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Geomorphological features of coastal dunes along the central Adriatic coast (Abruzzo, Italy)

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The main geomorphological features of dunes/beaches were investigated along the central Adriatic coast of Italy (Abruzzo). Nine foredune areas typified by established dunes and incipient dunes were investigated through detailed geomorphological surveying and an analysis of historical maps and photographs (aerial and land).
The dunes are located along both low coasts and high coast. The morphology is typical of foredunes, with elongated fields parallel to the castline. The total linear extension is ∼15,500 m; established dunes are more extended than incipient ones and occupy the greatest portion of the total surface area (∼1,500,000 m2).
Analyses of historical maps and photographs (aerial and land) led to the reconstruction of coastal dune morphology from the beginning of the 1800s to the turn of the 20th century, showing a surface reduction >80%. AMS 14C dating, carried out on samples of Helix sp, outlines the minimum age of Abruzzo dune systems at about 730±40 years BP.
The overall study enabled the reconstruction of different geomorphological arrangements of the dune areas, allowing to define the dunes of the Abruzzo coast as semi-natural foredunes, with mainly direct and locally indirect management control.
The reconstruction of dune evolution identifies Abruzzo's oldest recognizable period of aeolian deposition in the late-Middle Ages; aeolian deposition was widely active until the early 1900s and dunes were a significant morphological component of the Italian coastal landscape. The first significant human-induced processes began in the 1900s; over the last 50 years human activity has played an important role in the coastal morphogenesis, with direct and indirect effects on coastal dune reduction and removal, heavily affecting the whole coastal system.