological time.
Triassic: A period in geological time.

Glacio-eustacy: See 'eustatic'.
Gonochoric: Individuals that have separate sexes / colonies (c.f. hermaphrodite).
Guild: A group of species having similar ecological resource requirements and therefore having similar roles in the community.
Habitat: A vague word indicating the particular type of environment occupied by an organism.
Microhabitat: A vague word indicating the particular type of habitat occupied by a coral colony.
Hardy-Weinberg equilibrium: In a large, random-mating population, the frequencies of homozygotes and heterozygotes with respect to allelic variation in a single gene should remain constant (conform algebraically to the Hardy-Weinberg equilibrium) from generation to generation unless outside forces (selection, mutation and migration) act to change it.
Harvey, William (1578-1675), English physician; discovered the physiology of the circulatory system; founder of modern embryology.
Hermaphrodite: Individuals that are both male and female or have male or female gonads (c.f. gonochoric).
Hermatypic: Corals with symbiotic algae present in the polyp tissue. Almost all reef corals are hermatypic.
Heterophyllidae: Paleontology, a small family of elongate solitary corals in the extinct subclass or order Heterocorallia; Upper Devonian and Lower Carboniferous.
Heterophyllous: Botany, having two or more different leaf forms on the same plant or stem.
Homoplasy: Structural resemblance due to parallel, convergent, or reversed evolution rather than common ancestry.
Homonymy: The condition of having homonyms; i.e. each of two or more names that are identical in the meaning of the ICZN Code but apply to different taxa.
Junior H.: The younger, or most recently established name.
Primary H.: Identical species names first published in the same genus.
Secondary H.: Species names that are, or become the same when placed in the same genus subsequent to first publication of at last one of them.
Senior H.: The older, or earliest established name.
Hybrid: An individual formed by hybridisation between unlike forms, usually species.
Hydro-isoslasy: Deformation of continental shelves due to the weight of overlying water.
ICBN: International Code of Botanical Nomenclature; the judicial body empowered to enforce and interpret the International Code of Botanical Nomenclature.
ICZN: International Commission on Zoological Nomenclature; the judicial body empowered to enforce and interpret the International Code of Zoological Nomenclature.
Incertae sedis: Of uncertain taxonomic placement.
Industrial melanism: Ecology, an increase in the amount of the pigment melanin found in some species inhabiting highly industrialized areas, due to selection against lighter-colored individuals in an environment darkened by pollution.
Introgression: The permanent incorporation of genes from one set of differentiated populations into another.
Isopangeneric contours: Contours of equal generic diversity.
Isotherm: Of equal temperature; i.e. a line linking points of equal temperature.
Isozyme: One of several forms of an enzyme produced by different, non-allelic, loci in an individual organism's genome (a subset of an allozyme).

Lamarck, Jean Baptiste (1744-1829), French naturalist founder of invertebrate paleontology, formulated Lamarckism, the Lamarckian theory of evolution.

Lamarckism: Evolution, a theory of evolution stating that changes in an organism's environment cause variations in the use and disuse of various organs, resulting in changes in their size and function and that these variations can be inherited and passed on to offspring.

Lithosphere: The solid part of the earth including the crust and upper mantle.

Location: See 'geographic terminology'.

Ma: Million years ago.

Marsden square: A unit of area commonly used in oceanography, being 1° latitude x 1° longitude.

Mendel population:

Microenvironment: The immediate environment of an individual coral colony.

Migration: Large-scale movement of a population. Synonymous with dispersion except implying an activity specific in time or space.

Milankovitch cycles: Cycles of orbital forcing.

Mimesis: (Gk. mimeisthai, to imitate). Directional selection shifts a population towards one extreme form of a trait.

Mimicry: (Gk. mimos, to mime) An adaptation whereby an animal becomes camouflaged by taking on the appearance of some other living or nonliving object that serves to deceive a predator or prey organism.

Minimum spanning tree: A network algorithm that is specified by forming a complete linkage (joining all points or objects) where the total length of the connections is minimal and where no loops or circuits occur.

Mitochondrial DNA: DNA contained in mitochondria and therefore additional to nuclear DNA. mitochondrial DNA is maternally inherited and especially useful for molecular systematics because it has a high mutation rate.

Molecular clock: The hypothesis that the rate of evolutionary change in DNA is constant over geologically long periods of time and thus appropriate DNA techniques can determine points in time of phylogenetic divergence.

Morphology: The form, structure and configuration of an organism. This includes aspects of the outward appearance (shape, structure, colour, pattern as well as the form and structure of the internal parts like bones and organs. This is in contrast to physiology, which deals primarily with function. Morphology is a branch of life science dealing with the study of gross structure of an organism or taxon and its component parts.

Eco-M.: An intraspecific variant produced in response to environmental factors.

Poly-M.: Existing in more than one form. The term has two meanings. First it is the occurrence in several forms, the existence in the same species, or other natural group of several morphological types. Genetic polymorphisms (as in RFLPs) have no implications for morphological polymorphism.

Morphometric: Using measurement of morphological (usually skeletal) characters.

Multivariate: Using more than a single attribute (variable).

Mutation: A vague term for processes that cause a change in a nucleotide sequence in an organism (c.f. paramutation in epigenetics).

My: Million years.

Name: The formal system of naming species is called binomial nomenclature (especially in botanical circles), binominal nomenclature (since 1953, the technically correct form in zoological circles), or binary nomenclature.

Conserved N.: Through action of ICZN, use of a name is preserved as the valid name (when it would not otherwise be valid); or a work is declared to be published (when it would not otherwise be available).

Invalid N. A name or nomenclatural act that is not valid under the Code.

Replacement N.: A new name expressly proposed for an already established one.

Suppressed N.: A name or work on which the Commission has ruled that the name or work is never to be used (totally suppressed) or only conditionally used (conditionally suppressed).

Vernacular N.: A name proposed in a language used for general purposes as opposed to a name proposed only for zoological nomenclature. In a catalogue one may find the expression, "Not available, appeared as a French vernacular."

Natio: A category below the subspecies level.

Nomen dubium (pl. nomina dubia): Name(s) of unknown or doubtful application.

Nomen oblitum: A forgotten name.

Neontology: The study of living organisms (c.f. palaeontology).
Neoplasm: Cancerous growths commonly found on corals.
Nomendaiorial priority: Priority of name, usually based on the oldest name.
Nomenclature: Systematics, a classified system of names, as of organisms, anatomical structures, celestial objects, and so on

N. **congress**: Systematics, a collection of rules, such as the International Code of Botanical Nomenclature Congress standards, governing the formation and application of scientific names to biological taxa.

N. **type**: Systematics, the individual specimen with which a scientific name is associated; the taxon that determines the correct name of the higher taxon to which it belongs.

Nucleolides: A subunit of DNA or RNA molecules. The sequence of nucleotide codes for the structure of proteins synthesized in cells.
Ordination: A general term for techniques that attempt to condense information associated with a set of attributes to a limited number of new attributes.
Palaeontology: The study of past life (c.f. 'neontology').
Panmictic: Continuous populations or races within which interbreeding is random.
Parapatric: (see speciation).
Parsimony: The use of the shortest number of evolutionary steps as a criterion for constructing a cladogram.
Paucispecific: Having a low number of species.
PCR: See 'polymerised chain reaction'.
Phaenogeny: See systematics.
Philopatry: A tendency to remain in the native locality because of limited capacity to disperse.
Phylogeny: The evolutionary history of a group or lineage. See systematics.
Phylogenesis: The evolutionary history of a taxon.
Phylogenetics: The description of evolutionary relationships using cladistic methods.
Planula: The free-swimming, planktonic larval stage of corals and other coelentrates.

Teleplanic L.: Pelagic larvae that have a protracted planktonic existence.

Polymerase chain reaction (PCR): A technique where specific segments of DNA are amplified using specific primers in repeated rounds of replication of the PCR. Only minute amounts of original material are needed and the product can be used for RFLP analysis, sequencing, or other procedures.
Polyp: An individual coral (an anemone-like animal) including soft (fleshy) tissues and skeleton; i.e. the living part of a coral.

Coenosarc: An extension of the polyp that stretches over the surface of the skeleton.

Coenosteum: Skeletal material deposited outside the corallite wall.

Dissepiments: Skeletal structures left by the polyps.

Mesenteries / mesenterial filaments: The mesenteriesare radial partitions lying within the gastrovascular cavity of the coral polyp; mesenterial filaments may be produced from their free inner margins; coiled tubular structures within the polyp body cavity.

Oral disc: Upper surface of the polyp, extending from the mouth to the outer ring of tentacles.

Peristome: Area within the inner ring of tentacles and immediately surrounding the mouth.

Peritheca: The surface of the coenosteum between the corallites.

Perforate: Referring to skeletal structures in corals (e.g., walls, septa, coenosteum) that are porous rather than solid.

Polyphyly: Derived from more than one ancestral taxon.
Polyploid: Possessing more than two entire chromosome complements.
Polyploidy: Cells or individuals that have more than two sets of chromosomes. Polyploid cells arise at a low frequency as the result of a mistake in mitosis in which the chromosomes divide but the nucleus does not. In this way, a cell with twice the usual number of chromosomes is produced. If such a cell then goes through interphase and divides, it can give rise, either sexually or asexually, to a new individual that will have twice the number of chromosomes of its parents or parent.
Population: A group of conspecific organisms that exhibit reproductive continuity. It is generally presumed that ecological and reproductive interactions are more frequent among members within a population than with members of other populations.

Allopatric P.: Populations are contiguous but separated by space across which migration occurs only at very low frequency.

Dichopatric P.: Populations that are widely separated by space across which there is no migration.

Parapatric P.: Populations occupying separate but adjoining areas, such that only a small fraction of individuals in each encounters the other.

Peripatric P.: Populations of very different sizes occupying separate but adjoining areas, such that only a small fraction of individuals in each encounters the other.

Sympatric P.: Populations that encounter one another with 'moderate' frequency. Such populations may be ecologically segregated, or may breed in different seasons, or have genetic isolating mechanisms.

Pourtales Plan: an arrangement of septa used in identification.

Primitive characters: Characters found in many taxa that have been retained from a common ancestor.

Province: See 'geographic terminology'.

Preadapt: Evolution, to undergo preadaptation.

Preadaptation: Evolution, a condition in which an organism possesses characters or traits that would enable it to adapt easily to a given potential change in its environment, so that such a change would not be a threat to the survival of the species.

Race: A vague term for a group of populations within a species that differ in the composition of their gene pools, and usually in their genetically determined phenotypic characters, from other conspecific populations.

Radio-Immunoassay: An immunological assay that recognizes major antigenic sites and can be used to study very small quantities of proteins, including those from fossils.

Rafting: The transport of biota on floating objects.

Realm: See 'geographic terminology'.

Recessive: Genetics, Describing an allele that is phenotypically expressed only when homozygous; when present in the heterozygous condition, it is masked by the phenotypic expression of a dominant allele; a trait or character determined by such an allele.

Recessiveness: Genetics, the property of an allele that is obscured in the phenotype of a heterozygote by a dominant allele; or the property of a phenotype that is obscured by a dominant phenotype.

Red Queen Hypothesis: That each evolutionary advance by any one species represents a deterioration of the environment of other species so that each species must evolve as fast as it can merely to survive.

Reef: Many reefs result from abiotic processes - deposition of sand, wave erosion planning down rock outcrops, and other natural processes - but the best-known reefs are the coral reefs of tropical waters developed through biotic processes dominated by corals and calcareous algae.

Artificial R.: Manmade structure such as shipwrecks are sometimes created to enhance physical complexity on generally featureless sand bottoms in order to attract a diverse assemblage of organisms, especially fish.

Atoll: a roughly circular reef (a group of reefs and islands) that encloses a central lagoon.

Bank R.: A reef formed by growth of corals on an underwater hillock. The top of the reef is not exposed.

Barrier R.: A reef formed at the margin between the continental shelf and deep oceanic waters.

Fringing R.: A reef growing adjacent to island or mainland shores.

Oceanic R.: A reef that has its base in deep oceanic waters.

Shelf R.: A reef that has its base on the relatively shallow floor of the continental shelf.

Platform R.: A reef formed by growth of corals on an underwater hillock.

R. **Section**: Structural parts of the reef that constitute a reef.

R. **Cay**: islands formed by the accumulation of sand on a coral reef. These are distinct from "high islands" which do not have a reefal origin.

R. **Biotope**: An area with particular physical and biological features; e.g., reef front, lagoon, back reef, exposed fore reef, etc. (see general definition of biotope).

Back R.: A shallow, usually impoverished, part of the reef facing away from the reef front toward land or shallow water.

Fore R.: The main seaward facing part of the reef, stretching from shallow to deep water.

Back R.: A shallow, usually impoverished, part of the reef facing away from the reef front toward land or shallow water.

Bank R.: A reef formed by growth of corals on an underwater hillock. The top of the reef is not exposed.

R. **Crest:** an emergent part of the reef, just behind the reef front.

Reef flat: The flat intertidal part of reefs that are exposed to wave action.

R. **Slope**: The sloping part of reefs below the reef flat.

Region: See 'geographic terminology'.

Reinforcement: The evolution of prezygotic mating barriers in hybrid zones.

Reproductive isolating mechanism: Genetics, any biological property of an organism that interferes with its interbreeding with orgasms of other species.

Reproductive isolation: Ecology, the inability of a population to reproduce with other populations of the same or related species for physiological (rather than geographic) reasons.

Restriction endonuclease: Enzymes that cleave double-stranded DNA at a constant position within a specific recognition sequence, typically 4-6 base pairs long.

Restriction fragment length polymorphisms: A genetic polymorphism in an individual, population or species, defined by restriction fragments of a distinctive length caused by gain or loss of a restriction site or insertion or deletion of a length of DNA between restriction sites.

Reticulation: Interbreeding that creates reticulate patterns within and among species over large geographic areas – see evolution, reticulate evolution.

RFLP: See 'restriction fragment length polymorphisms'.

Rudists: Mesozoic bivalves that dominated reefs throughout much of the Cretaceous and became extinct at the close of the Cretaceous.

Satellite colonies: Colonies that develop within the tissue of parent colonies and which have their own unattached skeletons. Best seen in *Goniopora stokesi*.

Saturation: The term has different meanings in genetics and ecology. Here it is used in a genetic context to mean 'saturated with respect to biodiversity', not ecologically to mean 'saturated with respect to space'.

Scleractinian: Corals which have limestone skeletons and which belong to the order Scleractinia.

Selection: a process of choosing or of being chosen; specific use include: Evolution, any natural or artificial limitation that favors the survival and reproduction of individuals in a population who possess a specific hereditary character over those that do not possess it.

Aposotatic S.: Ecology, the tendency of a predator to select the most abundant form of prey available in a given area, which tends to equalize the population of the various forms in the area.

Directional S.: Occurs when natural selection favors a single phenotype and therefore allele frequency continuously shifts in one direction. Under directional selection, the advantageous allele will increase in frequency independently of its dominance relative to other alleles (i.e. even if the advantageous allele is recessive, it will eventually become fixed). Directional selection stands in contrast to balancing selection where selection may favor multiple alleles, and is the same as purifying selection which removes deleterious mutations from a population.

Disruptive S. (also called **diversifying** S.): Is a descriptive term used to describe changes in population genetics that simultaneously favor individuals at both extremes of the distribution. When disruptive selection operates, individuals at the extremes contribute more offspring than those in the center, producing two peaks in the distribution of a particular trait.

Group S.: Ecology, the theory that certain behaviors, such as the decline of reproductive rates, arise from group needs and benefit the entire population rather than the individual organism; may include the controversial hypothesis that natural selection favors characteristics and behaviors (such as altruism) that enhance survival of the entire population even at the expense of certain individuals.

Natural S: is the process by which organisms with more favorable characteristics with respect to their environment leave more surviving progeny. This non-random and differential reproduction of different genotypes acting to preserve favorable variants and to eliminate less favorable variants; viewed as the. creative force that directs the course of evolution by preserving those variants or traits best adapted in the face of natural competition.

Meta-S.: A conceptual taxon that is genetically isolated in evolutionary time, but which consists of species that are capable of hybridizing.

Stabilizing S.: A process of natural selection in which genetic variation is selected against, resulting in a population from which ill-adapted or peripheral variants are eliminated. Genetics, any natural selection that reduces the genetic variability of a population by removing alleles that cause deviation from the mean phenotype.

S. **Pressure:** Evolution, any of the environmental or genetic factors that influence natural selection and consequently the direction of evolutionary change. Genetics, a measure of the intensity of natural selection on a population, as shown by the degree of alteration in the genetic makeup of that population over a give period of time.

Selective death: Ecology, the death of an individual caused by a genetic trait which is harmful to that individual in that environment; e.g., a lighter-colored moth that is more visible to predators in an environment darkened by air pollution.

Septum: see corallite.

Sexual Selection: Evolution, the component in the process of natural selection that tends to perpetuate the hereditary characteristics that attract one sex to the other. Genetics, the selection of characteristics in

males that enhance their ability to compete with other males for reproduction with females, even if those characteristics confer no other survival advantage to the possessor.

Site: See 'geographic terminology'.

Skeleton: Aragonite is a carbonate mineral, one of the two common, naturally occurring crystal forms of calcium carbonate, $CaCO_3$ (the other form is the mineral calcite.) It is formed by biological and physical processes, including precipitation from marine and freshwater environments.

Askeletal corals and larvae: Corals and larvae that do not have, skeletons.

Aragonitic skeletons: Skeletons primarily composed of the aragonite form of calcium carbonate. All scleractinia have aragonitic skeletons (of calcitic skeletons). Aragonite turns into calcite through the process of diagenesis and in so doing usually loses much skeletal detail.

Calcitic skeletons: Skeletons primarily composed of the calcite form of calcium carbonate. All Rugosa and molluscs have calcite skeletons (of aragonitic skeletons).

Skeletogenesis: The evolution of skeletons.

Space and Time: The word-concepts *ecologically-significant space* and *biogeopgrahically-significant space* are used throughout. The intended meaning of the former is the 'space needed (or ecologically-significant variation to occur'. The absolute measure of this space will depend on the particular situation; it may be an individual biotope. The intended meaning of the latter is 'space needed for biogeographieally-significant variation to take place'; implying a continental coastline or larger than regional space. .

Ecologically-significant: The word-concepts *ecologically-significant time* and *evolutionary significant time* are also frequently used. The intended meaning of the former is the 'time needed for ecologically-significant change to take place", and of the latter, the 'time needed for genetically-significant evolutionary change to take place. The absolute measure of these will depend entirely on the particular situation

Speciation: The emergence of new species due to geographical isolation from each other and evolution in different directions; or evolutionary process by which one species arises from another.

Allopatric S.: (Gk. allo, different; patra, native land) A physical barrier such as a river can separate populations of a single species and prevent gene-flow between the groups; creating distinct gene pools. The splitting of a widespread population into two or more isolates by a geological or ecological isolating barrier (speciation by subdivision) and subsequent differentiation into a new taxon, or the dispersal of a few propagules across a pre-existing barrier and subsequent differentiation into a new taxon.

Dichopatric S: Gk. di, bi, two) The splitting of a widespread population into two or more isolates by a geological or ecological isolating barrier ('dumbbell' speciation or speciation by subdivision) and subsequent differentiation into a new taxon. See 'concepts of species — terminology issues'.

Parapatric S.: (Gk. para, parallel) Two populations of a species occupying sparate but adjacent territories may interbreed at one degde of the range but still diverge. Speciation between parapatric populations, initialed by both spatial segregation and spatial differentiation, leading to the evolution of isolating mechanisms). Sec 'concepts of species — terminology issues'.

Peripatric S.: (Gk. peri, around) the dispersal of a few propagules across a pre-existing barrier (founder effect) and subsequent differentiation into a new taxon.

Pseudo-S.: Apparent origination of a clade, but where a significant proportion of the genetic composition of the clade occurs in another clade.

Stasipatric S.: (Gk. stasi, stationary) The formation of a new species as a result of chromosomal rearrangements giving homozygotes that are adaptively superior in a particular part of the geographic range of the ancestral species.

Sympatric S.:(Gk. symo, same) Speciation between sympatric populations. Occurs when two species evolved from a single species without any geographical sepaeration of the population or whose ranges are partially overlapping.

Species: Broadly, a unique group within a genus whose members share the same set of structural traits and can successfully reproduce in nature only with members of the same species. In most books, species are morphological units recognised by taxonomists. Systematics, a group of organisms of common ancestry that are able to reproduce only among themselves and that are usually geographically distinct. A species is a fundamental rank in the taxonomic hierarchy, indicating the limit of organisms able to interbreed. Within a single region they are morphologically distinguishable from other species and genetically semi-isolated from other species. Over their full geographic range, most vary morphologically and genetically to the extent that they intergrade with other species and form a continuum. Corals which display characteristics that are intermediate between the species units recognised are an inevitable consequence of natural continua. Users should expect to encounter such specimens from time to time and can describe them using their morphological affinities to existing recognised species units.

Biological Species concept: Species as are defined as genetically similar populations capable of interbreeding and which, through genetically determined isolation mechanisms, evolve in a way isolated or distinct from other populations.

Concepts of species: Common, terms and concepts are used differently by different authors. This is largely because our understanding of evolutionary processes is rapidly evolving, and doing so in a wide range of different disciplines that, share the same terms and similar or related concepts. It is also because common terms used in the context of one theory or process often take on a different meaning when used in the context of another, and again change when theory, process, concept and observation are intermixed, and again when meeting the needs of different taxa or different research fields. These changes are often subtle and tend to confuse and frustrate, even when they are well explained. Standard terras within the literature of evolution —,'allopatric', 'dichopatric', 'parapatric', 'peripatric' and 'sympatric' are all geographically (area) based. Such is the close, link between *patterns* resulting from evolution and the *process* of evolution itself that these terms continue to be used in reference to both, without causing undue confusion.

Chronospecies: A conceptual species that exists through evolutionary time.

Conspecific: Belonging to the same species.

Cryptic S.: Species that are difficult to distinguish *in situ.*

Geminate S.: Similar species, that are the product of relatively recent speciation, occupying adjacent areas (see 'sibling species').

Geographic subspecies: A taxonomically definable subgroup of a species with a restricted geographic range. Only in rare instances do geographic subspecies of corals have taxonomically meaningful names, as frequently found in plants.

Nominal S.: Species that exist in name only. These are usually synonymized with operational species.

Operational S.: Described species that arc actually used in taxonomy or in other fields (c.f. nominal species).

Phenetic species concept: Species arc defined by morphological characters that arc considered sufficient to warrant species status.

Relict S.: Species that occur in an isolated region after the species has become extinct over its former, larger, range.

Sibling S.: Similar species that are the product of relatively recent speciation that may or may not be allopatric (see 'geminate species').

Species area curve: Ecology, a common patter in which the number of species on islands increases as island area increases.

S. **Diversity**: Ecology, an index combining the number and relative frequency of different species in an area or community.

S. **Equilibrium**: Ecology, a condition in which the number of new species immigrating into an area is balanced by the rate of extinction of species already existing there.

S. **Nova**: Systematics, in taxonomic literature, a notation used to indicate a new species.

S. **Population**: Ecology, a group of organisms living in a particular area at a given time that have similar characteristics.

S. **Recognition**: Behavior, the capacity of an organism to distinguish between members of its own species and organisms belonging to other species.

S. **Richness**: Ecology, the number of different species in an area or community.

S. **Specific**: Biology, limited to or affecting only one species; e.g., a disease that affects only humans.

Morpho-S.: The designation of a species based completely on morphological characteristics.

Siblings S.: One of the two or more persons having the same parents.

Subspecies Systematics (see taxonomy).

Type S.: In systematics, the (nominal) species designated as the nomenclatural type of a genus or subgenus; i.e., the species that is the name-bearing type of a genus or subgenus.

Vicariant S.: Ecologically similar, but geographically separated species, or ecologically different species occupying the same area, or closely related species occupying adjacent areas separated by a barrier. Vicariant species arise by the historical process of vicariance – see there.

Stepping-stones: Points along the dispersion path of corals such that dispersal can occur from one point to the next.

Stromatolites: Mounds of limestone formed by the growth of blue-green algae. Common in the Precambrian and still extant.

Subspecies: See 'geographic subspecies'.

Symbiosis: The close association of two organisms where there is substantial mutual benefit.

Syngameon: A complex of species that can interbreed. Syngameons in plants have the characteristics of well-isolated 'biological' species at their outer boundary, but differ in having a more complex internal structure.

Synonymy: The relationship between synonymous names, or a list of synonymous names; that is, the list of names considered by a taxonomist to apply to a given taxon other than the name by which the taxon should be known. "Synonym of ...." refers to the fact that a taxon is synonymous with another name. Typically, two names for the same taxon; only one can be used; they are said to be synonyms. Two or more scientific names of the same rank used to denote the same taxon.

Homonym: Each of two or more names that are identical in the meaning of the Code but apply to different taxa – Homonymy: The condition of having homonyms.

Junior: The younger name of two synonyms.

Objective: Each of two or more synonyms that are based on the same name-bearing type. For genera, two or more different names based on the same type species.

Primary: Identical species names first published in the same genus.

Secondary: Species names that are, or become the same when placed in the same genus subsequent to first publication of at last one of them.

Senior: The older, or earliest established name.

Subjective: Each of two or more synonyms that are based on different name-bearing types. For genera, two or more different names based on different type species which a specialist deems to represent the same taxon.

Sympatric: (see speciation).

Systematics: The study of evolutionary, classification and study of organisms with regard to their natural relationships. Broader, it is the classification and scientific study of the diversity of organisms, and how they are related in an evolutionary context. (c.f. taxonomy).

Evolutionary S.: Relating to the evolutionary relationships within a group.

Numeric S.: Systematic taxonomy that makes extensive use of numerical comparison.

Phaenetic S.: Classification based on external similarities, homologic features.

Phylogenetic S.: The study of evolutionary history of different groups of organisms.

Apomorphic: A feature appearing the first time.

Plesiomorphic: An ancestral unchanged feature.

Synapomorphic: A feature shared only by two closely related organisms.

Symplesiomorphic: A feature shared with more closely related organisms.

Mono- / poly-phyletic S.: Relating to any group sharing a single ancestral form; derived from the same / many ancestral taxon.

Paraphyletic S.: Relating to a taxonomic group that includes a common ancestor and some, but not all of its descendants.

Tautonymy: The use of the same word for the name of a genus-group taxon and for one of its included species or subspecies.

Absolute T.: The identical spelling of a generic-group name and one of its included specific-group names. Such as *Brama brama*.

Linnaean T.: Identical spelling of a new genus-group name and a pre-Linnaean (i.e., before 1758) one-word name cited as a synonym of only one of the species or subspecies originally included in that genus.

Taxon (pl. taxa): A taxonomic unit, such as a species, genus, subgenus, family.. Taxa are arranged in hierarchies of taxonomic levels. Any group of organisms that has been scientifically designated as belonging to specific taxon and has been given a position within the taxonomic hierarchy.

Original T.: The description of a nominal taxon when first established.

A taxon is a taxonomic unit, such as a species, genus, subgenus, family. The currently used ranking system is structured in the following way:

Domain: A taxonomic group comprised of members of similar kingdoms.

Kingdom: One of the six animal kingdoms (Archea-, Eubacteria; Protista, Plant, Fungi, Animals).

Phylum / Division: One of the dozen or so major divisions of the animal kingdom. It is the highest taxon level normally used and usually represents a group of related classes. Classes are divided into orders, of which Scleractinia is one. There are often other taxonomic levels besides these between phylum and order – see below.

Subphylum: A major subdivision of a phylum, containing a group of related classes.

Class: A major subdivision of a phylum or subphylum, containing a group of related orders.

Subclass: A major subdivision of a class, containing a group of related orders.

Order: A subdivision of classes or subclasses, containing a group of related families.
Suborder: A major subdivision of an order, containing a group of related families.
Superfamily: A Group of closely related families (-*oidea*).
Family: A major subdivision of an order, suborder, or superfamily, and containing a group of related genera, tribes, or subfamilies (-*idae*); a grouping of related genera with common characteristics.
Subfamily: A major subdivision of a family, containing a group of related tribes or genera (-*inae*).
Tribe: A subdivision of a subfamily, containing a group of related genera (-*ini*).
Subtribe: A subdivision of a tribe, containing a group of related genera (-*ina*).
Genus: A group of closely related species with common characteristics; the first name in a bi- / trinomial scientific name (*Genus*).
*Genus **sp***.: No specification of species.
*Genus **spp***.: Includes all species in that genus - includes even subspecies.
*Genus **sp***. Linneus 1758 (371): Linneus first described and named the organism in his publication from 1758 on page 371.
*Genus **sp***. (L): described from Linneus.
*Genus **sp***. (L) Darwin: wrongly classified by Linneus, corrected by Darwin.
*Genus **sp***. Darwin: Darwin did new research on it.
*Genus **sp***. L. sensu Darwin: In the way Darwin meant it to be.
*Genus **sp***. [L]: Published anonymously, but accredited to L.
*Genus **sp***. auct.: (auctorum) The way other authors described it.
*Genus **sp***. auct.nec.L: The way description done was from other others than L.
*Genus **sp***. L.nec.auct.: The way description done was from by L. than other authors.
Subgenus: A major subdivision of a genus containing a group of related species. (SUBGENUS).
Species: A group of individuals or populations that are similar in structure and physiology and are capable of interbreeding and producing fertile offspring, and which are different in structure and / or physiology from other groups and normally do not interbreed with them.
Subspecies: A group of organisms that is geographically isolated from and may display some morphological differences from other populations of a species, but is nevertheless able to interbreed with other such groups within the species where their ranges overlap.
Infrasubspecific: A category below the subspecies level.
Form (forma): A category below the species level; interpretation varies on the basis of date of use.

Taxonomy: (Gk. taxis, arrangement; nomos, law) The naming and classification of organisms. Or broader, the study and practice of naming and classifying organisms, as done by taxonomists; i.e. the science of identification and classification into categories of varying rank, based on similarities and differences, and naming them.
Ichnotaxon: A taxon based on the fossilized work of an animal, including fossilized trails, burrows, and tubes made by an animal.

Tectono-eustacy: See 'eustatic'.
Thermohaline: Cold, with a high salt content.
Tethys Sea: The ancient tropical sea that once connected the Indian and Atlantic Oceans.
Transilience: Fixation of a small part of the founder genome by the overcoming of isolating barriers.
Type locality: The locality from which a type specimen was collected.
Type species: The species on which a genus is primarily based.
Type specimen: The specimen on which a nominal (named) species is based.

Typus: Forms, designated when a species or group is described to be most representative or typical, to serve as the reference if there is any question about what the species or group includes. The type of a species or subspecies is a specimen; one of a sub-, genus a species; one of a tribe, sub-, super-, family a genus.
The type refers to a term used alone or as part of a compound term used for a kind of specimen or taxon; whereas the type series denotes the original name-bearing specimens used to define a species-group taxon; while the type species is associated with the (nominal) species that is the name-bearing type of a genus or subgenus.
Allotype: A term designating a specimen of opposite sex to the holotype.
Cotype: A term not now to be used that formerly was used for either a syntype or paratype.
Holotype: The specimen on which a named species is based or the single specimen on which the taxon was based or the single specimen designated as the name-bearing (or primary) specimen.
Karyotype: The structural characteristics of the chromosomes.
Lectotype: A syntype later designated as the one name-bearing type specimen; i.e. a reference-species chosen from syntypes to become the holotype of the new genus.
Monotype: For genera, the generic group name when proposed was considered by the original author to contain a single valid species that was cited by an available name.

Neotype: At the level of holo-, lectotype, a substitute, if the original specimen has been lost (fire etc.) or the specimen designated as the name-bearing type of a nominal species or subspecies for which no holotype, or lectotype, or syntype, or prior neotype is believed to exist.

Paralectotype: The remaining syntypes, after a lectotype has been chosen.

Paratype: Specimens of the type series other than the holotype; i.e. similar, slightly modified species of the holotype, where description fits, but apparently no name has been given yet.

Syntype: A larger number of species, yet unnamed and undescribed, fits into the description of the holotype (not acceptable); i.e. specimen of a type series (of equal rank) when no holotype or lectotype has been named.

Upwelling: The upward movement of cold, deep, usually nutrient-rich water up continental slopes.

Van Allen's Law: The probability of extinction within any group remains constant through lime.

Vicariance: The process that occurs when a formerly continuous population is divided by a barrier and evolves into two or more species.

Vicariance biogeography Historical biogeography that assumes that geographical distributions of organisms mostly result from vicariance processes.

Viviparous: Producing live offspring from within the body of the parent.

Zoochlorellae: Small green algae or flagellate Protozoa that live symbolically in freshwater protozoans and invertebrates.

Zooxanthellate: Unicellular algae (dinoflagellates) that live in coral tissues.

Azooxanthellate corals and larvae: Corals and larvae that do not have zooxanthellae (endosymbionts).

Zooxanthellate corals and larvae: Corals and larvae that have photosynthetic endosymbiotic algae. Here it is used as a non-specific term that is applicable to all marine, invertebrates, extant or extinct (see coral, hermatypic).

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