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DANIELE SAVELLI (*), FRANCESCO TROIANI (*), ELISABETTA BRUGIAPAGLIA (**), GILBERTO CALDERONI (***), PAOLO CAVITOLO (*), ANDREA DIGNANI (****), ELENA ORTU (*****), SAURO TEODORI (*), FRANCESCO VENERI (*) & OLIVIA NESCI (*)

THE LANDSLIDE-DAMMED PALEOLAKE OF MONTELAGO (NORTH MARCHE APENNINES, ITALY): GEOMORPHOLOGICAL EVOLUTION AND PALEOENVIRONMENTAL OUTLINES

ABSTRACT: SAVELLI D., TROIANI F., BRUGIAPAGLIA E., CALDERONI G., CAVITOLO P., DIGNANI A., ORTU E., TEODORI S., VENERI F. & NESCI O., *The landslide-dammed paleolake of Montelago (North-Marche Apennines, Italy): geomorphological evolution and paleoenvironmental outlines*. (IT ISSN 0391-9838, 2013).

In the early Holocene a small lake formed by landslide-damming of the Fosso del Lago stream close to Montelago (Sassoferrato, Province of Ancona), a village of the northern Marche sector of the Adriatic side of the Umbria-Marche Apennines (central Italy). A targeted comprehensive and multidisciplinary project, consisting of a geomorphological survey, seismic tomography, and sediment core drilling, was carried out in this area and complemented by radiocarbon dating and pollen analysis. Geomorphological, chronological and paleoenvironmental constraints for the lake formation, evolution and extinction, also accounting for some apparently contradictory information from the Gregorian Cadastre (1816-1835 AD), were thus obtained and are presented and discussed in this work.

We propose an evolutionary frame where the damming landslide (Montelago Landslide, MLL) is the reactivation of a larger «first time landslide» post-dating the upper Pleistocene coldest stages. Large amounts of calcareous breccia boulders incorporated into the MLL runout caused an effective stream blockage and the formation of a small lake. The radiocarbon dating of the lacustrine sediment was useful for roughly constraining the landslide blockage at about the Boreal-Atlantic transition.

Both the stream blockage and some secondary landslide movements brought about important changes in the Fosso del Lago catchment. Besides the production of the lacustrine trough, key modifications include a marked convexity of the longitudinal stream profile, an associated epigenetic gorge and distinctive knickpoints on residual landslide boulders. Our study allowed the reconstruction of a preliminary Holocene pollen sequence that, to date, is unique for this sector of the Central Apennines.

The pollen record revealed that in the Montelago site, a pre-forest environment with *Corylus*, *Ulmus*, *Fraxinus* and *Tilia* characterizes the early stages of lake existence and is followed by a beech forest expansion culminating at about 6640-6490 cal. BP with a delayed spread of *Abies*. Starting from 5910-5750 cal. BP, an increasing human agro-forestry-pastoral activity is recorded in association with beech forest reduction and concomitant expansion of xerofile and herbaceous taxa. The major environmental modifications recorded by the sediment core can be related to climate changes as well as to human activity, displaying both specific behaviours and similarities with already known sites of the Mediterranean area.

Although the age of the landslide-dammed lake extinction is not strictly constrained, it is yet ascertained that the water pond represented in the 19th century Gregorian cadastral maps a little further upstream the paleolake site, far from being a relic of the landslide-dammed lake, is rather a small man-made reservoir dug long after the former lake dried up.

KEY WORDS: Landslide-dam, Lacustrine sediments, Holocene, Palinology, Montelago, Marche Apennines, Italy.

RIASSUNTO: SAVELLI D., TROIANI F., BRUGIAPAGLIA E., CALDERONI G., CAVITOLO P., DIGNANI A., ORTU E., TEODORI S., VENERI F. & NESCI O., *Il lago di sbarramento per frana di Montelago (Appennino nord-marchigiano, Italia): evoluzione geomorfologica e inquadramento paleoambientale*. (IT ISSN 0391-9838, 2013).

Lo sbarramento per frana del Fosso del Lago nei pressi di Montelago (Sassoferrato, Provincia di Ancona), un piccolo nucleo abitato dell'Appennino nord-Marchigiano (Italia centrale), ha determinato all'inizio dell'Olocene la formazione di un piccolo lago. Questo sito è stato oggetto di uno studio multidisciplinare, consistito in un rilevamento geomorfologico, indagini geognostiche, analisi palinologiche e datazioni radiometriche su una carota dei sedimenti lacustri. Per l'analisi delle fasi evolutive più recenti, sono state prese in esame anche le informazioni contenute nelle mappe del Catasto Gregoriano (1816-1835 AD).

(*) *Dipartimento di Scienze della Terra, della Vita e dell'Ambiente (DiSTeVA), Università di Urbino «Carlo Bo» - Urbino, Italia.*

(**) *Dipartimento Agricoltura, Ambiente e Alimenti, Università del Molise - Campobasso, Italia.*

(***) *Dipartimento di Scienze della Terra, Università di Roma «La Sapienza» - Roma, Italia.*

(****) *External collaborator, Università di Urbino «Carlo Bo»; Sunesis Ambiente - Jesi, Italia.*

(*****) *UMR-CNRS 5805 EPOC Université de Bordeaux 1 - Talence, France.*

Corresponding author, e-mail: olivia.nesci@uniurb.it