A foliar disease of field elm (Ulmus minor) was observed in 2010 in two natural ecosystems in northern Greece (Serres and Thessaloniki) during a nationwide survey aiming at determining the current status of Dutch Elm Disease in the country. Symptoms consisted of small circular necrotic spots with yellow border on ca. 30% of the leaves. Single spore cultures from the fungus isolated on potato dextrose agar (PDA) gave rise to white colonies which turned to grayish-black and produced obpyriform, ovoid or ellipsoidal conidia in long chains. Conidia had 1 to 5 transverse and 0 to 3 longitudinal septa and measured 11.8-31.8.0 × 7.8-16.4 μm (average 18.4 × 8.3 μm). These morphological characteristics conform to those of Alternaria alternata (Fr.) Keissl. (Simmons, 2007). The ITS1-5.8S-ITS2 region was amplified with primers ITS1 and ITS4 and sequenced (GenBank accession Nos. KT893476, KT893477). A BLAST search of GenBank database showed 100% homology with the sequences of isolates (e.g. JX308308). Twenty healthy detached elm leaves were sprayed with a spore suspension (106 spores/ml), placed into 20 cm diameter Petri dishes containing a wet sterilized piece of cotton and incubated in a growth chamber at 25°C. Pathogenicity tests were repeated three times and 10 days post inoculation spots similar to the original ones developed on all inoculated leaves, while control leaves sprayed with sterile distilled water remained symptomless. A. alternata was reisolated from artificially inoculated leaves fulfilling Koch’s postulates. This is the first report of A. alternata as the cause of a leaf spot disease on U. minor in Greece.