

Summer 2014

CAN WE PREVENT A FOOD BREAKDOWN?

By Lester R. Brown

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As food supplies have tightened, a new geopolitics of food has emerged—a world in which the global competition for land and water is intensifying and each country is fending for itself. We cannot claim that we are unaware of the trends that are undermining our food supply and thus our civilization. We know what we need to do.

There was a time when if we got into trouble on the food front, ministries of agriculture would offer farmers more financial incentives, like higher price supports, and things would soon return to normal. But responding to the tightening of food supplies today is a far more complex undertaking. It involves the ministries of energy, water resources, transportation, and health and family planning, among others. Because of the looming specter of climate change that is threatening to disrupt agriculture, we may find that energy policies will have an even greater effect on future food security than agricultural policies do. In short, avoiding a breakdown in the food system requires the mobilization of our entire society.

On the demand side of the food equation, there are four pressing needs—to stabilize world population, eradicate poverty, reduce excessive meat consumption, and reverse biofuels policies that encourage the use of food, land, or water that could otherwise be used to feed people. We need to press forward on all four fronts at the same time.

The world needs to focus on filling the gap in reproductive health care and family planning while working to eradicate poverty. Progress on one will reinforce progress on the other. Two cornerstones of eradicating poverty are making sure that all children—both boys and girls—get at least an elementary school education and rudimentary health care. And the poorest countries need a school lunch program, one that will encourage families to send children to school and that will enable them to learn once they get there.

At the other end of the food spectrum, a large segment of the world's people are consuming animal products at a level that is unhealthy and contributing to obesity and cardiovascular disease. The good news is that when the affluent consume less meat, milk, and eggs, it improves their health. When meat consumption falls in the United States, as it recently has, this frees up grain for direct consumption. Moving down the food chain also lessens pressure on the earth's land and water resources. In short, it is a win-win-win situation.

Another initiative, one that can quickly lower food prices, is the cancellation of biofuel mandates. There is no social justification for the massive conversion of food into fuel for cars. With plug-in hybrids and all-electric cars coming to market that can run on local wind-generated electricity at a gasoline-equivalent cost of 80¢ per gallon, why keep burning costly fuel at four times the price?

On the supply side of the food equation, we face several challenges, including stabilizing climate, raising water productivity, and conserving soil. Stabilizing climate is not easy, but it can be done if we act quickly. It will take a huge cut in carbon emissions, some 80 percent within a decade, to give us a chance of avoiding the worst consequences of climate change. This means a wholesale restructuring of the world energy economy.

The easiest way to do this is to restructure the tax system. The market has many strengths, but it also has some dangerous weaknesses. It readily captures the direct costs of mining coal and delivering it to power plants. But the market does not incorporate the indirect costs of fossil fuels in prices, such as the costs to society of global warming. Sir Nicholas Stern, former chief economist at the World Bank, noted when releasing his landmark study on the costs of climate change that climate change was the product of a massive market failure.

The goal of restructuring taxes is to lower income taxes and raise carbon taxes so that the cost of climate change and other indirect costs of fossil fuel use are incorporated in market prices. If we can get the market to tell the truth, the transition from coal and oil to wind, solar, and geothermal energy will move very fast. If we remove the massive subsidies to the fossil fuel industry, we will move even faster.

Along with stabilizing climate, another key component to avoiding a breakdown in the food system is to raise water productivity. This could be patterned after the worldwide effort launched over a half-century ago to raise cropland productivity. This extraordinarily successful earlier endeavor tripled the world grain yield per acre between 1950 and 2011.

Raising water productivity begins with agriculture, simply because 70 percent of all water use goes to irrigation. Some irrigation technologies are much more efficient than others. The least efficient are flood and furrow irrigation. Sprinkler irrigation, using the center-pivot systems that are widely seen in the crop circles in the western U.S. Great Plains, and drip irrigation are far more efficient. The advantage of drip irrigation is that it applies water very slowly at a rate that the plants can use, losing little to evaporation. It simultaneously raises yields and reduces water use. Because it is labor-intensive, it is used primarily to produce high-value vegetable crops or in orchards.

Another option is to encourage the use of more water-efficient crops, such as wheat, instead of rice. Egypt, for example, limits the production of rice. China banned rice production in the Beijing region. Moving down the food chain also saves water.

Another valuable tool in the soil conservation tool kit is no-till farming. Instead of the traditional practice of plowing land and discing or harrowing it to prepare the seedbed, and then using a mechanical cultivator to control weeds in row crops, farmers simply drill seeds directly through crop residues into undisturbed soil, controlling weeds with herbicides when necessary. In addition to reducing erosion, this practice retains water, raises soil organic matter content, and greatly reduces energy use for tillage.

These initiatives do not constitute a menu from which to pick and choose. We need to take all these actions simultaneously. They reinforce each other. We will not likely be able to stabilize population unless we eradicate poverty. We will not likely be able to restore the earth's natural systems without stabilizing population and stabilizing climate. Nor can we eradicate poverty without reversing the decline of the earth's natural systems.

Achieving all these goals to reduce demand and increase supply requires that we redefine security. We have inherited a definition of security from the last century, a century dominated by two world wars and a cold war, that is almost exclusively military in focus. When the term national security comes up in Washington, people automatically think of expanded military budgets and more-advanced weapon systems. But armed aggression is no longer the principal threat to our future. The overriding threats in this century are climate change, population growth, spreading water shortages, rising food prices, and politically failing states.

We all need to select an issue and go to work on it. Find some friends who share your concern and get to work. The overriding priority is redefining security and reallocating fiscal resources accordingly. If your major concern is population growth, join one of the internationally oriented groups and lobby to fill the family planning gap. If your overriding concern is climate change, join the effort to close coal-fired power plants. We can prevent a breakdown of the food system, but it will require a huge political effort undertaken on many fronts and with a fierce sense of urgency.

[From Full Planet, Empty Plates: The New Geopolitics of Food Scarcity by Lester R. Brown (New York: W.W. Norton & Co.) Supporting data, video, and slideshows are available for free download at www.earth-policy.org/books/fpep .]

ARCTIC SEA ICE FREEFALL IS MIRROR IMAGE OF CARBON DIOXIDE ASCENT

By Emily E. Adams

www.earth-policy.org/data_highlights/2014/highlights44

Earth Policy Institute

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Graph on Late Summer Arctic Sea Ice Extent and Atmospheric Carbon Dioxide Concentration, 1000-2013

The amount of Arctic sea ice has plummeted in recent decades—a bold manifestation of the rise in temperature resulting from the rapid increase in carbon dioxide (CO₂) in the atmosphere. After staying below 300 parts per million (ppm) for some 800,000 years, the concentration of CO₂ in the atmosphere skyrocketed as humans started burning more and more fossil fuels. In 2013, atmospheric CO₂ averaged 396 ppm. Carbon dioxide traps heat, reducing the amount escaping into space, thereby warming the globe. Together with other heat-trapping gases, the additional CO₂ has so far raised the Earth’s temperature by 1.4 degrees Fahrenheit (0.8 degrees Celsius) since the late 19th century. The extra heat is melting snow and ice around the world, including Arctic sea ice, changing the face of the planet as we know it. For some 1,500 years the late summertime size of the North Pole’s ice cap fluctuated narrowly around 10 million square kilometers; in recent summers, ice covered half that area. The ice pack is expected to keep shrinking as temperatures continue to rise.

[For more information on the changing climate and how to stabilize it, see World on the Edge, by Lester R. Brown at www.earth-policy.org/books/wote Data and additional resources available at www.earth-policy.org]

DIVISION RESOLUTIONS

Passed June, 2014

OPPOSE THE SINGLETON QUARRY

Whereas, Singleton Stone, LLC, has proposed a 600 acre limestone quarry southeast of the intersection of I-65 and State Road 2 in Eagle Creek Township, Lake County; and

Whereas, the quarry could eventually be 400-450 feet deep and discharge up to 80 million gallons of water per day to the Singleton Ditch; and

Whereas, a large increase of flow into the Singleton Ditch will increase the erosion of sand in the ditch and deposit it downstream in the Kankakee River in Illinois, an area already heavily impacted by sand and silt deposition; and

Whereas, the diversion of water from the existing network can negatively impact the quantity of water in the Kankakee River from I-65 to the Singleton Ditch near Momence; and

Whereas, the drainage of the land for the quarry will seriously impact the availability of ground water for local families and farms and could cause an aquifer drawdown in excess of five miles of the site; and

Whereas, the changes in water quality and temperature will have detrimental effects on both the flora and fauna of the Singleton Ditch and the Kankakee River; and

Whereas, the Indiana Department of Natural Resources states the proposed quarry site contains both “floodway” and a “Special Flood Hazard” area; and

Whereas, the land in question was once part of the Grand Kankakee Marsh and could be restored to wetland as part of a number of government programs that encourage restoration;

Therefore, be it resolved that the Indiana Division of the Izaak Walton League of America, gathered in Convention June 8, 2014, at Evansville Chapter, opposes the Singleton Quarry near Lowell, Indiana as proposed.

And be it further resolved, the Indiana Division opposes the issuance of any local, state, and federal permits that would allow the quarry to operate.

2014.

OPEN UP THE GARY LAKEFRONT TO SHORELINE ANGLERS

Whereas, most of the Lake Michigan shoreline in Lake County, Indiana is within the city limits of Gary, Indiana, and

Whereas, the sport fishery of Lake Michigan is largely funded by fishing license fees purchased by anglers that fish from shore as well as by boat, and

Whereas, there is not a single location within the Gary city limits available for shoreline fishing, and

Whereas, 1% of the United States Gross Domestic Product is spent on wildlife associated recreation, including angling according to the National Survey of Fishing, Hunting, and Wildlife Associated Recreation, and

Whereas, shoreline access can instill a sense of ownership and pride in the shoreline and Lake Michigan and help educate anglers and children on the need for conservation of the Lake, the shoreline, and the fishery,

Therefore, Be it Resolved, that the Indiana Division Izaak Walton League, in Convention June 8, 2014, and the Evansville Chapter, insist that all appropriate government agencies work together with the City of Gary to open portions of its lakefront to shoreline anglers so that they have the ability to reach the Lake Michigan sport fishery.

Be it Further Resolved that this access be available free of charge to anglers and include free parking, access to bathroom facilities, and include handicap access.

IWLA CHILDREN'S OUTDOOR BILL OF RIGHTS

Whereas, today, children in the United States spend more time indoors and with electronic equipment than they do outside in nature or in unstructured play and,

Whereas, Richard Louv wrote in "Last Child in the Woods" that there are numerous negative results in modern childhood development that can be lessened or eliminated by children spending more time outside and interacting with nature and,

Whereas, one of his propositions suggests that because there are so many fewer children exposed to nature and unstructured recreation today that there may well be fewer conservationists in the future and,

Whereas, in 2013, the League approved a new strategic plan that includes the goal; "Connect more young to people to conservation and outdoor recreation." and,

Whereas, many states and organizations have developed a "Bill of Rights" to help market conservation and nature-based recreation to young people and the general public.

Whereas, an “Izaak Walton League of America Children’s Bill of Rights” can be a powerful tool for members, chapters, and divisions to use to promote the League, its chapters and their facilities, and conservation to the public, therefore

Be It Resolved, The Indiana Division, IWLA, assembled in Convention June 8, 2014, at the Evansville Chapter, adopts the following as a “Children’s Bill of Rights” to promote conservation and outdoor recreation to the American public and its children.

Every child should have the opportunity to:

- * Play outside in unstructured recreation every day.
- * Camp under the stars.
- * Swim in a lake or river.
- * Climb a tree.
- * Learn to fish.
- * Plant a garden.
- * Shoot a bow or a rifle.
- * Explore nature in their neighborhoods.
- * Celebrate America’s natural heritage.
- * Grow up to love the out-of-doors and to protect it for their children.

THE BLUEGILL AS THE OFFICIAL STATE FISH OF INDIANA

Whereas, The Bluegill (*Lepomis macrochirus*) is the species of fish most commonly caught by Indiana children being introduced to the outdoors by their friends or families, and

Whereas, The Bluegill is common throughout the State of Indiana and can help introduce children to outdoor sporting activities, and

Whereas, developing an interest in angling can lead to an increased interest in water quality, natural resource conservation, and the earth sciences, and

Whereas, catching and eating bluegill and other fish can be part of a healthy diet, and

Whereas, children of today spend more time with electronics than they do in unstructured outdoor activities, therefore

Be it Resolved, that the Indiana Division IWLA, assembled in Convention June 8, 2014, at the Evansville Chapter, recommends that the State of Indiana adopts and promotes the Bluegill as the official State Fish of Indiana.

REGULATED HUNTING IN INDIANA IS AN ETHICAL PURSUIT

Whereas, a policy that wildlife endemic to Indiana are owned by no one and are to be held in trust by government for the benefit of present and future generations is one of the keystones of the North American model of wildlife conservation, and

Whereas, hunting in Indiana is a traditional pastime revered by many generations of Hoosiers and is a major economic engine for many parts of the state, and

Whereas, regulated hunting is recognized as an effective wildlife management tool, and

Whereas, the Boone and Crockett Club, founded by Theodore Roosevelt in 1887, defines ethical hunting as:

- * Obeying applicable laws and regulations.
- * Respecting the customs of the locale where the hunting occurs.
- * A personal code of conduct that reflects favorably on the abilities and sensibility as a hunter.
- * Acquiring and maintaining the necessary skills to make a kill as certain and as quick as possible.
- * Behaving in a way that will bring no dishonor to the hunter, the hunted, or the environment.
- * Recognizing that these tenets are intended to enhance the hunter's experience of the relationship between predator and prey, one of the most fundamental relationships of humans and their environment, and

Whereas, ethical hunting demonstrates to the public, the safe and responsible use of firearms and archery equipment, and

Whereas, private interests have sought to legalize the shooting of endemic species of big game animals for profit in confined facilities, therefore

Be it Resolved, that the Indiana Division IWLA, in convention June 8, 2014, at the Evansville Chapter, recommends that the State of Indiana implement a policy on hunting that:

- * Condemns the killing of any big game animal kept in a fenced area, or released from a confined space, to be killed in a situation where the game lacks the equivalent chance to escape afforded to free-ranging animals,
- * Condemns any activity that assures a shooter or customer a certain or unrealistically favorable chance of a kill or to kill a specific animal, including drugging animals,
- * Condemns the artificial or unnatural enhancement of a game species genetic characteristics. This includes artificial insemination, controlled or unnatural breeding programs, cloning, and translocation of breeding stock for shooting purposes,
- * Condemns the practice of transporting big game species from one location to another, within the State or between states, so it can be killed for a fee,
- * Condemns the privatization or private ownership of species of big game endemic to Indiana for the purpose of shooting or for breeding selective traits,
- * Condemns the practice of shooting an animal from a remote location using the internet or other technical device.

Be it Further Resolved, that the Indiana General Assembly define “ethical hunting” as defined by the Boone and Crockett Club, and

Be it Further Resolved, that the Indiana General Assembly recognizes that the public perception of hunting in Indiana reflects on the State as well as the hunter.

ETHYLE BLOCH LEADERSHIP AWARD

Whereas, Ethyle Bloch was a valued member of the Fort Wayne and Argos Chapters and Indiana Division of the Izaak Walton League of America for many years, and

Whereas, Ms. Bloch was known for her dedication to League principles and her resolve in standing up to opposition, and

Whereas, Ethyle was highly respected for her diligent work to research water quality issues and to promote the issues and the rules and regulations to address them, and

Whereas, Ms. Bloch served as the first female president of the Indiana Division and held several other leadership positions in the IWLA, and

Whereas, Ms. Bloch and husband Bill were founding members of the ACRES Land Trust in northeast Indiana where she served as treasurer for 17 years, and

Whereas, Ethyle served in leadership positions with the River Greenway in Fort Wayne, the League of Women Voters, and the Hoosier Environmental Council, and

Whereas, Ethyle Bloch is a great example of effective leadership; therefore

Be it Resolved, that the Indiana Division of the Izaak Walton League of America, in convention June 8, 2014, at the Evansville Chapter, in honor of the memory of Ethyle Bloch, creates the Ethyle Bloch Environmental Leadership Award to acknowledge Indiana Division members for their long standing, dedicated, and effective leadership service to the environmental goals of the IWLA.

SUPPORT INCREASED PUBLIC LAND ACQUISITION IN INDIANA

Whereas, approximately 4% of Indiana land is publically owned and not all of it is available for outdoor recreation, and

Whereas, the Indiana Department of Natural Resources, US Fish and Wildlife Service, National Park Service, other government agencies, and non-profit groups have ongoing efforts to acquire more land for conservation and public use, and

Whereas, the State of Indiana does not have a regular and adequately funded program for the purchase of more public land, therefore

Be it Resolved, the Indiana Division IWLA, in convention June 8, 2014, at the Evansville Chapter, supports:

- * The creation of a permanent state program to purchase additional land for conservation and recreation that commits a minimum of \$10.00 of public money for every \$1.00 raised for the Indiana Heritage Trust.
- * All efforts of other government agencies and non-profits organizations to buy more land and easements for these purposes.
- * A state initiative to maximize federal matching grants based on hunting and angling licenses sold in Indiana and any donations made to wildlife conservation programs.

Be it Further Resolved, this support should include, from all League entities, formal organization letters, public testimony, press releases and guest editorials, membership alerts, fundraising and expenditures, and partnering with agencies and non-profits, etc., to attain these goals.

ANNUAL PLANNING BETWEEN THE INDIANA DNR AND ITS CORE FISH AND WILDLIFE CONSTITUENCIES

Whereas, since 1993, the Illinois Conservation Congress has given the Illinois Department of Natural Resources and their fish and wildlife constituencies a formal process to propose strategies and actions to take to state officials to promote the cause of conservation and wildlife associated recreation in Illinois, and

Whereas, the goal of the Congress is to ensure professional and sustainable management of natural resources and recreational opportunities and the enjoyment of these resources for this and future generations, and

Whereas, such an event can be used to develop proposals for funding clean water programs, land acquisition, increased public access, and DNR operations, and

Whereas, there is currently no regular forum for the majority of fish and wildlife organizations in Indiana to present a unified and comprehensive platform to the Indiana Department of Natural Resources, and

Whereas, the actions and recommendations made by the stakeholders at such an event could be used by the DNR as a platform to promote those recommendations within state government, therefore

Be it Resolved, that the Indiana Division IWLA, assembled in convention June 8, 2014 at the Evansville Chapter, encourages and requests the establishment of an annual meeting and planning event between the Indiana Department of Natural Resources and its core fish and wildlife stakeholders from around the state.

This event should be structured in a way that encourages an exchange of ideas between the DNR and the stakeholders and results in a list of immediate and long term recommendations the DNR can take away as a directive from its core fish and wildlife constituencies.

PUBLIC LANDS & FISH & WILDLIFE REPORT

June 7, 2014

By Chuck Bauer

There is a lot of activity that affects our Fish and Wildlife Resources and our Public Lands. A great deal of activity both statewide and nationally deal with wetlands, streams, rivers, and watershed and aquifer protection. The first is the newly authorized Farm Bill. It couples Federal Crop Insurance with conservation compliance. There is significant funding for wetlands protection and agricultural

mitigation banks. There are special provisions for the Prairie Pothole Region to protect migratory bird nesting grounds. Our IWLA office in Washington was among the groups instrumental in this win. We will still lose wetlands but it will be slowed.

Secondly the U. S. Corps of Engineers and the EPA have reached agreement on a proposed rule to protect headwater streams and wetlands. This provides some protection to wetlands which have been missing since two Supreme Court decisions overturned provisions of the Clean Water Act a decade ago. This is a big deal which the IKEs and other conservation and hunting and fishing groups have joined forces to enact. Every Ike should log on to IWLA.ORG and click on 'support clean water rule', and send a letter in support of this rule. There will be a continuing negotiation to strengthen or weaken this program. We have made great headway but keep involved.

There are a number of State water activities which have are important and impact fish and wildlife. The first is called the 'In Lieu of' program. This program would allow someone or entity which destroyed a protected wetland or stream to pay a fee to the State to mitigate the damage. The State would then be responsible to the EPA and Corps to restore some wetlands or streams to mitigate the loss. This is a form of mitigation banking which is favored by developers, industry, utilities and Chambers of Commerce to make permitting to destroy wetlands and streams easier. It is good and bad depending on implementation. The current plan is that Ducks Unlimited will write the Plan for Indiana and the IDNR Division of Fish and Wildlife will manage the restorations. If the fees are high enough and all funds go to the IDNR to implement this program it is acceptable. If the fees are too low and the funds go to the State treasury we could see massive amounts of our hunting and fishing license fees diverted to mitigate wetlands destruction. We need to continue to watch this.

There is also a State activity to study and catalog our water resources. This is currently being done by Purdue University. We need to make sure this is not a precursor to allowing Indiana to sell water resources to other states with water shortages. There is a nationwide water resource problem. Indiana needs to protect our water resources.

On a local level we have a new problem. The coal mining industry has incrementally changed the practices of how to dispose of wastes due to mining. When coal is extracted a great deal of toxic waste labeled Gob or Coal Fines is created. This is what is removed from the coal before it is shipped. In many cases there is as much waste as there is coal, so we are talking massive waste-- trainloads a day. The past practice was to consolidate this waste in an area away from streams and aquifers and cap it with highly impermeable soils. This is expensive and the coal industry always looks for ways to cut corners. They have succeeded in getting approval from the EPA to liquefy and pump these wastes into the stripper pits and impoundments they create as a part of reclamation. They are now permitted to and are filling these impoundments with highly sulfate laden wastes in all of their impoundments. They are allowed to fill these "Recreational Impoundments" with waste to within 4 feet of the surface in 75% of the pit and within 8 feet of the remaining 25%. The big problem is the sulfates which kill most micro and macro invertebrates. This is the bottom of the food chain and effects all fish and wildlife above it. No more great fishing in stripper pits. The real problem is that the coal company is only responsible for these impoundments while the mine is active and the property is still under bond. Any failure of the levy or dam wall in the future, any seismic activity, any mine subsidence, will create a flood of sulfate laden material that will impact our flood plains and rivers and streams for miles. We have had minor coal fine impoundments and pumping pipe spills in the South Fork in the past two decades and the stream has not recovered.

Canned Hunting and Deer Farms: There is a flurry of activity both nationally and in Indiana about Canned Hunting and High Fenced Hunting Preserves. Chronic Wasting Disease continues to spread and most believe captive deer farms are the major cause for the increase. Many states are now strengthening laws to curtail deer farms. Many other States have transferred deer farm regulation from the Departments of Natural Resources to the State agriculture department. The Indianapolis Star published a series of articles on high fence hunting and Cervid farms. These were well researched articles and were very critical of these operations. These articles and the prodding by IWLA and other hunting and fishing organizations have prompted the Indiana Legislature to convene a summer study committee to plan possible legislation. The Fair Chase Coalition to which I

represent the IWLA is very involved. This team of sportsmen organizations is being coordinated by the Indiana Wildlife Federation in Indianapolis. We are working with the legislature to identify expert witnesses nationwide to present to this committee. We have one who has already committed to come and he only asks that we pay travel and lodging. I am requesting that either the Indiana IWLA Endowment or the Indiana Division commit up to two thousand dollars to help defer travel and lodging expense and copying and printing expenses for this legislative battle. We will only reimburse expenses for which we have receipts. I again can't praise enough the work Barb Simpson and the IWF board has done in leading this effort. The Indiana Wildlife Federation, the Indiana Deer Hunters Association and the Indiana Chapter of the Wildlife Society have filed an Amicus Curia (Friend of the Court) brief supporting Indiana Attorney General Greg Zoeller's appeal of the Harrison County Court decision that concluded that canned hunting cannot be prohibited by the state. A copy of the press release is available.

The South West Indiana NAWM proposal submitted by DU for \$1,000,000 has been awarded. The monies will be used for land acquisition for the Patoka National Wildlife Refuge. The Indiana Division of the IWLA is a partner in this endeavor with our \$1,000 pledge.

KANKAKEE RIVER REPORT

June 7, 2014

By Jim Sweeney

Planning for the Grand Kankakee Marsh National Wildlife Refuge continues, now with a new planner in the USFWS Region 3 office. Jeanne Holler is the new planner replacing Tom Larson who just retired and was the primary planner for the Refuge since the beginning. Ms. Holler came down for a visit in May with the Friends of the Kankakee.

The Service is working with the Indiana Department of Natural Resources and other partners to get the approval of Indiana Governor Mike Pence before they go public with the planning effort again.

It is likely that the word "refuge" will be replaced with "conservation initiative" or other term that may be less worrisome to people afraid of a big, monolithic

federal project. We may also use one of the Native American terms for the river too, Aukiki or Theatiki.

The Kankakee Refuge will not be a large block of land that displaces people from their homes and farms. Most of it will be green corridors connecting existing conservation properties to others with maybe a few local bigger blocks. All land acquired for this refuge will be purchased from willing sellers only and the Service will use conservation easements and agricultural incentive programs too.

The Friends of Hackmatack created a national wildlife refuge on the Illinois/Wisconsin border in an area where the USFWS had no plans for a refuge. The result is the Hackmatack National Wildlife Refuge, approved in 2012.

I took some of their leaders for a Kankakee tour last week. These folks have a lot of good experience to share with the supporters of the Kankakee Refuge.

The regional planning folks met in May with other stakeholders and the DNR at Notre Dame to get an update on the FWS funded study on the Kankakee titled the “Assessment of Waterfowl Habitat Restoration as an Adaptive Mechanism for Water Sustainability in the Grand Kankakee River Watershed.”

The study is going to look at the impact of the proposed refuge on the availability of water for all purposes throughout the Kankakee River watershed.

From the study, “Therefore, the Kankakee watershed is in particular need for restoration not only because it is highly modified as a result of its hydrologic alterations, but also because the transformation of the Grand Kankakee Marsh represents one of the greatest losses of waterfowl habitat in North America. Creation of a national wildlife refuge could herald one of the greatest waterfowl comeback stories in American history, if effectively implemented. The study should be completed in the spring of 2015.

The County Surveyor is still pursuing the re-meandering project on the Kankakee River in Laporte County and the Porter County Chapter will likely still be involved. The site under consideration is 30 acres between two parcels owned by Indiana DNR, all of which have old river meanders on them. The proposal is to reconnect both ends of the meander to the river and engineer the artificial channel to serve as a vegetated overflow during high water events.

Members of PCC last week went on a boat ride with the Surveyor and Dr. Thomas Simon of Indiana State University, author of “The Fishes of Indiana.” He was very impressed with site and thought it would be a perfect nesting site for northern pike and the reintroduction of several species of fish that have been extirpated from the Kankakee.

The Porter County Chapter is also working with the LaPorte County Surveyors office to create “The LaSalle Plan.” Akin to the Marquette Plan on Lake Michigan, the LaSalle Plan will be a comprehensive plan for the Kankakee River that will restore fish and wildlife populations, lessen flooding and erosion, and increase water quality and the availability of water for all users.

THE BEES' NEEDS

by Sharon Levy

Reprinted from Resilience.org

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The sky darkens above the ruins of a cluster of ponderosa pine that burned 20 years ago. Two women stand amid grass and wildflowers, in a field studded with the charred stumps and downed trunks of dead trees. In the dry hills of Montana’s Helena National Forest, the landscape can take decades to recover after a burn.

But as the sun emerges from behind a blanket of thunderclouds, the air comes alive with buzzing, swooping activity. Bees begin to appear among the blossoms of blanket-flower, yarrow, and vetch. “Here comes a little cutey-pants,” murmurs Elizabeth Reese, a research assistant at Montana State University. She swoops a bee into her net, flicking her wrist to trap it near the top of the cone-shaped mesh. Then she expertly transfers the insect to a clear vial and hands it to me. The black and yellow specimen—a female—squirms inside its plastic prison, orbs of bright yellow jiggling on its hind legs. Bees have evolved brushes of hair designed to trap and carry pollen; this one appears to be carrying a full load.

Over the past 30 years, residents of Montana and neighboring western states have watched and worried as wildfires in their region have grown in both number and intensity. Data collected by the U.S. Forest Service reveal that the average number of fires that burned more than 1,000 acres in Montana and Wyoming has doubled since the 1970s; in Idaho, the number has nearly quadrupled.

And with the increased threat of devastating wildfires comes the increased need to find new ways of fostering biodiversity in their aftermath. That's why Reese and her supervisor, Laura Burkle, a community ecologist at Montana State, are poking around the wildflowers in a burned-over pine grove on this overcast midsummer day. Much of Burkle's research focuses on wild pollinators, a group of insects made up largely of the tens of thousands of native bee species that are far different from the honey-makers people usually think of when they hear the word "bee." For the past few years, she has been looking especially closely at these creatures as part of a larger study on biodiversity's role in helping landscapes recover after wildfire.

Burkle and many other ecologists have hypothesized that wild pollinators are key to speeding up the process by which burned forests bounce back from barrenness to fecundity. For example, lupine—a wildflower that often pops up on sites recently affected by fire—relies on wild pollinators for reproduction. Once established, the plant's roots host nitrogen-fixing bacteria that enrich the soil below, paving the way for the sprouting of shrubs and conifer seedlings. Other pollinator-dependent wildflowers and shrubs nourish all manner of woodland creatures, from mice to grizzly bears. (The latter are fond of huckleberries, the fruit of a shrub that relies on bees to carry its pollen.)

Pollination biologists and ecologists are also aware, in a way that many non-scientists aren't, of the critical yet largely unheralded role that wild pollinators already play in global food production. It's a role that has grown even more vital to humans as honeybee populations decline. We need wild pollinators to help restore burned forest landscapes, to help feed us, and to help provide a number of other important ecosystem services.

But if we want wild pollinators to keep helping us, we have to start helping them. Because thanks to climate change, their habitats around the globe are being dramatically altered. Sometimes their habitats are disappearing altogether.

The best-known threat facing bees is colony collapse disorder, the syndrome that has nearly halved the domesticated honeybee populations of North America and Europe in only seven years' time, leaving millions of hives empty and littering the landscape with tiny carcasses. No single cause for CCD has yet been discovered. But many scientists believe that the syndrome is the result of multiple negative factors, including the widespread use of pesticides, infestation by parasitic mites, and the significant stresses that honeybees undergo when they're trucked cross-country—thousands of miles from their home bases—to pollinate our crops.

More than one-third of the world's food crops, in fact, rely on pollinators to enable them to set fruit. But modern agriculture has tried to place the full weight of this monumental task onto the fragile backs of domesticated honeybees. That scenario carries real risks. "If you look at the bigger picture," Burkle says, "CCD shows the dangers of relying on one type of bee to pollinate our food crops. In nature, there are many bee species doing the work." Indeed, a 2013 study conducted by an international team of 50 scientists and published in the journal *Science* noted that across the globe, wild pollinators were actually twice as effective as domesticated honeybees at increasing the proportion of a plant's flowers that later develop into mature fruits or seeds.

Despite the ecologically essential roles wild pollinators play, most people don't give them too much thought, aside from the most highly visible species: butterflies, bumblebees, wasps, and flies. But Burkle has been obsessed with them for years. Before she began researching them among the towering ponderosa pines and crystalline lakes of Helena National Forest, she was studying them in a place that couldn't look or feel any more different: Carlinville, Illinois, a distant exurb of St. Louis whose primary claim to fame is as the nation's largest repository of Sears Catalog Homes concentrated in a single neighborhood.

In 2009 Burkle and other scientists embarked on a research project that paired their expertise in pollination biology with a penchant for historical sleuthing. For nearly three decades bracketing the turn of the last century, from 1887 until 1916,

the American entomologist Charles Robertson had observed and collected bees in the forest surrounding Carlinville, carefully recording which plants the insects visited, when they visited them, and when the plants began to blossom. A century later, Burkle and her colleagues decided to check in on the area's wild bee population and to look at local pollination patterns, to find out what had changed and what had remained the same.

The striking results of their report were published last year in *Science*. Half of the bee species that Robertson originally recorded had become locally extinct. Crucial relationships between bees and plants that existed in his time had ended; either the plant or the pollinator had disappeared, or else both organisms had fallen out of sync, their symbiotic rhythms disrupted by the dissonance of climate change. Over the past century, average winter and spring temperatures in Carlinville have risen by more than three degrees. Wildflowers were blooming earlier in the spring, Burkle and her team discovered—but many wild bees were becoming active earlier still. Their accelerated schedules meant that pollinating bees in Carlinville were flying 22.5 fewer days than they had flown in Robertson's time.

Even so, Burkle and her colleagues got the chance to see for themselves just how flexible wild pollinators could be under highly stressful circumstances. By 2010 whatever fragments of forest were still to be found in and around Carlinville were essentially tiny islands of wildness surrounded by acres of managed agricultural land, retail developments, and homes. Because of the destruction of their habitat, many of Carlinville's remaining wild bees could be observed collecting pollen from flowers they would never have visited 120 years ago. If one species of wild bee couldn't find any of the toothwort blossoms that had been its favorite nineteenth-century food, for example, it would make do, gathering pollen from a neighboring snakeroot or spring beauty plant instead.

For many years the assumption in pollination biology had been that plants and pollinators tended to be specifically adapted to one another, with this insect fitting into that blossom like a key fits into a lock. But over the past decade, a new way of looking at plants and pollinators—as large, diverse, holistic communities, rather than as sets of pairs—has shown that the vast majority of flowering plants and the insects that feed from them are actually generalists: each one might have many

different partners in the dance of pollination. Models that are based on this insight, which is known as ecological network analysis, suggest that plant communities can respond with surprising resilience whenever they're faced with the loss of any single species of pollinator, since there are so many other pollinators around to pick up the slack.

But the information Burkle has gathered—much of it from her Carlinville study—complicates this picture. When one bee species disappears from a community, she has found, the surviving species that fill in the gap by visiting a wider variety of plants are actually less efficient as pollinators. Bees can adapt to pollinate new plants, but they are most helpful to their ecosystems when gathering pollen from a single species at a time. Pollen from a gilia blossom doesn't help an aster plant to set seed. Or, to put it another way: adaptability is a wonderful thing, but biodiversity is even better.

“We need lots of species pollinating our crops and our wild plants,” says Burkle. “Different bees are better pollinators for certain plants, or at certain times of the day or season. Having them all is the safe way to go.”

Berry Brosi, an ecologist at Emory University, has been testing this theory and has found data consistent with it. A few years ago, he and a colleague began tracking the behavior of 11 species of bumblebee that were jointly pollinating a large patch of larkspur, a common wildflower. After dividing the patch into plots, they then captured and temporarily removed the most abundant bumblebee species in each plot.

When a single, dominant bee species was taken out of the picture, Brosi and his colleague discovered that the larkspur tended to set fewer seeds, which translated into fewer flowering plants the following spring. Brosi's study, recently published in the Proceedings of the National Academy of Sciences, underscores the crucial importance of keeping wild pollinator communities healthy—as well as the importance of keeping them diverse.

Some wild pollinators are more recognizable than others. It's relatively easy, for example, to identify a chubby, buzzing bumblebee, carrying bright masses of pollen on its legs. But others are more mysterious. (“That fuzzy-faced one you love so much,” I overhear Reese say to Burkle at one point. “Is that a fly or a

bee?") When I try to describe to Burkle a bumblebee I had seen among the burned-down ponderosa pines, I find myself likening it to a tiny Huey helicopter. She laughs and shares a description of one of her own favorites: a bee with a black-and-white-striped abdomen offset by a stylish metallic green thorax. "She looks all dressed up and ready to go to a party," she says. "So I call that species Party Pants."

As it happens, Montana's wild pollinators are so little studied that Burkle and her research assistants often come across species previously unknown to science. Walking with Burkle and Reese through their survey plots, I watch them delicately caress the leaves of the many different plants they're cataloguing. Every bee that visits a blossom will be captured and placed in a plastic vial, which is then carefully labeled. Later, during the winter months—while the next generation of bees is waiting to emerge from nests underground or inside of tree trunks—Burkle and her team will meticulously study each captured insect and identify it to species.

Many of these insects are quite different from what people usually think of as a bee. Unlike hive-dwelling honeybees, native bees are solitary creatures. A female typically creates brood cells underground or in the hollowed-out core of a plant stem, where she lays a few eggs, leaving pollen she has collected to feed her larvae once they hatch. Plenty of wild bees don't look bee-like: some are iridescent green or blue; others are solid black and resemble stout, hovering ants. "Birders talk about the difficulty of identifying little brown birds," Burkle notes. "We deal with a lot of little black bees. We can't tell them apart until they're pinned under a dissecting scope." Magnified, a particular species might be identified by the pattern of its wing veins, or the number of spines that are visible on a tiny segment of leg.

A day in the field with Burkle and Reese is a crash course in the dazzling diversity of wild pollinators, and of the plants they service. In midsummer, when I visited Montana, the bright flowers of prairie smoke had already faded, leaving behind the wispy seed heads that give the plant its name. Bees and flies cruised right by them, en route to white clumps of blossoming yarrow, purple bells of campanula flowers, or brilliant blooms of toadflax. Leafcutter bees carried off chunks of greenery to line their nests. Sweat bees lapped salt from my arm. Bee

flies moved among the blossoms, feeding on nectar. These flies are masqueraders: they lack a stinger, but their yellow and black stripes are usually enough to keep predators away.

Brosi sees Burkle's work as emblematic of a relatively new idea in conservation biology: a concerted effort to restore not only single species but also the complex interactions among plants, animals, and phenomena—such as fire—that define the fundamental dynamic of any ecosystem. It's the same idea that has informed the shift in thinking among forest managers with regard to wildfire suppression: the policy, ironclad for the first half of the twentieth century, dictating that all forest fires be put out as soon as they were discovered. After much debate, ecologists who had long recognized that naturally occurring fire was, in fact, an important ecological process that fostered biodiversity were able to convince the National Park Service to change its policy in 1968. "Historically, we've had this very simplistic idea of trying to preserve 'pristine' nature," Brosi says. "But we've come to realize that nature isn't static. Change and development are normal. Fire is essential to many natural communities. It's just in the last decade that we've begun to study plant-pollinator networks, and the ways they change over time."

The early work that pollinators do after a fire sets the stage for a biodiverse future.

After studying how Carlinville's wild pollinators reacted and adapted to the loss of their habitat because of climate change and development, Burkle says that she is just now beginning to get a good feel for the ways that plant-pollinator networks respond to varying intensities of fire. In some cases, she has discovered, only a limited number of plants will colonize the ravaged land in the first few years following an especially hot burn. But forests that have been hit by what's known as a mixed-severity fire—very hot in some spots, but relatively cool in others—will often support a greater array of wildflowers, grasses, and shrubs.

"The hypothesis is that more diverse plant communities will host more diverse groups of pollinators," Burkle says. "We're excited to get our pollinators identified and to see if that idea proves out."

What ties this sort of wild-pollinator research to the ongoing debate over wildfire-suppression policies and colony collapse disorder is a shared first principle. The best way—many would say the only way—to ensure healthy ecosystems is to encourage as much biodiversity within habitats as possible. That can mean letting a small wildfire burn, secure in the knowledge that the forest will restore itself once the flames have died out. It definitely means easing the burden placed on honeybees to carry the weight of feeding the world, and letting wild pollinators pitch in at this job they seem to perform so well. Which means, in turn, not undoing through overdevelopment and global warming relationships these insects have forged with plants over millions of years.

The secret life of wild pollinators is complex, fascinating, and as difficult to grasp as a flame. But what Laura Burkle, Elizabeth Reese, Berry Brosi, and other scientists like them have learned is that these tiny, oft-overlooked creatures have disproportionately large impacts on their ecosystems. Bees and wasps and butterflies shape the landscape—just as surely as fire does. When a wild bee flies from a blossoming plant back to its nest, its fuzzy body bright with pollen, it's carrying the seed of biodiversity.

[This article was made possible by the Jonathan and Maxine Marshall Fund for environmental journalism.]

INTERNATIONAL ENERGY AGENCY

“The economic case for energy transition to renewables is incontestable. A \$44 trillion investment is needed by 2050 to secure our energy future. Fuel savings if that investment is made in the same period equals \$115 trillion.” The math is not complicated.

PORTER COUNTY CHAPTER–PROFILE

By Jim Sweeney

The Porter County Chapter does an incredible amount of good conservation work as a chapter in the Izaak Walton League of America. What makes our work most noteworthy is that we have only 45 members.

Herb and Charlotte Read and a handful of others created the chapter in 1958 to help create the Indiana Dunes National Lakeshore. They succeeded and some of that group is still active in the chapter and our conservation work today.

In 2012, the chapter purchased 19.7 acres that straddle one-half mile of the East Branch of the Little Calumet River and raised \$100,000 in grants to pay for it. This parcel is adjacent to the 1250 acre Reynolds's Creek State Fish and Wildlife Area, and will provide access to the river and give us a classroom for our outdoor education activities.

Our Education committee has worked with local elementary and high school teachers to create programs we will take into the schools to introduce the students and their families to the IWLA and to the conservation of our natural resources. These events will be held at 5 local schools in the spring of 2014.

PCC members regularly attend meetings and submit comments on various air and water permit applications both locally and in Indianapolis. We have good working relationships with members of the northwest Indiana legislators in the General Assembly and our US Congressman is a member of the chapter.

Our members literally have decades of experience in regulatory affairs. Two members sit on state advisory boards and two serve on the IWLA Great Lakes Committee, one on the County Parks board, and others on the Porter County Plan Commission. We regularly attend the meetings of the Regional Plan Commission. A member is a regular voice for conservation on the Little Calumet River Basin Commission and another is a founding board member of the Friends of the Kankakee working to get a National Wildlife Refuge on the Kankakee River in Indiana and Illinois.

Also among our ranks is an expert botanist and another works for the Field Museum in Chicago, an expert on reptiles and amphibians. Another member built a "schoolhouse" on her lake property to use for conservation education programs. Most of our experts participate in various education programs throughout the year.

Another member has been referred to as the person that “knows more about the land of northwest Indiana better than anyone else.” He has helped to protect hundreds of acres in NW Indiana and another has been a strong, local voice for conservation for forty years and organizes an annual debate between the speech clubs of two local high schools on environmental issues.

We are very much involved in the protection of the Indiana Dunes and Lake Michigan, matters regarding both the East and West branches of the Little Calumet River, and restoration projects in the Kankakee River basin.

The Chapter meets on the third Saturday of each month at the Chesterton Town Library at 2:00 PM. It is a good idea to check first as the meeting locations change often. New members are welcome. Modest dues are \$59.00 per year and include membership in the Indiana State Division and the National IWLA.

To get more information about the Chapter and the activities of the League contact:

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The Porter County Chapter [PCC] is a small but very committed chapter in the Izaak Walton League.

WALTONIAN AND WEB

June, 2014

By Jim Daniels

The Hoosier Waltonian and Web 2 reports will be combined. The purpose of both is to inform and enable both members and others to have a positive influence on natural systems. The focus of the newspaper will primarily be for members and the focus for the Web 2 will be for non members.

Each issue of the Hoosier Waltonian will have submission guidelines and time frame. Since this is a quarterly publication it limits material to that which does not require fast action. The deadlines for submitting articles can be generalized as the quarterly Division meetings. Material can be submitted anytime, but the closer to deadline will lessen the chances of making the print.

Typed copy sent electronically is much preferred. An email attachment or simply as the email text will generally work. Avoid formatting such as numbering, bold, italic, and the like. Each submission will need to have contact information for the submitter. Remember, if you are sending in someone else's work, permission must be obtained.

The second Division web site, known as Web 2, is moving along slowly. Bluehost is the web hosting company, and they are contracted for three years totaling \$178.20. I will be using Wordpress as the design software, and this is free.

Issue focus will be on Population, Climate Change, Energy, and Food Production. Other issues will be covered as well, but these four are center stage. Suggestions and submissions are always welcome. Just email me with your thoughts. There are no deadlines with the web site, as data can be entered anytime. That is the advantage of the web. It is immediate.

Remember that with email either for the Waltonian or the Web, you will need to identify yourself in the subject line by entering either 'Waltonian' or 'Web 2'. If I do not recognize your name the mail will not be opened.

One thing I have not done is to seek a potential replacement for the Waltonian, and now, the web. I believe it is important for anyone as an officer or as committee chair to keep in mind someone to take their place. When I took over as editor of the Waltonian I decided to move the operation from typewriter and handwriting to computer. While I learned quite a bit from Tom Dustin, the previous editor, I needed to learn quite a lot quickly. I hope to be able to make any transition smoother for whoever is next.

While I do not plan to stop in the near future, sometime between the next 20 seconds and 20 years someone else will need to take over.

The mechanics of the Hoosier Waltonian are pretty straightforward, and will remain so as long as our printer is Clinton Color Crafters. They make life much easier and are extremely valuable to us. The web is a bit different. Younger folks are more savvy with the web and the huge potential and challenges. The technology changes pretty fast. Each time brings some things easier and some a bit more difficult.

POLITICAL SPENDING

[Reprinted from Spring 2014 issue of Earthwise, a publication of The Union of Concerned Scientists]

USC research has found that many companies can obstruct climate policy through their trade and business associations without any accountability to policy makers, the public, or even their own shareholders.

Of the 5,557 companies sent a questionnaire about their trade group memberships, only 33 percent responded publicly—despite this information being requested on behalf of company investors.

Of the companies that did respond, many did not disclose their seats on trade groups' boards of directors. Only one of the 32 respondents on the board of the U.S. Chamber of Commerce acknowledged its board membership.

Many of the companies that did acknowledge their trade group board seats claimed to disagree with the trade group's climate position. For example, 60 percent of National Association of Manufacturers board members that responded disagreed with the group's position.

The public deserves to know who is influencing policies that affect our health and safety. A proposed Securities and Exchange Commission (SEC) rule would help put us on this path. The rule would require publicly traded companies to disclose their direct and indirect political spending, including support for trade and business associations. This rule has already received nearly 700,000 positive public comments. But trade groups including the U.S. Chamber of Commerce and

National Association of Manufacturers are pressuring the SEC to drop consideration of the rule.

You can do something. Urge the SEC to prioritize passage of its disclosure rule and improve transparency in policy making. Comments can be sent through the USC website at www.uscusa.org/disclosurerule, or send your comments to: Securities and Exchange Commission, Re: File #4-637, 100 F Street NE, Washington, DC 20549.

TIM FERGUSON, PROFILE

I joined the Griffith chapter of the Izaak Walton League about 8 years ago after my late wife, our son Jon and I did the Hunter Education class there and came to like the club. This was 2007. A friend there, Done Jones, talked me into becoming a volunteer Hunter Education instructor for the Indiana DNE district 10. That was January 2008. That year after teaching about five classes I was awarded Instructor of the year for district 10 DNR. I won this award total of three times: 2008, 2010 and 2011. When I run a class I do it as a member of the Griffith Chapter and promote other events the club has going on. I would have the classes at Cabelas in Hammond, Gander Mountain Hobart, Bass Pro Shop in Portage, Lake County fair grounds, and the chapter house in Griffith. I would be asked to help other instructors who just started their first class or if an instructor has a large class I would go and help and I do as a member of the Griffith Izaak Walton League. Last year I taught over 280 students for the Indiana Hunter Education and handed out information about the League, the Griffith chapter events, how to build a bat or bird house.

I am the only Bow Hunter education instructor for IBHEA in the Northwest Indiana area and have been doing this for about four years now. I do not get the same amount of students as the Hunters Ed class but if you want to go bow hunt in some states and parts of Canada this class is required to do so. I only do one class a year and it varies in size from two students to 20 students. In both classes, Hunter Education and Bow Hunters Education I have been seeing more females taking the class and taking an interest in the outdoors.

About six or seven year ago, with the help from a follow Griffith Izaak Walton member (John Hetling) and a great understanding from my loving late wife Sharon, we started Griffith Izaak Walton League archery clinic. The first year we had about 35 kids and adults who wanted to learn the sport of archery. We had a great response from our members coming out to help set up and take down, teach, donate their time, arrows, targets. I even put together a moving 3D deer they can shot at for fun. Every year when we have these clinics we set a start time and stop time but we end up starting 30 min early and stopping an hour late. We have kids come at the start and shoot for five and six hours straight.

Three or four years ago I started doing a traveling archery clinic and would go to Gander Mountain, Bass Pro Shop and last summer a camp for kids who were abused and are wards of the state. When we did the camp for these kids, John Hetling and Paul Z. volunteered and without hesitation jumped in and helped. The Griffith Izaak Walton Chapter was able to gather up hats, clothing, fishing rod and reels and candy for these kids. We all fell in love with these kids and look forward to doing this again this year.

I have a great report with the Indiana DNR District 10, and members would ask me questions about any new rules on fishing or hunting, so I would have a DNR officer come talk to the club during our member meetings or I can call an Officer about any time to get an answer that is needed.

I started setting up a info table at Gander Mountain seven years ago then started it at the Hammond Cabelas store, handing out info about the Izaak Walton League and the Griffith Chapter and what we offer to the public and our members when they join. We have a great team of members who keep doing these stores(Bobby Wright, Paul Z., Jim and Shelly Lynch, Stan and his son Stosh and so many more). I keep striving to promote our club in any way I can and as long as we have members able to come out to help I will always will do this and I have more plans to help promote our club and the Izaak Walton League.

I have been going to area schools trying to get the NASP (National Archery in School Program) into the schools As the outdoor ethics and education chair for the Griffith Izaak Walton League I have been sending letters, going to the school and talking with the teachers, principles, PE teachers. Northwest Indiana has no NASP

program in any of the schools. I was successful in getting an after school archery program started in Calumet high school in Gary and we are in the fourth year doing this. I did the first two years setting up the back stops, talking to the kids but without the help from other Griffith Izaak Waltons like Stan, Paul, Jim Lynch and Joe Buckowski this after school program would not be there. Shelly Lynch and Joe Buckowski are still going strong at the school and have from 15 to 20 kids come out for after school archery.

As you can see it is not just one person that does these programs but a group of men and women with the same goal in mind, teach the public that there are more things to do outside than doing Wii archery.

I was asked by Tim Beck the Indiana NASP coordinator if I would come down to the Indiana State Fair and help with the Indiana State NASP competition on March 22nd and I said yes and I will be going as a member of the Griffith chapter of the Griffith Izaak Walton League. The State NASP is held every March but it was done at Ball State in Muncie Indiana with about 800 kids but this year they had to move to Indianapolis Fair due to now having around 1700 kids and growing every year. You can go to the NASP web site at www.nasp.com and you will understand why this program is good for the kids.

2013 MARKED THE THIRTY-SEVENTH CONSECUTIVE YEAR OF ABOVE-AVERAGE TEMPERATURE

By Janet Larsen

www.earth-policy.org/indicators/C51/temperature_2014

Earth Policy Institute

Eco-Economy Indicator

Eco-Economy Indicators are twelve trends that the Earth Policy Institute tracks to measure progress in building a sustainable economy. Taking the earth's temperature tells us about the relative health of the planet.

Last year was the thirty-seventh consecutive year of above-normal global temperature. According to data from NASA, the global temperature in 2013 averaged 58.3 degrees Fahrenheit (14.6 degrees Celsius), roughly a degree warmer than the twentieth-century average. Since the dawn of agriculture 11,000 years ago, civilization has enjoyed a relatively stable climate. That is now changing as the growing human population rivals long-range geological processes in shaping the face of the planet. Fully 4 billion people alive today have never experienced a year that was cooler than last century's average, begging the question of what is now “normal” with respect to the climate.

Despite the absence of El Niño conditions (an oceanic/atmospheric circulation pattern that tends to warm the globe), 2013 placed among the 10 warmest years in recordkeeping since 1880. With the exception of 1998—an intense El Niño year—these top 10 years have all occurred since 2000. More important than annual records, however, is the longer-term trend, which in the case of the Earth's temperature is clearly on the way up.

Graph on Average Global Temperature, 1880-2013

Since 1970, each decade has averaged 0.28 degrees Fahrenheit warmer than the preceding one. As emissions from burning fossil fuels and forests have soared since the Industrial Revolution, the amount of heat-trapping carbon dioxide (CO₂) in the atmosphere has increased, peaking at 400 parts per million in 2013. The last time the CO₂ concentration was this high was over 3 million years ago, when there was far less ice on the planet and the seas were much higher.

Much of the 7.5 inches (19 centimeters) of sea level rise since 1901 has been from the thermal expansion of water, but the contribution from melting mountain glaciers and polar ice caps is growing. The amount of ice in the Arctic Ocean is shrinking to new lows. While the loss of floating ice does not directly affect sea level, the shrinkage of the highly reflective cover allows more sunlight to be absorbed, heating the region about twice as fast as at lower latitudes and further accelerating melting, importantly on Greenland. If Greenland's ice cap were to melt completely, global sea level would rise by 23 feet (7 meters). As early as 2100, seas could rise by up to 6 feet, dramatically redrawing coastlines around the world.

With each incremental increase in temperature, the risk of profound disruption increases too. Even a small rise above the freezing point at critical times means the difference between a rain shower and a snowfall, an important distinction for areas dependent on water gradually released from melting snowpack. A preview is on display in California: Following the state's driest year on record, with precipitation just a third of average, snowpack in the Sierra Nevada Mountains shrank to 88 percent below normal by late January 2014.

As the global average temperature has risen, the world has seen an increase in warmer days. In the United States, for instance, more high-temperature records have been set in recent years than record lows. Throughout 2013, while there certainly were cold weather events, no region of the globe experienced record cold. Heat waves have increased in recent decades in some areas, particularly in Europe, Asia, and Australia. Off-the-chart temperatures in Australia made 2013 its warmest year on record, with December marking the seventeenth consecutive month of above-average temperature. Regional heat waves continued in January 2014, with the inland town of Moomba topping 120 degrees Fahrenheit on the second day of the New Year. In Queensland, an estimated 100,000 bats died from heat stress.

Global warming is predicted to amplify both dry spells and wet ones. In one example of the kind of event expected to happen more frequently on a hotter planet, much of southern China was blanketed by intense drought and heat in July and August 2013. Seven provinces received less than half their normal rainfall, leaving 20 million acres (8 million hectares) of cropland thirsty. Losses neared \$8 billion. According to the U.S. National Climatic Data Center, the heat wave "was one of the most severe on record with respect to its geographical extent, duration, and intensity; more than 300 stations exceeded a daily maximum temperature of 104 degrees Fahrenheit."

In Angola and Namibia, where one of every four people are chronically undernourished, 2013 brought a second consecutive year of extremely low rainfall in a string of 30 years that have tended toward dryness. And a drought in Brazil's northeast, thought to be the most severe in the last half century, continued from late 2012 into the first part of 2013, with some areas receiving no rain for a year. The result was some \$8 billion in losses. Then in December 2013, two months'

worth of rain fell in a matter of hours in the heaviest precipitation in 90 years, leading to severe flooding and landslides.

Parts of India and Nepal also received record rainfall in June 2013, with northwestern India receiving double its normal precipitation for that month. The resulting floods and landslides killed more than 6,500 people.

The most expensive weather event in 2013, according to reinsurance company Aon Benfield, was the spring flooding in Central Europe that brought \$22 billion worth in damages, only about a quarter of which were insured. June flooding in Alberta was Canada's costliest natural disaster in history, racking up \$5.2 billion in damages. A major Canadian property insurer announced premium hikes of up to 20 percent shortly after its CEO warned of "severe weather events becoming more extreme and frequent"—just one of the growing number of businesses realizing the risk that climate change poses to their bottom lines.

Some insurers have pulled out from storm-prone coastal areas entirely. In a warmer world, tropical cyclones (hurricanes) are not necessarily expected to form more frequently, but the ones that do develop have a good chance of growing more severe, fueled by additional heat energy. Together with higher seas, which make storm surge more dangerous, and increasing populations and infrastructure in vulnerable areas, this is a recipe for high costs.

The year 2013 saw more tropical storms develop than the average since 1980, though fewer than average reached land. In September, Mexico had the unusual experience of being hit from both sides by simultaneous hurricanes in the North Atlantic and the Eastern Pacific. And then in the Western Pacific in November, Super Typhoon Haiyan, the strongest tropical storm ever to make landfall, ravaged large swaths of the Philippines, killing 8,000 people and leaving millions homeless. Winds that reached 235 miles per hour and a major storm surge brought damages tallying an estimated \$13 billion.

While any one of these events could possibly have occurred prior to anthropogenic climate change, the risk of weather surprises is increasing as temperatures climb. Furthermore, the danger of hitting invisible thresholds—such as the loss of major ice sheets—where the effects of global warming become irreversible on a human timescale is real. With rapid rates of change, adaptation

becomes difficult to impossible. For the safety of civilization, governments around the world have agreed on the goal of staying within a temperature rise of 3.6 degrees Fahrenheit (2 degrees Celsius). We will shoot past that mark, however, without dramatic reductions in fossil fuel burning and deforestation. This requires investment, but the alternative costs that will mount from inaction are beyond measure.

[For a plan to stabilize the Earth's climate, see "Time for Plan B" and more at www.earth-policy.org. Janet Larsen is Director of Research at Earth Policy Institute.]