Ecology 101

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The topic of authorship of publications has always been delicate and sometimes problematic. In the "old days," professors didn't say much to students about authorship because a question about authorship usually never came up until one had received a graduate degree and been on the job for a year or two. However, discussions about authorship are not just for post-graduates, graduates, and undergraduates any more. Authorship has become a problem even for high school students presenting and publishing scientific work.

The following article by Carlos Galindo-Leal, Center for Conservation Biology, Stanford University, suggests a two-stage process of deciding assignment of authorship.-Ed.

Table 1. Research activities and scoring system (modified from Hunt 1991). If the required score for authorship is 25%, in this example the supervisor would not achieve it.

Research activities	Contribution	%	Student	Supervisor
Planning	No	0		
	Minor	5		5
	Moderate	10	10	
	Major	20		
Executing	No	0		
	Minor	5		5
	Moderate	10		
	Major	20	20	
Analyzing	No	0		0
	Minor	5		
	Moderate	10		
	Major	20	20	
Interpreting	No	0		
	Minor	5		5
	Moderate	10		
	Major	20	20	
Writing	No	0		
	Minor	5		5
	Moderate	10		
	Major	20	20	
Total		100	90	20

EXPLICIT AUTHORSHIP

Scientific publications are the principal means to assess researchers. They are used to decide between competing researchers for grants, jobs, and promotions, especially tenure. CVs are scrutinized not only for the quantity and quality of scientific papers, but for the number of single- and first-authored papers. Although many formal aspects of the assessment of scientific activity, such as the peer review system, have been in place for a long time, policy on authorship in scientific publications remains extremely loose, informal, and idiosyncratic. This aspect is particularly important to relations between graduate students, post-doctoral fellows, and their supervisors (Altmann 1994). Supervisors differ widely in their policies regarding co-authorship, and in many, if not most cases, there is no stated policy. Everyone is familiar with cases in which one party has perceived (or received) an unfair deal, and resentments developed because of lack of communication (Broad and Wade 1982, Altmann 1994, 1995). Graduate student courses do not deal with this topic. At the end of the 2-6 years or more of graduate student life, many graduate students end up confused about the handling of authorship. Should their supervisors co-author their thesis publications? How many publications should be shared? What should the authorship order be?

Hunt (199 1) proposed a system to decide the order of authors according to their participation in different stages of the research process. He divided research activities into different categories. Every category is weighted according to the degree of involvement, from 0 to 20-25%. Full involvement in every aspect results in a 100% score. Anyone achieving a total of 25 points in this co-authorship scoring system shares authorship, and the order is decided according to the total scores obtained. Although Hunt's scoring system was intended to rank collaboration among researchers, adaptations of his scheme could be used to clearly define the rights and obligations of graduate students

and their supervisors. The number of categories and their relative values may differ according to the discipline. Table 1 shows a simplification of Hunt's scheme.

I would like to suggest a two-stage process based on this system. (1) Before the student begins his or her research, both parties should write a letter of understanding describing their roles and responsibilities, including co-authorships. This pre-research agreement could follow Hunt's scheme to score the commitment of both parties, and could be reviewed periodically to refresh both parties about their commitment. (2) Once the research has ended, both parties should review the agreement to evaluate the actual involvement (and possibly to adjust the earlier score).

In some cases authorship is granted only on the basis of providing funding. While some supervisors provide funding along with intellectual support, others do not provide the latter. Although funding is no doubt a necessary condition for research, most researchers would agree that funding alone should not guarantee co-authorship (Altmann 1994). Funding individuals as well as agencies should be recognized in the acknowledgments.

The issue of authorship is by no means trivial. Regardless of the content, a written agreement should help to clear up many issues. Individuals as well as research institutions should adopt clear policies regarding authorship (Huth 1993). I believe that a process like the one depicted here would help to clearly define the roles, commitments, and expectations of graduate students and their supervisors, avoiding misunderstandings and resentments (Altmann 1995).

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