

Multi-State S-1084 Hemp Meeting
Lexington, Kentucky
August 23, 2019

8:12 am: Introduction and welcome from Dr. Bob Pearce from the University of Kentucky. Dr. Pearce started by thanking Dr. David Williams for his service to the hemp industry in Kentucky and getting many of us all started in hemp. To honor his legacy we will continue to move the hemp program forward. Dr. Pearce introduces Doris Hamilton from the Kentucky Department of Agriculture.

8:16 Doris Hamilton provided the audience with an introduction to the KY hemp industry and program. This is the 6th year of the hemp pilot program and she is excited in 2020 to be going commercial. She gave a special thanks to Dr. David Williams and the universities for the research but also for being a sounding board. Doris stated how important it is for universities to have a good relationship with Department of Agriculture. Doris stated that in 2014 Kentucky had 33 acres registered by 20 growers. Now in 2019 there are 1000 growers and 200 processors. This year there were 60,000 acres of hemp approved for planting and so far 22,500 acres (800 fields) confirmed to be planted. Hemp has had a significant impact on the KY economy with over \$58 million in gross sales with \$17.75 paid to Kentucky growers and 281 jobs created in 2018. Kentucky offers three types of licenses including one for growers, one for processor/handler; and a third for universities and colleges. The fee is \$100 up front, followed by a 4-hour class, then \$400 per address (a total of \$500). Processor fees are \$3,000 per year for CBD and \$500 per year for grain and fiber. There are no fees for University licenses but they are still required. Kentucky also does not require the University to file harvest reports or testing. The state will come and sample but only at the request of the University. Kentucky approves 20 labs for testing.

8:58 - Larry Smart calls S1084 meeting to order. Ask for approval of meeting minutes. Christine Smart made motion to approve minutes, Carlyn Buckler second. All approved but Gerry Berkowitz opposed (Larry did not ask Gerry why).

8:59 am - Opening remarks by NIFA Rep – Bill Hoffman explained the role and goal of Hatch Funds and the Multi-State Funds. NIFA supplies Hatch Funds via formula to Universities with these funds 75% stays within University and 25% of the pot are reserved for multistate activities like S1084. Hatch funds are unlike anything else because they are steady year after year formula dollars – can be used to support long range and projects of state importance. Yields great benefit as we have seen the past couple of days. NIFA is moving to Kansas City; bulk of operations will move – many vacancies as a result keep eye on internet. National Program Leaders will be needed; need a person with knowledge on hemp to join staff. USA jobs website. Ph.D. Scientist to Program specialist and website folks. NIFA/Industrial-hemp website explains Ag Marketing Service is coming out with regulations and be looking for those within the calendar year. Gives basic answer to basic questions. There will be many job openings at NIFA at [USAjobs.gov https://nifa.usda.gov/industrial-hemp](https://nifa.usda.gov/industrial-hemp).

Lesley Oliver (Administrative Advisor) - Lots of research and extension activities covered by this project. Mandated to spend 25% of funds on integrated projects. If anyone needs help becoming part of the S1084 project, let her know.

NIFA has been in support of hemp agronomic projects but not sure if production for compounds like CBD will be excluded? Bill Hoffman from NIFA indicated that most projects would be supported unless dealing with post-harvest production of compounds like CBD oil. He was not 100% certain but felt like these types of hemp projects might not be included.

Individual State Project Reports

Alabama – Ernst Ceibert from Alabama A&M University, with Xianyan Kuang. Started in 2019 – it was very rushed but the state approved all 152 permits (\$1,000 each plus \$200 application fee). Did a cultivar trial planted Jinma (from Sunstrand) plus 7 other cultivars. Planted June 5, June 19 and July 11. Much seed was inferior, less than 30% germ. Jinma was best. Rain event washed seed away. Variation in phenotype. Impact of weed pressure, significant rain. Has a nice inventory of insect pest – no damage as of yet. Grower across the street planted 400 acres of CBD hemp.

Alabama – Katelyn Kesheimer also Dennis Delaney (on Zoom), Kassie Conner (plant path), Sonjy Thomas from Auburn University. First year for Alabama, 152 growers 59 processors. Working with Alabama Department of Agriculture to get pesticides registered in AL. So far they have two herbicides registered – not sure which ones. Perhaps I heard that wrong. Morning glory (bind weed) is a serious issue. Powdery mildew, plus leaf spots, fusarium wilt and southern blight, root rots Pythium, phytophthora, fusarium and rhizoc. Insects – fire ants, hemp russet mites, army worms, corn earworm, striped cucumber beetles, leaf miners, termites. Fire ants tunnel into and girdle plants. Growers lose up to 1/3 of plants. Continuing to look at pest management.

California – Houston Wilson from UC Riverside. Hemp work has fallen to wayside because of cannabis. He is an entomologist. Different counties have different rules as to if you can grow hemp or not. They have started an industrial hemp advisory board. Several UC campuses have started cannabis centers (Berkeley and Davis). Sources of certified seed for UC Hemp research have come from the California Crop Improvement Association. He has a hard time bringing plants onto campus. There is a California hemp association that is attempting to coordinate activity. Several campus cannabis groups – Human health aspects; Policy/Land-use; environmental impacts; agronomic aspects. Hemp research is primarily focused on agronomics. Have small number of research plots. Agronomics = Bob Hutmacher and Dan Putnams UCD; Emma Aronson = microbiome; insects = Houston Wilson, Kent Daane and Ian Grettenberger. Future directions – where does hemp fit into CA landscape?

Colorado – Abdel Berrada from Colorado State University. Started growing in 2014.

Over 80,000 registered acres. CSU researchers do not touch marijuana. He started working on hemp in 2015 with John McKay doing variety trials. Has published work on gxe interactions, the paper came out in July. Abdel is working on water use. Entomologist Whitney Crenshaw is working on hemp. Several other faculty working on hemp. Not much work in CBD but has started. Funding a challenge but research starting to grow. The National Hemp Research and Education Conference will be hosted by Berrada at Fort Collins on March 17-18.

Connecticut – Jessica Lubell-Brand (UConn) – Horticulture. Has worked with feminized seed (silver thiosulfate) and tested rates. Publication in Hort Technology in 2018. Some issues, as some cultivars are more amenable than others (some pollen is not viable). They are using cultivars Candida CD-1, Abacus, Dinamed CBD. They have seen issues with inbreeding. Have AFLP fingerprinting worked out, but may go to GBS. See variegation with inbreeding. Pollen drift is a major worry and a real issue. Seedless cultivars could be an answer to this issue. Working on ploidy breeding. Tetraploid is thick and chunky, cross with diploid to perhaps get triploid. Cultivar ‘Wife’ going to cross with ‘Kentucky Sunshine’, ‘Abacus’, ‘Mountain Mango’, and ‘Cherry Wine’. Tissue culture micropropagation system. She has it worked out for hemp. Small young tissue cuttings, good system of rooting and is working to improve on that. Gerry Berkowitz (UConn) - What rate-limits cannabinoid synthesis? Also works on molecular basis of disease resistance. His goal is to investigate hemp and marijuana and figure out what rate-limits

cannabinoid synthesis? Looking at expression of genes involved in the pathway and the end products. Data from marijuana plant and is getting data on hemp plant. Interesting timeline data on gene expression. He is working with the marijuana cultivar 'Purple Kush'. He hopes to work to understand the promoters as to how these genes are turning on during flower development. He also has terpene profiles, by inoculating plants with bacterial extract (lactic acid producing bacteria). Organic seed treatment activates the plants immune system and protects against disease. Work on fiber variety, seed soaked in growth promoter Harpin. See reduced mortality. Ethylene (100uM) increases flower size, and an increase in CBD synthase.

Florida – Zach Brym from the University of Florida. Florida got operational this year (2019). 10 permits operational, three field trials on a variety of soil types/environments. Has a list – we can get his presentation. Early challenges – invasion risk. Diseases, water etc. has website we can check out. Also has a newsletter.

Illinois – Karla Gage from the Southern Illinois University. Also Eric Miller. Working on microbials and stimulants, allelopathy (CBD); Dual purpose have project with University of Illinois (Talon Becker and Philip Alberti); also fiber trial and herbicide dose response. Significant amount of rain delayed planting and also brought crop disasters this year. Planted July 2. Variety trial does not look great, had establishment issues. Pathogens: Botrytis, has info on susceptibility by variety.

Kansas – Jason Griffin from Kansas State University. There about 7 faculty along with vet school (feeding calves). State of Kansas has provided \$100,000 per year for three years to study water use in hemp. There were 203 grower licenses in 2019 and almost all were for hemp to be grown for CBD production. Larger growers are waiting to see where market heads and feasibility/economics. There are a number of trials including variety evaluation and trellising.

Kentucky – Bob Pearce from the University of Kentucky. Current active projects; variety trials, herbicide, fertility, microbial ecology of retting, lots of plant pathology with Nicole, Diagnostic lab (Julie Beale and Brenda Kennedy) will have more hemp than tobacco samples this year. Horticulture, regulatory services, pharmacy, ag economics. Biosystems and ag engineering; entomology, 1890 partner Shawn Lucas, working on rotation and retting in terms of ecosystem services and organic hemp production.

Louisiana – Gerald Myers and Ted Gauthier with Louisiana State University – program just getting up and running. They are having difficulties getting seed. Also hard to find varieties that will tolerate southern climate.

Maryland – Nicole Fiorellino with the University of Maryland – first year growing. \$250 for licenses, no licenses for processors. All partners had \$2,500 fee to work with U Maryland. 65 growers 13 partnering with U Maryland. All production with end goal of producing CBD – 2 fiber growers but they did not end up planting. Southern Maryland had grown tobacco, and they may be moving towards hemp but most of those growers had no interest in the first year. Research focused on nutrient management looking for optimum nitrogen recommendations. All growers doing nitrogen response trials. Have a research trial at one research center. Biggest issue fusarium crown rot.

Michigan - Garrett Owen from Michigan State University (also Kurt Thelen). Hemp program launched in 2019 in MI so first year of program. The primary research being done is focused on greenhouse growers that are trying to develop clone propagation businesses. Extension helping to address clonal propagation issues in large greenhouse setting.

Mississippi – Randy Little is an Agricultural Economist with Mississippi State University. There is still a ban on hemp in Mississippi. State legislature is moving forward. Hope to have approval in the next session. Interested in economics and cost of production.

Missouri – Joe Horner at University of Missouri – not much happening. Applications available in fall 2019. First production in 2020. Have been able to do research since July. Produce clones and transplants this winter for next spring. Medical Marijuana referendum passed with application for 60 cultivation facilities and 192 dispensaries. Plantings at several experiment stations, 4 fiber varieties x 2 row spacing drilled at 30". They tried no-till production and had crop failures. Nine folks working on project, and they are working closely with UK.

Montana – Chengci Chen from Montana State University (also a rep from the biofuels multistate project). Have a pilot program and a grower advisory board. There were 20,000 acres in 2018 most harvested for seed and also pulled fiber as a second crop but no processing facility so product still sitting. Lots of interest in seed production – but it's not clear if seed was sold or not from 2018. Current research; basic agronomic work in eastern Montana with two varieties CRS-1 and Katani and two seeding rates seeded on May 8 and May 29 in eastern Montana. Wanted to look at dual purpose and plant at different densities to see plant development for seed production. Used irrigation. Flowering by June 29. CRS-1 is taller with more seed shattering than Katani. Farmers are ahead of the research but interest from researchers is building.

New York - Larry Smart from Cornell University. There are 15 faculty at Cornell doing work on hemp in addition to extension educators. Overall goals; evaluate cultivars, improve management, breeding/germplasm and improve breeding methods. Common cultivar trial doing well. Evaluating grain/fiber trials 3 trials with one on organic land. Fiber, dual purpose, and grain trials separated out. Two trials with 30 CBD hemp trials and several demonstration sites in two other locations in NY. Powdery mildew resistance (Chris Smart working on this) comparing high throughput method with whole leaf assay. Will talk more about genetics and feral hemp in afternoon.

North Carolina – Jeanine Davis from North Carolina State University. There are over 1100 growers with 5.5 million square feet of greenhouse space and 14,000 acres (fiber and hemp for CBD). There are numerous research trials being conducted including planting date x harvest date at 4 locations as well as research evaluating spacing and mulching. Angela Post is taking the lead on hemp with a 30+ variety trial. A breeding program has also be initiated. Lindsey Thiessen – taking on diseases and insects. Brian Whipker working on greenhouse, fertility, and pH. Also lots of extension activity.

Oregon – Jay Noller from Oregon State University is the Director of the new Global Hemp Innovation Center. The Center was started in June 2019 center and includes 13 diff colleges from 35 disciplines and many faculty. Coordinates university activity across State (within OSU and other universities and colleges within the state of Oregon). Also have faculty in Europe and Asia. Have funding from industry and USDA and other federal government sources. Over \$3.5M for the program this month. Checkoff on hemp which will be \$30-40M just this year, hope to add processing on that as well. Have hemp at 10 experiment stations, which cover 13 growing zones. He is working on growing at 45 degrees latitude around the world. Setting up international import and export to move hemp biomass and seed. Research ongoing on both positive and negative aspects of hemp. Economic impact of 2.3 billion from hemp in Oregon. Engineering is also working on hemp, along with textiles. Growing in Northern China

and making hemp thread and being woven in Los Angeles. International lab standards is key for compliance.

Pennsylvania – Alyssa Collins (field crops pathologist) from Pennsylvania State University. The state of PA has unlimited permits and acres allowed. Have been growing for three years. In PA there were 300 permits issued for 828 growing locations at a fee of \$600. Cross pollination issues and not sure how that will impact 2020 permitting structure. The grain varieties secured from Hemp Genetics International (HGI) grown in 2017 and 2018, did not grow very tall. For 2019 there are a number of agronomic research trials including herbicide evaluation, fungicide efficacy trials, fiber and seed varieties, harvest timing and field processing, mulches for CBD production, impact of corn and soybean residual herbicide programs. Uniform fungicide trials would be helpful and Alyssa is looking for collaborators. Lots of outreach factsheets, and public education. New hemp website. Hemp has been involved with Lancaster Farming Podcast that Alyssa recommends. Hemp website extension.psu.edu/hemp.

Tennessee – Zach Hansen and Eric Walker from University of Tennessee. Acreage increasing rapidly in Tennessee. Diversity among producers – former tobacco growers to hobby farmers (struggling with very high acreage). Questionable information floating around and there is a need for reliable extension information. There were 50,000 acres licensed – really large production. Mostly hemp being grown for CBD market and there are way more questions than answers. Lots of extension meetings with 34 events and 3000 attendees. Lots of disease and insect pest pressure on hemp . Fungal leaf spot, Southern Blight, bud rot (Botrytis), worms in buds, post harvest mold. Hemp working group with 20 faculty lots of opportunity for collaboration. Hemp trials; planting density, CBD variety, fertility.

Texas – George Knapek an ag economist from Texas A&M; Megan Harper (MS student). TAM has hemp task force but was only legalized in May. No trials, just trying to educate growers that may want to plant thousands of acres. Elemental building processing facility in Houston that will process for CBD.

Vermont – Heather Darby from the University of Vermont – licenses increased to 425 with 4,000 acres registered. License is \$25 no matter what. People moving to Vermont and buying land to grow hemp because the land and licensing is cheap – no barriers. New England has no other research or extension beyond Vermont. Research; grain, fiber and flower/CBD production since 2016. All production outdoors. Funding from industry and private donations. Just received a SARE partnership grant. Focusing on train the trainer programs in extension.

Virginia – John Fike from Virginia Tech. State. Virginia registration is \$50 with over 800 growers and 10,000 acres registered. Several faculty, similar to other states in diseases and insect pests. He is the state forage specialist and has been reluctant to have a large program. Has IR-4 work, herbicide tolerance publication coming out.

West Virginia – Jeff Skousen from West Virginia University. Some people wanting to grow on reclaimed mine land. Lots of greenhouse work and cooperatives. Cow and calf livestock farmers trying to diversify with hemp. They are working on fee structures and testing protocols. WVU is looking at stressors that soils put on plants that might alter terpene or cannabinoid content. Large greenhouse producers moving into state. Jeff is working on a best practices manual for growers.

Wisconsin - Shelby Ellison University of Wisconsin. First year of research but second year of pilot project in the state. Lost 700 dairy farms so people are looking to switch from dairy to hemp. Producing planting and harvest webinars that are on website if folks want to view them. Lots of field days.

Research; getting all 1200 samples from State dept of Ag and UW can run all the samples. Shelby is collecting all feral hemp germplasm. Working on hemp national needs survey. Rodrigo Werle extension specialist on weed control in hemp. He is working on grain and fiber hemp and has hired a graduate student. There are between 20-30 faculty and educators involved in hemp research and outreach. The crop shatters a lot and weeds are a problem for grain and fiber. Herbicide tolerance also being done. Nitrogen response, and organic production and engineers working on harvest.

Afternoon session

Description of objectives:

Objective 1 is to develop a common protocol for a variety trial (9 states with 13 trials). Bob Pearce describes protocol. Bob worked out a simple agreement with seed companies to access seed for the trials. The written protocol is for a hand harvest with two separate 1 square meter sample within each plot. Dual fiber/grain trial. Clip heads and bag/dry and thresh seed then weigh stalks for straw estimate. May be able to get retted weight (ideal). In terms of drying grain, using cloth bags on a rack with moving air (no heat). Seed will mold overnight if they don't have moving air. Harvest each variety as it reaches 75% maturity. If you wait and harvests all at the same time, will lose 50% of seed from early varieties due to shattering.

How do new universities become part of the variety trial? Bob says show interest and he will try to get seed for everyone. We need at least two years of data to publish. The more quality evaluation we can add the stronger the publication. The manuscript could get difficult to analyze so if there is a postdoc that could analyze this?

Ten varieties in the trial this year. Larry will send a note to list serve and Bob will build a multi-state variety trial list. Bob will also contact Kurt for oil assessment and send a protocol for that.

Will we do CBD trials next year? about 12-14 universities. Might be able to get 2-3 varieties from interested cooperators. Heather Darby had a strong interest in having a CBD variety trial this year. She signed agreements and ended up with 22 varieties, Larry said Cornell did the same thing and had 30 varieties. Jay Noller asked that we refer to CBD hemp as essential oil hemp rather than CBD hemp. Jay would like to work with Oregon breeders that have cultivars moving through PVP and he would like to have those tested in variety trials. Are there restrictions to working on CBD in this project? Bill Hoffman from USDA NIFA says we can do CBD variety trials. Jay is willing to coordinate the multi-site essential oil trial. Gerry asked about varieties with differences in day length requirement for flowering (day length insensitive). Three cultivars from OR flowered 5 weeks ahead of everything else. Day length brings up a challenge for these trials because of different maturity times. But this is valuable information as industry is interested in knowing if we can have two crops per season.

Bill Hoffman - USDA will not take away federal funds from a university working on marijuana, as long as they are NOT using federal funds for marijuana. Part of your state funding may be used as match for federal funds. At LSU, anyone working on marijuana has NO federal funding. NIDA (National Institute on Drug Addiction) would be open to working with NIDA on their material. LSU did reach out to Old Miss and also met with NIDA, who was enthusiastic but DEA was not at all enthusiastic.

Objective 2: quality assessments of material from variety trial (objective 1). Talked about seed quality assessment. How should group proceed with THC sampling? Everyone should be using the same protocol. The protocol with 10 plants per plot taking top 10 cm dry in bag – Larry Smart will send protocol to everyone. How do we measure moisture content in grain? University of Kentucky measures

moisture content after drying. Larry Smart from Cornell uses a Dicky John MIniGak (handheld moisture meter) for measuring moisture as it has a hemp calibration. Some sites may not have big enough samples for this tool.

Central location for conducting grain quality work. Kurt Thalen had volunteered to do all the oil analysis on hemp seed. Bob Pearce will contact Kurt Thalen for oil assessment and associated protocol. Should we include fiber quality analysis? Possible to assay samples at LSU as Gerald Myers is a cotton breeder and has experience in testing fiber strength, fineness, maturity etc. They are willing to do fiber testing if they can adapt to their equipment. LSU can take retted samples.

Objective 3: Genetics. Build a collection of feral hemp. A strength of this group is that we have geographic diversity across country. Larry has done GBS on cultivars (approximately 60 genotypes). There is distinct clustering of grain and fiber types; group of 4 fiber types from China; group with Cherry; group from Oregon CBD; group of Otto II and AC/DC. Feral types have grouped with cluster of grain and fiber types. Assembling hemp germplasm slide – there are states with feral hemp included in our multi-state group. Larry has collected two populations in NY. John McKay from Colorado says he has collected from two locations in CO and have sequences of 3-4 individuals of each of those locations. The two locations are unique from each other, and unique from Italian fiber types. Worth sending someone to get a better collection. Larry has written a protocol that he has sent around to participants.

STEP 1 is to get state approval to collect feral hemp. Then follow rest of protocol. The protocol can be included as an attachment to the meeting minutes. Seed will go to the hemp germplasm repository in Geneva NY. Shelby Ellison is collecting in Wisconsin. Larry Smart has seed from WI, NE so far. Jason Griffin will collect in Kansas, Ted Gauthier in Louisiana, Karla Gage in Illinois; Heather Darby in VT; John Fike in Virginia. In Vermont, John McPartland has traced feral hemp in VT. One of those varieties is now approved in New Zealand. Three varieties bred by Atalo were collected near Lake Ontario.

To start looking for feral hemp, Shelby (in WI) reached out to extension educators and state historical society, librarian to get info on hemp, and brings it up at grower meetings too. How many populations are needed? Asking growers can help. Please do reach out to growers. Parameters = a minimum 3 miles separation from populations; a population with 50 plants would be great; GPS coordinates; general site description; any other meta data you can find. Get seed dried and cleaned so it's ready to ship.

What about international germplasm? Jay Noller and Larry Smart are both working on agreements. John McKay has 50 accessions from Germany and they could be included in the germplasm repository. These genetics must be negotiated for commercial breeding, but for research it's no problem. John McKay also has funds from the State of CO and he is assembling and annotating two hemp genomes from Europe. (USO31 and Carmagnola). He has 25,000 gene models across genome and two assemblies of each. Folks should be able to get access to these cultivars. He sequenced females. Larry Smart wants to assemble a male – perhaps. Hope is to have diverse germplasm accessions to distribute in 2 (or more) years.

Objective 4. Economics

Assess crop value when grown for different uses. Production budget budgets for different end uses. Market scale and potential. Tyler Mark from UK is leading this objective. It would be worthwhile to figure out how to standardize budgets across states. Southern states will be doing this in September. The issue of how to 'scale up' this industry. How big is this market and how do we scale up to that. Dual use vs single use – industry is looking to move to dual use. Broad acre vs horticultural/specialty crop growing. Budgets now include grain, fiber and four different budgets for CBD. These are currently on-

line. Should the economic team be describing the volatility of the market? Yes, it would be nice to be able to explain. Two groups (hemp benchmark and economic exchange) and they are giving opposite information. Working backwards from processor costs back to farm level cost. Will have to sample a large number of market prices.

Contract or lease agreements? Tyler Mark is working with an ag lawyer for general contracting language for growers. If you have access to contracts Tyler Mark would love to see them. How does crop insurance fit into that? Multiple very large grants that answer system questions are definitely a need at this point.

What is the major market for hemp? With 500,000 acres planted. Right now it's CBD (essential oils) will that remain? Don't know yet. Processors and markets will drive that.

Discussion of next meeting

A proposal submitted to conduct a national needs assessment on hemp was funded through USDA NIFA. Meeting will be held in Fort Collins, CO on March 17-18. The agenda and framework is still being developed. Currently:

Day 1 – feedback from stakeholders?

Day 2 – key presentations to see what state of research is, focus discussion around those areas.

Breakout sessions?

Renee Johnson has been contacted – good knowledge on industry (and policy?). No more than 200 people. Each state can bring 1-3 stakeholders (state and federal regulators and others).

\$300 per participant for the two days.

Also doing a national survey to assess research and educational needs.

Outputs will include a white paper for USDA-NIFA with a list of research and educational priorities.

A secondary output will likely be the conference proceedings?

What percentage will be people from this group and stakeholders? How will conversations be driven – scientific vs stakeholder. Hope to have 100 between us and policy folks, and the 100 growers/processors/associations/seed suppliers.

Can we have corporate sponsors? Many questions yet to be answered and there is a core group planning the event.

Discussion of national hemp survey – Shelby Ellison

Goal is to sample as many people working in the hemp industry as possible. Every state to send to growers and processors. Need someone to sign up as a state contact for each state. Start survey with a strong letter stating the importance will be important.

Next meeting (FY '20 – starts Oct 1, 2020) – where/when

Should the meeting be Thursday March 19 in Fort Collins – just one day. It will be things directly related to the project objectives. Nail down final details of 2020 growing plan. What journal might be interested in a special issue. What about the new hemp research journal? Too new.

What about leadership transitions? Larry Smart is chair for two years. John is vice chair and Heather is secretary – until the next meeting in CO.

Meeting adjourned.