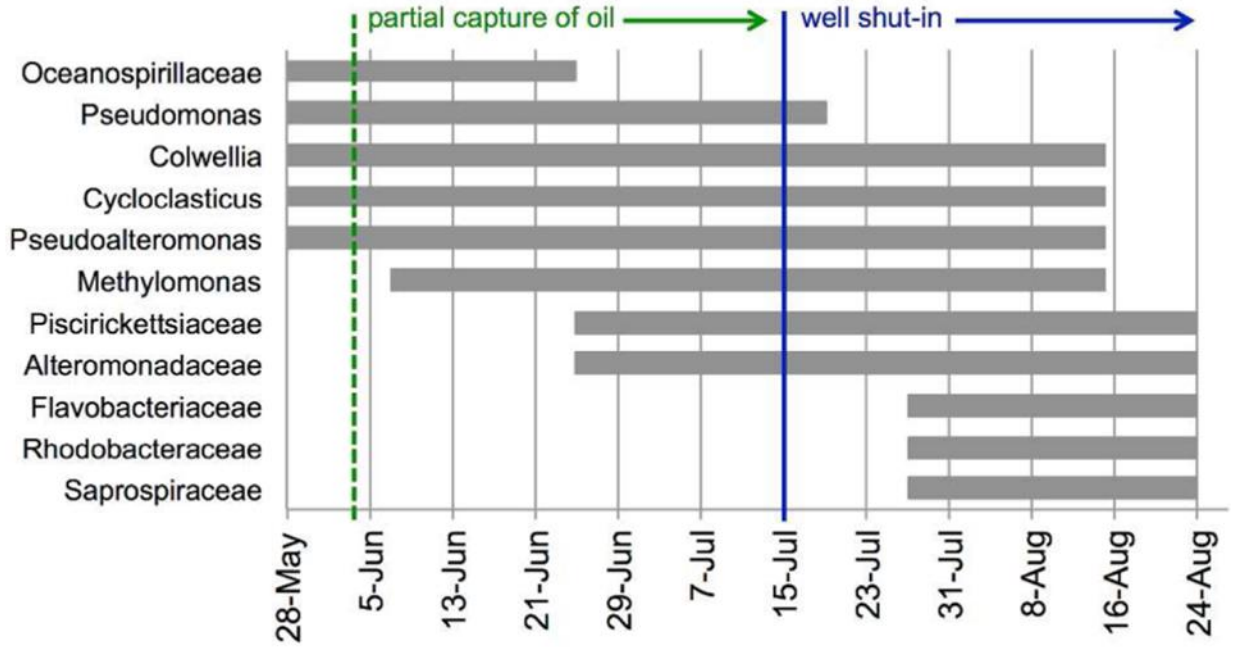

Caption: The bacterial taxa that were overabundant in oil plumes during and after the Deepwater Horizon oil spill in the Gulf of Mexico. The gray bars indicate the time periods when the abundance of bacterial taxa was "enriched" (> 2 times the prespill abundance in that area). The time period between the green and blue lines is when oil was being partially captured, reducing oil inputs by over 50%. The time period after the blue line is when the oil well was completely shut in and the flow of oil into the gulf ceased.

BACKGROUND INFORMATION

The Deepwater Horizon drilling unit in the Gulf of Mexico exploded on April 20, 2010, leading to the blowout of one of the wells. This resulted in the release of 50,000 to 70,000 barrels of oil and natural gas per day into the water from April 20 until June 4. Oil and natural gas are primarily made up of hydrocarbons, which are molecules composed of hydrogen and carbon. As oil was released, large hydrocarbon plumes formed in the deep waters of the gulf. On June 4, the oil flowing from the well was partially captured, reducing the leak rate to about 60% of the original rate. After 83 days, the well was completely shut in, halting the leak.

The plumes stimulated the growth of naturally occurring bacteria that use hydrocarbons as fuel to grow and reproduce. In the process, they break down the hydrocarbons into smaller molecules, thereby degrading the hydrocarbons into components that in turn feed other microbe communities. Researchers observed the succession of the enriched bacteria populations using data from before, during, and after the 83-day spill. Relative abundance of bacterial taxa over time was used to determine microbial response and the potential for biodegradation of the oil spill. The chart below describes some of the roles of each of the bacterial taxa represented in the graph:

Microbe	Consumes/breaks down
Oceanospirillales, *Pseudomonas*	linear-chain hydrocarbons (6 or more carbons)
Colwellia, Cycloclasticus, and *Pseudoalteromonas*	cyclic hydrocarbons (harder to break down than linear bonds)
Methylomonas	methane (most abundant hydrocarbon released in spill)
Piscirickettsiaceae	methanol and/or formaldehyde (produced by Alteromonadaceae)
Flavobacteriaceae, Alteromonadaceae, and Rhodobacteraceae	complex organic matter (e.g., bacteria)