

PHOSPHATE MINING

Phosphate strip mining has irreparably changed the face of Florida, devastating hundreds of thousands of acres of sensitive lands and waters, evicting wildlife from their natural habitats, and producing hazardous wastes that threaten water quality and public health. From mining to phosphoric acid production to use in synthetic fertilizers, industrial agriculture's addiction to Florida's phosphate reserves spells disaster for the health of the environment and the people of Florida.

To obtain phosphate ore, mining companies clear away vegetation, topsoil and wildlife from thousands of consecutive acres of rich central Florida habitat. The phosphate ore is then transported by pipeline to a nearby plant, where it is forcibly separated from sand and clay. The clay is sent to clay-settling areas, sometimes euphemistically referred to as “ponds,” on mined sites; the areas are unable to revert back to normal biome, and the clay remains in perpetuity, scarring the landscape indefinitely.

The separated phosphate ore is then sent to a nearby fertilizer plant where it is treated with sulfuric acid to produce phosphoric acid, which is predominantly used in synthetic fertilizer. This process creates phosphogypsum, a radioactive, hazardous byproduct that is stored in mountainous “stacks” that are hundreds of acres wide and hundreds of feet tall. More than 1 billion tons of the radioactive waste has already been stored in 25 stacks scattered throughout Florida, perched precariously atop the Floridan aquifer — which supplies drinking water for 10 million people.

The devastating and costly phosphate extraction process is driven by unsustainable industrial agricultural practices that leave soils nutrient-deficient. As a result the industrial food system has become reliant on adding phosphorus to soils in the form of synthetic phosphate fertilizers, much of which is wasted in application and lost in runoff that pollutes our drinking water and irrevocably harms our air and freshwater ecosystems. Nutrient loading from agricultural runoff is a key factor in the creation of harmful algal blooms, large-scale fish kills, and public-health emergencies.



Photo by Hannah Connor

Phosphate ore is a finite, nonrenewable resource, and some locations are expected to run out of extractable ore in the next few decades.

Florida's Frightening Phosphate Problem

The phosphate industry has a dark history of polluting Florida's environment, including irresponsibly keeping the public in the dark about leaking radioactive and acidic waste from phosphogypsum stacks into the state's groundwater resources.⁴ Despite these alarming events, the industry has not offered any meaningful methods for managing and disposing of the hazardous wastes this process produces or for restoring ecological or wildlife functions to stripped and mined lands. Yet it now intends to strip and process an additional 50,000 acres of irreplaceable central Florida habitat.⁵



How is U.S. phosphate rock used?

About 90 percent of the phosphate rock we extract in the United States goes to synthetic fertilizer production. The United States is also the leading importer of phosphate rock — the majority of which is turned into synthetic fertilizer. These fertilizers are used in large part on crops such as corn and soybeans that go toward animal feed to support industrial meat and dairy operations. The remaining 10 percent of U.S.-produced phosphate rock goes to creating animal feed supplements (about 5 percent), generating detergents and fire suppressants, and producing elemental phosphorus.¹

U.S. phosphorus consumption by crop is approximately:²

Corn:	47%	U.S. corn consumption by sector³:	
Cotton:	3%		
Soybeans:	13%		
Wheat:	11%		
Other:	25%		
			U.S. corn consumption by sector³:
		Animal feed and related:	46%
		Fuel ethanol:	28.9%
		Human food:	9.8%
		Exports (largely for animal feed):	15.3%

The United States' dependence on phosphate rock could be drastically cut by improving the efficiency of how the rock is used and by finding such alternatives to synthetic fertilizer as treated and composted waste.

That's why the Center and partners launched a [lawsuit](#) against the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service for authorizing the further destruction of Florida's natural heritage through phosphate mining. We are working to prevent irretrievable damage to imperiled endangered species habitat, water quality and Florida's unique landscape.

1. USGS. 2015. 2013 Minerals Yearbook. Phosphate Rock. Accessed: http://minerals.usgs.gov/minerals/pubs/commodity/phosphate_rock/myb1-2013-phosp.pdf
2. USDA Economic Research Service. 2016. Fertilizer Use and Price. Table 2—U.S. plant nutrient use by corn, soybeans, cotton, and wheat, 1964-2012. Accessed: <http://www.ers.usda.gov/data-products/fertilizer-use-and-price.aspx#26720>
3. USDA. 2017. ERS Feed Outlook, Crop Year Ending August 31, 2017. ProExporter Network. Accessed: <https://www.ers.usda.gov/webdocs/publications/fds17a/fds-17a.pdf?v=42752>
4. USGS. 2015. 2013 Minerals Yearbook. Phosphate Rock. Accessed: http://minerals.usgs.gov/minerals/pubs/commodity/phosphate_rock/myb1-2013-phosp.pdf
5. https://www.biologicaldiversity.org/news/press_releases/2016/florida-sinkhole-09-16-2016.html