WANTED: Female Role Models

SURVEY HIGHLIGHTS PROMINENT WOMEN IN WILDLIFE

By Kerry Nicholson

Credit: Byron R. Buckley

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In December 2008 President-elect Barack Obama selected Jane Lubchenco to lead the National Oceanic and Atmospheric Administration (NOAA), the first woman to hold that post. I was heartened by the news of a woman taking such a prominent scientific role. In fact, I've been thinking about the scarcity of women leaders in the wildlife profession since late 2007, when my graduate advisor asked me to discuss the issue for an undergraduate class I was helping teach. That classroom discussion sparked my interest, and I began to do some research to learn more about female leaders in the wildlife profession.

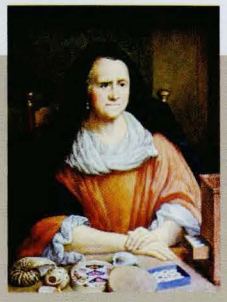
Like many scientific fields, wildlife management and research has long been dominated by men. Historically, fieldwork was stigmatized as unladylike. In an 1871 essay in the *Atlantic Monthly*, for example, naturalist Wilson Flagg wrote: "Women cannot conveniently become hunters or anglers, nor can they without some eccentricity of conduct follow birds and quadrupeds to the woods...the only part of natural history which they can pursue out of doors is the study of plants." Early female naturalists did venture outdoors, however, and laid the groundwork for future contributions. Botany and entomology were the first of the natural sciences considered suitable for women (Kaufman *et al.* 1996, Alic 1986). Acceptance into the ornithological field in the late 1800s followed, as bird-watching was a common hobby of the female aristocracy in Europe (Ainley 1987). Still, early female contributors did not usually pursue original research, and often worked alongside their husbands (Rudolph 1982, 1990).

Women wildlifers have made great strides since wildlife management emerged as a unique field in the 1930s. Their recognition and numbers, however, remain relatively scant. In the 59 years since the Aldo Leopold Award was first presented, wildlife toxicologist Lucille Stickel is the only woman who has received it. (Aldo Leopold's wife also was presented with the award, but in honor of her late husband.) Wildlife biologist Diana Hallett remains the sole woman to have served as president of TWS, leading in 2001-2002. Only 18 percent of the 11,363 TWS journal articles published from 1937 to 2006 have had female lead authors or contributors (Nicholson *et al.* 2008), and today women make up only a quarter of TWS's membership.

The Leopold Standard

To select women who are strong role models in wildlife, I developed what I call the "Leopold standard," which sets the bar for achievement (Nicholson *et al.* 2008). All wildlife professionals are well familiar with Aldo Leopold's contributions as a pioneer in the field of natural resource management. He was a leader who transformed the profession by formalizing theories and practices, initiating and influencing organizations, and advising political decision makers. I wanted to find women who had been overlooked by history but who essentially met this standard as scientists of integrity, dedicated to the stewardship of wildlife and ecosystems. Several early pioneers stood out. Among them:

- German naturalist and scientific illustrator Anna Maria Sibylla Merian (1647-1717) had a



Anna Maria Sibylla Merian

Martha Maxwell

Ellen Swallow Richards

Florence Augusta Merriam Bailey

Mardy Murie with Olaf Murie

fascination for caterpillars and butterflies, an interest that was rare among 17th-century scientists. Merian's meticulous observations and illustrations of the metamorphosis of butterflies earned her the reputation as the mother of entomology.

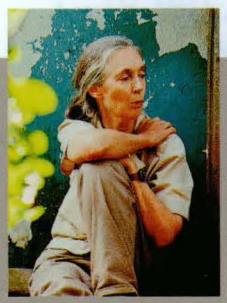
- Colorado naturalist Martha Maxwell (1831-1881) became the first woman to hunt for, prepare, and mount her own wildlife specimens, thus contributing to the development of taxidermy and museum displays. At the Philadelphia Centennial in 1876, Maxwell exhibited a life-like diorama of her mounts titled "Woman's Work."
- Chemist and botanist Rachel Littler Bodley (1831-1888) taught natural history at the Cincinnati Female Seminary, published an acclaimed work on botany, and in 1865 became the first female professor of chemistry at Woman's Medical College in Philadelphia, where she later served as dean. Her work in chemistry contributed to the founding of the American Chemical Society, of which she became a charter member in 1876.
- Ellen Swallow Richards (1842-1911) was the foremost female industrial and environmental chemist in the United States in her day. In 1873 she became the first woman to earn a degree in chemistry from the Massachusetts Institute of Technology, and later created and taught the first ecology curriculum at MIT (Clarke 1973).
- Ornithologist Florence Augusta Merriam Bailey (1863-1948) devoted her life to studying and writing about birds and their protection. Named the first female fellow of the American Ornithologists' Union in 1931, Bailey published scores of articles and ten books, the last of which, about birds of the Grand Canyon, was published by the National Park Service in 1939.
- Botanist Mary Katharine Layne Curran Brandegee (1867-1949) became curator of botany at the California Academy of Sciences in 1883. More than 74 eponyms of plants honor Brandegee, referring to her maiden name of Layne, her first married name of Curran, or her second married name of Brandegee (Frazier and Allred 2000).

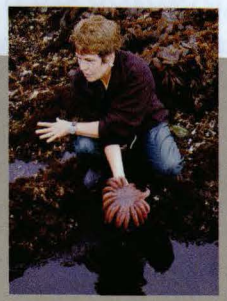
These women were all exceptional in their time, but I wanted to find women who have made broader contributions to wildlife science through research, writings, political involvement, and leadership. In search of ideas, I sent an online survey to members of TWS, the Ecological Society of America (ESA), and the School of Natural Resources (SNR) at the University of Arizona, asking participants to identify women who have had a significant impact on wildlife practices through contributions approaching those of Aldo Leopold's. The survey elicited 358 responses: 178 from ESA, 150 from TWS, and 30 from SNR. These came from all around the world including China, Russia, Vietnam, Uruguay, Kenya, Portugal, and the United States From these responses and informal discussions on the subject, I identified 42 women who approach the Leopold standard in their contributions (see table online for full list). Most are familiar names, and with good reason. Among them:

Margaret Thomas "Mardy" Murie (1902-2003). Often called the grandmother of the conservation movement, Murie is perhaps known best for her work in the 1950s campaigning to protect 8,000,000 acres of Alaskan wilderness in what is now the Arctic National Wildlife Refuge (ANWR). Murie was the first woman to graduate from the Alaska Agricultural College and School of Mines (now the University of Alaska Fairbanks), earning a degree in business administration. An author and philosopher (e.g. *Two in the Far North*, *Island Between*, and *Wapiti Wilderness*), she received the Audubon Medal in 1980, the John Muir Award in 1983, the Robert Marshall Conservation Award in 1986, and the Presidential Medal of Freedom in 1998. In 2002 at the age of 100 she received the J.N. Ding Darling Conservationist of the Year Award, the National Wildlife Federation's highest honor.


Rachel Carson


Dian Fossey


Jane Goodall


Jane Lubchenco

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Rachel Carson (1907-1964). Carson earned the most accolades, with 120 survey respondents naming her, and many arguing that her contributions to wildlife biology and ecology met or even surpassed those of Leopold. In 1936 Carson began her career as a writer and editor in the U.S. Fish and Wildlife Service and eventually became editor-in-chief of all the agency's publications. Over the years she wrote many papers and books on conservation and natural resources, including a prize-winning study of the ocean, *The Sea Around Us*, in 1952. In 1962 Carson published *Silent Spring* in which she challenged the practices of agricultural sciences and called for a change in the way humans viewed the natural world. Carson's book brought environmental concerns to the fore. Her work forced scientists and the general public alike to acknowledge the damage humans can cause and to reach beyond the proximate to realize the ultimate impacts of our decisions.

Frances Hamerstrom (1907-1998). A student and protégé of Aldo Leopold, Hamerstrom in 1940 became the first woman to receive a master's degree in wildlife management. During her 60-year career, she wrote 12 books and published more than 150 papers. An ornithologist, she specialized in studies of prairie chickens and birds of prey. Described by Leopold as independent and determined, Hamerstrom was one of the first women to "crash the barrier into the all-male wildlife research profession," according to the late Ray Anderson, a former professor at the University of Wisconsin at Stevens Point (Burkhart 1998).

Dian Fossey (1932-1985). Fossey graduated from San Jose State College in 1954 as an occupational therapist. In 1966, a trip to Africa and a chance meeting with Louis Leakey led her to carry out research on mountain gorillas in the Democratic Republic of Congo (then Zaire) and then in Rwanda. In 1967 she founded the Karisoke Research Center and in January of 1970, a feature about her in *National Geographic* magazine brought massive publicity to her cause. Wiping away the Hollywood "King Kong" stereotype of gorillas, Fossey's work, including her popular book, *Gorillas in the Mist*, helped convince the public that gorillas were worth saving. Fossey was a conservationist opposed to removal of individuals for zoo displays, and supported anti-poaching efforts and preservation of natural habitat. She was tragically murdered in 1985 at her research camp in Rwanda's Virunga Mountains.

Jane Goodall (1934-). Dubbed a Messenger of Peace by the United Nations, Goodall is best known for her 45 years of studying chimpanzees. She has received over 80 awards and honors for her environmental and humanitarian work, including 29 honorary degrees. In 1960 the 26-year-old Goodall was encouraged by Louis Leakey to study wild chimpanzees in Tanzania. Her research upended the paradigm that humans were the only toolmakers in the animal kingdom. Eventually chimpanzees and gorillas were classified as hominids due to her work. Later, she founded the Jane Goodall Institute to increase environmental awareness. Goodall also began the grassroots- and youth-driven group Roots & Shoots to foster respect and compassion for living things and to promote humane treatment of animals around the world.

Jane Lubchenco (1947-). A teacher, researcher, mentor, and now the new head of NOAA, Lubchenco has led a life of service. She has been the Wayne and Gladys Valley professor of marine biology and a distinguished professor of zoology at Oregon State University, as well as president of the International Council for Science, the American Association for the Advancement of Science, and the Ecological Society of America. She was appointed by President Clinton to serve on the National Science Board, where she advised the president, Congress, and the National Science Foundation from 1996 to 2006.

Continuing the Legacy

All of the women described above and many others have left their mark on the wildlife profession. Some would argue that none of these, however, has influenced the field of wildlife management as significantly as Leopold. There are many reasons why, ranging from women's belated entry into the formal study of the natural world, the newness of the wildlife field itself, or lingering discrimination against women in science or in jobs requiring outdoor work. Perhaps the answer is as simple as every field can have only one founder.

The future holds great promise for women in wildlife professions. Several women cited in my survey are still at work, influencing the wildlife profession on policy, academic, and management fronts. Other up-and-coming female wildlife students and young professionals will have even greater opportunities to influence wildlife management in an increasingly complex world. While there may be room for only one founder of our profession, the combined contributions of thousands will lead the way for the future. To Leopold, whether a wildlife professional was male or female was unimportant; rather it was "enthusiasm, dedication, and a certain indefinite quality that made a person a *wildlifer*" (Meine 1988). ■

For complete references, the names of all 42 women cited in Nicholson's survey, and a video on their contributions to the wildlife profession, see this article online at *www.wildlife.org*.

Vol. 3 No. 1 Spring 2009

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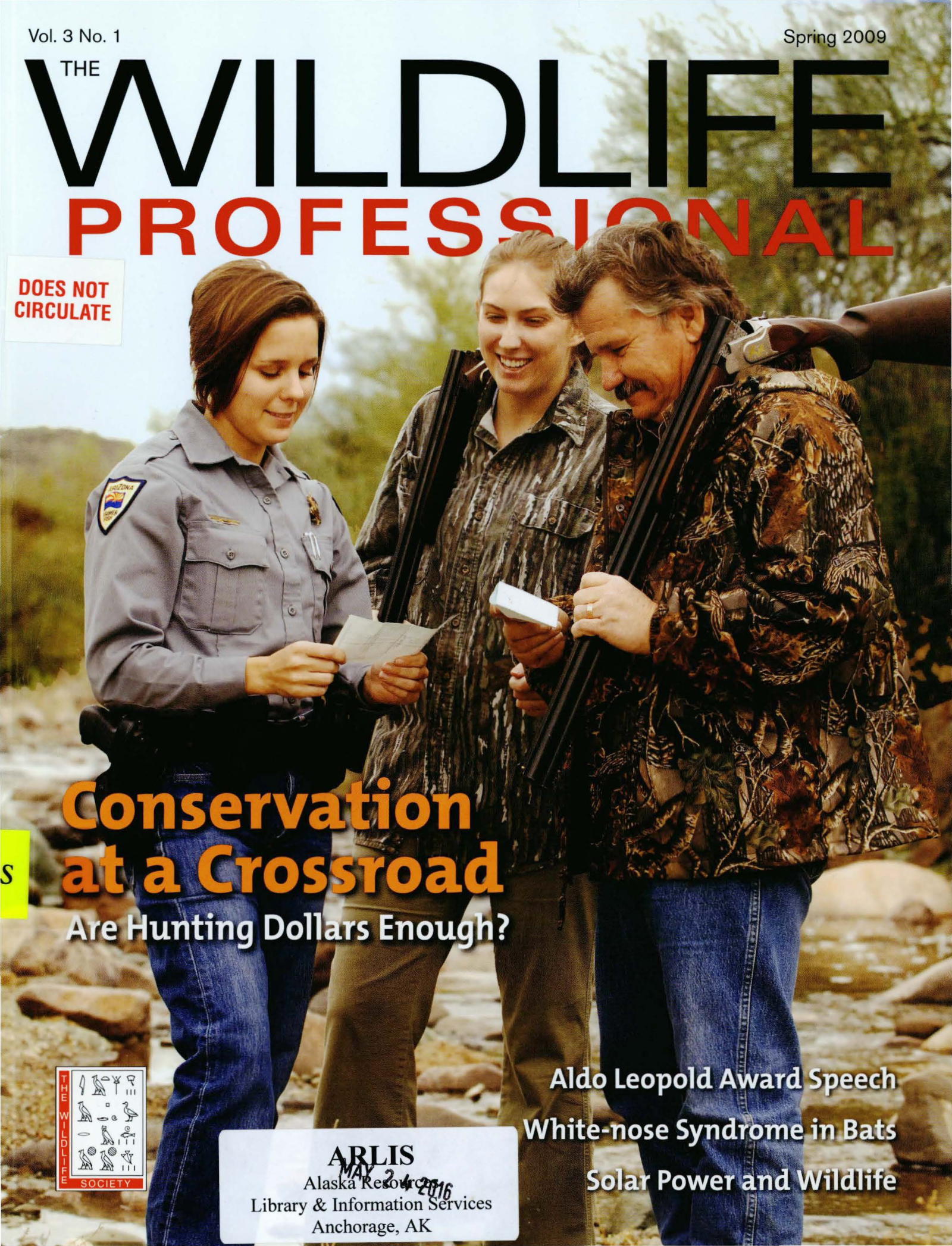

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