

THE DEVONIAN/CARBONIFEROUS (D/C) CONODONT DATABASE:  
ANSWER TO A MICROPALAEONTOLOGIST'S DREAM

SANDBERG\*, Charles A., Geologist Emeritus; and CHARPENTIER, Ronald R.,  
Geologist; U.S. Geological Survey, Box 25046, MS 940, Federal Center,  
Denver, CO 80225-0046, U.S.A.

Made publicly available by open file in 1992, the relational D/C Conodont Database, version 1.0, provides a program usable by conodont workers and adaptable by other paleontologists. It is extremely user friendly, intuitive, and rapid, running by 4th Dimension software on personal computers, such as 1988 or newer Macintoshes. From a six-page entry form, the database prepares separate sample, location, and species files. Conodont zones, biofacies, color alteration indexes (CAI), and dozens of other variables can be entered and retrieved. The database enables easy maintenance of records of sample preparation procedures and rapid location of individual specimens and SEM photomicrographs. Additionally, it permits preparation of range charts, biofacies analyses of single samples or entire collections, analyses of most common faunal associates, fossil identification reports, and personalized reports.

The conodont program has been operated for five years to build a database now comprising 700 collections, containing 12,000 species entries, from 260 localities. The database structure occupies about 350 k and the records, about 5.5 MB on a hard drive. Now in version 1.1, the structure is programmed for all standard conodont zones, biofacies, and published taxa between the late Silurian and early Pennsylvanian. Modifications are permitted in all categories. This database has been operated rapidly and efficiently on a Macintosh SE computer, with only 20 MHz speed, 4 MB of built-in memory, and an additional 4 MB of virtual memory.

The operational database has been used in preparation of four published reports and several talks on the Devonian and Mississippian of North America and Europe for dating and analyzing the biofacies of large groups of conodont collections and for providing input data for tabulation and other calculations. In only a few minutes, it can select and combine hundreds of collections, containing tens of thousands of conodonts assigned to hundreds of taxa. From these large sets, it can perform laborious calculations to provide several types of formatted reports, for example: (1) consolidated taxon tabulations by genera, species, and subspecies; (2) ordered lists of most common taxa, giving the number of collections in which they occur and their percentages of total faunas; and (3) ordered lists of the most common associates of a selected taxon, giving the number of samples and faunal percentages of each associated taxon. In calculating biofacies, the database can be used to test multiple working scenarios by selecting and re-calculating data sets based on changed criteria.

In personal use, the D/C Conodont Database has proven to be an indispensable tool that has annually saved hundreds of man-hours. It is employed daily to locate collections and individual specimens comparable to those under study, to input collections for future study, and to produce formal fossil reports for other scientists. The operational database has exhibited: (1) ease of use by novice operators, (2) extreme flexibility in selectively grouping collections by multiple criteria, and (3) rapid performance of otherwise time-consuming calculations.

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