Specimen Databases and the Lack of Standard Nomenclature: a Proposal for North American Insects

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Clearly one of the major problems facing databasing of entomological collections is the lack of basic taxonomic catalogs to standardize nomenclature. Some specimen databasing projects can be delayed until taxonomic databases are completed, but many specimen databasing projects are already underway and cannot wait. This is especially a problem for state surveys based at institutions that do not have comprehensive libraries. For example, how many state surveys know that a world catalog of histerid beetles published in Poland in 1984 changed the generic placements of many North American species? We will handicap entomology for years to come if we do not address this problem immediately. Clearly, we cannot revise all taxa within a reasonable period of years, but we can make the current status of knowledge readily available to all who need it.

After discussions with many entomologists during and after the Entomology Collections Network

Preliminary list of lists of North American insect taxa

Order	Contact Person or Publication	Current?	Electronic?	No. of species
Protura				20
Collembola	Christiansen & Bellinger 1980-81	Mostly	No	700
Diplura	Reddell 1983 (part)	Yes	No?	64
Microcoryphia	Mendes 1990 (part)	Yes	No	35
Thysanura	Wygodzinsky 1961 (part)		No	30
Ephemeroptera	Edmunds et al. 1976	Mostly	No	555
	McCafferty unpubl.	Yes?	Yes?	
Odonata	Bridges 1991	Yes	Yes	415
Grylloblattaria	Rentz 1982	Yes	No	13
Phasmida		-		31
Orthoptera (s.s.)				1800
Mantodea				20
Blattaria	Atkinson et al. 1991	Yes	?	66
Isoptera	Nickle & Collins unpubl..	Yes	Yes	41
Dermaptera	Hoffman 1987	Yes	No	23
Embiidina	Ross 1984	Yes	No	13
Plecoptera	Stark et al. unpubl.	Yes	Yes	578
Zoraptera				2
Psocoptera	Smithers 1967	No	No	257
Phthiraptera	Hellenthal unpubl.	Yes	Yes	776
Hemiptera	Henry & Froeschner 1988	Yes	Yes	3834
Homoptera				6970
Thysanoptera				700
Neuroptera (s.l.)	Penny unpubl.	Yes	Yes	376
Coleoptera	USDA catalogs (part),	Yes	Yes	23640
	Arnett 1983	Partly	?	
	O'Brien & Wibmer 1982 (weevils)		?	
Strepsiptera	Kinzelbach 1971	Yes	No	109
Mecoptera	Penny & Byers 1979	Yes	?	75
Siphonaptera	Lewis unpubl.	Yes	Yes	258
Diptera	Thompson unpubl.	Yes	Yes	19562
Trichoptera	Morse unpubl.	Yes	Yes	1340
Lepidoptera	Hodges et al. 1983 (update underway)	Yes	Yes	11300
Hymenoptera	Krombein et al. 1979, McGinley et al. updating	Yes	Yes	17429

Names from Borror et al., 1989. Numbers of valid described species from Kosztarab & Schaefer, 1990.

(ECN) and Entomological Society of America meetings in December 1990, I have come to the conclusion that more-or-less complete taxonomic catalogs exist in some form for most taxa of North American insects. Most of these are even in some kind of electronic storage. Many of them are not generally available and some are not quite complete, but these problems can be solved with relatively small amounts of funding.

I have appended a draft list of taxonomic catalogs that I know exist. See Preliminary list of lists of North American insect taxa on preceeding page. There must be more that I have not listed (especially unpublished databases maintained by individuals). The largest gap is Coleoptera. Yet, using the published and manuscript USDA fascicles, specialist files, and Arnett's "colored checklists" as a base, even the Coleoptera could be completed to a reasonable level in a few years. The table shows that other than beetles, there are 67,328 known North American insect species, and more-or-less current lists exist in electronic form for 55,984 or 83%! The table indicates that much more information actually exists than is commonly thought ... the problem is availability!

Therefore, I propose that a working group be formed within ECN to (1) collect all the available taxonomic catalogs of North American insects into a master database; (2) organize specialists to fill the important gaps in coverage; (3) compile a summary list of North American insects from the database; and (4) distribute this both as hardcopy and on disk. This list could be as simple as a checklist with valid names, authors, years, and synonyms. The process could be facilitated by making draft lists available on Internet, as is now being done in a similar exercise by botanists. Specialists could develop more detailed catalogues if desired, but the important task of creating a list of valid names need not be delayed with additional details.

The center of operations of this group would have to be at a major institution with appropriate computer and library resources. The lead organizer of the project would have to have access to appropriate computer resources. But contributing specialists could be anywhere, and this will be an opportunity for many small institutions to make major contributions. After the database was completed, perhaps some agency could take on the task of maintaining it and incorporating subsequent literature.

The project would require some funding, but I suspect not that much compared to the combined resources that will go into databases of specimens over the next few years. It seems to me like an excellent project for the National Science Foundation Biological Research Resources program to support. Besides filling basic functional needs of insect collections, the project would fill vital needs of applied users of insect names (e.g., agriculture, forestry, fisheries, conservation, ecology, etc.).