

# Orange-Chatham Group Sierra Club

<http://nc.sierraclub.org/ocg/>

P.O. Box 1303, Chapel Hill, NC 27514

## Ethanol and Other Biofuels

by Judith Ferster, Conservation Chair

On January 15, Anne Tazewell and Kim Tungate, from the NC Solar Center, discussed renewable and non-polluting domestically produced fuels for transportation. Together, they outlined an alternative future.

Fuel doesn't come free—production takes energy. A fuel can be evaluated by comparing the energy cost of making it to its energy yield, a ratio called the energy balance. For instance, every unit of energy spent to produce gasoline yields 0.74 units. Diesel output is 0.83. Of the various ethanol,



corn yields 1.2 units, ethanol from other starches yields 4 units, from biomass 5, and from sugar cane 8. Biodiesel from fats (waste oils from food) and oils (soybean or rape seed) yields approximately 3 units. That is, gasoline costs the most energy. Considering the extracting, refining, and transporting of oil, not to mention cleaning up spills, that low yield isn't surprising.

But we can't jump instantly from fuel that we drill to fuel that we grow. Currently, infrastructure isn't available to deliver ethanol: in 2007, there were 62 North Carolina biofuels stations compared to over 7,000 selling petroleum. A still limited number of vehicles can run on ethanol (see [http://www.engr.ncsu.edu/ncsc/transportation/docs/Factsheets/E85\\_FFV\\_List.pdf](http://www.engr.ncsu.edu/ncsc/transportation/docs/Factsheets/E85_FFV_List.pdf)).

The media sometimes cast corn ethanol as competition for food. The Mexican riots protesting high corn prices seem connected to price rises caused by competition with ethanol. Ethanol currently takes 14% of the corn crop. But 55% of corn grown in the U.S. feeds cattle, not people. The energy balance of beef is costly: it takes seven to nine pounds of grain to make one pound of beef, an inefficient way to feed people, especially considering the fossil fuels needed to make fertilizer and pesticides, and the water needed for irrigation. But it doesn't take food from people since ethanol processing uses only the starch and leaves distillers grain still usable for animal feed.

Supply is problematic for ethanol made from biomass, which includes wood, wood chips, tree bark, corn stalks, other agricultural waste, and municipal solid waste. One promising source of biomass for ethanol is switchgrass, easily grown with little irrigation. Its energy balance is good because it is not dependent on fertilizer made from fossil fuel, also reducing nutrient runoff into watersheds.

The problem with these sources is breaking down the sturdy cellulose cell walls. Because it is difficult, it is expensive. Researchers are working to create commercially viable methods, and there are two plants being built in Georgia making ethanol from pine wood waste.

Switching vehicles from diesel to biodiesel is easy, but the problem is again insufficient supply. Sources include oil from frying, recycled motor oil, animal fat waste, and vegetable oils such as soybean and rapeseed. Another source might be algae. Although it is difficult to cultivate without contamination from undesirable strains, the right

**BIOFUELS** (Continued on reverse)

## Group Events

In lieu of a regular meeting, the Orange-Chatham Sierra Club will sponsor a candidate forum in March:

**Orange County Commissioner Candidates' Forum**  
Monday, March 17, 7-9 p.m.  
Carrboro Town Hall

All of the candidates for Orange County Commissioner have been invited to this forum to answer questions about the environmental issues facing Orange County. Please come and meet the candidates and your fellow Sierra Club members. The forum will also be televised on cable.

**Green Energy Discussion**  
Wednesday, April 16, 7-9 p.m.  
Chapel Hill Public Library

We've been hearing about biofuels and energy matters at the January meeting (see the report in this issue) and the Earth & Sky expo in February. Now let's try to put some of what we heard into action. Come to a meeting at which we'll brain-storm about green energy. Let's make it real!

The meeting is open to all members, as well as the public. Refreshments will be served.

**Executive Committee Meetings**  
Second Monday of each month, 7-9 p.m.  
Carolina Meadows Activities Center

Meetings are held in the second-floor conference room. Contact Judith Ferster, [judith\\_ferster@ncsu.edu](mailto:judith_ferster@ncsu.edu) or 929-6648, for more information.

## It's easy to stay in the know...

on Orange-Chatham Group news and happenings: subscribe to our email listserv. You'll receive group updates and news delivered to your email. It also allows the OCG to get the group news out in a less expensive and more environmentally friendly way.

You can subscribe in one of two ways:

1. Go to the OCG homepage <http://nc.sierraclub.org/ocg/>, click the link under email announcements and follow the instructions.
2. Send an email to [Listserv@lists.sierraclub.org](mailto:Listserv@lists.sierraclub.org). In the message type: SUBSCRIBE NC-OCG-NEWS. Include your name at the end.

You will receive an email with a web link to confirm your subscription. Please subscribe today!

### Other ways to keep in touch online

*Orange-Chatham meetings podcasts:*

<http://h2opodcast.com/earth.html>

*NC Sierra Blog:*

<http://sierraclubnc.blogspot.com/>

## Have Fun Volunteering!

Volunteers are essential to the Sierra Club. By participating, you'll learn a great deal about our issues and meet other active members. Could you see yourself doing any of these?

**Publicity** – Help provide information about events and activities to media outlets.

**Sierra Watch** – Choose local public meetings to attend and act as the Sierra Club eyes and ears on our issues.



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If you're interested in any of these opportunities or other ways to help the group, please contact one of our Group Co-chairs (see reverse).



## Outings

Sierra Club outings are open to all. Outings are educational unless designated as a social (S). All participants on Sierra Club outings are required to sign a standard liability waiver. If you would like to read the liability waiver before you chose to participate on an outing, please go to: <http://www.sierraclub.org/outings/chapter/forms/>, or contact the Outings Department at (415) 977-5528 for a printed version.

### Ongoing Service Outing

**3rd Saturdays on the Bolin Creek Trail:** This is a long-term habitat restoration project, and we need many more volunteers. It's hard work, but very rewarding. We meet at the Greenway entrance on Bolinwood Drive, just off Hillsborough Street in Chapel Hill. Please contact Bill Bracey at [arbor-net@mindspring.com](mailto:arbor-net@mindspring.com), or 942-9937.

### Current Outings

**MAR 9 (Sun)** Falls Lake day hike. Hike a section of the Mts. to Sea Trail at Falls Lake. About six miles; moderate rating. Call Margaret Anderson (OCG) at 919-493-0397 or e-mail [andcamlib@hotmail.com](mailto:andcamlib@hotmail.com)

**MAR 14-16 (Fri-Sun)** Moderate backpacking trip to Lost Cove Creek Wilderness Study Area near Morganton. Easy 2 mile hike to a base camp along Lost Cove Creek on first day. Explore two double waterfalls in this area on a day hike on middle day. Easy backpack, moderate day hike with a short strenuous cross-country hike to approach Upper Little Lost Cove Creek Falls. Good boots and willingness to wade creeks in boots or sandals a must. Trip limited to 8. Contact Jim Avery (CG) at 919-802-6627 or [javery3@nc.rr.com](mailto:javery3@nc.rr.com)

**MAR 15 (Sat)** Jordan Lake Clean-Up. Participate in the Clean-up-a-thon for the Haw River watershed by cleaning up trash on the shore of Jordan Lake. Bags and gloves will be provided. For more information or to sign up, email Sarah Slover (CG) at [sloversj@hotmail.com](mailto:sloversj@hotmail.com) or call (919) 467-4024.

**MAR 29 (Sat)** Hike the Battle Branch Greenway in Chapel Hill. Meet at 10am, at the University Mall Parking Lot next to Wacho-

### BIOFUELS (Continued from reverse)

species in the right conditions could offer 8000-12,000 gallons of fuel per acre. Some studies expect three times that, an almost unimaginable gain over corn. Follow this line of inquiry at <http://www.oilgae.com>.

It might seem that these different fuels would have no impact on global warming since all combustion produces greenhouse gases. But biofuels are different from subterranean petroleum that has been sequestering carbon for eons. Burning plants and animals that ate plants is different because plants take carbon from air, not underground deposits, so burning them does not increase atmospheric carbon. It would be better for Earth if more people were vegetarians. Vehicles, too.

In closing, our speakers urged us to monitor the Solar House website, [www.cleantransportation.org](http://www.cleantransportation.org), to follow the research and programs leading to a sustainable transportation future.

via Bank on the corner of Estes Drive and Willow Drive. Enjoy an easy 3 mile round trip walk, with a visit to the Chapel Hill Museum in the Historic District. Possible "lunch out" if you wish. No hike reservations necessary. Contacts: Eric Block (OCG) at 919- 489-4255 or Kathy Harris (OCG) 919-968-8173.

**APR 5 (Sat)** 1 p.m. Moderate 6-mile hike on Laurel Bluff Trail in the Eno River State Park. To register, call Marcia Eickmeier (HWG) before 9 pm at 919-644-1806.

**APR 11- APR 13 (Fri-Sun)** Table Rock day hike Friday at 1 p.m., Shortoff Mtn. backpack Saturday at 10 a.m. & ends Sunday at 3 p.m. Come celebrate Spring in Linville Gorge Wilderness, the Grand Canyon of the East! An area landmark, Table Rock affords views of many spectacular places in NC: nearby Hawks Bill, Sitting Bear, the West Rim, the Chimneys, Grandfather Mountain, Beach Mountain, and on a clear day Mt. Mitchell. Due to its very rugged character, Linville Gorge Wilderness includes several species of rare plants and deep coves of virgin forests. To respect this true wilderness we will conduct a Leave No Trace (LNT) trip. This trip is a 3 day trip with an option to meet us Saturday for the 2 day backpack only. Time and weather permitting, we'll day hike Friday around Table Rock and down to the river and back. Saturday we'll meet at the trailhead and backpack to Shortoff Mountain for an overnight stay in a spectacular wilderness setting overlooking the Linville Gorge. The backpacking trip is an 11 mile roundtrip and is rated strenuous due to mileage, elevation gain, and the character of trails in the gorge. To participate you will need previous backpacking experience plus the fitness to hike on rough terrain over these distances. Group size limited to 8 people, no pets/fires allowed. See terms and conditions at the top of the main NC Chapter Outings page for more info. Requires leader pre-approval plus a \$25 deposit. Contact Chris Plummer (CG) at (919)-720-8125 or [cplummer@nc.rr.com](mailto:cplummer@nc.rr.com)

**APR 12 (Sat)** 9 a.m. Easy-moderate 5 miles around Historic West Durham. Meet at Club and 9th Street by the School for Math and Science. The hike will start with a walk down the mysterious, hidden alley, past Walltown, to Trinity Heights and beyond. John Schlep will point out places of interest and give us the scoop on some famous people (see [www.owdna.org/selfguidedtourOWD.htm](http://www.owdna.org/selfguidedtourOWD.htm) for more). Pre-registration is not required on this hike. Any questions, please contact Janet Hitti (HWG) at [janet.hitti@verizon.net](mailto:janet.hitti@verizon.net).

**APR 26 (Sat)** Moderate hike on a picturesque trail along the always beautiful Haw River. Contact Brian Rosa (OCG) at 919-732-8196.

Watch for additional outings listings on our website.

### Orange-Chatham Group Leaders

Executive Committee Members (year indicates end of two-year term)

Loren Hintz (2009) **Group Co-chair and Transportation Chair**  
[ldhintz@bellsouth.net](mailto:ldhintz@bellsouth.net) 933-8987

May Becker (2009) **Group Co-chair** [tomatocutter@yahoo.com](mailto:tomatocutter@yahoo.com) 969-7439

Dave Keesee (2008) **Treasurer** [dskeesee@bellsouth.net](mailto:dskeesee@bellsouth.net) 933-4879

Judith Ferster (2008) **Conservation Chair** [judith\\_ferster@ncsu.edu](mailto:judith_ferster@ncsu.edu)  
929-6648

Maureen Hayes (2008) **Secretary** [mchayes720@earthlink.net](mailto:mchayes720@earthlink.net) 933-3140

Matt Scheer (2008) [mws21575@yahoo.com](mailto:mws21575@yahoo.com) 370-4267

Jean Westbrook (2009) [jtwdrw@hotmail.com](mailto:jtwdrw@hotmail.com) 542-6212

#### Other Group Leaders

Jason Baker **Political Chair** [jason@jasonbaker.us](mailto:jason@jasonbaker.us) 338-1506

Pam Hemminger **Calendar Sales** [pheheminger@bellsouth.net](mailto:pheheminger@bellsouth.net) 942-2273

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