

## CONSTRUCTION OF ICHNOGENERIC NAMES

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Rindsberg, A. K., 2015. Construction of ichnogenic names. *Annales Societatis Geologorum Poloniae*, 85: 529–549.

**Abstract:** Ichnologists have overused the root *ichn-* “trace”, employing it in new terms and new ichnogenera alike, to the point where it can be difficult to express oneself clearly without using it several times in one sentence. The root derives from Ancient Greek ἵχνος (*ichnos*), which means “footprint” or “track”, or by extension a “trace”, any sign of an animal’s activity. Perhaps it is time to explore the use of other roots to create new ichnologic terms and genera. Alternative Latin and Greek roots are given here, as well as advice on how to construct new ichnogenera in a technically correct and aesthetically pleasing manner.

**Key words:** Ichnology, trace fossils, ichnotaxonomy, terminology.

*Manuscript received 16 June 2015, accepted, 7 September 2015*

### INTRODUCTION

Robert W. Frey used to remark that the phrase “ichnogenus *Teichichnus*” sounded awful, but there was nothing to be done about it. Ichnologists have hundreds of uses for the Greek word ἵχνος (-ουζ, τό), which means “footprint” or “track”, or by extension a “trace”, any sign of an animal’s passing. Seilacher, in particular, has been responsible for coining new terms incorporating ἵχνος. Knaust (2012, p. 95) determined that about 44% of all valid invertebrate ichnogenera end in *ichnus*. Accordingly, this paper suggests alternative roots that are appropriate for constructing new ichnogenic names.

Many of the most commonly used ichnologic terms include the stem ἵχν-. These include ichnocoenose or ichnocoenosis (Davitashvili, 1945; Lessertisseur, 1956, p. 10), ichnofabric (Bromley and Ekdale, 1982), ichnofacies (*Ichnofazies*, Seilacher, 1963), ichnofauna (Frey, 1973, table 2), ichnofossil (Seilacher, 1956, p. 158), ichnogenus (Seilacher, 1953, p. 440), ichnologist, ichnology (Buckland, about 1830, *vide* Häntzschel, 1975, p. W2), ichnospecies (*Ichnospezies*, Seilacher, 1953, p. 440), ichnotaxon, neo-ichnology (*Neoichnologie*, Seilacher, 1953, p. 473); cubichnion, domichnion, fodichnion, pascichnion, repichnion (Seilacher, 1953, pp. 432–434); fugichnion (Frey, 1973); agrichnion (Ekdale *et al.*, 1984); endichnion, epichnion, exichnion, hypichnion (Martinsson, 1965). Where possible, I have given the citation for the first use of the term. All of these words are dysphonious in English, in which the similar word *icky* means “sticky, distasteful”, but they are part of the regular vocabulary of ichnology.

In addition, there is a host of terms in less common use: anichnial (Dörjes and Hertweck, 1975, p. 479), comparative

ichnology (*ichnologie comparée*, Lessertisseur, 1952), coprolichnia (Macsoy, 1967, p. 10), cursichnion, mordichnion, natichnion, volichnion (Müller, 1962), ichnidion or endichnidion (Martinsson, 1970, p. 328), ichnite (Hitchcock, 1837, p. 175), ichnoabundance (Knaust *et al.*, 2014, p. 2232); ichnodisparity (Buatois and Mángano, 2013), ichnodiversity (Lockley and Gillette, 1987), ichnoguild (Bromley, 1990, p. 211), ichnofamily (Seilacher, 1977, p. 296; Rindsberg, 1990, p. 61), ichnoflora (Frey, 1973, table 2), ichnolite (Hitchcock *in R.*, 1838, p. 201), ichnolithology (Hitchcock, 1841, p. 770), ichnospectrum (*Ichnospektrum*, Seilacher, 1964, p. 697), ichnostratigraphy (Baldwin, 1977, fig. 6), ichnotaxonomy (Bromley and Fürsich, 1980; Ekdale *et al.*, 1984, p. 17), ichnotope (Radwański and Roniewicz, 1971, p. 53), lithichnozoa (Hitchcock, 1858, p. 1), ornithichnites, ornithichnology (Hitchcock, 1836), palaeoichnology (*Paläoichnologie*, Abel, 1935, p. 33) or palichnology (*Palichnologie*, Seilacher, 1953, p. 423); and the many ethological categories reviewed by Vallon *et al.* (2015). I cite the earliest uses of the terms of which I am currently aware. Some of the latter terms are destined to become part of the regular vocabulary of science; some are obsolete; some have been used only once.

The greatest use for ἵχνος is in a large number of generic names for fossil traces such as *Aulichnites*, *Cylindrichnus*, *Diplichnites*, *Ichnium*, *Ichnocumulus*, *Ichnospica*, *Isopodichnus*, *Permichnium*, *Phoebichnus*, and *Teichichnus* (Table 1). More are named every year. Häntzschel (1975, p. W24) traced the origin of this custom to Jardine (1853), who “proposed that the ending *-ichnus* be added to the generic names of vertebrate trails from Scotland so that it

**Table 1**

Ichnogeneric names and other terms exhibiting variants derived ultimately from *ichnos*, including its diminutive *ichnion* (“little track” or “little trace”). Not all of these variants are proper; some are deliberate misspellings in substitute names for older, unavailable ichnogenera

Variant of <i>ichnos</i>	Ichnogenus or other term	Meaning
- <i>ichna</i>	<i>Lanicoidichna</i> Chamberlain, 1971 <i>Undichna</i> Anderson, 1976	<i>Lanice</i> -like trace wave trace
<i>ichni</i> -	<i>Ichniotherium</i> Pohlrig, 1892	little track beast
- <i>ichnia</i>	<i>Pilichnia</i> Chamberlain, 1971	little pillar trace
- <i>ichnion</i>	<i>domichnion</i> Seilacher, 1953	little dwelling trace
- <i>ichnis</i>	<i>Mammillichnis</i> Chamberlain, 1971 <i>Circulichnis</i> Vyalov, 1971	breast trace circle trace
- <i>ichnites</i>	<i>Climactichnites</i> Logan, 1860 ichnite Hitchcock, 1837	ladder trace ancient trace
- <i>ichnium</i>	<i>Ichnium</i> Pabst, 1896 <i>Kouphichnium</i> Nopcsa, 1923	little trace light (not heavy) little trace
<i>ichno</i> -	<i>Ichnocumulus</i> Seilacher, 1956	trace heap
- <i>ichnus</i>	<i>Acanthichnus</i> Hitchcock, 1858 <i>Chomatichnus</i> Donaldson & Simpson, 1962 <i>Didymaulichnus</i> Young, 1972 <i>Hexapodichnus</i> Hitchcock, 1858 <i>Imbrichnus</i> Hallam, 1970 <i>Isopodichnus</i> Bornemann, 1889 <i>Ixalichnus</i> Callison, 1970 <i>Lobichnus</i> Kemper, 1968 <i>Margaritichnus</i> Bandel, 1973 <i>Monomorphichnus</i> Crimes, 1970 <i>Ormathichnus</i> Miller, 1880 <i>Petalichnus</i> Miller, 1880 <i>Sagittichnus</i> Seilacher, 1953 <i>Teichichnus</i> Seilacher, 1955 <i>Treptichnus</i> Miller, 1889 <i>Trichichnus</i> Frey, 1970 <i>Tylichnus</i> Osgood, 1970	thorn trace mound trace double flute trace six-foot trace or hexapod trace shingle trace isopod trace leaping trace lobe trace rosary trace one-shape trace chain trace broad trace or leaf trace arrow trace (city) wall trace turned trace hair trace knot trace
<i>ichny</i> -	<i>Ichnypica</i> Linck, 1949	trace ear (of grain)

would be possible to distinguish names of trace fossils from body fossils by their characteristic endings”; however, an inspection of Häntzschel’s copy of Jardine’s work shows no such recommendation. Jardine (1853) did, however, give all but one of his new ichnogenera names ending with *-ichnus*, and referred to *Hoplichnus* Hitchcock, 1848. Thus, the practice can be traced to Hitchcock, but not the recommendation. As early as 1836, Hitchcock began to name fossil trackways as *Ornithichnites* (“ancestral bird footprints”); in 1837 he named several new ichnogenera ending in *-ichnites*. In later works, Hitchcock (1858, 1865) used *-ichnus* as the root for a few vertebrate trackways (*Apatichnus*, *Arachichnus*, *Toxichnus*) and invertebrate traces (*Acanthichnus*, *Cochlichnus*, *Hexapodichnus*), but overall his names were constructed using many different roots. Others used the form genera *Ichnium* or *Ichnites* to include trace fossils (Häntzschel, 1975, p. W24). The recommendation to end new ichnogenera in *-ichnus* was echoed by ichnologic theorists Seilacher (1953, p. 446) and Häntzschel (1962, p. W182; 1975, p. W24). Frey did not endorse it directly in his arti-

cles, but used *ἴχνος* when he named *Trichichnus* Frey, 1971 and *Schaubeylindrichnus* Frey and Howard, 1991. Bromley also consistently expressed a preference for such names, e.g., *Oichnus* Bromley, 1981, *Phoebichnus* Bromley and Asgaard, 1972. The practice has been very widespread in vertebrate and invertebrate ichnology; nearly half of all valid invertebrate ichnogenera have names ending in *-ichnus* (Knaust, 2012).

Many variations on *ἴχνος* have been employed as well (Table 1). The Ancient Greek can be transcribed in Latin characters as *ichnos* or latinized as *ichnus*. It may be feminized as *ichna* or neutered as *ichnum*, practices that are not strictly correct grammatically, but which serve to vary the language. A diminutive form may be used (*ichnion* or *ichnium*, “little trace”). And the root may be used to begin a word instead of ending it (*ichn*-).

The root *ἴχνος* has been valuable to ichnologists in the past, but is now perhaps overused. Hitchcock himself was not so constrained as to use a single root in every new name. The purpose of this article is to suggest alternative Latin and Greek roots for constructing new generic names of trace fossils. But first, the Indo-European origin of *ἴχνος* is explored and its cognates are identified.

## ETYMOLOGY OF ἴΧΝΟΣ

The root most commonly used by ichnologists is the latinized Greek *ichn*-, deriving from Ancient Greek *ἴχνος* (*ichnos*), “trace, track, footprint”. This word is of obscure origin, but may be related to *οἴχνεω* (*oichneu*), “to go, to come” (Chantraine, 1968–1980, pp. 474, 788–789). If so, then its ultimate origin is from a Proto-Indo-European root, *\*ik(h)-*, *ig(h)-*, or *eigh-*, “to go,” itself an extension of an earlier *\*ei-* “to go” (Partridge, 1963, p. 303, 905; Watkins, 2000, p. 22). The asterisk indicates a reconstructed form that is not attested in any written source. I have located no convincing evidence of cognates of *ichnos* in other languages, although the Proto-Indo-European root has descendants in several languages. The word may have been used for the first time in Proto-Greek, the unwritten language that was ancestral to the Greek dialects.

*ἴχνος* has left few other descendants in the English language. An ichnograph is a plan view (“footprint writing”) of a building in architecture. To the Greeks, an *ichneumon* (“tracker”) was either the mongoose, an animal that followed crocodiles to find and eat their eggs, or a kind of wasp that hunts its prey. In modern English, *ichneumon* refers chiefly to the wasp, and several specialized words have derived from this usage for use in entomology. Both of these words entered the English language in the sixteenth to eighteenth centuries, predating the development of ichnology in the early nineteenth century (Brown, 1993, 1: 1301).

## GOOD AND BAD WAYS TO NAME ICHNOGENERA

A good name is short, easy to remember, and easy to pronounce. The best names are fresh, distinctive, and mean-

ingful, descriptive of some diagnostic aspect of the fossil. However, it is not desirable for all names to be formed in the same way; for names to be mnemonic, they must be varied.

This article focuses on the mechanics of word construction and is not intended as a complete guide to naming new ichnogenera, an outline of which was given by Rindsberg (2012). Ultimately, new names are governed by the *International Code of Zoological Nomenclature* (International Commission on Zoological Nomenclature, 1999), which contains some guidelines for the construction of valid generic names. In general, the name must be in the Latin alphabet, which may include *j*, *k*, *w*, or *y* (Art. 11.2), but not diacritic marks or hyphens (Art. 27). It must be “used as a word” (i.e., be pronounceable; Art. 11.3). Although classical Greek and Latin roots are preferred, and the Code recommends that they be latinized, words from any language may serve, or indeed from no language (Art. 11.3). The name must not be a homonym, i.e., one that has been previously used under the ICZN (Art. 52). The guidelines regarding correct and incorrect spellings are complex (Arts. 19, 32, 33).

Most authors continue to prefer to base new names on Greek and Latin roots. Constructing a name correctly requires more knowledge than simply consulting a dictionary; *Botanical Latin* (Stearns, 1966), and *Composition of Scientific Words* (Brown, 1956) are especially helpful in this regard, along with the recommendations on grammar and transliteration in the third edition of the Code (ICZN, 1985). The classical languages, especially Latin, have continued to evolve in scientific usage, particularly for the description of organisms. Botanical Latin is a standardized and flexible mode of communication that was honed over a period of centuries. Linnaeus used it, and botanists still use it.

Ichnologists naming new genera have found inspiration in diverse ways (Häntzschel, 1975, pp. W24–W25; Pemberton and Frey, 1982). Some have related the trace fossil to its supposed maker, or to modern organisms. Some have named a trace fossil for its site of discovery, formation, or age. Some have chosen to honour an ichnologist or other scientist. Some have even named ichnogenera after other ichnogenera. Humour has inspired others. Currently, the most approved method is to incorporate some aspect of the trace’s morphology in the name (Table 2). Pemberton and Frey (1982, p. 847) disapproved of all of these methods except the morphological, but it is more important for names to be varied than to be ideal.

A formerly popular method was to incorporate the name of the deduced maker into the trace fossil’s name (Table 3). Even in cases where the tracemaker is found within the trace, it cannot be deduced that this is the trace’s only maker; still, the temptation to draw analogies can be irresistible. Thus, *Balanoglossites* is supposed to have been made by the enteropneust *Balanoglossus*, *Corophioides* by the amphipod *Corophium*, *Pelecypodichnus* by pelecypods, *Lingulichnus* by lingulids, *Isopodichnus* by isopods, and so on. This method has often led to embarrassment when later evidence shows that several diverse makers can account for one trace fossil, or when the proposed maker is misidentified (Table 3).

Nineteenth-century authors frequently mistook trace fossils for body fossils of plants or animals, and many of

Table 2

Some of the many ichnogenic names that are based on morphology of the trace fossils

Ichnogenus	Meaning
<i>Alectorurus</i> Schimper, 1869	rooster's tail
<i>Amphorichnus</i> Myannil, 1966	amphora trace
<i>Arthrarria</i> Billings, 1873	joint “group” ( <i>-aria</i> denotes groups)
<i>Asterosoma</i> Otto, 1854	star body
<i>Baroccoichnites</i> Vyalov, 1971	ancestral baroque trace
<i>Belorhapha</i> Fuchs, 1895	arrow seam
<i>Bifasciculus</i> Volk, 1960	two little bundles
<i>Bifungites</i> Desio, 1940	two mushroom-like
<i>Bifurculapes</i> Hitchcock, 1858	two-fork foot
<i>Calycraterion</i> Karaszewski, 1971	calyx bowl
<i>Circulichnis</i> Vyalov, 1971	circle trace
<i>Cochlichnus</i> Hitchcock, 1858	spiral trace
<i>Conspiron</i> Vyalov, 1969	cone spiral
<i>Conostichus</i> Lesquereux, 1876	cone row
<i>Curvolithus</i> Fritsch, 1908	bent stone
<i>Dendrina</i> Quenstedt, 1848	tree-like
<i>Dimorphichnus</i> Seilacher, 1955	two-shape trace
<i>Granularia</i> Pomel, 1849	granular one
<i>Gyrochorte</i> Heer, 1865	turning hay
<i>Helminthopsis</i> Heer, 1877	worm-like
<i>Laevicyclus</i> Quenstedt, 1879	smooth circle
<i>Ophiomorpha</i> Lundgren, 1891	snake shape
<i>Palaeochorda</i> M’Coy in Sedgwick, 1848	old string
<i>Paleodictyon</i> Meneghini in Murchison, 1850	old net
<i>Pholeus</i> Fiege, 1944	hole
<i>Phymatoderma</i> Brongniart, 1849	tumor skin
<i>Plagiogmus</i> Roedel, 1929	slope furrow
<i>Plangtichnus</i> Miller, 1889	wandering trace
<i>Polykampton</i> Ooster, 1869	many bend(s)
<i>Polykladichnus</i> Fürsich, 1981	many branch trace
<i>Polyupsilon</i> Howell, 1957	many upsilon(s) (U’s)
<i>Scalarituba</i> Weller, 1899	ladder pipe
<i>Taonurus</i> Fischer-Ooster, 1858	peacock tail
<i>Taupezia</i> Declair, 1962	tau (T) foot
<i>Tomaculum</i> Groom, 1902	sausage
<i>Trisulcus</i> Hitchcock, 1865	three furrow
<i>Upsilonoides</i> Byrne and Branson, 1941	upsilon (U)-like
<i>Vexillum</i> Rouault, 1850	flag
<i>Xenohelix</i> Mansfield, 1927	strange spiral

these mistakes have been memorialized in ichnologic taxonomy. The ending *-ites* was commonly used to denote ancestral forms of modern organisms; it was used so often, and so erroneously, that the Zoological Code now discourages ending any new name in *-ites* or its variants, *-ytes* and *-ithes* (International Commission for Zoological Nomenclature, 1999, Art. 20). Some ichnogenera can be traced back to names of modern seaweeds (Table 4): *Caulerpites* to *Caulerpa*, *Chondrites* to *Chondria*. Zoological errors include trace fossils *Arenicolites* and *Nereites*, thought to be remains of the polychaete *Arenicola* and *Nereis*; *Asteriacites*, thought to be the starfish *Asterias*; and *Pennatulites*, mistaken for a sea pen (Table 3). Another Greek root,  $\phi\upsilon\kappa\omicron\varsigma$ , latinized as *phycus* or *fucus*, means “seaweed” and was commonly employed for fossil seaweeds or “fucoids” (a family of brown algae including *Fucus*). Several venerable names include this root, including *Arthropycus*, *Asterophycus*, *Dactylophycus*, *Fucoides*, *Fucusopsis*, *Palaeophycus*, *Phycodes*, *Phycosiphon*, *Rusophycus*, *Spirophycus*,

Table 3

Some ichnogenetic names that are modified from generic names of animals, either because the author thought this was a body fossil of the animal, or because the author concluded that it was a trace fossil made by the animal. This is not a recommended practice; asterisks (\*) show examples of ichnogeneta that are now thought to be grossly misnamed.

Ichnogenus	Meaning	Presumed maker
<i>Clionolithes</i> Clarke, 1908 <i>Clionoides</i> Fenton & Fenton, 1932	<i>Cliona</i> stone <i>Cliona</i> -like	Porifera
* <i>Alcyonidiopsis</i> Massalongo, 1856 * <i>Pennatulites</i> Stefani, 1885 * <i>Protovirgularia</i> M'Coy, 1850 * <i>Rhizocorallium</i> Zenker, 1836	alcyoniid-like ancestral <i>Pennatula</i> first <i>Virgularia</i> root coral	Coelenterata
* <i>Gordia</i> Emmons, 1844	<i>Gordius</i> (hairworm)	Nematomorpha
* <i>Nemertites</i> MacLeay, 1839	ancestral <i>Nemertes</i>	Nemertea
<i>Annelidichnium</i> Kuhn, 1937 * <i>Lumbricaria</i> Münster in Goldfuss, 1831	annelid trace earthworm ( <i>lumbricus</i> ) group	Oligochaeta
<i>Arenicolites</i> Salter, 1857 <i>Diopatrighnus</i> Kern, 1978 <i>Goniadichnites</i> Matthew, 1891 <i>Lanicoidichna</i> Chamberlain, 1971 <i>Maeandropolydora</i> Voigt, 1965 <i>Myzostomites</i> Clarke, 1921 * <i>Nereites</i> MacLeay, 1839 <i>Palaeosabella</i> Clarke, 1921 * <i>Phyllodocites</i> Geinitz, 1867 <i>Polydorites</i> Douvillé, 1908 * <i>Sabellarifex</i> Richter, 1921 * <i>Sabellarites</i> Dawson, 1890	ancestral <i>Arenicola</i> <i>Diopatra</i> trace ancestral <i>Goniada</i> trace <i>Lanice</i> -like trace meander <i>Polydora</i> ancestral <i>Myzostomum</i> ancestral <i>Nereis</i> ancient <i>Sabella</i> ancestral <i>Phyllodoce</i> ancestral <i>Polydora</i> <i>Sabellaria</i> (reef) maker ancestral <i>Sabellaria</i>	Polychaeta
<i>Helminthoida</i> Schafhäütl, 1851 <i>Helminthoidichnites</i> Fitch, 1848 * <i>Scolicia</i> Quatrefages, 1849	worm-like ancient wormlike trace worm ( <i>scolex</i> )	Undifferentiated "worms"
<i>Gastrochaenolites</i> Leymerie, 1842 <i>Martesites</i> Vitális, 1961 <i>Pelecypodichnus</i> Seilacher, 1953 <i>Teredolites</i> Leymerie, 1842	<i>Gastrochaena</i> stone ancestral <i>Martesia</i> pelecypod trace <i>Teredo</i> stone	Bivalvia
* <i>Archaeonassa</i> Fenton & Fenton, 1937 * <i>Olivellites</i> Fenton & Fenton, 1937 * <i>Palaeobullia</i> Götzinger & Becker, 1932	ancient <i>Ilyanassa</i> ancient <i>Olivella</i> ancient <i>Bullia</i>	Gastropoda
<i>Aglaspidichnus</i> Radwański & Roniewicz, 1967 <i>Anobichnium</i> Linck, 1949 <i>Arthropodichnus</i> Chiplonkar & Badwe, 1970 <i>Asaphoidichnus</i> Miller, 1880 <i>Caridolites</i> Nicholson, 1873 <i>Corophioides</i> Smith, 1893 <i>Isopodichnus</i> Bornemann, 1889 <i>Merostomichnites</i> Packard, 1900 <i>Myriapodites</i> Matthew, 1903 <i>Oniscoidichnus</i> Brady, 1949 <i>Palaeobuprestis</i> Häntzschel, 1962 <i>Thalassinoides</i> Ehrenberg, 1944	Aglaspida trace <i>Anobium</i> trace (beetle) arthropod trace <i>Asaphus</i> -like trace ( <i>Ceratio</i> ) <i>caris</i> stone <i>Corophium</i> -like (amphipod) isopod trace ancient merostome trace ancient myriapod <i>Oniscus</i> -like trace (isopod) ancient <i>Buprestis</i> (beetle) Thalassinidea-like	Arthropoda
<i>Balanoglossites</i> Häntzschel, 1962	ancestral <i>Balanoglossus</i>	Hemichordata
<i>Asteriacites</i> Schlotheim, 1820	ancestral <i>Asterias</i>	Asterozoa
<i>Chirotherium</i> Kaup, 1835 <i>Cincosaurus</i> Aldrich, 1930 <i>Erpetopus</i> Moodie, 1929 <i>Ichniotherium</i> Pohlig, 1892 <i>Ichthyoidichnites</i> Ami, 1903 <i>Ignotornis</i> Mehl, 1931 <i>Megalosauropus</i> Colbert & Merrilees, 1967 <i>Otozoum</i> Hitchcock, 1847 <i>Pulchravipes</i> Demathieu et al., 1984 <i>Tyrannosauropus</i> Haubold, 1971	hand beast five (toed) lizard reptile foot little-track beast ancestral fishlike trace unknown bird megalosauropus foot ear animal beautiful bird foot tyrannosauropus foot	Vertebrata

Table 4

Ichnogeneric names with roots indicating that they were originally named as fossil plants, especially seaweeds. For the most part, this practice ended about 1900. Not all of these ichnogenera are considered to be valid today.

Ichnogenus	Meaning
<i>Archaeozostera</i> Koriba & Miki, 1971	ancient <i>Zostera</i> (a seagrass)
<i>Arthropycus</i> Hall, 1852	joint(ed) seaweed
<i>Asterophycus</i> Lesquereux, 1876	star seaweed
<i>Aulacophycus</i> Heer, 1877	flute seaweed
<i>Bostricophyton</i> Squinabol, 1890	curl plant
<i>Buthotrephis</i> Hall, 1847	growing (in) the deep
<i>Cancellophycus</i> Saporta, 1872	lattice seaweed
<i>Caulerpietes</i> Sternberg, 1833	ancestral (or near) <i>Caulerpa</i> (a seaweed)
<i>Ceratophycus</i> Schimper, 1879	horn seaweed
<i>Chondrites</i> Sternberg, 1833	ancestral <i>Chondria</i>
<i>Criophycus</i> Tola, 1906	ram seaweed
<i>Flabellophycus</i> Squinabol, 1890	fan seaweed
<i>Fucoides</i> Brongniart, 1822	like <i>Fucus</i> (a seaweed)
<i>Gyrophyllites</i> Glocker, 1841	ancestral turning leaf
<i>Halmedides</i> Lorenz von Liburnau, 1902	like <i>Halimeda</i> (a calcareous alga)
<i>Halopoa</i> Torell, 1870	salt grass
<i>Hippodophycus</i> Hall & Whitfield, 1872	horse-hoof seaweed
<i>Hormosiroidea</i> Schaffer, 1928	like <i>Hormosira</i> (a seaweed)
<i>Ichnophycus</i> Hall, 1852	track seaweed
<i>Licrophycus</i> Billings, 1862	antler seaweed
<i>Mycelites</i> Roux, 1887	ancient mycelium (fungus)
<i>Myelophycus</i> Ulrich, 1904	marrow or pith seaweed
<i>Nulliporites</i> Heer, 1865	ancestral <i>Nullipora</i> (a seaweed)
<i>Palaeophycus</i> Hall, 1852	ancient seaweed
<i>Phycodes</i> Richter, 1850	seaweed-like
<i>Phycosiphon</i> Fischer-Ooster, 1858	seaweed tube
<i>Physophycus</i> Schimper, 1869	bellows seaweed
<i>Phytopsis</i> Hall, 1847	plant-looking
<i>Rusophycus</i> Hall, 1852	wrinkled seaweed
<i>Spirophycus</i> Häntzschel, 1962	spiral seaweed
<i>Spirophyton</i> Hall, 1863	spiral plant
<i>Staurophyton</i> Meunier, 1891	cross plant
<i>Trichophycus</i> Miller and Dyer, 1878b	hair seaweed
<i>Zoophycos</i> Massalongo, 1855	animal plant

and *Zoophycos*. Among the trace fossils mistaken for animals, *Rhizocorallium* is not a coral, and *Protovirgularia* is not related to the octocoral *Virgularia*.

Several ichnogenera were named for sites of discovery, strata, or geologic age (Tables 5, 6). Place-derived names include *Brookvalichnus* (Brookvale), *Capodistria* (Capo d'Istria), *Steigerwaldichnium* (Steigerwald), and several others (Table 5). Such geographic names can be tiresome when additional specimens are discovered far from the type area. Native names are often refreshing, e.g., *Umfolozia*. Stratigraphic names are less common (Table 6), but include *Beaconites* and *Beaconichnus* (Beacon Group), *Hartsellea* (Hartselle Sandstone), and *Yakutatia* (Yakutat Formation). Only a few ichnogenera refer to stratigraphic age, such as *Permichnium* (Permian); one might also include *Archaeichnium* ("old little trace", from the Precambrian). All these names have a serious disadvantage. At its first publication, the full range of a genus is unlikely to be known. *Beaconichnus* is now known outside the Beacon Group of Antarctica, and *Permichnium* has been reported from the Triassic (Häntzschel, 1975, pp. W45, W91). Nevertheless, they have the advantages of sounding fresh and memorable.

Table 5

Some ichnogeneric names that are based on geographic names. This should be done sparingly.

Ichnogenus	Meaning
<i>Brookvalichnus</i> Webby, 1970	Brookvale trace (Australia)
<i>Capodistria</i> Vyalov, 1964	Capodistria (now Koper, Slovenia)
<i>Gluckstadtella</i> Savage, 1971	little Gluckstadt (South Africa)
<i>Jeholosauripes</i> Yabe, Inai & Shikama, 1940	Jehol (China) lizard foot
<i>Kiivermus</i> Katto, 1976	Kii (Peninsula, Japan) worm
<i>Oldhamia</i> Forbes, 1849	Oldham (Ireland)
<i>Polarichnus</i> Narbonne, Gibling & Jones, 1979	(North) Polar trace
<i>Quebecichnus</i> Hofmann, 1972	Québec (Canada) trace
<i>Steigerwaldichnium</i> Kuhn, 1937	Steigerwald (Germany) little-trace
<i>Tambia</i> Müller, 1969	Tambach (Germany)
<i>Tambachichnium</i> Müller, 1954	Tambach (Germany) little-trace
<i>Tasmanadia</i> Chapman, 1929	Tasmania (Australia)
<i>Umfolozia</i> Savage, 1971	(Swart) Umfolozi, (South Africa)

Table 6

Some ichnogeneric names that are based on stratigraphy. This should be done only occasionally.

Ichnogenus	Meaning
<i>Archaeichnium</i> Glaessner, 1963	old little-trace (Precambrian)
<i>Beaconichnus</i> Gevers, 1973	Beacon (Group) trace (Antarctica)
<i>Beaconites</i> Vyalov, 1962	ancestral Beacon (Group)
<i>Graysonia</i> Stephenson, 1952	Grayson (Marl, Texas)
<i>Hartsellea</i> Rindsberg, 1994	Hartselle (Sandstone, Alabama)
<i>Navahopus</i> Baird, 1980	Navaho (Sandstone, Arizona)
<i>Permichnium</i> Guthörl, 1934	Permian little-trace
<i>Protichnites</i> Owen, 1852	first trace (Cambrian)
<i>Torrowangea</i> Webby, 1970	Torrowangee (Group, New South Wales)
<i>Yakutatia</i> Ulrich, 1904	Yakutat (Formation, Alaska)
<i>Yokoia</i> Hatai and Noda, 1975	Yoko-o (Formation, Japan)

Some generic names honour ichnologists or other scientists, generally by adding the ending *-ia* to the stem of the person's name (Table 7). *Haentzschelinia* honours Walter Häntzschel, who wrote the ichnologic part of the *Treatise on Invertebrate Paleontology* as well as many other articles on traces. *Topsentia* (a sponge; the borings within this genus were later renamed *Topsentopsis*) honours Émile Topsent, who worked on modern sponges; *Rouaultia* was named for Marie Rouault, who named several ichnogenera in 1850. *Saportia* Squinabol, 1890 and *Lorenzina* Gabelli, 1900 respectively honour ichnologist Gaston de Saporta and naturalist Stefano Lorenzini. Some patronyms are less appropriate. *Scoyenia* White, 1929 was named for E. T. Scoyen, Chief Ranger of Grand Canyon National Park, *Lockeia* for John Locke, a Cincinnati paleontologist, *Cruziana* Orbigny, 1849 for General Andrés de Santa Cruz y Calahumana, and *Berguaeria* Prantl, 1946, apparently playfully, for the Czech sexologist Vladimír Bergauer. Because these persons did no ichnologic work, these names have little significance to ichnologists. Such names say nothing about the trace fossil itself. However, persons' names are relatively easy to remember, and they provide relief from the endless ichnogenera ending in *-ichnus*.

Table 7

A selection of ichnogenic names that are modified from the names of persons. This should be done sparingly.

Ichnogenus	Meaning	Person
<i>Abeliella</i> Mägdefrau, 1937	little Abel	Othenio Abel, paleobiologist
<i>Bergaueria</i> Prantl, 1946	Bergauer	Vladimír Bergauer, geologist
<i>Brachyzapfes</i> Codez, 1957	short Zapfe	Helmuth Zapfe
<i>Brooksella</i> Walcott, 1896	little Brooks	William Keith Brooks, zoologist
<i>Collettosaurus</i> Cox, 1873	Collett lizard	John Collett, geologist
<i>Condranema</i> Bassler, 1952	Condra thread	George Evert Condra, geologist
<i>Cruziana</i> Orbnigny, 1842	pertaining to Cruz	Andrés de Santa Cruz y Calahumana, President of Peru and Bolivia
<i>Favreina</i> Brönnimann, 1955	little Favre	J. Favre, first describer of trace
<i>Glockerichnus</i> Pickerill, 1982	Glocker trace	F. E. Glocker; substitute name for <i>Glockeria</i>
<i>Haentzschelina</i> Vyalov, 1964	little Häntzschel	Walter Häntzschel, ichnologist
<i>Harlania</i> Goepfert, 1852	Harlan	Richard Harlan, paleontologist
<i>Keckia</i> Glocker, 1841	Keck	Michael Keck von Keck, collector
<i>Kingella</i> Savage, 1971	little King	Lester King, discoverer of trace
<i>Lapparentichnus</i> Haubold, 1971	Lapparent trace	Albert-Félix de Lapparent, ichnologist
<i>Lockeia</i> James, 1879	Locke	John Locke, paleontologist
<i>Lorenzina</i> Gabelli, 1900	Lorenzini	Stefano Lorenzini, naturalist
<i>Mathewichnus</i> Haubold, 1970	Matthew trace	George Frederick Matthew, ichnologist
<i>Mehliella</i> Strand, 1932	little Mehl	Maurice G. Mehl, vertebrate paleontologist
<i>Moodieichnus</i> Sarjeant, 1972	Moodie trace	Roy Lee Moodie, paleopathologist
<i>Muensteria</i> Sternberg, 1833	Münster	Georg von Münster, paleontologist
<i>Rauffella</i> Ulrich, 1889	little Rauff	Hermann Rauff, paleontologist
<i>Saportia</i> Squinabol, 1891	Saporta	Gaston de Saport, paleobotanist
<i>Scoyenia</i> White, 1929	Scoyen	E. T. Scoyen, park ranger
<i>Shepardia</i> Hitchcock, 1858	Shepard	Charles Upham Shepard, geologist
<i>Sillimanius</i> Hitchcock, 1845	Silliman	Benjamin Silliman, geologist
<i>Tasselia</i> de Heinzelin, 1965	Tassel	R. Van Tassel, first describer of trace
<i>Topsentia</i> Clarke, 1921	Topsent	E. Topsent, sponge biologist
<i>Volkichnium</i> Pfeiffer, 1965	Volk trace	Max Volk, ichnologist
<i>Walcottia</i> Miller & Dyer, 1878a	Walcott	Charles Doolittle Walcott, paleontologist
<i>Wildeichnus</i> Casamiquela, 1964	Wilde trace	Eduardo Wilde, physician and politician
<i>Zapfella</i> Saint-Seine, 1956	little Zapfe	H. Zapfe

Some ichnogenera are named for other ichnogenera (Table 8): *Paratisoa* for its similarity to *Tisoa*, *Megapermichnium* after *Permichnium*, *Sublorenzina* for *Lorenzina*, *Parahaentzschelina* for *Haentzschelina*, *Neonereites* after *Nereites*, *Mixoteichnichnus* for *Teichichnus*. The similarity is often idiosyncratic and may strike other workers as superficial and misleading. Also, these names tend to be inconveniently long. Placing a prefix like *sub-* (“under, less”) before a person’s name, as in *Sublorenzina* and *Subglockeria*, is unintentionally offensive. In some cases, rejected homonyms have been replaced by similar names, retaining nomenclatorial continuity. *Glockerichnus* replaced *Glockeria*; *Topsentopsis* replaced *Topsentia*.

Names of miscellaneous origin, including humorous names, provide refreshment and amusement (Table 9). *Ardelia* (“busybody”) is a vertical burrow having horizontal branches in all directions. A burrow having a sunburst cross-section received the cognomen *Phoebichnus*, for Phoebus Apollo, the Greek sun god. *Baroccoichnites* refers to its bizarrely “baroque” curls. A fine name is *Daedalus*, a screw-shaped trace fossil, honouring the mythical scientist Daedalus. *Daimonelix* is a rough translation into Greek of its common name, “devil’s corkscrew”. Less amusing in the long run is *Hondichnus*, whose author likened to the track of a Honda motorcycle. If species-level names may be introduced into this discussion, surely the following must be mentioned: *Diplocraterion yoyo* Goldring, 1962, a U-shaped burrow whose spreite shifted up and down like a toy yoyo,

Table 8

A selection of ichnogenic names (not all valid) that are modified from other ichnogenic names. This is not a recommended practice.

Ichnogenus	Meaning
<i>Chondritoides</i> Borrello, 1966	<i>Chondrites</i> -like
<i>Eugyrichnites</i> Ami, 1905	true <i>Gyrichnites</i>
<i>Mixoteichichnus</i> Müller, 1966	mixed <i>Teichichnus</i>
<i>Neonereites</i> Seilacher, 1960	new <i>Nereites</i>
<i>Parahaentzschelina</i> Chamberlain, 1971	near <i>Haentzschelina</i>
<i>Paratisoa</i> Gaillard, 1972	near <i>Tisoa</i>
<i>Protopaleodictyon</i> Książkiewicz, 1970	first <i>Paleodictyon</i>
<i>Pseudobilobites</i> Kennedy, 1967	false <i>Bilobites</i>
<i>Radionereites</i> Gregory, 1969	radiating <i>Nereites</i>
<i>Spirocormorhapha</i> Seilacher, 1989	spiral <i>Cormorhapha</i>
<i>Subglockeria</i> Książkiewicz, 1968	under (i.e., “not quite”) <i>Glockeria</i>
<i>Subphyllochorda</i> Götzinger & Becker, 1932	“not quite” <i>Phyllochorda</i>
<i>Taphrhelminthopsis</i> Sacco, 1888	ditch <i>Helminthopsis</i>

and *Asteriacites gugelhupf* Seilacher, 1983, a plug-shaped trace that resembles a German cake called a *Gugelhupf*. An occasional joke is good, and Linnaeus himself was a great humorist (Austin, 1993), but ichnologic taxonomy is already burdened by an abundance of unintended humour.

A few names are of uncertain derivation, e.g., *Laotira* Walcott, 1896, *Macanopsis* Macsotay, 1967 (perhaps “like

**Table 9**

A selection of ichnogenic names (not all valid) having miscellaneous derivations

Ichnogenus	Meaning
<i>Ardelia</i> Chamberlain, 1971	busybody
<i>Cursipes</i> Matthew, 1903	run foot
<i>Daedalus</i> Rouault, 1850	Daedalus (mythical Greek craftsman)
<i>Daimonelix</i> Barbour, 1892	demon helix (translation of common name “devil’s corkscrew”)
<i>Dromopus</i> Marsh, 1894	run foot
<i>Entobia</i> Bronn, 1838	liv(ing) within
<i>Fraena</i> Rouault, 1850	bridle, bridge (i.e., straplike)
<i>Grallator</i> Hitchcock, 1858	stilt-walker
<i>Hondichnus</i> Ausich, 1979	Honda (motorcycle) trace
<i>Incisifex</i> Dahmer, 1937	incis(ion) maker
<i>Iramena</i> Boekschoten, 1970	anagram of <i>Annemarie</i> Boekschoten-Van Helsdingen
<i>Phoebichnus</i> Bromley & Asgaard, 1972	Phoebus (Apollo) trace
<i>Planolites</i> Nicholson, 1873	wandering stone
<i>Psammichnites</i> Torell, 1870	ancestral sand trace
<i>Saltator</i> Hitchcock, 1858	leaper
<i>Scotolithus</i> Linnarsson, 1871	obscure stone
<i>Sustergichnus</i> Chamberlain, 1971	pig-back (i.e., hogback) trace (from local football team “Arkansas Razorback”)
<i>Talpina</i> Hagenow, 1840	little mole
<i>Tisoa</i> Serres, 1840	Tisoa, a sea nymph in Greek mythology
<i>Walpia</i> White, 1929	Hualapai (Native American tribe)

a *macana*”, i.e., “club” in Spanish), and *Palaxius* Brönnimann and Norton, 1980. Occasionally, an author does not reveal the etymology of his creation, although it is good practice to do so. Further, authors may dub a new ichnogenus with any combination of letters (e.g., *Pirandikus* Holub and Kozur, 1981) as long as they follow a few sensible rules. The name must consist of at least three Latin letters, be pronounceable, not previously used, and so forth (ICZN, 1999).

The most appropriate names for ichnogenera are primarily morphologic (Table 2), because the criteria for identifying ichnotaxa are morphologic (Bromley, 1970, 1996; Sarjeant and Kennedy, 1973; Fürsich, 1974; Häntzschel and Frey, 1979; Pemberton and Frey, 1982, p. 847). These names are very numerous and most are still appropriate. A few examples are *Cylindrichnus* (“cylinder trace”), *Asterosoma* (“star body”), *Ophiomorpha* (“snake shape”), *Cochlichnus* (“screw trace”), *Unisulcus* (“one furrow”), *Diplocraterion* (“double cup”), *Dimorphichnus* (“two shape trace”). Morphologic names are mnemonic in any language that derives its scientific terminology from Latin or Greek, including all major European languages.

Only a handful of names refer to the biological activity represented by the trace fossil. Such names include *Phagophytichnus* (“eat plant trace”) for bite marks on leaves, *Fascifodina* (“bundle eat”), and *Limulicubichnus* (“limuli[de] resting trace”). Although the danger exists that such names may misrepresent the activity, such names are easily remembered and fall neatly into the ethologic categories of Seilacher (1953) as revised by later authors (for a review see Vallon *et al.*, 2015). Names can be constructed that are

both morphologic and ethologic, and it is this kind of name I would like to encourage. If a new trace fossil includes more than one kind of behaviour, and especially if its behaviour is in doubt, the researcher should refrain from incorporating its ethology into its name.

## ETHOLOGICALLY BASED ROOTS FOR ICHNOGENERIC NAMES

Most trace fossils are invertebrate burrows and borings, vertebrate trackways, and coprolites (for an overview see Knaust, 2012). Invertebrate burrows can be classified in the familiar ethological categories (resting, dwelling, feeding, crawling, grazing, farming, and escape traces), and roots suggesting these activities can be incorporated into generic names. Appropriate roots for vertebrate trackways, borings, and coprolites are also available in classical languages.

The *International Code of Zoological Nomenclature* (ICZN, 1999) encourages the use of classical (Greek and Latin) roots; it does not require them, but roots from other languages are less likely to be understood. Although it has been a long time since scientific papers were routinely written in Latin, and the typical student no longer studies classical languages, every scientist is nevertheless familiar with at least the commonest classical roots, such as the *bio-* of *biology* and *biogeography* and *bioerosion*, and can consult dictionaries to obtain others. The root *ichn-* is rare outside of the studies of trace fossils and ichneumon wasps, but its extensive use in ichnology has made it easily understood to geologists. The premise of this paper is that additional roots can become familiar to ichnologists with use.

With the aid of standard sources such as Liddell *et al.* (1940), Brown (1956), and Stearn (1966), I have compiled lists of roots that may be used in creating new ichnogenic names (Tables 11, 12). While all can be used to describe a trace fossil morphologically, some can additionally be used to suggest an ethological interpretation. Thus, *tubus*, “tube”, can be used to denote trace fossils that are tubular in form, while *nidus*, “nest”, could be incorporated within the name of an ichnogenus that is interpreted as a calichnion.

## AESTHETIC AND PRAGMATIC CONSIDERATIONS

Inexperienced biologists and geologists often embark on naming a new organism or trace fossil in the spirit of adventure, vying for a name that will be distinctive in its own sake: the longest, the shortest, the hardest to pronounce; the most entertaining, the most demeaning, the most memorable. This is why we have parasites named for political figures, plankton for rock stars. These kinds of jokes tend to pall with age, but scientists will be stuck with them indefinitely. If a joke is called for, it should be one that can be appreciated decades or even centuries hence.

Experienced taxonomists tend to occupy the middle ground, striving for names that are appropriate, useful, and considerate of others.

Table 10

Appropriate Latin roots for ichnogenera and other ichnologic terms. Meanings are selected from among those given by Simpson (1968). Abbreviations: m. = masculine noun, f. = feminine noun, n. = neuter noun, v. = verb, a. = adjective.

Latin word and stem	Selected meanings	Examples
Roots for general use		
<i>signum</i> n., <i>sign-</i> <i>tubus</i> m., <i>tub-</i>	sign, distinguishing mark tube, pipe, trumpet	<i>Micatuba</i> Chamberlain, 1971; <i>Scalarituba</i> Weller, 1899; <i>Vermitubus</i> Hatai, Murata & Kawakami, 1972
<i>vestigium</i> n., <i>vestigi-</i>	footprint, trace	<i>Punctatumvestigium</i> Butts, 1891; <i>Triavestigia</i> Gilmore, 1927
Roots for resting trace		
<i>celare</i> v., <i>cel-</i> <i>fovea</i> f., <i>fove-</i> <i>stratum</i> n., <i>strat-</i> <i>tectum</i> n., <i>tect-</i>	to hide small (dug) pit covering shelter, roof	
Roots for dwelling traces		
<i>atrium</i> n., <i>atri-</i> <i>baculum</i> n., <i>bacul-</i> <i>caula</i> f., <i>caul-</i> <i>caverna</i> f., <i>cavern-</i> <i>cavea</i> f., <i>cave-</i> ; <i>cavus</i> m., <i>cav-</i> ; <i>cavum</i> n., <i>cav-</i> <i>culmus</i> m., <i>culm-</i> <i>domus</i> f., <i>dom-</i> <i>aedes</i> f., <i>aed-</i>	chief room in Roman house staff, stick hole hollow, cavern den, cavity, hollow  stalk, stem (use for shafts) home room, house	<i>Caulostrepsis</i> Clarke, 1908 <i>Cavernaecola</i> Bentz, 1929 nucleocavia Richter & Richter, 1930  domichnion Seilacher, 1953
Roots for locomotive traces		
<i>canalis</i> m., <i>canal-</i> <i>fossa</i> f., <i>foss-</i> <i>iter</i> m., <i>itiner-</i> <i>ligula</i> f., <i>ligul-</i> <i>lira</i> f., <i>lir-</i> <i>motus</i> m., <i>motu-</i> <i>semita</i> f., <i>semit-</i> <i>sulcus</i> m., <i>sulc-</i>  <i>taenia</i> f., <i>taeni-</i> <i>via</i> f., <i>vi-</i>	channel, canal ditch way strap furrow ridge motion path, way furrow  ribbon, headband highway, road	<i>Rodocanalis</i> Schloz, 1972 Fossil  <i>Trisulcus</i> Hitchcock, 1865; <i>Unisulcus</i> Hitchcock, 1858 <i>Taenidium</i> Heer, 1877
Roots for trackways		
<i>digitus</i> m., <i>digit-</i> <i>gradus</i> m., <i>grad-</i> <i>manus</i> f., <i>manu-</i> <i>palma</i> f., <i>palm-</i> <i>pes</i> m., <i>ped-</i>  <i>planta</i> f., <i>plant-</i>	digit, finger or toe footstep hand palm (of the hand) foot  sole (of the foot)	<i>Circapalmichnus</i> Gand, 1977; <i>Palmichnus</i> Schmidt, 1959 <i>Bifurculapes</i> Hitchcock, 1858; <i>Hamipes</i> Hitchcock, 1858; <i>Pachypes</i> Leonardi <i>et al.</i> , 1975; <i>Quadropedia</i> Aldrich, 1930
Roots for grazing traces		
<i>pascuum</i> n., <i>pascu-</i> <i>pastus</i> m., <i>pastu-</i>	pasture pasture	pascichnion Seilacher, 1953
Roots for feeding traces		
<i>fodio</i> v., <i>fodi-</i> <i>quarea</i> f., <i>quarei-</i> <i>spica</i> f., <i>spic-</i>	dig (dug = <i>foss-</i> ) quarry (Medieval Latin) ear (of grain); use for "ear-shaped traces"	<i>Fascifodina</i> Osgood, 1970; fodinichnion Seilacher, 1953  <i>Ichnospica</i> Linck, 1949
Roots for traces including a spreite		
<i>folium</i> n., <i>foli-</i> <i>lamina</i> f., <i>lamin-</i> <i>lamna</i> f., <i>lamm-</i>	leaf sheet, thin layer	<i>Laminites</i> Ghent & Henderson, 1966
Roots for farming traces		
<i>hortus</i> m., <i>hort-</i>	garden	
Roots for nesting traces		
<i>nidus</i> m., <i>nid-</i>	nest	



Table 10 continued

Latin word and stem	Selected meanings	Examples
Roots for coprolites		
<i>faex</i> f., <i>faec-</i> <i>stercus</i> n., <i>stercor-</i> <i>fim</i> m., <i>fin-</i> ; <i>fimum</i> n., <i>fin-</i> <i>globus</i> m., <i>glob-</i> <i>glomus</i> n., <i>glomer-</i> <i>pila</i> f., <i>pil-</i> <i>pilula</i> f., <i>pilul-</i>	lees, impure residue (hence faeces in the modern sense) dung dung  ball ball ball pill	
Roots for borings		
<i>foramen</i> n., <i>foramin-</i> <i>foris</i> f., <i>for-</i>  <i>noxa</i> f., <i>nox-</i> <i>rodere</i> v., <i>rod-</i> <i>specus</i> m., f., n., <i>specu-</i> <i>terebra</i> f., <i>terebr-</i> <i>terebro</i> v., <i>terebr-</i>	(bored or pierced) hole door  harm, injury gnaw, erode cave, hole, hollow borer to bore	<i>Conchifora</i> Müller, 1968; <i>Foralites</i> Rouault, 1850; <i>Vermiforichnus</i> Cameron, 1969  <i>Calciroda</i> Mayer, 1952; <i>Filuroda</i> Solle, 1938; <i>Rodocanalis</i> Schloz, 1972 <i>Lapispecus</i> Voigt, 1970; <i>Specus</i> Stephenson, 1952  <i>Terebripora</i> Orbigny, 1842

### Consult a dictionary

Several guides to the construction of new scientific terms are available. The most valuable are *Botanical Latin* (Stearns, 1966) and *Composition of Scientific Words* (Brown, 1956). *Describing Species* (Winston, 1999) is also useful, though it is unreliable with regard to ichnotaxonomic principles. The classical languages, especially Latin, have continued to evolve in scientific usage, particularly for the description of organisms. Botanical Latin is a standardized and flexible mode of communication that was honed over a period of centuries. Linnaeus used it, and botanists still use it.

Beware of “false friends”, words whose meaning has changed over the centuries. *Rarus* is “sparse”, not “rare”; *intricatus* is “entangled”, not “intricate.” In these cases, the meaning has shifted in English while remaining constant in Latin.

### Consult an expert on correct language use

If you know no Latin or Greek, have someone else check your work. A botanist is the preferred choice, because Botanical Latin differs considerably from Classical Latin. The *International Code of Zoological Nomenclature* (ICZN, 1999) has specific recommendations on the transliteration and latinization of Greek roots. It is all too easy to make embarrassing but lasting mistakes, e.g., *Ophiomorpha irregulaire* Frey, Howard and Pryor, 1978 incorrectly used French *irregulaire* instead of Latin *irregularis*, but once published the name could not be changed.

Do not combine unlatinized Greek roots with Latin ones in the same word. While it is not forbidden by the Code, it is in poor taste. If a combination of such roots is desired, the Greek root may be latinized, a practice begun by the Romans themselves.

When combining Latin roots, use the vowel *-i-* to connect them if one is not supplied by the root itself, e.g.,

*Incis-i-fex*. Greek roots should be connected by *-o-*, e.g., *Arthr-o-phycus*, *Collett-o-saurus*.

### Keep the name short

Save those extra syllables for the diagnosis. It is inconsiderate to give an organism a monstrously long name, however appropriate the name may be. There is no need to compress an entire diagnosis into an ichnogenus; an accurate name is good, but a brief name is better. Greek is often more succinct than Latin; compare Greek *ichnos* and Latin *vestigium*, “trace”. A good limit for most words is five syllables (Table 13); Bromley (oral comm., 1998) recommended three including *-ichnus*. Remember that the ichnogenetic name will often be used together with specific names, and if one is very long, the other should be short.

### Use a variety of construction methods

Morphologic and ethologic roots are best, but an occasional exception is good to make names memorable. Names of animals, persons, places, and formations are acceptable, though not ideal. Names can also be constructed from anagrams or random combinations of letters.

### Say the name out loud

It may be that the proposed name is a pun or joke, and not even an intentional or clever one. Aim for euphony; if you cannot pronounce it, it is not a good name.

### Check to see if the name has already been used

In the precybernetic era, this meant a trip to a good reference library for an afternoon with compilations such as the *Treatise on Invertebrate Paleontology*, *Fossilium Catalogus*, *Nomenclator Zoologicus*, and *Zoological Record*. Today, it is more likely to involve searches of online data-

Table 11

Appropriate Greek roots for ichnogenera. Transliteration and latinization are done according to recommendations of the International Code of Zoological Nomenclature (International Commission for Zoological Nomenclature, 1999); either version is acceptable, although Greek and Latin should not be mixed. Latinized Greek roots are treated as if they were Latin; they may be combined with Latin roots. Selected meanings are those that are most appropriate to ichnology.

Abbreviations: m. = masculine noun, f. = feminine noun, n. = neuter noun, v. = verb, a. = adjective.

Greek	Transliterated Greek	Latinized Greek	Selected meanings	Examples
Roots for general use				
αυλός	<i>aulos</i> m., <i>aul-</i>	<i>aulus</i> m., <i>aul-</i>	flute	<i>Aulacophycus</i> Heer, 1877 <i>Aulichnites</i> Fenton & Fenton, 1937a <i>Cymataulus</i> Rindsberg, 1994 <i>Didymaulichnus</i> Young, 1972 <i>Tropidaulus</i> Fenton & Fenton, 1937a
ὄρμος	<i>hormos</i> m., <i>horm-</i>	<i>hormus</i> m., <i>horm-</i>	chain, cord, necklace, collar	<i>Hormosiroidea</i> Schaffer, 1928
ἰχνιον	<i>ichnion</i> n., <i>ichni-</i>	<i>ichnium</i> n., <i>ichni-</i>	little track	See Table 1.
ἰχνιος	<i>ichnos</i> n., <i>ichn-</i>	<i>ichnus</i> m., n., <i>ichn-</i>	trace, track, footprint, spoor	See Table 1.
κυλινδρος	<i>kylindros</i> m., <i>kylindr-</i>	<i>cylindrus</i> m., <i>cylindr-</i>	cylinder	<i>Cylindrichnus</i> Toots in Howard, 1966 <i>Cylindricum</i> Linck, 1949 <i>Kulindrichnus</i> Hallam, 1960
ῥαφίς	<i>rhaphis</i> f., <i>rhaphid-</i>	<i>rhaphis</i> f., <i>rhaphid-</i>	needle	<i>Belorhaphis</i> Fuchs, 1895 <i>Chondrorhaphis</i> Seilacher, 1977 <i>Helicorhaphis</i> Książkiewicz, 1970 <i>Helminthorhaphis</i> Seilacher, 1977
σημα	<i>sema</i> n., <i>semat-</i>	<i>semum</i> n., <i>semat-</i>	sign	
σκάπτω-	<i>skaptein</i> v.	<i>scapt-</i>	dig, hoe	
συριγξ	<i>syrinx</i> f., <i>syring-</i>	<i>syrinx</i> f., <i>syring-</i>	pipe	<i>Syringodendron</i> Fuchs, 1895 <i>Syringomorpha</i> Nathorst, 1886
Roots for resting traces				
ἔδρα	<i>hedra</i> f., <i>hedr-</i>	<i>hedra</i> f., <i>hedr-</i>	seat, abode	
ἔδριον	<i>hedrion</i> n., <i>hedri-</i>	<i>hedrium</i> n., <i>hedri-</i>	little seat	
καλύπτός	<i>kalyptos</i> a., <i>kalypt-</i>	<i>calyptus</i> a., <i>calypt-</i>	covered, hidden	
καλύπτρα	<i>kalyptra</i> f., <i>kalyptr-</i>	<i>calyptra</i> f., <i>calyptr-</i>	covering, veil, lid	
κλίνη	<i>kline</i> f., <i>klin-</i>	<i>clina</i> f., <i>clin-</i>	couch	
κρυπτός	<i>kryptos</i> a., <i>krypt-</i>	<i>cryptus</i> a., <i>crypt-</i>	hidden, secret	cryptobioturbation Howard and Frey, 1975
ὄρυγμα	<i>orygma</i> n., <i>orygmat-</i>	<i>orygma</i> m., f., <i>orygmat-</i>	(dug) pit, hole, trench, tunnel	<i>Diorygma</i> Biernat, 1961
ορύσσω	<i>orysso</i> v., <i>oryss-</i>	<i>oryss-</i> v., <i>oryss-</i>	dig, dig up, dig through, bury	
ορύξις	<i>oryxis</i> f., <i>oryx-</i>	<i>oryxis</i> f., <i>oryx-</i>	digging	
σκαφη	<i>skaphe</i> f., <i>skaph-</i>	<i>scapha</i> f., <i>scaph-</i>	trough, skiff, dugout	
στέγα	<i>stega</i> f., <i>steg-</i>	<i>stega</i> f., <i>steg-</i>	roof, room, shelter	
στιγμα,-ατος	<i>stigma</i> f., <i>stigmat-</i>	<i>stigma</i> m., f., <i>stigmat-</i>	tattoo, brand	
Roots for dwelling traces				
άντρον	<i>antron</i> n., <i>antr-</i>	<i>antrum</i> n., <i>antr-</i>	cave, closet	
καυλός	<i>kaulos</i> m., <i>kaul-</i>	<i>caulus</i> m., <i>caul-</i>	stalk (vertical)	<i>Caulostrepsis</i> Clarke, 1908
δωμα	<i>doma</i> n., <i>dom-</i>	<i>doma</i> f., <i>dom-domus</i> m., <i>domu-</i>	house, room	
χάσμα	<i>hasma</i> n., <i>hasm-</i>	<i>chasma</i> m., f., <i>chasm-</i>	wide opening, gap, yawning chasm	
χάσματιον	<i>hasmation</i> n., <i>hasmati-</i>	<i>chasmatium</i> n., <i>chasmati-</i>	small aperture, vent	
χοανη, χώνη	<i>khoane</i> , <i>khone</i> f., <i>khoan-</i> , <i>khon-</i>	<i>chona</i> f., <i>chon-</i>	funnel	<i>Heliochone</i> Seilacher & Hemleben, 1966
κοιλία	<i>koilia</i> f., <i>koili-</i>	<i>coelia</i> f., <i>coeli-</i>	(body) cavity, guts	
κολεος	<i>koleos</i> n., <i>kole-</i>	<i>coleum</i> n., <i>cole-</i>	sheath, scabbard	
κράτηρ	<i>krater</i> m., <i>krater-</i>	<i>crater</i> m., <i>cratera</i> f., <i>crater-</i>	mixing bowl	
κράτηρία	<i>krateria</i> f., <i>krateri-</i>	<i>crateria</i> f., <i>crateri-</i>	little bowl	<i>Calycraterion</i> Karaszewski, 1971 <i>Diplocraterion</i> Torell, 1870 <i>Lenticraterion</i> Karaszewski, 1971 <i>Monocraterion</i> Torell, 1870

Greek	Transliterated Greek	Latinized Greek	Selected meanings	Examples
οίκος	<i>oikos</i> m., <i>oik-</i>	<i>oecus</i> m., <i>oec-</i>		house, room, home
φωλεός	<i>pholeos</i> m.	<i>pholeus</i>	hole, cave, den	<i>Ctenopholeus</i> Seilacher & Hemleben, 1966 <i>Pholeus</i> Fiege, 1944
φρεαρ	<i>phrear</i> n., <i>phreat-</i>	<i>phrear</i> n., <i>phreat-</i>	well	
πόρος	<i>poros</i> m., <i>por-</i>	<i>porus</i> m., <i>por-</i>	opening, pore	<i>Dictyoporus</i> Mägdefrau, 1937 <i>Spathipora</i> Fischer, 1866 <i>Terebripora</i> Orbigny, 1842
σίφων	<i>siphon</i> m., <i>siph-</i>	<i>siphus</i> , <i>sipho</i> m., <i>siphon-</i>	tube, pipe	<i>Phycosiphon</i> Fischer-Ooster, 1858 <i>Siphodendron</i> Saporta, 1884 <i>Siphonites</i> Saporta, 1872
σκέπας	<i>skepas</i> n., <i>skepa-</i>	<i>scepas</i> m., <i>scep-</i>	covering, shelter	
σκεπτρον	<i>skeptron</i> n., <i>skeptr-</i>	<i>sceptrum</i> n., <i>sceptr-</i>	staff, cane	
σκύφος	<i>skyphos</i> m., <i>skyph-</i>	<i>scyphus</i> m., <i>scyph-</i>	cup, can	
σκυτάαη	<i>skytale</i> f., <i>skytal-</i>	<i>scytala</i> f., <i>scytal-</i>	staff, club, cudgel	
σολήν	<i>solen</i> m., <i>solen-</i>	<i>solen</i> m., <i>solen-</i>	pipe, channel, gutter	
στομα	<i>stoma</i> n., <i>stomat-</i>	<i>stoma</i> m., f., <i>stomat-</i>	mouth	<i>Myzostomites</i> Clarke, 1921
θάλαμος	<i>thamos</i> m., <i>thalam-</i>	<i>thalamus</i> m., <i>thalam-</i>	inner room	<i>Thalamophaga</i> Rhumbler, 1911
θηκη	<i>theke</i> f., <i>thek-</i>	<i>theca</i> f., <i>thec-</i>	box, case, chest	
θολος	<i>tholos</i> f., <i>thol-</i>	<i>tholus</i> m., <i>thol-</i>	round building	
Roots for grazing traces				
χορεία	<i>khoreia</i> f., <i>khore-</i>	<i>choria</i> , <i>chorea</i> f., <i>chori-</i> , <i>chore-</i>	round dance	
νομή	<i>nome</i> f., <i>nom-</i>	<i>noma</i> f., <i>nom-</i>	pasture (food)	
		<i>nomas</i> f., <i>nomad-</i>	pasturing, hence nomad	
νομός	<i>nomos</i> m., <i>nom-</i>	<i>nomus</i> m., <i>nom-</i>	pasture (place)	
Roots for feeding traces				
δειπνον	<i>deipnon</i> n., <i>deipn-</i>	<i>dipnum</i> n., <i>dipn-</i>	dinner, meal, food	
ορυκτός	<i>oryktos</i> a., <i>orykt-</i>	<i>oryctus</i> a., <i>oryct-</i>	dug, dug up, dug out	
φαγειν	<i>phagein</i> v., <i>phag-</i>	<i>phageo</i> v., <i>phag-</i>	eat	<i>Phagophytichnus</i> van Ameron, 1966
ῥαβδος	<i>rhabdos</i> f., <i>rhabd-</i>	<i>rhabdus</i> m., <i>rhabd-</i>	rod, stick, wand	<i>Rhabdoglyphus</i> Vassoevich, 1951
ῥαβδίον	<i>rhabdion</i> n., <i>rhabdi-</i>	<i>rhabdium</i> n., <i>rhabdi-</i>	little rod	
ῥόπαλον	<i>rhopalon</i> n., <i>rhopal-</i>	<i>rhopalum</i> n., <i>rhopal-</i>	club (heavy stick)	<i>Ropalonaria</i> Ulrich, 1879
στάχυς	<i>stakhys</i> m., <i>stakh-</i>	<i>stachys</i> m., <i>stach-</i>	ear (of grain; to be used for "ear-shaped traces")	
Roots for traces having a spreite				
έλυτρον	<i>elytron</i> n., <i>elytr-</i>	<i>elytrum</i> n., <i>elytr-</i>	(rolled) sheath	
φύλλον	<i>phyllon</i> n., <i>phyll-</i>	<i>phyllum</i> n., <i>phyll-</i>	leaf	<i>Gyrophyllites</i> Glocker, 1841
συρμός	<i>syrmos</i> m., <i>surm-</i>	<i>syrmus</i> m., <i>surm-</i>	any sweeping motion, e.g., a snake trail	
Roots for locomotion traces in general				
δρόμος	<i>dromos</i> m., <i>drom-</i>	<i>dromus</i> m., <i>drom-</i>	(running) course	<i>Helicodromites</i> Berger, 1957
ὁδός	<i>hodos</i> f., <i>hod-</i>	<i>hodus</i> m., <i>hod-</i>	road, way	
ὁλκός	<i>holkos</i> f., <i>holc-</i>	<i>holcus</i> m., <i>holc-</i>	furrow, hence trace	
κινέω	<i>kinein</i> v., <i>kine-</i>	<i>cineo</i> , <i>cine-</i>	move, set into motion	
κίνημα	<i>kinema</i> n., <i>kinemat-</i>	<i>cinemum</i> n., <i>cinemat-</i>	movement	
όγμος	<i>ogmos</i> m., <i>ogm-</i>	<i>ogmus</i> m., <i>ogm-</i>	furrow	<i>Plagiogmus</i> Roedel, 1929
συρμή	<i>syrme</i> f., <i>surm-</i>	<i>syrma</i> f., <i>surm-</i>	snake trail	
τριβος	<i>tribos</i> f., <i>trib-</i>	<i>tribus</i> m., <i>trib-</i>	worn path	
τριμμός	<i>trimmos</i> m., <i>trimm-</i>	<i>trimmus</i> m., <i>trimm-</i>	worn track	

Greek	Transliterated Greek	Latinized Greek	Selected meanings	Examples
Roots for trackways				
δακτύλος	<i>daktylos m., daktyl-</i>	<i>dactylus m., dactyl-</i>	finger, toe	<i>Dactyloidiscus</i> Ślaczka, 1965 <i>Dactyloidites</i> Hall, 1886 <i>Dactylophycus</i> Miller & Dyer, 1878b <i>Harpedactylopus</i> Hitchcock, 1858 <i>Peratodactylopus</i> Sarjeant & Mossman, 1978 <i>Rotodactylus</i> Peabody, 1948
χείρ	<i>kheir f., kheir-</i>	<i>chir f., chir-</i>	hand	<i>Chirotherium</i> Kaup, 1835
πεδίον	<i>pedion n., pedi-</i>	<i>pedium n., pedi-</i>	metatarsus	<i>Quadropedia</i> Aldrich, 1930
πέλμα	<i>pelma n., pelmat-</i>	<i>pelma n., pelmat-</i>	sole (of the foot)	
πέζα	<i>peza f., pez-</i>	<i>peza f., pez-</i>	foot, instep	<i>Copeza</i> Hitchcock, 1858 <i>Sphaeropezium</i> King, 1845 <i>Xiphopezia</i> Hitchcock, 1848
φάλαγξ	<i>phalanx f., phalang-</i>	<i>phalanx f., phalang-</i>	finger bone, toe bone	<i>Phalangichnus</i> Schmidt, 1959
ποδίον	<i>podion n., podi-</i>	<i>podium n., podi-</i>	little foot	<i>Crossopodia</i> M' Coy, 1851
πούς	<i>pous m., pod-</i>	<i>pus m., pod-</i>	foot	<i>Agialopous</i> Branson & Mehl, 1933 <i>Diplopodichnus</i> Brady, 1947 <i>Harpepus</i> Hitchcock, 1865 <i>Octopodichnus</i> Gilmore, 1927 <i>Podichnus</i> Bromley & Surlyk, 1973 <i>Sauropus</i> Lea, 1849
πτερνίς	<i>pternis f., pternid-</i>	<i>pterna f., pternid-</i>	base (of a dish)	
στίβος	<i>stibos m., stib-</i>	<i>stibus m., stib-</i>	footprint, trackway, path	
ταρσός	<i>tarsos m., tars-</i>	<i>tarsus m., tars-</i>	flat basket or mat, hence flat of the foot (between toes and heel)	
θέναρ	<i>thenar m., thenat-</i>	<i>thenar m., thenat-</i>	palm (of the hand)	<i>Thenaropus</i> King, 1846
Roots for farming traces (Graphoglyptids)				
βαλλίζω	<i>ballizo v., balliz-</i>	<i>ballizo v., balliz-</i>	to dance, jump about	
βιβασίς	<i>bibasis f., bibas-</i>	<i>bibasis f., bibas-</i>	Spartan dance	
χορός	<i>choros m., khor-</i>	<i>chorus m., chor-</i>	circle dance	
δεσμός	<i>desmos m., desm-</i>	<i>desmus m., desm-</i>	band (for fastening)	<i>Desmograpton</i> Fuchs, 1895 <i>Spirodesmos</i> Andrée, 1920
δίκτηον	<i>diktyon n.</i>	<i>dictyum n., dicty-</i>	net	<i>Dictyodora</i> Weiss, 1884 <i>Dictyoporus</i> Mägdefrau, 1937 <i>Glenodictyum</i> Marck, 1863 <i>Irredictyon</i> Vyalov, 1972 <i>Paleodictyon</i> Meneghini in Murchison, 1850 <i>Ramidictyon</i> Seilacher, 1977 <i>Squamodictyon</i> Vyalov and Golev, 1960
γλφή	<i>glyphe f., glyph-</i>	<i>glypha f., glyph-</i>	carving, a cut hole	bioglyph Vassoevich, 1953 <i>Fustiglyphus</i> Vyalov, 1971 <i>Petaloglyphus</i> Vyalov, Gorbach & Dobrovolska, 1964 <i>Rhabdoglyphus</i> Vassoevich, 1951 <i>Stelloglyphus</i> Vyalov, 1964 vermiglyph Fuchs, 1895 cf. graphoglyptid Seilacher, 1977
γραφή	<i>graphe f., graph-</i>	<i>grapha f., graph-</i>	writing	graphoglyptid Seilacher, 1977 <i>Lithographus</i> Hitchcock, 1858
γραπτός	<i>graptos a., grapt-</i>	<i>graptus a., grapt-</i>	written, engraved	<i>Desmograpton</i> Fuchs, 1895 <i>Megagrapton</i> Książkiewicz, 1968
χόρτος	<i>khortos m., khort-</i>	<i>chortus m., chort-</i>	grass, feeding lot	<i>Gyrochorte</i> Heer, 1865
κόρδαξ	<i>kordax n., kordak-</i>	<i>cordax m., f., cordac-</i>	lively comic dance	
μογγάς	<i>mongas n., mongad-</i>	<i>mongas m., f., mongad-</i>	wild dance	
μόνιμος	<i>monimos m., monim-</i>	<i>monimus m., monim-</i>	stable (for animals)	
ορχησις	<i>orkhesis f., orkhes-</i>	<i>orchesis f., orches-</i>	dancing, the dance	
ορχήστus	<i>orkhestes m., orkhest-</i>	<i>orchestus m., orchest-</i>	dancing, the dance	

Greek	Transliterated Greek	Latinized Greek	Selected meanings	Examples
Roots for farming traces				
ορσίτης	<i>orsites m., orsit-</i>	<i>orsitus m., orsit-</i>	Cretan dance	
ῥαφίς	<i>rhaphe f., rhaph-</i>	<i>rhapha f., rhaph-</i>	seam	<i>Acanthorhaphe</i> Książkiewicz, 1970 <i>Belorhaphe</i> Fuchs, 1895 <i>Cosmorhaphe</i> Fuchs, 1895 <i>Helicorhaphe</i> Książkiewicz, 1970 <i>Spirorhaphe</i> Fuchs, 1895 <i>Strobilorhaphe</i> Książkiewicz, 1968
σκαίρω	<i>skairo v., skair-</i>	<i>scaero v., scaer-</i>	to dance, skip, caper	
Roots for coprolites				
κοπρία	<i>kopria f., kopri-</i>	<i>copria f., copri-</i>	dunghill	
κόπρος	<i>kopros f., kopr-</i>	<i>coper, coprus m., coper-, copr-</i>	dung	coprolite Buckland, 1829 <i>Coprolithus</i> Paréjas, 1948 <i>Coprulus</i> Richter and Richter, 1939 <i>Prethocoprolithus</i> Elliott, 1962 <i>Scolecocoprus</i> Brady, 1947 <i>Syncoprulus</i> Richter and Richter, 1939
πάλλα	<i>palla f., pall-</i>	<i>palla f., pall-</i>	ball	
σκωρ	<i>skor n., skat-</i>	<i>scor n., scat-</i>	dung	scatology
Roots for borings and other bioerosion structures				
βλάβη	<i>blabe f., blab-</i>	<i>blaba f., blab-</i>	harm, damage	<i>Ostreoblabe</i> Voigt, 1965
νύξις	<i>nyxis f., nyx-</i>	<i>nyxis f., nyx-</i>	pricking, stabbing	
νύγμυή	<i>nygme f.</i>	<i>nygma f.</i>	pricking sensation, dot	<i>Nygmites</i> Mägdefrau, 1937
σαλπινγίς	<i>salpinx f., salping-</i>	<i>salpinx f., salping-</i>	trumpet	
θυρίς	<i>thyris f., thyrid-</i>	<i>thyris f., thyrid-</i>	small door, window	
τρεμα	<i>trema n., tremat-</i>	<i>trema m., f., tremat-</i>	hole, orifice (rubbed)	<i>Conchotrema</i> Teichert, 1945
τρησις	<i>tresis f., tres-</i>	<i>tresis f., tres-</i>	perforation (pierced)	
τρόγλη	<i>trogla f., trogl-</i>	<i>trogla f., trogl-</i>	hole (gnawed), mousehole	
τρύπαω	<i>trypan v., trypp-</i>	<i>trypo v., trypp-</i>	bore, pierce	<i>Trypanites</i> Mägdefrau, 1932
τρύπημα	<i>trypima n., trypimat-</i>	<i>trypima m., f., trypimat-</i>	hole (bored)	

bases including the *Zoological Record*, Google Scholar, and PaleoDatabase. Bear in mind that these are incomplete; if you select a name based on a single Greek or Latin word, or even an obvious combination of two classical roots, it is rather likely to be unoriginal. Early names, names published in obscure works, and names published in works written in non-European languages are frequently overlooked in databases.

And finally,

### Use your imagination!

### Acknowledgements

I am grateful to Richard G. Bromley, who hosted the First Workshop on Ichnotaxonomy at Limensgåde Mill (Åkirkeby, Bornholm, Denmark), where I delivered the first version of this paper as a talk in 1998. I thank the Editor, Alfred Uchman, for encouraging me to write a piece for this issue even though I was unable to attend the One Ichnology conference in 2014. Lothar H. Vallon kindly arranged to have Häntzschel's copy of Jardine's (1853) *Ichnology of Annandale* scanned at the Universität Hamburg. I also thank Max Wisshak (Senckenberg Research Institute, Frankfurt am Main) and Dirk Knaust (Statoil ASA, Stavanger) for thoughtful and thorough reviews, though it should not be assumed that they share all of the views expressed here.

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**Table 12**

The length of ichnogenic names expressed as number of syllables. How long is too long?

Number of syllables	Examples of ichnogenera
2	<i>Fraena</i> Rouault, 1850
	<i>Specus</i> Stephenson, 1952
	<i>Stichus</i> Etheridge, 1904
	<i>Truncus</i> Fritsch, 1908
3	<i>Chondrites</i> Sternberg, 1833
	<i>Eubrontes</i> Hitchcock, 1845
	<i>Gordia</i> Emmons, 1844
	<i>Oichnus</i> Bromley, 1981
	<i>Skolithos</i> Haldeman, 1840
	<i>Tisoa</i> Serres, 1840
4	<i>Arthropycus</i> Hall, 1852
	<i>Belorhaphé</i> Fuchs, 1895
	<i>Chelonipus</i> Rühle v. Lilienstern, 1939
	<i>Nereites</i> MacLeay, 1839
	<i>Otozoum</i> Hitchcock, 1847
	<i>Planolites</i> Nicholson, 1873
5	<i>Asterosoma</i> Otto, 1854
	<i>Buchholzbrunnichnus</i> Germs, 1973
	<i>Circapalmichnus</i> Gand, 1977
	<i>Didymaulichnus</i> Young, 1972
	<i>Ophiomorpha</i> Lundgren, 1891
	<i>Taphrelminthopsis</i> Sacco, 1888
6	<i>Arenicolites</i> Salter, 1857
	<i>Diplocraterion</i> Torell, 1870
	<i>Jeholosauripes</i> Yabe, Inai & Shikama, 1940
	<i>Spirocormorhaphé</i> Seilacher, 1989
	<i>Steigerwaldichnum</i> Kuhn, 1937
	<i>Tyrannosauropus</i> Haubold, 1971
7	<i>Alcyonidiopsis</i> Massalongo, 1856
	<i>Parahaentschelina</i> Chamberlain, 1971
	<i>Peratodactylopus</i> Sarjeant & Mossman, 1978
	<i>Protovirgularia</i> M'Coy, 1850
	<i>Pseudopolydorites</i> Głazek, Marcinowski & Wierzbowski, 1971
	<i>Punctatumvestigium</i> Butts, 1891

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