

# The aeropalynology of Oran's region Es-Senia, northwest Algeria

Ghania Kiared (Ould-Amara)<sup>a</sup>, Jordina Belmonte<sup>b,c</sup>, Mostefa Bessedik<sup>d</sup> and James B. Riding<sup>e</sup>

<sup>a</sup> Department of Pharmacy, Faculty of Medicine, University of Algiers, Algiers, Algeria

<sup>b</sup> Institut de Ciència i Tecnologia Ambientals - Universitat Autònoma de Barcelona (ICTA-UAB), Spain

<sup>c</sup> Unitat Botànica - Dept. Biologia Animal, Biologia Vegetal i Ecologia, Universitat Autònoma de Barcelona, Spain

<sup>d</sup> Palaeoenvironment and Stratigraphical Palaeontology Laboratory, University of Oran 2, Oran El M'Naouer, Algeria

<sup>e</sup> British Geological Survey, Environmental Science Centre, Nottingham United Kingdom

[gkiared@yahoo.fr](mailto:gkiared@yahoo.fr)

## 1. INTRODUCTION

A continuous study of atmospheric pollen in Oran Province, northwest Algeria, using the Cour method was undertaken between April 2004 and April 2006. The area studied was the meteorological station at Es-Senia airport (Oran). The aim is to establish the diversity of airborne pollen, the pollination periods of the major taxa, the intensity of pollen emissions and the relationship between airborne pollen calendar and the autochthonous and allochthonous vegetation in the region.



Fig. 1. Location of the sampling site at Es-Senia airport (Adapted from ASAL 2014)

## 2. MATERIAL AND METHODS

\* Es-Sénia airport (Oran) is located at 430 km west of Algiers at latitude 35° 37' 19.11"N and longitude 0°36' 59.46"W (Fig. 1) and 90 m.a.s.l. (I.N.C.T, 2008).

\* The climate of Oran includes a dry summer season between June and September, and a variably rainy season between November and April (Bagnouls & Gaussen 1953). It is within the Mediterranean semi-arid with mild winter bioclimatic region (Stewart 1969).

\* The main vegetation is composed by Cupressaceae, wild Poaceae, *Lygeum*, Chenopodiaceae/Amaranthaceae, Urticaceae and there is a big influence of the vegetation from Oran's Sebkhha (Alcaraz 1969).

\* A Cour device, placed 3 m above ground level at the meteorological station of Es-Sénia airport (Oran), was used to collect airborne pollen on a weekly basis, between April 2004 and April 2006. A filter was exposed for 1 week, and replaced each Saturday at 09:00. Physic-Chemical treatments and pollen analysis followed the methodology described by Cour (1974).

\* Data have been converted into mean weekly pollen concentrations (pollen per m<sup>3</sup> of air or P/m<sup>3</sup>) and to Annual Index (AI, sum of the mean weekly concentrations of pollen during an yearly period).

## 3. RESULTS AND DISCUSSION

The mean AI for the period studied was 3246 pollen grains/m<sup>3</sup>, only 0.3% of which could not be identified. The AI of the first year was 4230 pollen grains/m<sup>3</sup>, significantly higher than the 2258 pollen grains/m<sup>3</sup> of the second year. The pollen assemblages are dominated by grains from herbaceous plants (69.5%). Trees and shrubs pollen are respectively 27.9% and 2.3% (Fig 2) (Kiared (Ould-Amara) 2016).

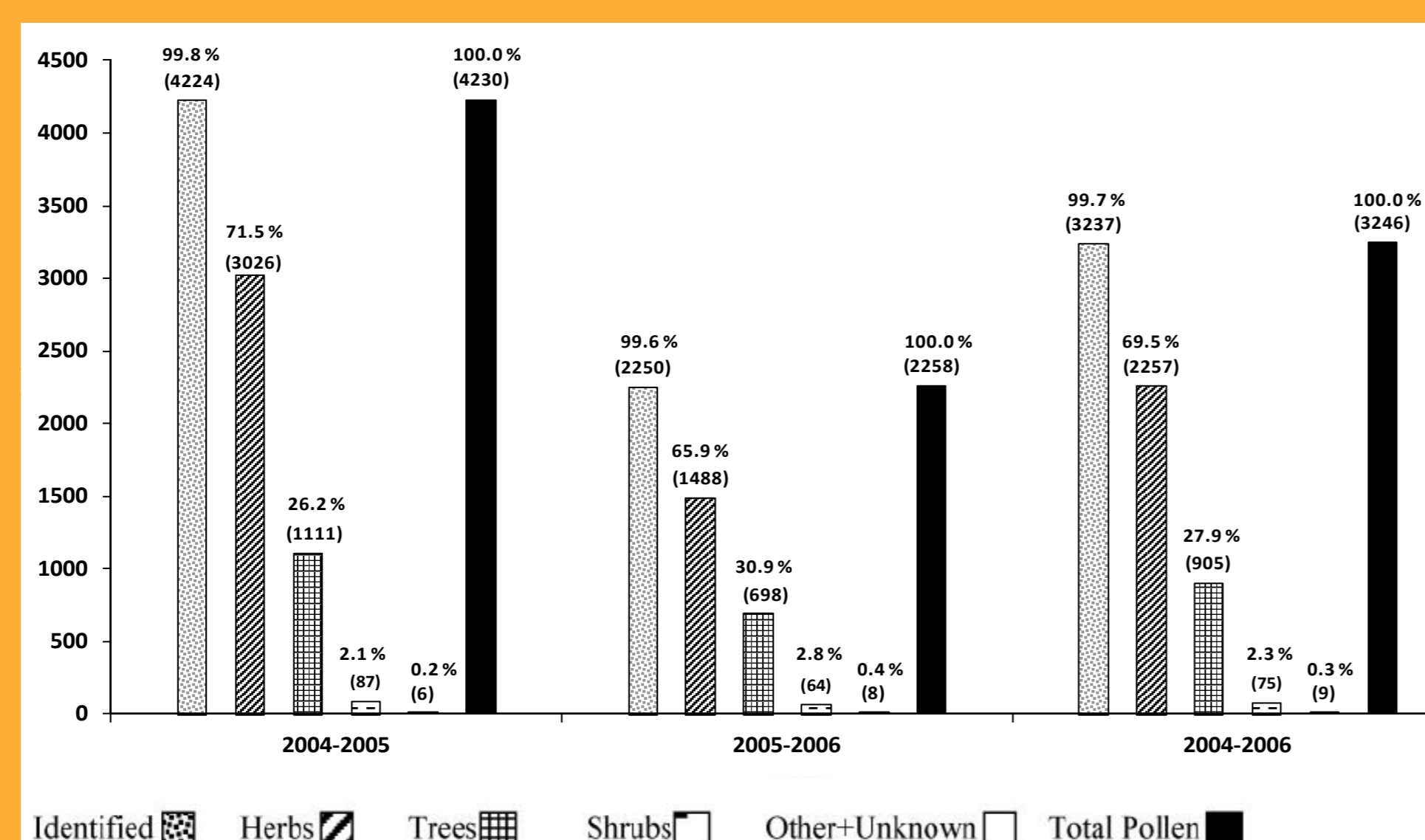


Fig. 2. Annual index (AI) of the study years and average values.

The winter pollen spectrum largely comprised Areaceae (for only one week) and Cupressaceae pollen. Most pollen grains were collected in spring; total Asteraceae, Brassicaceae, Chenopodiaceae /Amaranthaceae, *Lygeum*, *Olea*, *Pinus*, *Pistacia*, *Plantago*, Poaceae wild type, *Quercus*, *Rumex* and Urticaceae. The higher pollen concentrations were produced by *Plantago* and wild Poaceae (12 consecutive weeks), Chenopodiaceae/Amaranthaceae (nine weeks) and *Olea* (eight weeks). During summer Apiaceae and *Eucalyptus* pollinated, and in autumn only *Casuarina* pollen was produced. Our results are similar to those of Cambon (1981) for the same region and with the same methodology.

The relative importance of allochthonous pollen at Oran is low; most pollen is from autochthonous vegetation. The main taxa are

Autochthonous vegetation and pollination				Allochthonous vegetation and pollination	
Winter	Spring	Summer	Autumn	Winter	Spring
Cupressaceae	Chenopodiaceae/Amaranthaceae	<i>Eucalyptus</i>	<i>Casuarina</i>	Areaceae	<i>Pinus</i>
	Urticaceae	Apiaceae			<i>Quercus</i>
	Brassicaceae				
	<i>Plantago</i>				
	wild Poaceae				
	<i>Lygeum</i>				

Table 1. Elaborated by Kiared (Ould-Amara) 2016 from Alcaraz 1977; Santa et Daumas 1958).

Pollen	Month																																														
	January				February				March				April				May				June				July				August				September				October				November				December		
Cupressaceae	*																																														
Urticaceae	*																																														
Brassicaceae																																															
<i>Pinus</i>																																															
<i>Lygeum</i>																																															
<i>Plantago</i>									*				*				*				*				*				*				*				*				*						
<i>Pistacia</i>																																															
Wild Poaceae																																															
Cheno-Amaranthaceae																																															
Tot. Asteraceae																																															
Tot. <i>Quercus</i>																																															
<i>Olea</i>																																															
<i>Rumex</i>																																															
Apiaceae																																															
<i>Eucalyptus</i>																																															
<i>Casuarina</i>																																															
Areaceae																																															

Table 2. Pollen calendar of Oran Es-Sénia. \* Week number within the year; \*\* Week number within each month. Elaborated by Kiared (Ould-Amara) 2016.

## 4. CONCLUSIONS

Pollen from herbs dominates the assemblages, followed by pollen from trees and pollen from shrubs. The dominance of herbs is due to high concentrations of Chenopodiaceae/Amaranthaceae, followed by *Plantago*, wild Poaceae and Asteraceae.

The pollen calendar showed an important inter-annual variability in the airborne pollen content, the predominance of pollen from herbs, the pollen richness during spring and the importance of the autochthonous vegetation. Pollen from allochthonous plants shows relative low importance.

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