

Natural Resource News

UAF School of Natural Resources and Agricultural Sciences

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Erin Kelly, masters degree student in the Peace Corps Masters International program, on assignment near El Imposible National Park, El Salvador. Photo courtesy Erin Kelly.

PHOTO COURTESY
ERIN KELLY



Cooperative Peace Corps program

Report from El Salvador

SNRAS student Erin Kelly is spending her winter in the San Francisco Menendez sector of Bosque El Imposible National Park, El Salvador—but she's not on vacation. Kelly, a graduate student working on her master's in Natural Resources Management at SNRAS, is the first UAF student to participate in the Peace Corps Master's International Program (PCMIP). Peter Fix, her academic advisor and an assistant professor of Outdoor Recreation, is working with Kelly to help her form

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\$3.2 million from NSF will support RAP students

The Resilience and Adaptation Program at UAF has received a five-year, \$3.2 million grant from the National Science Foundation to address questions of social-ecological resilience, adaptation and sustainability. RAP is an interdisciplinary graduate program focused on answering questions of how global processes, like climate change, affect local processes, such as indigenous subsistence hunting.

“Economic, cultural and ecological dimensions of sustainability have to be considered together,” said Gary Kofinas, RAP director and UAF associate professor of resource policy and management. “To do that requires an integrated science that draws on several disciplinary perspectives.”

Kofinas, assistant professor of resources management, holds a joint appointment with SNRAS and the Institute of Arctic Biology. Other SNRAS professors currently participating in RAP are Glenn Juday, Scott Rupp, and David Verbyla of the Department of Forest Sciences, Joshua Greenberg of Resources Management, and Cary de Witt of Geography. Julie Lurman of Resources Management serves on the RAP steering committee.

The RAP program uses an innovative team-taught curriculum, hands-on internships and problem-centered training. Students from traditional disciplines such as economics, anthropology, political science and biology address issues of global-local sustainability in an integrated and interdisciplinary fashion. “Sustainability means that society has to think carefully about how the choices it makes now

will affect the world's ability to retain the characteristics society wants to hold onto,” said Kofinas.

Student projects have included green consumerism, arctic militarization, carbon sequestration, cancer and persistent waste, co-management of marine mammals, and the road ecology of caribou. The grant is RAP's second from NSF and will support 25 two-year traineeships for participating PhD students.

“This dedicated time allows students to focus on their research, work with their advisors, secure research dollars to finish their projects and complete their dissertation,” said Kofinas.

RAP, which is funded through the Institute of Arctic Biology, is one of more than 120 NSF Integrative Graduate Education and Research Traineeships in the United States, and is regarded as one of the most successful programs. In October, 2007, RAP hosted graduate students and faculty from 27 other interdisciplinary programs to share experiences with sustainability science at the first Conference for Sustainability IGERTs. “The important questions for society are not found deep within conventional scientific disciplines, but at the intersection of those disciplines,” Kofinas said. “We're training a new generation of scholars in how to work holistically, to inform better decisions about Alaska's future.”

For more information visit the RAP Program at:
www.rap.uaf.edu.

—Adapted from story by IAB information officer Marie Gilbert

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her research question, which is shaping up to be about the potential for ecotourism in this 8,818-acre forest park.

El Imposible is a dry tropical forest, named after the steep “Impossible Pass” in its boundaries, and created by governmental fiat in 1986. The park is surrounded by a 5,449-acre buffer zone, in which approximately 100,000 people live. A nonprofit environmental organization, SalvaNatura, administers the park.

In the degree program, graduate students must prepare a flexible proposal for their plan of work, as the conditions in their Peace Corps assignment are usually unknown until they arrive. This was the case for Kelly: she started out hoping to study ecotourism at El Imposible, but the area to which she was assigned, in the southeastern highlands, is very remote, steep country, and as a result doesn't have many tourists. Those who come are physically fit and eager to take on a challenge far off the beaten track. So, since there was very little ecotourism, Kelly had to readjust her thesis question, and is working on a marketing plan for how the area might attract more visitors. Her Peace Corps duties incorporate her thesis work, and the projects she works on include working with her community's

children: she's started an environmental club and is encouraging the children to read.

Emeritus Professor Tony Gasbarro and Associate Professor of Resource Management Planning Susan Todd advise the PCMIP students at SNRAS. The program now has a second student, Matt Helt, who will be going to Paraguay in September 2008. His primary interest is agroforestry and the empowerment of indigenous families—but what he'll find when he gets there could change the specific questions he'll need to ask, just as it did for Kelly.

More about Erin Kelly's studies in El Salvador:

“Salvadoran challenges,” December 2007, by LJ Evans, www.uaf.edu/news/featured/07/peacecorps/

“My Peace Corps site: El Salvador,” by Erin Kelly, www.uaf.edu/news/featured/07/peacecorps/elimposible.html

For more on the PCMIP, please go to www.uaf.edu/snras/pcmip/index.html or e-mail Tony Gasbarro at tonygasbarro@yahoo.com (Peace Corps questions) or Steve Sparrow at stephen.sparrow@uaf.edu (questions on graduate studies in natural resources management).

Reorganization follows review of land-grant functions

“Strong potential, many challenges, strong visionary leadership required summarizes the Alaska land-grant situation,” concluded an independent review team that visited the University of Alaska Fairbanks last fall. Now an action plan has been implemented for the Cooperative Extension Service and AFES based on the review report. “Grant universities across the country are in various stages of redesigning their teaching, research, and outreach/extension to be more productively involved with their communities,” the reviewers said. “This is a fundamental responsibility to the people, both local and global, to address actual, relevant needs, bringing tangible benefits to the people, to businesses, and to government. It is an outcome from blending research with learning opportunities, and brings to bear the intellectual resources of the university....Change and communication must occur on many levels in the university. Participation and inclusion in the processes of change must be welcomed.”

The University of Alaska Board of Regents was briefed on the review in December. After the final report was received, the regents accepted the resulting action plan in February. The central purpose of the review was to determine where to locate CES within the UAF administrative structure to enhance the UAF land grant mission; positively benefit Alaskans; and contribute to the success, prosperity, and repute of the University of Alaska System. Stakeholders, faculty, staff, and administrators participated in the review process after it was requested by the UAF administration.

Reviewers were asked to assess strengths and weaknesses in the land grant arena on which recommendations could be based that will enable UAF to achieve the land grant mission more effectively. The review team also addressed the value and effectiveness of UAF Extension and outreach, the internal

structure and alignment of Extension and research for the land grant mission, and the overall accomplishment of the land grant mission. Team participants were: team leader Dan Kugler, deputy administrator for natural resources and environment, USDA-CSREES; Nancy Bull, associate dean for outreach and public service, College of Agriculture and Natural Resources, University of Connecticut; Andrew Hashimoto, dean and director, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa; Marc Johnson, dean, College of Agriculture Sciences, Colorado State University; Jack Payne, vice president for extension and outreach, Iowa State University.

Organizational changes

The resulting recommendations focused on the structural framework, rather than prescriptive solutions. In response, to integrate extension into the learning and discovery mainstream of the university, a new position has been created under the UAF provost: vice provost for extension and outreach and CES director. The UAF provost, Susan Henrichs, is also the executive vice chancellor for academic affairs.

Positioning extension leadership in this way “removes it from the constraints of being within a single college and elevates extension administration to an administrative level that will allow the leadership to grow extension and outreach across the land grant campus, bringing all that the land grant university has to offer to the citizens of Alaska,” the review said. Pete Pinney, who has been acting CES director, is filling the new position on an interim basis until a national search for the vice provost/CES director is concluded, about ten to twelve months.

The team reported concern about extension isolation in relationship to the university's learning and discovery functions because it “hinders the ability of Extension to ensure the best

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research-based information for its clientele. As learning and discovery are connected to each other, the third leg of the land grant mission, outreach and service, must also be integrated within the University's land grant mission."

The UAF Vision Task Force already has recommended that community engagement be incorporated into every pathway of the UAF Strategic Plan 2017. The reviewers said: "Extension is a process of community engagement that crosses all disciplines related to community and economic development, including areas related to public health, nutrition, food safety, food security, and youth development. This complements the existing tripartite appointments of faculty. Extension educators are faculty extending the learning and discovery missions of the University to its stakeholders, and should report to the chief academic officer."

The reviewers found Alaska's CES faculty and staff to be "extremely dedicated and passionate about the programs they deliver to improve the quality of life of Alaskans, especially in the face of geographic challenges and budgetary constraints. They also noted that Extension is "highly valued and found relevant by its stakeholders and clientele groups throughout the state."

Among other recommendations for Extension were: investment in professional development to address the areas of measuring impacts, grantsmanship, and engaged scholarship; a structure that clarifies internal communications and communication with stakeholders; strengthening the involvement of current CES field faculty with the on-campus SNRAS/AFES faculty; focus on two or three strategic priorities for which additional fiscal resources might be invested; greater integration of outreach and extension across the institution; cooperative agreements with other states or countries when Alaska clientele needs are beyond the existing knowledge base, but not of sufficient duration to warrant a faculty position.

The team found a broad consensus by faculty and staff in CES and SNRAS that there would not be a good fit in moving CES into SNRAS. Many CES programs in its four areas (4-H, agriculture, natural resources and conservation, home and family) would not have a suitable "home" in SNRAS. Where appropriate, more joint appointments between SNRAS and CES were recommended, as will as between CES and other appropriate schools and departments. "An organizational structure is desired which will incorporate all of CES into the mainstream of the university, while recognizing the breadth of its disciplines," the review said.

SNRAS

Reviewers noted that SNRAS maintains a cohesive and dedicated faculty and staff who address a relatively narrow range of research topics and expertise that are tailored to Alaska,

for example: forestry, horticulture, soils, high-value vegetable crops, and wood products. They noted that there are some programs within SNRAS where there is a "good" fit with CES, such as natural resources management, geography, and soils. "These areas are or would be welcome for joint appointments," the report said. "Policy, standards, valuation, and expectation for scholarship and promotion/tenure need to be worked out."

Regarding the land-grant mission, reviewers said that the "SNRAS emphasis on natural resources is laudable because it represents the interest of the people of Alaska. Natural resources programming, research, education, and outreach are consistent with the land-grant mission. Limited emphasis on traditional agriculture is perfectly acceptable for Alaska."

The reviewers were concerned that natural resources research and science addressing current issues in the realm of the boreal/subarctic environment should be much more visible. "Alaska is uniquely situated to address heuristic topics, such as global change, ecosystem services, and bioenergy," the report said. "More attention should be paid to these broad topics by SNRAS, and to their integration into the curricula for students' education."

The Review Team also observed that the SNRAS faculty and staff are scattered across several locations on the UAF campus. It recommended a concerted planning effort be undertaken to consolidate SNRAS in a single location. This is a simple means to creating synergy and a higher functioning faculty.



Folks at the AFES Palmer Research and Extension Center brought home a prize for their float in the Palmer Christmas Parade. Photos courtesy the Palmer Research and Extension Center.



Good food news

One potato, two potato, three potato, four!

For classifying cultivated potatoes, four turns out to be the right number. Scientists at the USDA Agricultural Research Service and the International Potato Center have used morphology—the outward appearance of a plant—combined with molecular markers to revise the number of potato species from seven to four. Until recently, potato species designations have been based primarily on morphological characteristics and estimates—often incorrect—of how many chromosome sets they possessed.

Botanist David Spooner of the ARS Vegetable Crops Research Unit, Madison, Wisconsin, working with Marc Ghislain at the potato center in Peru, found that morphological variations among cultivated potatoes are not reliable species indicators. Using previous studies and examining DNA molecular markers from 742 cultivated potato varieties and eight wild relatives of potatoes, they concluded that cultivated potato varieties can be most accurately assigned to one of four species. Each variety was checked for the presence of one particular DNA mutation, a characteristic one that distinguishes between potatoes from the Chilean lowlands and potatoes from the high Andes.

Solanum tuberosum, the type of domesticated potato eaten around the world, is one of the four recognized species, and by far is the most common one. It has from two to four sets of chromosomes. The less common species, *S. ajanhuiri*, *S. juzepczukii*, and *S. curtilobum*, have two, three, and five sets of chromosomes, respectively. These can often be distinguished from each other by morphological data. This new classification system eliminates much guesswork and will benefit potato breeders. It was reported in the Nov. 2007 Proceedings of the National Academy of Sciences of the USA.



Blueberries and brains

An abnormal immune system can mistake body tissue for a foreign invader and attack it, causing inflammation; similar dynamics occur in the brain. In one cell-culture study, ARS scientists found that blueberry extracts help quell inflammation that was produced when the brain's immune cells responded to oxidative stress. The study was conducted by lead author, molecular biologist Francis Lau, and neuroscientist James Joseph at the USDA's Jean Mayer Human Nutrition Research Center on Aging at Tufts University in Boston. Joseph leads the HNRCA's Neuroscience Laboratory. The study was published in the *Journal of Neuroscience Research*.

Aging minds: A dietary change could stall or reverse some of the age-related functional losses in brain power, at least if humans react to the diet the same way rats do. That's according to the results of another HNRCA study in which "elderly" rats that were fed a high-antioxidant diet—for the equivalent of about 10 years in humans. The diet reversed age-related shortfalls in neuronal and cognitive function—the ability to use information to meet the challenges of daily living.

In one of the studies, three groups of rats—equivalent in age to 63-year-old-humans—were fed extracts of either spinach,

strawberry, or blueberry along with their chow; a control group was fed only standard chow. When the rats were equivalent in age to 73-year-old humans, their performance levels were measured. Rats fed the blueberry extract far outperformed their peers on balance and coordination showed much higher levels of dopamine in the brain; dopamine is one of several chemical neurotransmitters that help the brain's billions of neurons "talk" to one another. It plays a role in many brain functions, including the way the brain controls movements.

Studies with human volunteers are needed to assess whether similar improvements would be found in humans. Joseph, molecular biologist Lau, and psychologist Barbara Shukitt-Hale described this study and others in a review article appearing in *Neurobiology of Aging*. For more information, see:

<http://ars.usda.gov/is/AR/archive/aug07/aging0807.htm>

Better salads

Lettuce: ARS plant breeders at the Crop Improvement and Protection Research Unit in Salinas, California, developed an experimental technique to boost the nutritional value of iceberg head lettuce. As the lettuces grew, their leaves were pried open, preventing formation of tightly closed heads. With more surface exposed to sunlight, the plants accumulated twice as much iron and calcium and five times as much vitamin C as typical icebergs. Now they hope to determine how to help developing plants store these nutrients without changing the features that have made iceberg America's favorite lettuce.



Carrots: Most people are probably unaware that carrots are more nutritious than the ones eaten 30 years ago. That's because ARS scientists discovered a way to breed carrots with high amounts of beta-carotene, an orange pigment that helps humans make vitamin A; modern carrots have nearly 50 percent more beta-carotene than their predecessors. Scientists in the ARS Vegetable Crops Research Unit in Madison, Wis., helped raise beta-carotene levels in carrots, and are now working to produce the same results in cucumbers and melons. The same researchers are also using classical breeding methods to raise levels of heart-healthy compounds in onions and garlic.

Tomatoes: ARS scientists with the Genetic Improvement of Fruits and Vegetables Laboratory, part of the Henry A. Wallace Beltsville Agricultural Research Center in Beltsville, Md., developed tomato breeding lines to produce cherry tomatoes with enhanced beta-carotene content. Colleagues at the ARS Western Regional Research Center in Albany, Calif., have been seeking genes that cue tomatoes to produce another nutritious pigment: lycopene. Read more about this research in the March 2008 issue of *Agricultural Research* magazine, available online at: www.ars.usda.gov/is/AR/archive/mar08/foods0308.htm.

To view a database for measures of the antioxidant capacities of selected foods, go to: www.ars.usda.gov/nutrientdata/ORAC. An index to the ARS Food and Nutrition Briefs can be found at: www.ars.usda.gov/is/np/fnr/b/. The new Internet portal on food safety, a tool for smaller companies is available at www.ars.usda.gov/naa/errc/mfsru/portal. ARS is the US Department of Agriculture's chief scientific research agency. ARS news is found at www.ars.usda.gov/is/pr.

UN Climate Change Info

www.un.org/climatechange/

The United Nations has announced a new website, "Gateway to the UN System's Work on Climate Change." It provides access to climate change information from various UN agencies. Featured are the most recent scientific reports from the UN, the latest developments on efforts to reach a new international climate change agreement, climate change events, news, webcasts, projects in the field, and climate change information for youth.



Arctic Research Website

<http://arcticportal.org/iasc>

The International Arctic Science Committee (IASC) has launched a website that was developed in cooperation with the Arctic Portal (<http://www.arcticportal.org/>). Users will also be automatically redirected to the IASC website by visiting: <http://www.iasc.se>. IASC is a non-governmental organization that aims to encourage and facilitate cooperation in all aspects of arctic research, in all countries engaged in arctic research, and in all areas of the arctic region.



Alaska Park Science Symposium

<http://nps.arcus.org/meetings/2008/abstracts.html>

This year's meeting will be held in conjunction with Beringia Days 2008 International Conference, October 14–16 in Fairbanks. The International Polar Year event will include three days of speakers and presentations with an evening poster session on October 15 and an open public cultural event the 16th. Organizers welcome presentations on the natural and cultural heritage of greater Beringia. The 2008 conference is focused on parks and protected areas (e.g., preserves, monuments, refuges) in Greater Beringia, including Alaska, Chukotka, and the Yukon Territory from the Lena River in Siberia to the Mackenzie River in Canada, and from the North Pole to the Aleutian Islands. National Park Service areas in the Alaska Arctic include: Bering Land Bridge National Preserve, Cape Krusenstern National Monument, Gates of the Arctic National Park and Preserve, Kobuk Valley National Park, and Noatak National Preserve. This is the third in a biannual series of place-based scientific conferences on Alaska parks and protected areas. The NPS manages the Shared Beringian Heritage Program, which supports cultural exchanges, research, and international meetings. The annual Beringia Days International Conference aims to recognize and celebrate the contemporary and historic value of the region's shared ecological and cultural heritage. The deadline for abstract submittal is Thursday, 15 May 2008.



Little Alaska Weather Symposium

This conference is scheduled for 12-13 May 2008 at the University of Alaska Fairbanks. The registration deadline is Wednesday, 30 April 2008. There is no registration fee. For more information, please go to: <http://weather.arsc.edu/Events/LAWS08>



Arctic Report Card

www.arctic.noaa.gov/reportcard/

An international team of researchers has created a peer-reviewed website, Arctic Report Card 2007, which tracks multiple changes in the arctic environment. While the 2007 loss of summertime sea ice is the most dramatic example, changes are also seen in the atmosphere, on land and in the ocean, and as shifts in location and abundance of arctic species. The Report Card is organized by NOAA and will be updated annually. It is a contribution to the international Arctic Monitoring and Assessment Programme and the Conservation of Arctic Flora and Fauna Programme.



International Permafrost Meeting

www.nicop.org

The 9th International Conference on Permafrost is at UAF June 29–July 3, 2008. The formal meetings will include local field trips, and pre- and post-conference extended field trips. Approximately 150 papers will be presented orally and there will be poster presentations. Several pre-conference courses and workshops for graduate students and professionals, and for K-12 teachers and students are planned. Conference updates will be posted on the nicop website as information becomes available.



Campus weeds targeted

Despite efforts to thwart invasive plants, not even the UAF campus is immune to the aliens. The purple flowering bird vetch and several other invasive plants have been spotted. In February, SNRAS professor Susan Todd and her natural resources planning students organized the first first planning meeting for a UAF Invasive Plant Task Force. Organizers hope to increase awareness of the invasive plant problem and determine issues of concern to the UAF and Fairbanks communities. SNRAS and the U.S. Forest Service sponsored the meeting.



Polar Tourism

www.cabi.org/bk_BookDisplay.asp?PID=2022

Tourists now overwhelmingly outnumber residents in most polar destinations. A new book for researchers in tourism, ecology, and environmental studies and those involved in developing sustainable tourism in the polar regions, is now available from CABI, a nonprofit intergovernmental organization. The political significance, scientific interest, and outstanding natural beauty of polar regions are enticing more travellers to these remote locations in search of unique experiences and recreation. The book *Prospects for Polar Tourism* examines environmental, economic, and cultural settings, explores the potential for growth and covers management for sustainability. It was edited by J.M. Snyder, Strategic Studies Inc, USA and B. Stonehouse, Scott Polar Research Institute, Cambridge University, UK. Publisher: CABI, ISBN: 978-184593-247-3. Price, US\$120.



Notes

K-12 Outreach update: The UA geography program, headquartered at UAF/SNRAS recently assumed leadership of the Alaska Geographic Alliance, a K-12 outreach program supported in part by the National Geographic Society. The society supports similar programs in all 50 states. In this new role, the geography program, led by director Mike Sfraga, will offer professional education opportunities and classroom resources for K-12 educators.

New PhD program accepted by the UA Board of Regents: offered jointly by SNRAS and the School of Management, a new doctorate program will offer a degree in Natural Resources and Sustainability. Contact Josh Greenberg (SNRAS), ffjag@uaf.edu, or Joe Little (SoM), ffjml1@uaf.edu, for more information.

“Energizing the West,” the 2008 Western Region Joint Summer Meeting of the Committee on Agricultural Research, Education, and Teaching (CARET), will be hosted by SNRAS and the Cooperative Extension Service at the University of Alaska Fairbanks July 6–9, 2008. The conference brings together deans, directors, academic heads, program chairs, CARET representatives, and others associated with land grant mission leadership in the western states and the insular islands of the American Pacific. The conference will offer networking opportunities and discussions of issues and policy relevant to the land grant universities as they diversify their participation in instruction, research, and outreach to a rapidly changing population profile in the west. More information on this exciting gathering is available at the conference website, www.uaf.edu/ces/summer2008/index.html.

Fiscal officer **Tobi Campanella** will be leaving us to start new adventures in Montana no later than May 1, 2008. Her career with in the joint SNRAS/AFES/CES Business Office spans three deans/directors of SNRAS/AFES. For all, she has served as a resource and wealth of information on formula funds and grant oversight. Recently she has helped us in-

crease competitive funds, while working to balance our budgets, and ensuring that we are responsive and responsible to the earmarked funds we receive. We wish her well in her new endeavors.

The **SNRAS / AFES / CES Business Office** has returned to the Arctic Health Research Building. Their move was completed on April 7 and 8.

The **Reindeer Research Program periodically awards scholarships** to qualified students enrolled in the Natural Resources Management undergraduate degree program at the University of Alaska Fairbanks. Selection is competitive. Incoming freshmen, transfer students, and continuing UAF students are all encouraged to apply. The fall 2007 scholarship winners were Cody Maxwell and Sabrena Gneiting. This scholarship is named after the founder of the Reindeer Herders Association, a reindeer herder since 1967. For more information, visit <http://reindeer.salrm.uaf.edu/opportunities/#Scholarships>.

Agroborealis, Vol. 39, No. 2 for Winter/Spring 2008 includes an article on the woman responsible for founding a UAF school focused on natural resources and interdisciplinary study, Bonita Neiland. Neiland died in December 2007. Printed copies of the magazine will be mailed in April. The magazine is now on line at: www.uaf.edu/salrm/afes/pubs/agro/index.html. This issue includes: Bonita J. Nieland Remembered; Biomass for Biofuels: Not All Trees Are Created Equal; Musk Ox Husbandry; Boreal Forest Soils: Nutrient Cycling, Microbes, and the Fate of Oil; Conflicting Wildlife Mandates: On National Park Service Lands, Federal Law Preempts Alaska's Wildlife Management Statute; and Agriculture 100 Years Ago: the Search for Self-sufficiency.

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Retirements Announced

James Levison, Business Office Manager for the Cooperative Extension Service and SNRAS/AFES has announced his retirement effective April 30, 2008. “I know all of us have appreciated the services he has provided over the years he has been with SNRAS/AFES,” said Dean Carol Lewis. “We wish him the very best as he leaves to start his new career that focuses on relaxation and enjoyment.

Editor and information officer **Doreen Fitzgerald** retired on March 31, 2008. She began her UA career as an information officer with the statewide administration in 1980 and later served as editor at the Geophysical Institute before joining SNRAS in 2002. She is moving to Michigan with her husband, Bob, where they are building a passive house, a type of superinsulated, solar-heated building. (For more information on this architecture, see www.passivehouse.us.) “The publications office just won’t be the same without her. AUGH!” said Deirdre Helfferich, SNRAS editor.

