



Ethical Conduct for Research

A Code of Scientific Ethics *SRS-4251*

The USDA Forest Service recently developed and adopted a code of ethical conduct for scientific research and development. The code addresses issues related to research misconduct, such as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research or in reporting research results, as well as issues related to professional misconduct, such as authorship practices, conflict of interest, and responsible treatment of data and resources. The adoption of a code of scientific ethics is expected to foster fairness, accuracy, and integrity in the conduct and reporting of scientific research within the agency.

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Within the Forest Service, as in many other research organizations, there has been a general awareness of scientific ethics but no formal policy or guidelines that encouraged ethical practices. There were no formal guidelines to help identify unethical practices that threatened fairness, accuracy, and integrity in the conduct of science, nor was there any special process for handling allegations of research misconduct within the organization. To fill this void, the Forest Service completed the development of a code of ethical conduct for scientific research and development. The code was adopted by the Forest Service research organization at the end of 1999. The agency is expected to issue a formal policy regarding its use later in 2000.

The Code of Scientific Ethics for Forest Service Research and Development applies specifically to the conduct of scientific investigation and reporting. The code is intended to provide consistent guidance to all individuals who participate in agency-sponsored research and development. The Forest Service code was developed by a team of scientists and professionals from within the Forest Service research organization over a three-year period and relies heavily on the code adopted by the USDA Agricultural Research Service (Agricultural Research Service 1999).

The Need for a Code

The authors believe that in general, Forest Service research scientists understand science ethics and behave in accordance with the generally accepted principles of ethical conduct in science (National Academy of Sciences 1995; Sigma Xi 1999). Scientific misconduct is rare within the agency, but it does occur.

Science ethics has not been a major emphasis area in science education programs. By the completion of postsec-

ondary training, students are usually aware that plagiarism is unacceptable. Students taking technical training are generally warned that falsification or fabrication of data is unacceptable as well. Some university students receive some formal training in scientific ethics. However, university courses on the subject are usually limited to appropriate authorship practices and actions that benefit the individual at the expense of the client, generally termed "conflicts of interest" (Resnick 1998).

Because the national forests provide multiple public benefits, scientists from many different fields work within the Forest Service Research and Development organization. Many of the professional societies representing those fields have published codes of ethics, but the codes vary appreciably among disciplines and frequently emphasize ethical conduct in fee-for-service activities rather than in the conduct of science.

Given that not all students receive formal training in scientific ethics, that professional organizations do not emphasize scientific ethics, and that professional society codes are inconsistent across disciplines, it is imperative that government agencies have guidelines on the ethical conduct of science. Moreover, the new government-wide policy on research misconduct (Office of Science and Technology Policy 1999) requires agencies to formally describe expected ethical conduct for research scientists and those who support, manage, and cooperate with agency scientists.

The code adopted by the USDA Forest Service Research and Development organization (see sidebar, p. 33) provides the necessary guidelines, and its adoption is expected to foster fairness, accuracy, and integrity in the conduct and reporting of scientific research within the agency.

Forest Service Research and Development Code of Scientific Ethics

- I dedicate myself to the pursuit, promotion, and advancement of scientific truth.
- I will conduct, manage, judge, and report scientific research honestly, thoroughly, and without conflict of interest.
- I will prevent abuse of all resources entrusted to me and endeavor to treat human and animal subjects humanely, following established guidelines where they are available.
- I will not willfully hinder the research of others nor engage in dishonesty, fraud, deceit, misrepresentation, or other professional misconduct.
- I will welcome constructive criticism of my personal scientific research and offer the same to my colleagues in a manner that fosters mutual respect amid objective scientific debate.
- I will recognize past and present contributors to my research and will neither accept nor assume unauthorized and unwarranted credit for another's accomplishments.
- will claim authorship for a research product only if I am willing to be held responsible for both the interpretation of the data and the conclusions as presented.
- will claim authorship for a research product only if I have made a major intellectual contribution (as part of conception, design, data collection, data analysis, or interpretation) and made significant contributions to its preparation (write, review, or edit).
- I will not publish or use original ideas, research data, or unpublished findings of others without written approval.
- I will refrain from duplicative publication of the same research findings as original.
- I will show appropriate diligence toward preserving and maintaining resources such as data records that are entrusted to me.

What It Covers

The Forest Service Research and Development Code of Scientific Ethics goes beyond research misconduct as defined by the interagency Research Integrity Panel (Office of Science and Technology Policy 1999), whose definition of research misconduct is limited to fabrication, falsification, or plagiarism in proposing, performing, or reviewing research or in reporting research results. Issues related to professional misconduct (such as authorship practices, conflict of interest, and responsible treatment of data and resources) as well as research misconduct are considered in the Forest Service code.

The code applies primarily to research scientists within the Forest Service, but all Forest Service employees who participate in the oversight, conduct, and support of research and development in the agency will be aware of the code and be expected to abide by it. The code also applies to individuals who participate as scientists in the agency's mission, including scientists outside of the agency when they conduct work funded by the Forest Service.

Alleged Infractions

Federal guidelines and an administrative process already exist for handling allegations of misconduct by federal employees. The administrative investigative process typically begins with the naming of an investigator, who conducts an inquiry, investigation, and analysis of the situation. The investigator then provides recommendations to a line officer who has authority to decide on an appropriate discipline, which ranges from letter of reprimand to suspensions to removal, depending on the seriousness of the offense. A disciplinary guide is available to help determine the appropriate action.

Rather than creating a separate process for science misconduct, the

Forest Service approach to handling allegations of scientific misconduct adds an ethics panel to the established administrative process. The ethics panel consists of Forest Service researchers and technical staff, and the investigator consults with this panel during inquiry, investigation, and analysis. All existing employees' rights to confidentiality, appeal rights, and grievance procedures will be protected by using existing administrative processes for handling alleged violations of scientific ethics. No sanctions or disciplinary actions were developed for specific breaches of scientific ethics. The existing range of penalties in the agency's disciplinary guide apply, but the ethics panel may suggest and the deciding official may pursue alternative sanctions as appropriate.

Literature Cited

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