

THE JEPSON GLOBE

A Newsletter from the *Friends of The Jepson Herbarium*

September 2004

Director's Column: Graduate Student Research by Brent D. Mishler

One of the most important roles of a university-associated herbarium is to foster the research of graduate students. The University and Jepson Herbaria have developed an increasingly broad and interactive group of graduate students over the last decade. They span an incredible array of topics and approaches; we are very proud of them all. Several Ph.D. students have graduated recently and are off to promising starts in their careers (including Raymund Chan, John McMurray, Staci Markos, Terry O'Brien, Patricia Sanchez, Lisa Shultheis, and Dennis Wall). I'll let the current group of students tell you about themselves in their own words:

Kirsten Fisher

Because they have little economic value to humans, and are therefore unlikely subjects for anthropogenic dispersal, mosses provide an excellent system for investigating natural dispersal patterns and diversification processes across oceanic islands. My dissertation research has focused on the systematics and biogeography of a small clade of mosses, *Leucophanella*, that occur throughout the Paleotropics. Until recently, this group of mosses was recognized as a single polymorphic species, *Syrrihopodon involutus*; however, phylogenetic analyses of morphologi-

Special Feature: 2004 Botanical Expedition To Iran by Fosiee Tahbaz



The flora of Iran is very diverse: with over 8,000 species (450 endemics), it is richer in vascular plants than Central Europe. Climatically and physiographically, the Iranian deserts and mountains are very reminiscent of the Great Basin and Mojave Desert of North America. In 1998, I accordingly suggested to the President of Iran that a visit to Iran by US botanists might be a fruitful starting point for restoration of scientific and social relationships between Iran and the United States. The suggestion was accepted!

In 1999, I and Dr. Barbara Ertter (a research botanist at UC Berkeley with special expertise in the flora of western North America) realized the first of these visits, full of excitement and uncertain anticipation. In a second visit in 2002, we were accompanied by

two bryologists: Dr. Brent Mishler, professor and Director of the University and Jepson Herbaria; and Dr. Dan Norris, Emeritus Professor at Humboldt State University. On this second trip, we undertook extended field trips in various regions of Iran and collected numerous specimens. We visited several universities, met botanical colleagues and their stu-

dents, and presented lectures (Jepson Globe 10[3], 1999, and 14[1], 2002).

Funding for these expeditions to Iran and follow-up visits to Berkeley by two Iranian scholars was from the National Geographic Society. For a third NGS-funded expedition, a team of botanists representing a diversity of institutions around the United States gathered to undertake a comprehensive collection of Iranian plants and to further advance scientific relationships with their Iranian colleagues. Fortunately, the Dean of the Science College of the University of Tehran, Dr. Hassan Ebrahim-Zadeh, a friend and classmate of mine from 1959, graciously offered his institution as our host for this expedition. Dr. Ahmed Ghahreman, Professor of Botany of the Science College and Director of the Herbarium, who is

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Above: Tahbaz with U.S. and Iranian botanists in the Bakhtyari region.

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my old friend and colleague, also agreed to help ensure the success of this expedition.

The International Relationship Office of the University of Tehran provided all the supporting correspondence necessary for visa applications. The Office of Interests Section of the Islamic Republic of Iran (housed in the Pakistan Embassy in Washington, D.C.) facilitated the granting of visas for all expeditioners. The chancellor of Uromieh University, Dr. Gudarz Sadeghi-Hashjin; the Director of International Relations Offices of the University of Guilan, Professor Dr. Masoud Vahabi Moghaddam; and the Chair of the Biology Department of Esfahan University, Dr. Jamal Moshtaghian, all welcomed collaboration. Their warm acceptance of our program was the best news that the expedition could receive. My contacts to establish scientific relationship with these universities began in 1999, and I was very happy and appreciative to see the results of my efforts approaching reality. I was also in contact for many months with Assistant Professor Dr. Shahin Zaree, an energetic young botanist of the Sciences College, to coordinate plans for this expedition. I am grateful to him and to his colleague, Assistant Professor Dr. Farideh Attar, for their efforts on behalf of this expedition.

On May 12, 2004, I left the States three days early to check out and confirm one more time the details of the expedition's schedules that were initiated and planned several years previously. The other participants of this expedition were Drs. Ihsan Al-Shehbaz, Head of the Department of Asian Botany, Missouri Botanic Garden; Kelly Steele, Associate Professor of Arizona State University East; Travis Columbus, Associate Professor at Rancho Santa Ana Botanic Garden; David Charlet, Professor of Community College of Southern Nevada; William Shepard, Professor Emeritus and Research Associate entomologist; and

Barbara Ertter, Research Botanist from the University and Jepson Herbaria. The team of US scientists met each other at Frankfurt airport in Germany before proceeding to Iran. At 1:00 AM on May 17, 2004, after their very long flight (24 hours from Berkeley!), the group of six enthusiastic US biologists were welcomed at the Mehrabad airport by myself and Dr. Zaree. After some welcome sleep in the guesthouse of the University of Tehran (our base camp for the coming three weeks), the US team spent their first day visiting Golestan Palace (Palace of Flowers), the oldest historic monument of Tehran that belongs to a group of royal buildings (1502-1979), and the famous Tehran Bazar, where they had a traditional meal called Chelo Kabab. This day was a relaxing and attitude-adjusting preparation for our heavy and full botanical schedule that was to follow.

Our formal schedule began on the second day, starting with a meeting to discuss our goals with Drs. Ghahreman, Zaree, and Attar, at the University of Tehran's Central Herbarium (TUH in Index Herbariorum). These last two young botanists accompanied the expeditioners on most of the field trips, handled the assembling of field equipment, helped press specimens, and most important, provided identifications and shipment of all collected specimens. After an introduction by Dr. Huri Sepehri, Chairwoman of the Biology Department, the expeditioners were welcomed by the Dean of Sciences College, Dr. Ebrahim-Zadeh. Drs. Al-Shehbaz, Ertter, and Charlet then gave talks and answered a series of insightful questions from an attentive audience. The afternoon and evening were spent in the herbarium identifying specimens and reviewing Iranian manuscripts intended for publication in US scientific journals.

Next day at the Agriculture College in Karaj, the group met Dr. Alireza Talaii, Dean of the Agriculture College. Dr. Ali Vezvaei and Eng. Marzieh Mahdavian, our hosts at Karaj,

THE JEPSON HERBARIUM PROJECTS & RESOURCES

The Jepson Flora Project

Second Edition of *The Jepson Manual*
Online Interchange for Advances in
California Floristics
Jepson Desert Manual
Online Horticultural Database
Electronic Publication of Jepson's
A Flora of California

Publications & Research Projects

Constancea: University of California
electronic publications in botany
*Tarweeds & Silverswords: Evolution of
the Madiinae*
DeCew's Guide to the Seaweeds
Flora of Mount Diablo
Unravelling the dynamics of mating-system
evolution in tribe Collinsieae
Building the Tree of Life -- A National
Resource for Phyloinformatics and
Computational Phylogenetics
Deep Green Plant Phylogenetics: Novel
Analytical Methods for Scaling Data from
Genomics to Morphology
Beyond "Deep Green": Towards an Integra-
tion of Plant Phylogenetics and Plant
Genomics
Demography and Germination Ecology of
the Endangered Santa Cruz Tarplant
Sierra Nevada Plants Project

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roots of other plants. Parasitic plants represent interesting models to study molecular evolution because their evolutionary history may be linked to that of the host species, or genes may be transferred from the host plant to the parasite. Currently, I am building a phylogeny of the entire genus of about 25 taxa, using the nuclear rDNA gene ITS, and am pursuing the use of additional nuclear and chloroplast genes. I have already done extensive collecting in Hawaii and plan to collect in Australia, the South Pacific, and India. With my resulting phylogeny, I hope to address several questions, such as where and when the genus diverged, the biogeographic patterns across the Pacific, host-specificity, and evolution of polyploidy, among others. In addition, I will use the phylogeny to make any appropriate changes to the classification of the group, and identify populations for conservation.

Iran Expedition, continued from page 2.

graciously provided all necessary arrangements for this visit. After presentations by Drs. Al-Shehbaz, Columbus, and Steele, we visited the Agriculture College Herbarium (KAR, the oldest in Iran), the Botanical Garden, and Zoology Museum. A convivial reception given by Mrs. Eng. Marzieh Mahdavian at her home with a delicious Iranian meal concluded the day. Eng. Mahdavian had been our guest at UC-Berkeley the previous September, while Dr. Vezvaei had recently spent most of a year on sabbatical at UC-Davis.

Field expeditions began the next day, starting with a full day's drive to the historical city of Esfahan-the former capital of Iran, with a magnificent central square, mosques, palaces, bridges and garden that has been designated by UNESCO as a World Heritage Site. Between Tehran and Esfahan, we stopped at eleven collecting sites, including the dried bed of Qom Lake. We also visited the city of Ghamsar and saw its renowned technology for the distillation of rose water from *Rosa*

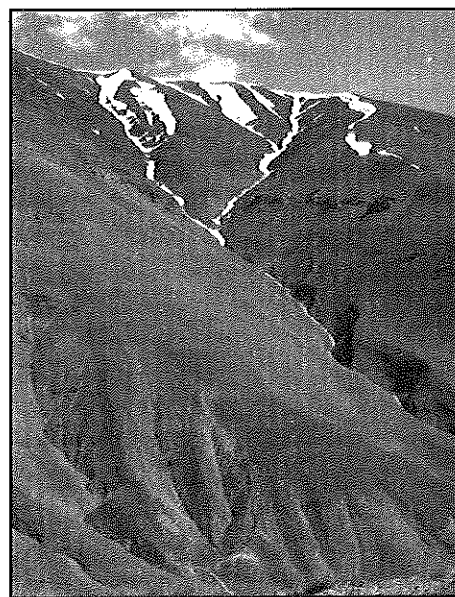
damascena. Once at the University of Esfahan, an emotional and touching moment preceded our lectures at the Biology Department, when faculty, staff, and students of the department entered the conference room and welcomed us by offering pink carnation flowers to each of us. Following a gracious introduction and welcome by the head of the Biology department, Dr. Moshtaghian, who was one of my students when I taught at the university of Tehran, Drs. Al-Shehbaz, Columbus, and Steele gave their presentations in Powerpoint on the University's state-of-the-art projection system (ironically, the US Treasury Department had not allowed us to take laptops). We then spent a few hours at the Esfahan University Herbarium for determination of the region's specimens, and to meet and interact with faculty, staff and students. Although our time was limited, we spent one evening visiting Emam Square, bordered by the magnificent Palace of Ali Ghapu and the splendid Emam and Lotfollah Mosques, built in the early seventeenth century. At the Bazar of Esfahan we bought carpets and other beautiful hand crafted gifts-not without extensive bargaining.

The expeditioners, accompanied by Botany Professor Dr. Mohammed Reza Rahimi-Nejad and his wife, Dr. Lili Ghaem-Maghami, en-

thusiastically toured Esfahan province, collecting specimens from the Zagros mountain range (northeast to southeast of Iran) including Tiran and Golpayegan. The popular Golestan Park at Khonsar was covered with a species of *Fritillaria* and shrubby *Astragalus adscendens*, the source of Gum Tragacanth. At Chahr Mahal and Bakhtyari Province we visited and collected specimens from regions of Shahr-e Kurd, Farsan, Chelgard, and the Kuhrang Range, from 2250 to 2400 m elevation. The Bakhtyari Mountains in the Zagros Range were covered with snow, providing unforgettably magnificent scenery. The limestone hills of this region were covered with perennial forbs, grasses, and species of *Astragalus*.

Returning to Tehran, we visited the Plant Pests & Diseases Research Institute at Evin (IRAN, the largest herbarium in Iran), and then spent more time in the TUH herbarium to identify plant specimens and to revise manuscripts for Iranian scientists. A one-day collecting trip to the mountains of the alpine Damavand region northeast of Tehran wasn't nearly long enough (Mt. Damavand, at 18,000 ft, is the highest mountain in Iran). At least we had the opportunity to see yellow and white wild tulips, wild orchids, and primroses, as well as the ancient remnants of former forests of *Juniperus* on dolomite. We were able to collect wild tulips near Lake Tad northeast of Damavand at ca. 3,000 m., one of the few natural lakes in Iran.

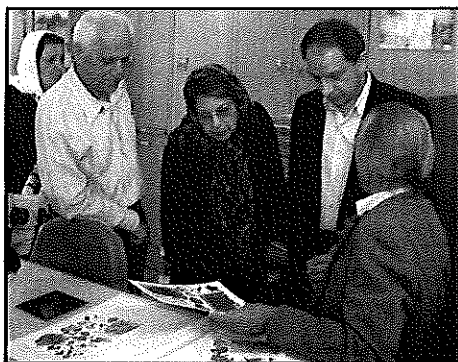
Next we visited Uromieh in western Iran, a city that claims to be the birth place of the prophet Zoroaster. We were warmly welcomed at the Uromieh airport by Dr. Jirair Carapetian, Director of the International Office of the University of Uromieh. We met with the chancellor of the University, Dr. Sadeghi-Hashjin, and then began a series of field trips: east of Uromieh Lake at Silvaneh; the Abshar area; Dyazaj and the area near the border with Turkey and Iraq; Slamas, Khoy, and near Ghotur, on the Iran-Turkey border; Oshnavieh;



Alborz Mountains near Lake Tad, NE of Damavand, ca. 3,000m.

and the Piranshahr area near the Iran-Iraq border. These trips were among the best for collecting plants and comparing diversity of vegetation. On one trip, a new species of mustard (Brassicaceae) was discovered, which Drs. Al-Shehbaz, Zarre, and Attar will describe and name after Dr. Ghahreman, in the spirit of collaboration and in appreciation of all the help of our Iranian botanical colleagues. Our stay in Uromieh ended with a dinner reception given by the Chancellor of Uromieh University at a luxury restaurant on the shores of Lake Uromieh, a saltwater lake famous for flamingos and brine shrimp. Presentations by Drs. Al-Shehbaz and Ertter the next morning were followed by our flight back to Tehran.

The last institution that we visited was Guilan University in the city of Rasht on the Caspian sea coast. At the airport, we were welcomed by Dr. Masoud Vahabi Moghadam, Professor and Director of International Relations of the Guilan University and his staff. At the university, I met with Dr. Moghadam and the chancellor, Dr. Ahmadi, to discuss the goals of the expedition. We were then taken by speedboat through a Phragmites marsh to Guilan Selkeh Wildlife Refuge in the Anzali Lagoon east of Rasht. Back at the University, Drs. Charlet, Columbus, Ertter and I presented our last talks. We also toured the Natural History Museum of the University, where one of my former students, Dr. Latif Salehi, Head of the Crop Protection Department, reminisced with me over photographs of the two of us taken exactly



Dr. Tahbaz at TUH herbarium, along with Drs. Sepehri, Ghahreman, Shirzadian, and

30 years ago. Iranians are characteristically appreciative of their teachers, and this meeting was a gratifying example of this quality. That evening we visited the village of Massuleh, an extremely picturesque mountainside village that has been declared a UNESCO World Heritage Site.

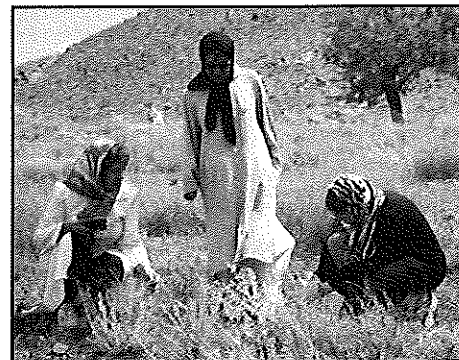
On field trips from Rasht we collected specimens in the Alborz Mountains, a range that lies west to east along the entire Caspian coast of northern Iran. At Asalem northwest of Rasht, en route to Khalkhal in Ardebil Province, we saw a mixed deciduous forest extending across the Talesh Mountains. We were reminded of the dense broadleaf forests of the eastern US. Another trip was memorable for the road from Rasht to Deyleman via Siah-Kal, with visits to Lahijan and to the rice fields and tea plantations of this area. Dr. Shahryar Saeidi-Mehrvarz, Botany Professor of Guilan University, accompanied the expedition during all field trips. During our field trip along the coastal region of the Caspian Sea, we were also protectively escorted by an army security vehicle.

Flying back to Tehran in the early morning gave us enough time to press newly collected specimens and to put in order over one thousand specimens collected from 81 sites during this expedition. The last day before departure was occupied until late at night with identification of Iranian specimens and revision of more manuscripts. The last morning in Iran was begun at TUH herbarium at 6:00 AM., allowing time for some last moments visiting and shopping at the Tehran Bazar and meeting with the Vice Chancellor for Research of the University of Tehran, Dr. Mohammad Rahimian.

The Iran-California Botanical Expedition of 2004 was a great success, made possible by the indefatigable enthusiasm of the expeditioners and the gracious welcome and untiring attention of our Iranian hosts. All of us were touched by the warm reception by Ira-

nian faculty, staff and students, and by Iranians we met everywhere in the field. Our fondest hopes are that our visits are only the beginning of productive, ongoing collaborations, with many future opportunities for further rewarding interactions between American and Iranian botanists.

The scientific results thus far have lived up to our early expectations. New species have already been identified among our collections, and critical samples of Iranian species have been made available to systematists working on the molecular phylogeny of Brassicaceae, Fabaceae, Poaceae and many other plant families. As one example, a species of *Trigonella* collected in Iran in the section *Elliptiae* is crucial for determining the sister group relationship of *Medicago* and *Trigonella*. Even more important than the plant material has been the newly forged collaborations between American and Iranian botanists, working on projects of mutual interest that span the continents. Interactions with students has been rewarding as well, with several US participants having already agreed to be foreign supervisor of some of the impressively talented and enthusiastic students they met. Journal exchanges have been initiated, allowing access to research results from both countries that were not otherwise readily in the other country. Seeing these kinds of contacts, collaboration, and close relations between botanists of the two countries is extremely satisfying, and encourages me to continue this botanical project between the two countries. ☺



Tahbaz with Attar (Univ. of Tehran) and Steele (Arizona State Univ.) collecting plants