

THE NEW YORK BOTANICAL GARDEN

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Decades-Long Project Documenting the Plants of the Ecologically Critical U.S. Intermountain West Concludes With Final Volume of Landmark Series

With Detailed Entries on Nearly 4,000 Species, *Intermountain Flora* Provides Invaluable Information to Help Conserve the Western Region's Remarkably Diverse Plant Life



Loose-leaf wild buckwheat (*Eriogonum brevicaulum* var. *laxifolium*), one of 611 species included in the newest volume of *Intermountain Flora*, shown here growing on Hidden Peak, part of the Wasatch Range in northern Utah. Photo by Gerard van Buiten

Completing a monumental project that traces its origins back to the 1930s, The New York Botanical Garden Press has published the final volume of *Intermountain Flora*, which documents in extensive detail the plant life found between the Sierra Nevada and Rocky Mountains in the American West. Previous volumes in the series have become indispensable references for the preservation of natural resources and wilderness areas in this botanically important region, and the high scholarly standards maintained throughout the series have placed it in the forefront of works of its type.

Superbly illustrated with precise line drawings of every species in the book, the new volume covers 611 species in a wide range of plant families, from water lilies to cacti. Among the well-known or typical plants and trees of the region included in this 732-page volume are buttercups, delphiniums, amaranths, poppies, oaks, birches, and dozens of species of wild buckwheat. The eight volumes of the series total 3,868 pages and include descriptions of 3,847 species.

Botanical Garden scientists Noel H. Holmgren, Ph.D., and Patricia K. Holmgren, Ph.D., and James L. Reveal, Ph.D., of Cornell University and the University of Maryland, are the principal authors.

“*Intermountain Flora* is arguably the most scholarly flora ever published,” said James S. Miller, Ph.D., the Garden’s Dean and Vice President for Science. “It has fundamentally transformed our understanding of the plant diversity of the Intermountain region and provided raw material for making sound conservation decisions.”

The Intermountain Region’s Diverse Plant Life Faces Many Environmental Challenges

Covering an area the size of Texas, the Intermountain region encompasses all or parts of seven states—all of Utah, major parts of Nevada and Idaho, and parts of Oregon, California, Arizona, and Wyoming. Included in this self-contained area are the Great Basin, the Snake River Plain, and a considerable part of the Colorado Plateau. With its isolated mountain ranges and many unusual soil types, the magnificent Intermountain region is home to a vast diversity of plant life, including a profusion of highly localized species that occur nowhere else.

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The region's ecosystem, however, has suffered from overgrazing by cattle and sheep, poorly planned mining, and other development pressures. As a result, more than 500 species of plants in Utah are considered at risk of extinction, as are more than 460 in Nevada. Only in California, Hawaii, and Arizona are larger numbers of species at risk, an indicator of the critical ecological condition of the Intermountain region and the importance of the *Intermountain Flora* project in documenting its plant diversity.

"The problem of invasives is pretty bad," said Dr. Noel Holmgren, noting the spread of cheatgrass, a weed that is displacing the region's characteristic sagebrush and other native shrubs and grasses. "Overgrazing has been a big factor in the spread of invasives, but also the popularity of all-terrain vehicles, which tear up the ground."

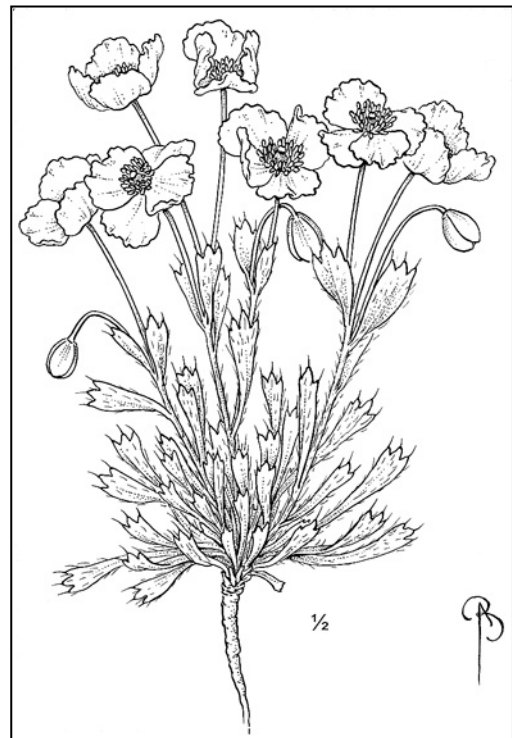
A Wealth of Information and Precise Illustrations for Every Species

As in previous volumes, the final installment of *Intermountain Flora* contains an almost unbelievable amount of plant information. Each species receives a detailed botanical description, including common names and varieties, with information about where a species is found, relevant specimens in U.S. and foreign plant research collections, and keys for identifying every species. Entries also provide information about how the plants are used, potential dangers from poisonous plants, and whether a species is of conservation concern.

The volume's botanical illustrations include not only a drawing of each plant but also, in most cases, drawings of certain features such as petals or a seed to help identify a species. Although many artists have contributed to the series, award-winning botanical illustrator Bobbi Angell receives special recognition in the acknowledgments for illustrations that "give vivid life to the text and markedly increase the usefulness of *Intermountain Flora*."

In addition to scientists who study the Intermountain West, the series has won followers among land-use managers, civil engineers, conservation officials, nature lovers, and others.

"Previous volumes of *Intermountain Flora* have helped wilderness and parks officials to become more familiar with the land that they steward," said Joy E. Runyon, Managing Editor of NYBG Press. "They have a fuller sense of the biodiversity of that land, the health of that land, and the interesting features of that land. For other readers, the series offers the satisfaction of being more connected to the natural world and having a better understanding of what they see."



An illustration from *Intermountain Flora* of the endangered dwarf bear-poppy (*Arctomecon humilis*), which is found only in southwestern Utah in gypsum-rich soils. Detail of a drawing by Bobbi Angell

Remarkable Intergenerational Links Connect *Intermountain Flora* Scientists

The history of the *Intermountain Flora* project is a story that not only spans decades of painstaking research but also unites several generations of scientists, including a teacher and his students, a father and a son, and a husband and a wife. Botanist Bassett Maguire first proposed a comprehensive study of the plant life of the Intermountain West in the late 1930s when he was a professor at Utah State University. Maguire brought the project with him when he joined the Garden in 1943.

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One of his earliest collaborators was Arthur H. Holmgren, a student of his who succeeded him at Utah State. Arthur Cronquist, another of Maguire's students, took Maguire's place on the project at the Garden as Maguire turned his attention to tropical exploration. Noel H. Holmgren, Arthur's son, and James L. Reveal joined the project in the early 1960s when Reveal was a student of Arthur Holmgren's at Utah State and Noel was a student of Cronquist's at the Garden. After the first volume in the series was published in 1972, Noel's wife, Patricia, joined the group of authors in 1977.

With the passage of time, the scientific team leading the *Intermountain Flora* project changed. Cronquist and Arthur Holmgren died in 1992. Dr. Reveal withdrew from the project to concentrate on his specialty, the genus *Eriogonum* (his treatment of the plant family that includes this vast genus is part of the final volume). Noel and Patricia Holmgren, however, have remained dedicated to seeing the series through to the end.

Although the new volume completes the treatment of the plants of the region, the Holmgrens are not quite finished with the project. They have already begun work on a supplement, which will include keys to all of the Intermountain plant families, a cumulative index for all eight volumes, a short history of the project, and photographs of many of those who made their field collections available for study.

"A project like this could only be undertaken at a major botanical institution that has the most comprehensive collection of relevant plant specimens in the world, an outstanding botanical library, and an administration that is willing to support a long-term project like this," Dr. Patricia Holmgren said.

Holmgrens Honored with Prestigious Award as They Complete *Intermountain Flora*



Drs. Noel H. and Patricia K. Holmgren of The New York Botanical Garden, at the head of Long Canyon in Big Flat, Utah. Photo by Tori Butt

As the final *Intermountain Flora* volume went to press, the Holmgrens' scientific accomplishments were recognized by the American Society of Plant Taxonomists, which awarded them the 2012 Asa Gray Award for outstanding lifetime achievement. The award is named for the most important American botanist of the 19th century.

In addition to the Holmgrens' work on *Intermountain Flora*, the Society cited them for their long stewardship of the *Index Herbariorum*, a comprehensive listing of the world's approximately 3,400 herbaria (plant research collections) and the roughly 10,000 curators who run them. The Holmgrens co-edited the *Index* for many years, seeing it through several print editions and then creating an [online database](#).

Apart from their work together, each has also had a distinguished individual career. Dr. Patricia Holmgren, who received her Ph.D. from the University of Washington, was the head of the Garden's William and Lynda Steere Herbarium—the largest herbarium in the Western Hemisphere, with more than 7 million plant specimens—for 33 years. Dr. Noel Holmgren, who received his Ph.D. from Columbia University, is widely regarded as a world expert on Indian paintbrushes and beard-tongues (the plant genera *Castilleja* and *Penstemon*, respectively) and also compiled the widely used *Illustrated Companion to Gleason and Cronquist's Manual of Vascular Plants*, which provides botanical line drawings for the species described in the manual.

The Holmgrens, who hold emeriti positions at the Garden, divide their time between homes in the New York area and Utah.

About The New York Botanical Garden Press

Since 1896 The New York Botanical Garden Press (nybgpress.org) has been publishing books and journals based on original research by plant scientists from around the world. Its mission is to put information in the hands of those engaged in exploring, understanding, and conserving plants and fungi. Areas of focus include floristics, systematics, economic botany, ecology, evolution, and ethnobotany. A growing list of books for general readers includes field guides and botanical history.

Ordering Information: *Intermountain Flora, Volume 2, Part A: Subclasses Magnoliidae–Caryophyllideae* (\$150 hardcover) is available exclusively through NYBG Press, as is the complete eight-book series (\$520). For ordering information, call 718.817.8721 or go to nybgpress.org

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The New York Botanical Garden is a museum of plants located at Bronx River Parkway (Exit 7W) and Fordham Road. It is easy to reach by Metro-North Railroad or subway. The Garden is open year-round, Tuesday through Sunday and Monday federal holidays, from 10 a.m. to 6 p.m. The best way to enjoy the Garden is with the *All-Garden Pass*, which includes admission to the grounds as well as to seasonal gardens, exhibitions, and attractions such as the Enid A. Haupt Conservatory, Everett Children's Adventure Garden, and Tram Tour. For ticket pricing, please check our Web site. For more information, please call 718.817.8700 or visit nybg.org

The New York Botanical Garden, 2900 Southern Boulevard, Bronx, New York 10458

The New York Botanical Garden is located on property owned in full by the City of New York, and its operation is made possible in part by public funds provided through the New York City Department of Cultural Affairs. A portion of the Garden's general operating funds is provided by The New York City Council and The New York State Office of Parks, Recreation and Historic Preservation. The Bronx Borough President and Bronx elected representatives in the City Council and State Legislature provide leadership funding.

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