

Mid-career graduate students in ecology



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A subset of prospective students in ecology is now enrolling into graduate programs after being in the workforce for one to two decades, but the size of the older student demographic is hidden, partly because graduate student age data are not analyzed in depth (NSB 2008). At the University of Washington's College of Forest Resources, 56% of the graduate students pursuing ecological tracks from 2003–2007 were ≥ 30 years old. Perhaps because of the challenges of graduate study and the ticking clock, it might seem that older students would stop at the master's degree level. However, 55% of doctoral recipients in ecological fields from 2003–2007 at our college were ≥ 35 years old. During the same period, 47% of graduate students enrolled in ecological tracks at Oregon State University's College of Forestry were ≥ 30 years old, and 58% of doctoral recipients were ≥ 35 years old. Here, we discuss characteristics of mid-career ecology graduate students, differences in their educational needs, strengths they bring to ecology programs, and strategies for integrating mid-career students with their traditional student colleagues.

Mid-career graduate student background. The academic, personal, and financial challenges to students resuming their education have been characterized at the undergraduate level (eg Hammer *et al.* 1998), and approximate the situations of mid-career graduate students (defined as ≥ 30 years old and having worked full time for ≥ 5 years). Older students are more likely to have married and to have children; their children also tend to be relatively older. The needs of their partners and dependents often add constraints to the geography, methodology, timing, and fields of study selected by such students (Hammer *et al.* 1998). Earning a doctorate in ecology generally takes 5 or more years of post-baccalaureate education. In contrast to programs in computer science, engineering, or business, few ecology programs offer part-time graduate tracks. Although some employers (eg the US Departments of Interior and Agriculture) support their employees while they continue their education, the typical path to a graduate degree in ecology is through full-time enrollment. For mid-career students, this often forces a complete break from their previous jobs. Many are worried about leaving full-time employment (with its attendant remuneration, benefits, and social standing) and adopting a graduate student lifestyle.

Needs of mid-career students. Graduate students of various ages have different motivations, learning methods, and outside constraints (Lynch and Bishop-Clark 1998), and successfully integrating graduate studies requires some under-

standing of those differences. The most important consideration for mid-career ecology graduate students is finding an advisor who can guide their education. Mid-career students need advisors willing to mentor older students (Rose 2005) and who can form cohesive, age-diverse lab groups. Because leaving a previous career is difficult, mid-career students need some reassurance that the challenges to resuming their education are not insurmountable. Professors and academic advisors can communicate past successes to prospective applicants, so that nontraditional students feel they will be joining a welcoming and productive environment.

Mid-career students' delayed start or continuation in science demands more effort to reach a professional level of skill, and may require more initial emphasis on courses and field familiarization than on research. Students transitioning from other disciplines need accelerated introductions to the history, methods, and practitioners of ecology. Therefore, mid-career students generally require more classwork than their comparatively up-to-date colleagues. And although some mid-career students have extensive field experience, those making a career change often need to acquire foundational field skills. The lifestyles of younger students often permit them to take field research positions, allowing them to develop expertise in experimental design, field sampling, and logistics. Although mid-career students eventually need to attain the same level of scholarship as that of any ecologist, the relative developmental emphasis is different; in addition to extra coursework, mid-career students need to actively seek advice from their younger colleagues and to have an advisor sensitive to their circumstances.

Strengths of mid-career students. Harnessing the previous experiences of students studying ecology in their 30s, 40s, or even 50s can increase the interdisciplinary capabilities of the ecological community. Nontraditional students may have knowledge of a broader range of analytical techniques to help solve research questions, particularly if their work experience has been outside of the natural sciences. Having refined their communication skills in diverse settings, older students can help their younger counterparts reach broader audiences with their writing and presentations. These students may also be more experienced in offering comprehensive, sensitive, and constructive criticism, and may set good examples for efficient time management. Their years of employment endow them with "people skills" and organizational abilities that make them a reliable resource for lab groups and for departments. Being exposed to the diverse professional backgrounds of mid-career students can help traditional students garner useful information about navigating through the professional world. Younger colleagues appreciate the insight of these alternative and perhaps unconsidered perspectives on corporations, organizations, government, finance, and relationships that come from life experience.

Strategies for success. Mid-career students need to become socialized in the graduate school environment to fully participate in the common purpose of scholarship (Grim 2008). For mid-career graduate students, networking with faculty and field-experienced student colleagues shortens the time to degree completion through speedier refinement of initial research ideas; productivity is also increased by comprehensive understanding of successful (and unsuccessful) research methodologies. Managing advisor expectations is equally important for mid-career students: they should keep their advisors focused on the mutual goals of graduation, production of peer-reviewed publications, and preparation for post-graduation professional life. Conversely, mid-career students already understand working environments, so advisors can, and should, promote regular progress and adherence to deadlines. Advisors can encourage their mid-career students by acknowledging both their experience and life challenges. Even more importantly, advisors can motivate their graduate students (traditional or mid-career) by inviting their joint

participation in the daily affairs of ecology – collaboration on manuscripts, group trips to conferences, and promotion of students' work throughout the ecological community.

Our experience with an age-diverse research group has been overwhelmingly positive (see also Gaetjens 1997). We find that mixing traditional students and mid-career re-entrants improves productivity and leads to rewarding interpersonal relationships (WebFigure 1). Faculty advisors provide the necessary leadership when they cultivate a collaborative work ethic and foster an environment where traditional and mid-career students facilitate each other's development as scholars. Ultimately, colleagues promote the synergies arising from an age-diverse research group by having all group members share their perspectives, experiences, and insights with mutual respect.

■ Acknowledgements

See WebPanel 1.

Faculty response



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I have mentored more than 45 graduate students over the past 35 years, including five students (three of them mid-career) who are currently members of my lab group. Several decades ago, the majority of graduate students joined my lab group within a few years of receiving their bachelor's degree. The mid-career students that have begun enrolling during the past few years clearly bring some different perspectives and challenges.

Highly developed skills – including advanced technical knowledge – and well-developed work habits are among the contributions that mid-career students bring to their classes, laboratory groups, and research. My cadre of grad students now includes people with expertise in physics and electrical engineering, development and operation of successful businesses, graphic arts, and high levels of experience in quantitative and reductionist analysis. These skills and expertise are freely shared with classmates and lab mates.

Another characteristic of the mid-career student is that they have very definite ideas about what they want to do and what knowledge sets and skills they will need to achieve their goals. This makes them a well-focused group of students who do not require a great deal of direction and encouragement. On the other hand, it also means that they are generally not as malleable as the younger graduate students and, in a few cases, may be resistant to direction or advice. In effect, they are more selective about the advice that they receive from their adviser. They are certainly less

inclined to tolerate arbitrary requirements and what they view as unnecessary institutional barriers to their programs!

Without question, I find the mid-career students to be a net asset to my lab group, teaching programs, and personal research program. The age- and experience-diverse group generates important synergies and certainly benefits the younger students. With their more extensive life experiences, older students provide additional mentoring for traditional students. Personally, I have found their participation to be energizing, challenging, and educational.

For the ecological profession as a whole, I think that the mid-career professionals bring novel perspectives, skills, and practical experience. This can be of immense value, particularly given the unprecedented challenges that the profession is facing in the 21st century. Any profession tends to be self-selected for a particular set of values and experiences, and ecology is no different. Encouraging these mid-career individuals to join the ecological sciences with their different value sets, histories, and experiences will substantially enrich our profession.

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WebPanel 1.

For funding, we thank NSF IGERT Multinational Challenges to the Environment (0333408), NASA (NNX07AN75H), the University of Washington Top Scholar Award, the Byron and Alice Lockwood Fellowship, the Seattle ARCS Foundation (Burdette & John McClelland Fellowship), the Wind River Canopy Crane Research Facility, JF Franklin, CB Halpern, and GA Bradley. We also thank MM Trudeau and CW Torset for data, as well as TB Time for conference facilities.



WebFigure 1. The age-diverse research lab at Sequoia National Monument. From left to right: AJ Larson, JA Freund, JF Franklin, RK Hagemann, and JA Lutz (not shown: VR Kane).