

RESUME of GLENN RINK
Far Out Botany
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Education:

Geology BS, Northern Arizona University, 1985
Botany MS, Northern Arizona University, 2003

Botanical reports:

- Rink, G. R., and M. Licher. 2015. *Carex* of Arizona. Canotia, Vol. II, 97p.
- Licher, M. and G. Rink. 2015. Visual guide to *Carex* of Arizona. Canotia, Vol. II, 15p.
- Rink, G. R. 2015. Monitoring of *Physaria kingii* var. *kaibabensis* on the Kaibab Plateau, Coconino County, Arizona, 2014 Section 6 Final Report Reference # 2014-2016-09, unpublished report for the US Fish and Wildlife Service.
- McGrath, J, M. Licher B. Norris, and G. Rink. 2015. A review of *Carex* in New Mexico: Initial findings. The New Mexico Botanist #63.
- Rink, G. R., and A. Hazelton, 2014, Demography Studies for *Carex specuicola* (Navajo sedge, Cyperaceae) 2014 Section 6 Final Report Reference #: 2013-2014-07, unpublished report for the US Fish and Wildlife Service.
- Rink, G. R., 2014, Monitoring of *Cimicifuga arizonica* (Arizona bugbane, Ranunculaceae) populations on Bill Williams Mountain related to Forest Service plans to burn the mountain. Reference #: 2013-2014-06, unpublished report for the US Fish and Wildlife Service.
- Rink, G. R., and M. Licher, 2013. New ideas about rarity of *Carex* species of Arizona, The Plant Press, Volume 36, Number 2, p.16-19.
- Christie, K., G.R. Rink, and T.J. Ayers, 2011, Additions to the flora of Grand Canyon National Park resulting from National Vegetation Mapping Program fieldwork. Canotia 7: p.41-53.
- Hill, Mar-Elise, G.R. Rink, and T.J. Ayers, 2010, Herbarium reviews for four parks in the Southern Colorado Plateau Network. Natural Resource Technical Report NPS/SCPN//NRTR-2010/316.
- Rink, G.R., A. C. Cully, and D.A. McCallum. 2009. A checklist of the vascular flora of El Morro National Monument, Cibola County, New Mexico. Journal of the Torrey Botanical Society 136(3) pp. 403-421.
- Rink, G.R. and A. Cully. 2008. A checklist of the vascular flora of Aztec Ruins National Monument, San Juan County, New Mexico. Journal of the Torrey Botanical Society 135(4) pp.571-584.
- Rink, G.R. 2007. A checklist of the vascular flora of Yucca House National Monument, Montezuma County, Colorado. Journal of the Torrey Botanical Society 134 (2) pp. 289-300.
- Rink, G.R., 2005, A checklist of the vascular flora of Canyon de Chelly National Monument, Apache County, Arizona. Journal of the Torrey Botanical Society 132(3) pp. 510-532.

Rare Plant and Floristic Field Experience:

2015, May 8-10, Rare plant survey of the Verde Formation, central Arizona, for the Coconino National Forest.

2014, April 23 – May 16, Sep 15 – Oct 12 – Desert tortoise clearance and cactus and yucca mitigation for Stateline Power Plant in California and Silverstate Power Plant in **Clark County, Nevada**. Reference: Danna Hinderle, Ironwood Inc, 20 Nevada Street, Suite 300, Redlands, CA 92373, dhinderle@ironwoodbio.com, 303-884-4664. 51 days.

2014, Jul 1-8; 2013, Aug 23-25 – Surveyed for *Carex specuicola*, Navajo sedge on Navajo Nation lands and in San Juan County, Utah under a Section Six USFWS grant. Reference: John Nystedt, USFWS, Flagstaff, AZ,

2014, Mar 24 – 31 – Plant list and rare plant survey of a portion of Johnson Valley, San Bernardino County, California for expansion of the 29 Palms Marine Base for Alice Karl Associates. Rare plants surveyed for included: *Androstaphium breviflorum*, *Astragalus albens*, *Astragalus bernardinus*, *Astragalus tricarinatus*, *Atriplex parishii*, *Boechera dispar*, *Boechera shockleyi*, *Calochortus striatus*, *Canbya canbyi*, *Castela emoryi*, *Caulanthus bernardinus*, *Chamaesyce platysperma*, *Chorizanthe xanti* var. *leucotheca*, *Coryphantha alversonii*, *Cryptantha clokeyi*, *Cymopterus multinervatus*, *Cymopterus panamintensis*, *Eriastrum harwoodii*, *Erigeron parishii*, *Eriogonum ovalifolium* var. *vineum*, *Eriophyllum mohavense*, *Grusonia parishii*, *Linanthus maculatus*, *Matelea parvifolia*, *Menodora spinescens* var. *mohavensis*, *Mentzelia puberula*, *Mentzelia tridentata*, *Mimulus mohavensis*, *Monardella boydii*, *Monardella robisonii*, *Muhlenbergia apressa*, *Pediomelum castoreum*, *Penstemon albomarginatus*, *Phacelia parishii*, *Plagiobothrys parishii*, *Puccinellia parishii*, *Saltugilia latimeri*, *Sidalcea neomexicana*, *Wislizenia refracta* subsp. *refracta*. reference: Alice Karl, PO Box 74006, Davis, California 95617, heliophile@mindspring.com, 530-666-9567 (office), 530-304-4121 (cell). 8 days.

2014 – Awarded Section Six grants to monitor Kaibab mustard (*Physaria kaibabensis*), Coconino County, AZ, explore for (*Eriogonum mortonianum*), northern AZ and southern UT, explore for Arizona bugbane (*Cimicifuga arizonica*) in Gila County, AZ, and write a Recovery Plan for Navajo sedge (*Carex specuicola*). Projects are in process.

2013 – Awarded Section Six grant to monitor Arizona bugbane, (*Cimicifuga arizonica*) on Bill Williams Mountain, Coconino County, AZ. Report completed.

2013 – Awarded Section Six grant to monitor and explore for Navajo sedge (*Carex specuicola*) northern AZ and southern UT. Report completed.

2013, June 16 – August 2 – Biological monitoring of waterline, road and tower construction for Copper Mountain Solar site in the **Eldorado Valley, Nevada**. Included exotic and rare plant surveys, exotic plant management, and cactus salvage. Reference: Don Copeland, Ironwood Inc., 20 Nevada Street, Suite 300, Redlands, CA 92373, don@ironwood-inc.com. 36 days.

2013, March 15 – April 3 - Plant list and rare plant survey of about 5,000 acres for solar power development in Riverside County, California. Rare plants surveyed for included: *Abronia villosa* var. *aurita*, *Acleisanthes longiflora*, *Androstaphium breviflorum*,

Astragalus insularis var. *harwoodii*, *Astragalus lentiginosus* var. *borreganus*, *Castela emoryi*, *Chamaesyce abramsiana*, *Colubrina californica*, *Coryphantha alversonii*, *Cryptantha costata*, *Cryptantha holoptera*, *Cynanchum utahense*, *Eriastrum harwoodii*, *Hymenoxys odorata*, *Koeberlinia spinosa*, *Mentzelia puberula*, *Mentzelia tridentata*, *Opuntia wigginsii*, *Teucrium cubense* ssp. *depressum*. Reference: Michael Honer, Ironwood Inc., 20 Nevada Street, Suite 300, Redlands, CA 92373, mihoner@earthlink.net, 805-450-7608. 17 days.

2012, Sept. 17-21 – Rare plant survey of Bill Williams Mountain, Coconino County, Arizona for the Hualapai Cultural Resources Office. Rare plants surveyed for included: *Cimicifuga arizonica*, *Astragalus rusbyi*, *Penstemon nudiflorus*, *Clematis hirsutissima*, *Hedeoma diffusa*. reference: Carrie Cannon, Hualapai Cultural Resources, PO Box 179, Peach Springs, AZ 86434, calisay17@hotmail.com, 928-727-1338. 5 days.

2012, Aug. 22-Sept.4 - Plant list and rare plant survey of about 8,000 acres for solar power development in Riverside County, California for Alice Karl as subcontractor for Tetratex at Blythe Solar Power. Rare plants surveyed for included: *Chamaesyce abramsiana*, *Colubrina californica*, *Cynanchum utahense*, *Proboscoidea althaeifolia*. reference: Alice Karl, PO Box 74006, Davis, California 95617, heliophile@mindspring.com, 530-666-9567 (office), 530-304-4121 (cell). 14 days.

2012, April 7-15, May 26-31 and 2011, Sep 9-16 - Invasive plant survey of season 2011 fires in the Atascosa, Huachuca, Parajito, Patagonia and Tumacacori Mountains for Coronado National Forest, Arizona. Exotics surveyed for included: *Rhus lancea*, *Centaurea melitensis*, *C. solstitialis*, *Cirsium arvensis*, *C. vulgare*, *Euryops subcarnosus*, *Helianthus ciliaris*, *Pentzia incana*, *Arundo donax*, *Eragrostis lehmanniana*, *Pennisetum ciliaris*, *P. setaceum*, *Sorghum halepense*, *Ailanthus altissima*, *Tamarix* sp. Reference: Sharon Biedenbender, Invasive Species Coordinator, Coronado National Forest, 300 West Congress Street, Tucson, AZ 85701, 520-559-2762, sbiedenbender@fs.fed.us. 22 days.

2012, Sept. 12, March 18-24 and 2011, Sep 24-Oct.3 – Plant list and rare plant survey of about 5,000 acres for solar power development at Sonoran West, a BSE project in Riverside County, California for URS Corporation. Rare plants surveyed for included: *Abronia villosa* var. *aurita*, *Acleisanthes longiflora*, *Androstephium breviflorum*, *Astragalus insularis* var. *harwoodii*, *Astragalus lentiginosus* var. *borreganus*, *Castela emoryi*, *Chamaesyce abramsiana*, *Colubrina californica*, *Coryphantha alversonii*, *Cryptantha costata*, *Cryptantha holoptera*, *Cynanchum utahense*, *Eriastrum harwoodii*, *Hymenoxys odorata*, *Koeberlinia spinosa*, *Mentzelia puberula*, *Mentzelia tridentata*, *Opuntia wigginsii*, *Teucrium cubense* ssp. *depressum*, Reference: Heather Rothbard, Staff Botanist, URS Corporation, 4225 Executive Square, Suite 1600, La Jolla, CA, 858-812-9292 x1547, (cell) 858-812-8295, Heather_Rothbard@URScorp.com. 15 days.

2012, Sept.3-11, 2011, March 7-15, April 25-May 7 – Plant list and rare plant survey of about 13,000 acres for solar power development in Riverside County, California for URS Corporation, Rio Mesa, a BSE project. Rare plants surveyed for included *Abronia villosa*

var. *aurita*, *Acleisanthes longiflora*, *Androstephium breviflorum*, *Astragalus insularis* var. *harwoodii*, *Astragalus lentiginosus* var. *borreganus*, *Castela emoryi*, *Chamaesyce abramsiana*, *Colubrina californica*, *Coryphantha alversonii*, *Cryptantha costata*, *Cryptantha holoptera*, *Cynanchum utahense*, *Eriastrum harwoodii*, *Hymenoxys odorata*, *Koeberlinia spinosa*, *Mentzelia puberula*, *Mentzelia tridentata*, *Opuntia wigginsii*, *Teucrium cubense* ssp. *depressum*, reference: Kristiaan Stuart, Botanical Field Lead, URS, 1129 Valley Oak Drive; Chico, CA 95926; ktnstuart@gmail.com, (858) 692.8534; later; Heather Rothbard, Staff Botanist, URS Corporation, 4225 Executive Square, Suite 1600, La Jolla, CA, 858-812-9292 x1547, (cell) 858-812-8295, Heather_Rothbard@URScorp.com. 31 days.

2012, May 4-10, 16-22, June 2-12, 18-26, Jul 2-10, 16-21, Jul 31-Aug 10, 2011, Jun 13-17, Jul 10-14, 19-23; 2010 May 17-26, Jun 2-5, Jul.13-22, Aug.23-27, Aug. 30-Sep.3, 6-16, Oct. 6-17; 2009, Oct 19-26 – Range bio-productivity surveys of several districts on remote Navajo Nation lands, San Juan County, Utah, Coconino, Navajo and Apache Counties, Arizona, and San Juan County, New Mexico. Protocol includes 2-3 clip plots out of 10 - 1m² plots along 100m transects, looked for *Astragalus cutleri*, *Astragalus humillimus*, *Atriplex garrettii* var. *navajoensis*, *Erigeron rhizomatus*, *Penstemon navajoa*, *Sclerocactus mesa-verdae*, *Asclepias welshii*, and *Polygala acanthoclada*, reference: Alexis Watts, Project Manager, Ecosphere Environmental Services, 112 West Montezuma Avenue, Suite 4, Cortez, CO 81321, 970-564-9100, cell: 928-386-1777, watts@ecosphere-services.com. 140 days.

2011, April 11-24, Plant list and rare plant survey of approx. 900 acres for Stateline Solar Power development near Primm, NV within California, approximately 700 acres for Silver State Solar Power development east of Primm, NV, and approx. 2500 acres in Eldorado Valley, Clark County, NV for Ironwood Consulting, Inc. Rare plants surveyed for included: *Arctomecon merriami*, *Astragalus nyensis*, *A. remotus*, *Cryptantha tumulosa*, *Ephedra funerea*, *Eriogonum heermannii* var. *clokeyi*, *Grusonia parishii*, *Penstemon albomarginatus*, *P. bicolor* ssp. *bicolor*, *P. bicolor* ssp. *roseus*, *Phacelia anelsonii*. Reference: Kent Hughes, 909-821-5836, or Kathy Simon 909-289-4649, kathy@ironwood-inc.com. 14 days.

2011, March 21-April 9, Oct. 3-11 and 2010, Oct. 1-4 Plant list and rare plant survey of about 12,000 acres for solar power development in Riverside County, California for Alice Karl as subcontractor for Tetratex at McCoy. Rare plants surveyed for included: *Abronia villosa* var. *aurita*, *Acleisanthes longiflora*, *Androstephium breviflorum*, *Astragalus insularis* var. *harwoodii*, *Astragalus lentiginosus* var. *borreganus*, *Castela emoryi*, *Chamaesyce abramsiana*, *Colubrina californica*, *Coryphantha alversonii*, *Cryptantha costata*, *Cryptantha holoptera*, *Cynanchum utahense*, *Eriastrum harwoodii*, *Hymenoxys odorata*, *Koeberlinia spinosa*, *Mentzelia puberula*, *Mentzelia tridentata*, *Teucrium cubense* ssp. *depressum*, reference: Alice Karl, PO Box 74006, Davis, California 95617, heliophile@mindspring.com, 530-666-9567 (office), 530-304-4121 (cell). 32 days.

2010, April 19 – 30 – Plant list and rare plant survey of about 2500 acres for solar power development in **Nye County, Nevada** for Tetratex Corporation. Rare plants surveyed for included: *Arctomecon merriamii*, *Astragalus nyensis*, *Cymopterus ripleyi* var. *saniculoides*, *Dudleya pulverulenta* ssp. *arizonica*, *Ephedra funereal*, *Eriogonum bifurcatum*, *Eriogonum contiguum*, *Mentzelia tiehmii*, *Penstemon albomarginatus*, *Penstemon fruticiformis* ssp. *amargosae*, *Perityle intricate*, *Phacelia filiae*, *Phacelia parishii*, *Sisyrinchium funereum*, *Sphaeralcea caespitosa* var. *williamsiae*, reference: Ron Gregg, Senior Project Manager, TetraTech, 17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-6213, 949-756-7574, cell: 949-922-9140, Ronald.gregg@ttech.com; also, Derrick Coleman, Senior Project Manager, TetraTech, 17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-6213, 949-756-7586, cell 949-648-0161, Derrick.Coleman@tetratex.com. 12 days.

2010, April 5 – 18, May 3 – 12, Sept. 20 - 24 – Plant list and rare plant survey of about 8000 acres in **San Bernardino County, California** for Calico Solar One power development for URS Corporation. Rare plants surveyed for included: *Androstaphyllum breviflorum*, *Astragalus lentiginosus* var. *borreganus*, *Calochortus striatus*, *Castela emoryi*, *Cryptantha clokeyi*, *Cryptantha costata*, *Cryptantha holoptera*, *Cynanchum utahense*, *Eriastrum harwoodii*, *Eriophyllum mohavense*, *Mentzelia tridentata*, *Mimulus mohavensis*, *Muilla coronata*, *Nemacaulis denudata* var. *gracilis*, *Penstemon albomarginatus*, *Phacelia parishii*, *Polygala acanthoclada*, reference: Shawn Johnston, Botanical Field Lead, URS, 619-600-7234, shawnjohnston@cox.net. 24 days.

2009, August 31-September 9 – Vegetation mapping (plant ID and cover estimates) on the North Rim of Grand Canyon, Kass Green and Associates. 10 days.

2009, July 7-10; 2008, May 6, August 27- September 2, October 8-10; 2007, April 27-28 – Vouchered plant survey of Surprise Canyon, a remote tributary of the Colorado River within Grand Canyon, **Mohave County, Arizona**, Far Out Botany. Rare plants looked for include: *Epilobium nevadense*, *Mentzelia hualapaiensis* sp. nov., *Ericameria arizonica*, *Aletes macdougallii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, and *Pteryxia petraea*, references listed below. 17 days.

2011, June; 2009, July 13-17, September 10; 2008, July 13-17; August 4-8; 2007, August 4-9, July 5-8 – Vouchered plant survey of the North Rim of Grand Canyon, Grand Canyon Field Institute and Far Out Botany. Rare plants looked for include: *Castilleja kaibabensis*, *Penstemon pseudoputus*, *Hymenoxys subintegra*, *Draba asprella*, *Selaginella watsonii*, *Ericameria arizonica*, and *Beckmannia syzigache*, references listed below. 25 days.

2009, June 2-4, 2008, June 10-17, vouchering rare and other plants from springs and hanging gardens in Bright Angel Canyon, Grand Canyon National Park, Far Out Botany. Rare plants searched for included: *Ericameria arizonica*, *Aletes macdougallii* ssp.

macdougallii, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, and *Silene rectiramea*, 11 days.

2009, March 29 – April 9, April 13-17, April 20-27 – Plant list and rare plant survey of about 8000 acres in **Clark County, Nevada** for solar power development, Tetrattech and Kiva Biological Consulting. Rare plants surveyed for included: *Arctomecon californica*, *Astragalus geyeri* var. *triquetrus*, *Astragalus mohavensis*, *Calochortus striatus*, *Cryptantha insolata*, *Eriogonum corymbosum* var. *nilesii* (Las Vegas buckwheat), *Eriogonum viscidulum*, *Opuntia whipplei* var. *multigeniculata*, *Penstemon albomarginatus*, and *Penstemon bicolor*, reference: Ron Gregg, Senior Project Manager, TetraTech, 17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-6213, 949-756-7574, cell: 949-922-9140, Ronald.gregg@ttech.com; also, Jina Sagar, Biologist, Tetrattech, 1750 SW Harbor Way, Suite 400, Portland, OR 97201, jina.sagar@tetrattech.com, 503-721-7210, cell 503-734-9506. 25 days.

2009, March 24-27 - Plant list and rare plant survey of Arizona Public Service powerline along Arizona State Highway 72 in the vicinity of Bouse, **La Paz County, Arizona**, EnviroSystems Management, rare plants surveyed for: *Pholisma arenaria*, and *Astragalus magdalenae* var. *niveus*, reference: Stephanie Treptow, EnviroSystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 4 days.

2008, March 2 – Plant list and rare plant survey of 80 acres in the Mohave Valley of **Mohave County, Arizona**, Circa Cultural Consulting, Rare plants surveyed for: *Camissonia brevipes* and *Enceliopsis argophylla*, reference,: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 1 day.

2008, September 12-18, May 15-21, April 16-May 5 – Vouchered plants in Grand Canyon as part of vegetation mapping effort, National Park Service, rare plants surveyed for included: *Epilobium nevadense*, *Mentzelia hualapaiensis* sp. nov., *Ericameria arizonica*, *Aletes macdougallii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Hesperodoria salicina*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, *Arctomecon californica*, *Argemone arizonica*, *Euphorbia aaron-rosei*, *Rosa stellata* ssp. *abyssa*, and *Silene rectiramea*, references below. 34 days.

2008, September 19-October 2; 2007, April 6-30; 2006, May 30-16, June 5-10; 2005, September 2-26; 2004, March 6-April 1; 2003, May 13-23, Vouchered plants in Grand Canyon National Park, Far Out Botany, rare plants looked for included: *Epilobium nevadense*, *Mentzelia hualapaiensis* sp. nov., *Ericameria arizonica*, *Aletes macdougallii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*,

Fraxinus cuspidata var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Hesperodoria salicina*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, *Arctomecon californica*, *Argemone arizonica*, *Euphorbia aaron-rosei*, *Rosa stellata* ssp. *abyssa*, and *Silene rectiramea*, references below. 124 days.

2008, May 25-27, June 21-22, 28-29, July 6, 27-28, August 24 – Vouchered plant list of Barbershop Canyon, Coconino County, Arizona, Far Out Botany, rare plants looked for included: *Rumex orthoneurus*, *Arenaria aberrans* – Mt. Dellenbaugh sandwort, *Aquilegia desertorum* – Mogollon columbine, *Astragalus troglodytes* – creeping milkvetch, *Calypso bulbosa* – western fairy slipper, *Cirsium parryi* ssp. *mogollonense* – Mogollon thistle, *Eriogonum jonesii* – Jones's buckwheat, *Hedeoma diffusa* – Flagstaff pennyroyal, *Helenium arizonicum* – Arizona sneezeweed, *Heuchera eastwoodiae* – Eastwood alum root, *Hymenoxys jamesii* – James hymenoxys, *Malaxis porphyrea* – purple adder's mouth, *Phlox amabilis* – Arizona phlox, *Talinum validulum* – Tusayan fameflower, *Cimicifuga arizonica* – Arizona bugbane, *Listera convallarioides* – broadleaf twayblade, *Potentilla multifoliolata* – Arizona cinquefoil, *Triteleia lemmoniae* – Mazatzal triteleia, *Spiranthes romanzoffiana* – hooded ladie's tresses, *Erigeron anchana* – Mogollon fleabane, *Erigeron saxatilis* – rock fleabane, reference: Barb Phillips, National Forest Zone Botanist, 1824 S. Thompson Street, Flagstaff, AZ 86001, 928-527-3600, bgphillips@fs.fed.us. 11 days.

2008, April 12-15 – Rare plant survey in Johnson Valley, **San Bernardino County, California**, URS, rare plants surveyed for included: *Astragalus albens*, *Astragalus tricarinatus*, *Calochortus striatus*, *Calochortus plummerae*, *Camissonia boothii* ssp. *boothii*, *Castilleja cinerea*, *Chamaesyce platysperma*, *Erigeron parishii*, *Eriogonum ovalifolium* var. *vineum*, *Linanthus maculatus*, *Mimulus mohavensis*, *Penstemon albomarginatus*, *Phacelia parishii*, *Plagiobothrys parishii*, *Polygala acanthoclada*, and *Saltugilia latimeri*, reference: John H. Davis IV, URS, 130 Robin Hill Road, Suite 100, Santa Barbara, CA 93117, 805-964-6010, cell: 805-202-9560, john_davis@urscorp.com. 4 days.

2007, October 10-13 - Plant list and rare plant survey of ca 2000 acres east of the San Rafael Swell in Utah, Circa Cultural Consulting, rare plants surveyed for: *Grindelia fastigiata*, *Platyschukhria integrifolia* var. *ourolepis*, and *Eriogonum scabrella*, reference: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 4 days.

2007, August 30 – Rare plant survey of Portonova Ranch east of Flagstaff, Arizona, Fred Phillips Consulting, rare plants surveyed for: *Arenaria aberrans*, *Aquilegia desertorum*, *Astragalus cremnophylax*, *Astragalus troglodytes*, *Chrysothamnus molestus*, *Erigeron saxatilis*, *Eriogonum jonesii*, *Hedeoma diffusa*, *Hymenoxys jamesii*, *Potentilla multifoliolata*, and *Talinum validulum*, reference: Fred Phillips Consulting, LLC, 401 South Leroux St., Flagstaff, AZ 86001, (928) 773-1530, fphillips@commspeed.net. 1 day.

2007, May 27- June 3 – Survey for rare *Echinocereus fendleri* var. *kuenzleri* and species list in Lincoln National Forest, New Mexico, Southwest Botanical Research, Marc Baker,

1217 Granite Creek Lane, Chino Valley, AZ 86323, 928-713-7009, marc_baker@cableone.net. 8 days.

2007, March 20 – Rare plant survey of Arizona Public Service powerlines in Gila County, Arizona, EnviroSystems Management, rare species surveyed for: *Abutilon parishii*, *Agave arizonica*, *Agave delmateri*, *Echinocereus triglochidiatus* var. *arizonicus*, *Erigeron piscatus*, *Heuchera glomerata*, *Mabrya acerifolia*, *Penstemon discolor*, *Perityle saxicola*, and *Salvia amissa*, reference: Stephanie Treptow, EnviroSystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 1 day.

2007, August 4, June 28, May 5-7, 25-26; 2006, August 25-27, October 4-5 - Vouchered species list for Aztec Ruins National Monument, San Juan County, New Mexico, National Park Service, rare plants surveyed for: *Aletes macdougallii* ssp. *breviradiatus*, *Aliciella formosa*, *Astragalus humillimus*, *Astragalus micromerius*, *Sclerocactus cloveriae* ssp. *brackii*, *Sclerocactus cloveriae* ssp. *cloveriae*, *Sclerocactus mesae-verdae*, *Penstemon breviculus*, and *Proatrirplex pleiantha*, reference: Theresa Nichols, Aztec Ruins National Monument Resource Manager, 84 County Road 2900, Aztec, NM 87410, Terry_Nichols@nps.gov, 505-334-6372, 12 days.

2007, August 1-2, June 3-4, 23-24, May 3-4, 12, 26-27; 2006, September 2-4, 21-22, October 3 - Vouchered species list for El Morro National Monument, Cibola County, New Mexico, National Park Service, rare plants surveyed for: *Besseya arizonica*, *Erigeron acomanus*, *Helianthus paradoxus*, *Physaria newberryi* var. *yesicola*, *Astragalus accumbens*, and *Phacelia serrata*, reference: Lisa Thomas, Coordinator, Southern Colorado Plateau I&M Network, Northern Arizona University, P.O. Box 5765, Flagstaff, AZ 86011, (928) 523-9280, Lisa_Thomas@nps.gov. 17 days.

2007, November 7 – Survey for rare plants on US Forest Service and BLM lands for the Arizona Department of Transportation, EnviroSystems Management, reference: Stephanie Treptow, EnviroSystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 1 day.

2006, April 16-19, Voucher of plants along Trout Creek, Mohave County, Arizona, Far Out Botany, rare plants surveyed for: *Allium bigelovii*, *Arenaria aberrans*, *Arctomecon californica*, *Penstemon bicolor*, *Polygala rusbyi*, *Purshia subintegra*, and *Salvia davidsonii*. 4 days.

2006, March 27-28, February 23-24 - Plant list and rare plant survey of a proposed gravel pit in the Sacramento Valley, **Mohave County, Arizona**, Circa Cultural Consulting, rare plants surveyed for: *Arctomecon californica*, *Cynanchum utahense*, *Enceliopsis argophyllus*, *Eriogonum viscidulum*, *Penstemon bicolor*, *Polygala acanthoclada*, and *Selinocarpus nevadensis*, reference: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 4 days.

2005, November 14-17 and December 13-18 – Powerline survey for rare plants and to make a plant list between Boulder City and Davis Dam, **Clark County, Nevada**, Circa Cultural Consulting, rare plants surveyed for: *Arctomecon californica*, *Cynanchum utahense*, *Enceliopsis argophyllus*, *Eriogonum viscidulum*, *Penstemon bicolor*, *Polygala acanthoclada*, and *Selinocarpus nevadensis*, reference: Peter Bungart, Circa Cultural

Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 10 days.

2005, November 18-19, October 8 - Plant list and rare plant survey of roads in **Mohave County, Arizona**, Circa Cultural Consulting, rare plants surveyed for: *Arctomecon californica*, *Cynanchum utahense*, *Enceliopsis argophyllus*, *Eriogonum viscidulum*, *Penstemon bicolor*, *Polygala acanthoclada*, and *Selinocarpus nevadensis*, reference: Peter Bungart, Circa Cultural Consulting, 4 North San Francisco, Flagstaff, AZ 86001, 928-213-0984, pbungart@circaculture.com. 3 days.

2005, August 24-25 - Plant list and rare plant survey of Arizona Public Service powerline from Grey Mountain to Tuba City, Navajo Reservation, Arizona, Envirosystems Management, Rare plants surveyed for: *Amsonia peeblesii*, *Astragalus sophoroides*, *Cymopterus megacephalus*, *Asclepias welshii*, *Errazurizia rotundata*, *Pediocactus peeblesianus* var. *fickeiseniae*, and *Puccinellia parishii*, reference: Stephanie Treptow, Envirosystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 2 days.

2005, June 23-25 – Voucher plants along Fossil Creek, central Arizona, for future monitoring, Northern Arizona University. 3 days.

2005, June 8-11, Rare plant survey and voucher of plants between Hance and Cremation Creeks, Grand Canyon National Park, National Park Service, rare plants surveyed for: *Ericameria arizonica*, *Aletes macdougallii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Hesperodoria salicina*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, *Arctomecon californica*, *Argemone arizonica*, *Euphorbia aaron-rosei*, *Rosa stellata* ssp. *abyssa*, and *Silene rectiramea*, references below. 4 days.

2005, May 27- June 5, April 10-15, Rare plant survey and voucher of plants in Glen Canyon National Recreation Area, Far Out Botany, rare plants surveyed for: *Astragalus harrisonii*, *Astragalus musiniensis*, *Cirsium rydbergii*, *Cycladenia humilis* var. *jonesii*, *Carex scirpoidea* var. *curatorum*, *Erigeron kachinensis*, *Erigeron zothecinus*, *Perityle specuicola*, *Platanthera zothecina*, *Carex specuicola*, *Primula specuicola*, and *Zigadenus vaginatus*, Far Out Botany. 16 days.

2005, May 13-18, Rare plant survey and voucher of plants along the Bass Trail, Grand Canyon National Park, National Park Service, rare plants surveyed for: *Ericameria arizonica*, *Aletes macdougallii* ssp. *macdougallii*, *Camissonia specuicola* ssp. *hesperia*, *Carex scirpoidea* var. *curatorum*, *Crossosoma parviflorum*, *Cryptantha capitata*, *Flaveria macdougallii*, *Fraxinus cuspidata* var. *macropetala*, *Hesperodoria scopulorum* var. *scopulorum*, *Hesperodoria salicina*, *Imperata brevifolia*, *Ostrya knowltonii*, *Primula specuicola*, *Pteryxia petraea*, *Arctomecon californica*, *Argemone arizonica*, *Euphorbia aaron-rosei*, *Rosa stellata* ssp. *abyssa*, and *Silene rectiramea*, references below. 6 days.

2004, October 6-9 – Survey for rare *Coryphantha scheerii* var. *robustispina* within Mexico along the US border south of **Pima County, Arizona**, Southwest Botanical

Research, Marc Baker, 1217 Granite Creek Lane, Chino Valley, AZ 86323, 928-713-7009, marc_baker@cableone.net.. 4 days.

2004, September 22-25, Vouchered plants on the Shivwits Plateau, Mohave County, Arizona, Far Out Botany. 4 days

2004, June 19-20 – Rare plant survey at Lowell Discovery Channel Telescope site near Happy Jack, Arizona, EnviroSystems Management, rare plants surveyed for: *Arenaria aberrans*, *Astragalus rusbyi*, *Helenium arizonicum*, *Heuchera eastwoodiae*, and *Penstemon nudiflorus*, reference: Stephanie Treptow, EnviroSystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 2 days.

2004, May 27, July 13, August 2 – Vouchered plant list for Edgemont Highlands, a housing development east of Durango, Colorado, Linda Robinson Studios. 3 days.

2004, May 16-19, 24-25, 30-31, June 1, 5, July 23-August 2, September 4-7; 2003, March 8, 25-27, April 13-20, June 26-30, July 6-9, 14-19, 22-27, 29-30; September 21-22, 27 – Vouchered plant survey and rare plant survey of portions of the San Juan River Basin for the San Juan Flora Project, San Juan College, Farmington, New Mexico, too many rare plants surveyed for to mention, reference: Ken Heil, Math-Science Division, Room 1807, San Juan College, 4601 College Boulevard, Farmington, New Mexico 87402-4699, heilk@sjc.cc.nm.us. 64 days.

2004, April 29-30, May 1, 26, 28; 2003, July 27, August 21-22, September 23 – Vouchered species list for Yucca House National Monument, Montezuma County, Colorado, National Park Service, rare plants looked for: *Aletes macdougalii* ssp. *breviradiatus*, *Astragalus coltonii* var. *moabensis*, *Astragalus cronquistii*, *Astragalus naturitensis*, *Astragalus newberryi*, *Astragalus schmolliae*, *Astragalus tortipes*, *Eriogonum clavellatum*, *Eriogonum leptocladon* var. *ramosissimum*, *Hackelia gracilentia*, *Iliamna grandiflora*, *Penstemon parviflorus*, *Penstemon utahensis*, *Penstemon breviculus*, *Penstemon lentus*, and *Sclerocactus mesa-verdae*, reference: Lisa Thomas, Coordinator, Southern Colorado Plateau I&M Network, Northern Arizona University, P.O. Box 5765, Flagstaff, AZ 86011, (928) 523-9280, Lisa_Thomas@nps.gov. 9 days.

2004, April 14-18 and 2001, five days in March – Survey for the rare plant *Astragalus magdalenae* var. *peirsonii* in the Algodones Dunes of **Imperial County, California**, Botanical and Environmental Consulting, other rare plants surveyed for: *Astragalus lentiginosus* var. *borreganus*, *Croton wigginsii*, *Helianthus niveus* ssp. *tephrodes*, *Palafoxia arida* var. *gigantea*, and *Pholisma sonora*, reference: Arthur Phillips, Botanical and Environmental Consulting, PO Box 173, Eckert, CO 81418, Nn7a@aol.com, 970-250-8112. 5 days.

2004, April 9 – Survey of Tapco powerline in central Arizona, EnviroSystems Management, rare plants surveyed for: *Purshia subintegra*, *Eriogonum ripleyi*, *Eriogonum ericifolium*, and *Polygala rusbyi*, reference: Stephanie Treptow, EnviroSystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 1 day.

2003, April 25, 30, June 6-9, 17-20 – Rare and sensitive plant survey of portions of Prescott National Forest, EnviroSystems Management, rare plants surveyed for: *Agave delamateri*, *Arenaria aberrans*, *Erigeron saxatilis*, *Eriogonum ericifolium* var. *ericifolium*, *Eriogonum ripleyi*, *Hedeoma diffusum*, *Heuchera eastwoodiae*, *Lupinus latifolius* ssp. *leucanthus*, *Phlox amabilis*, *Polygala rusbyi*, and *Salvia dorrii* ssp. *mearnsii*, reference: Stephanie Treptow, EnviroSystems Management, 23 E. Fine, Flagstaff, AZ 86001, 928-22600236, streptow@esmaz.com. 10 days.

2001-2003, April –November, Vouchered plant species list for Canyon de Chelly National Monument, Apache County, Arizona, National Park Service, rare plants surveyed for: *Allium gooddingii*, *Astragalus chuskanus*, *Cirsium chellyense*, *Lupinus caudatus* ssp. *cutleri*, *Opuntia xviridiflora*, *Platanthera zothecina*, *Zigadenus vaginatus*, *Carex curatorum*, and *Carex specuicola*, reference: Lisa Thomas, Coordinator, Southern Colorado Plateau I&M Network, Northern Arizona University, P.O. Box 5765, Flagstaff, AZ 86011, (928) 523-9280, Lisa_Thomas@nps.gov. 110 days.

1996-2004, survey for rare plants and vouchering of plants on remote portions of the Navajo Reservation, rare plants surveyed for: *Carex specuicola*, *Primula specuicola*, *Zigadenus vaginatus*, *Polygala acanthoclada*, *Platanthera zothecina*, *Errazurizia rotundata*, *Perityle specuicola*, *Cirsium rydbergii*, and *Euphorbia aaron-rosei*, Daniela Roth, U.S. Fish and Wildlife Service, 2369W. Orton Circle, Suite 50, West Valley City, UT 84119-7603, 801-975-3330 x123, daniela_roth@fws.gov. 20 days.

1067 days of rare plant surveying; and collecting and vouchering plants. 13,600 specimens collected and vouchered in museums.

References for Grand Canyon rare plant and floristic work:

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