

AperTO - Archivio Istituzionale Open Access dell'Università di Torino

**The Bambapp Project: a citizen science network for monitoring and defining the distribution of bamboos in Piedmont and Aosta Valley (NW Italy)**

**This is the author's manuscript**

*Original Citation:*

*Availability:*

This version is available <http://hdl.handle.net/2318/1732437> since 2020-03-02T13:37:34Z

*Terms of use:*

Open Access

Anyone can freely access the full text of works made available as "Open Access". Works made available under a Creative Commons license can be used according to the terms and conditions of said license. Use of all other works requires consent of the right holder (author or publisher) if not exempted from copyright protection by the applicable law.

(Article begins on next page)

# 6. = THE BAMBAPP PROJECT: A CITIZEN SCIENCE NETWORK FOR MONITORING AND DEFINING THE DISTRIBUTION OF BAMBOOS IN PIEDMONT AND AOSTA VALLEY (NW ITALY)

Andrea Mainetti<sup>1</sup>, Simone Ravetto Enri<sup>1</sup>, Valerio Mezzasalma<sup>2</sup>, Fabrizio De Mattia<sup>2</sup>, Jessica Frigerio<sup>2</sup>, Roberto Damilano<sup>3</sup>, Sandra Buzio<sup>3</sup>, Michele Lonati<sup>1</sup>

<sup>1</sup>Department of Agriculture, Forest and Food Sciences, University of Torino, Largo Paolo Braccini 2, 10095 Grugliasco (TO), Italy; <sup>2</sup>FEM2-Ambiente srl, Piazza della Scienza 2, 20126 Milano (MI), Italy; <sup>3</sup>Ente di gestione delle Aree Protette del Po torinese, Corso Trieste 98, 10024 Moncalieri (TO), Italy



## Introduction and objectives

The subfamily Bambusoideae comprises the least-understood and most diverse group of plants in Poaceae (1). Three tribes belong to this subfamily: Bambuseae (tropical woody bamboos), Olyreae (herbaceous bamboos), and Arundinarieae (temperate woody bamboos), all of them not native to Europe. However, in the last years several bamboo species (mainly Arundinarieae) have been spreaded for both ornamental and productive purposes among plant nurseries and private citizens in Europe and Italy as well. In Piedmont and Aosta Valley (North-western Italy) some species belonging to *Phyllostachys* genus have been included in local black lists (2, 3) due to their vegetative expansion often remarkable. Nevertheless, the issue of bamboo invasiveness and threat to natural environment is still uncertain (4). The 'BambApp' project (December 2017-April 2019) aimed to fill the knowledge gap about the presence and distribution of bamboo species naturalized in Piedmont and Aosta Valley, as a preliminary step toward the definition of bamboo invasiveness.

## Methods

The project was based on the participation of private citizens using the iNaturalist mobile application (5) for the monitoring. Within the project, contributors were asked to provide for every record of naturalized bamboo:

- Latitude/longitude;
- Altitude;
- Stand extension;
- Four pictures (i.e. a plant basis, an intermediate node, leaves, and entire stand);
- Two specimens (i.e. one branch and some leaves).

The leaf specimens were used to identify 100 stands at species level through DNA barcoding and RAPD methods (6). The resulting species represented the reference base to recognize the morphological characters used for the visual identification all other records, from the respective pictures.

Only 0.3% of the stands were reported above 800 m a.s.l., up to 1034 m a.s.l. for a *Phyllostachys viridis* (R.A.Young) McClure stand (Fig. 3). Stand size ranged between few square meters to more than one hectare but more than 73% covered less than 100 m<sup>2</sup> (Fig. 4).

As additional outcome of the project, a **descriptive photographic guide** for the identification of naturalized bamboo species of Piedmont and Aosta Valley was released in March 2019 (7).

## Results

The contributors recorded 937 stands across Piedmont and Aosta Valley, belonging to nine different species (Fig. 1). The most frequent and widespread species were *Phyllostachys aurea* Carrière ex Rivière & C.Rivière (n=620, 67%), *Phyllostachys viridiglaucescens* (Carrière) Rivière & C.Rivière (n=148, 16%), and *Pseudosasa japonica* (Siebold & Zucc. ex Steud.) Makino ex Nakai (n=56, 6%), respectively (Fig. 2). Furthermore, one bamboo species new for the Italian alien vascular flora (*Semiarundinaria fastuosa* (Mitford) Makino) and two species new for both Piedmont (*Semiarundinaria fastuosa*, *Phyllostachys viridis* (R.A.Young) McClure) and Aosta Valley (*Phyllostachys viridis*, *Pseudosasa japonica*) were found.

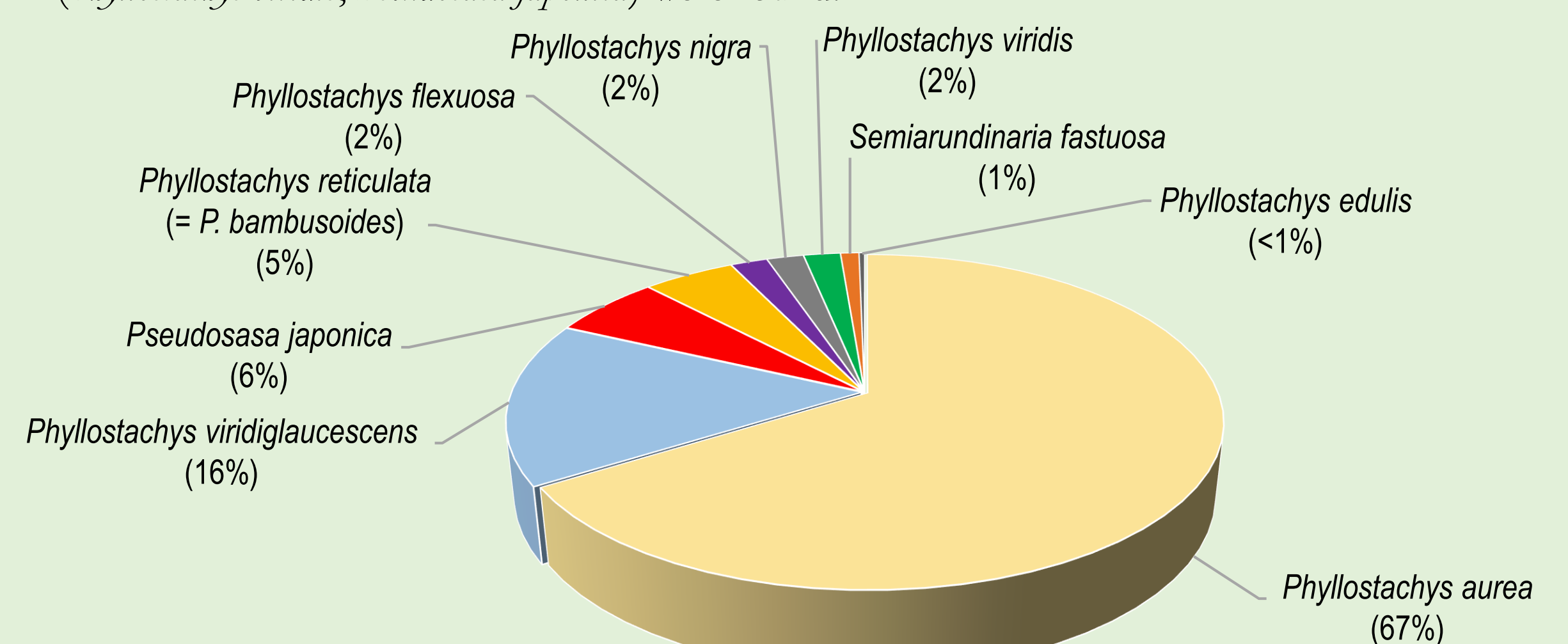


Fig. 1 – Species abundance (% on total recorded stands)

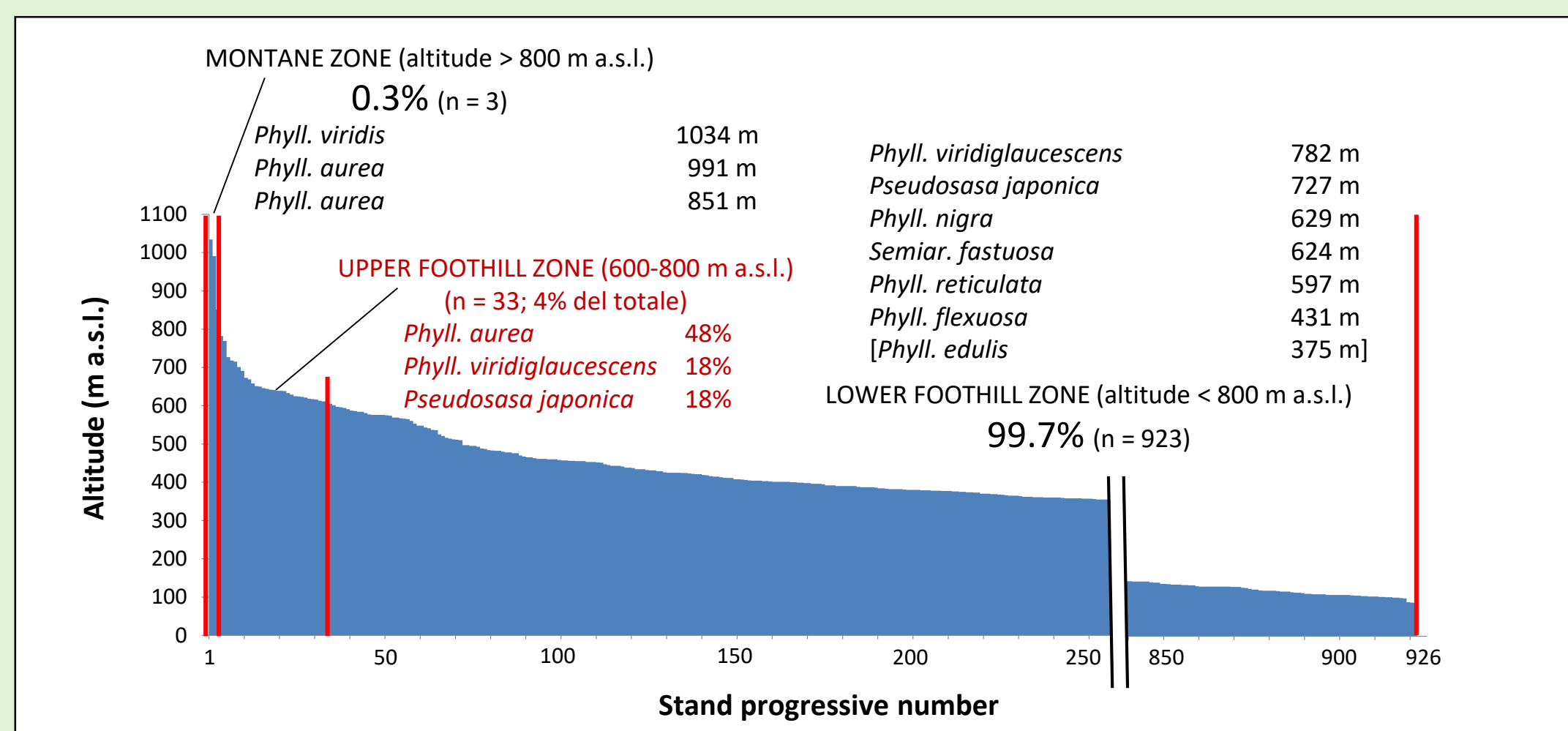


Fig. 3 – Altitude distribution of the recorded bamboo stands in Piedmont and Aosta Valley

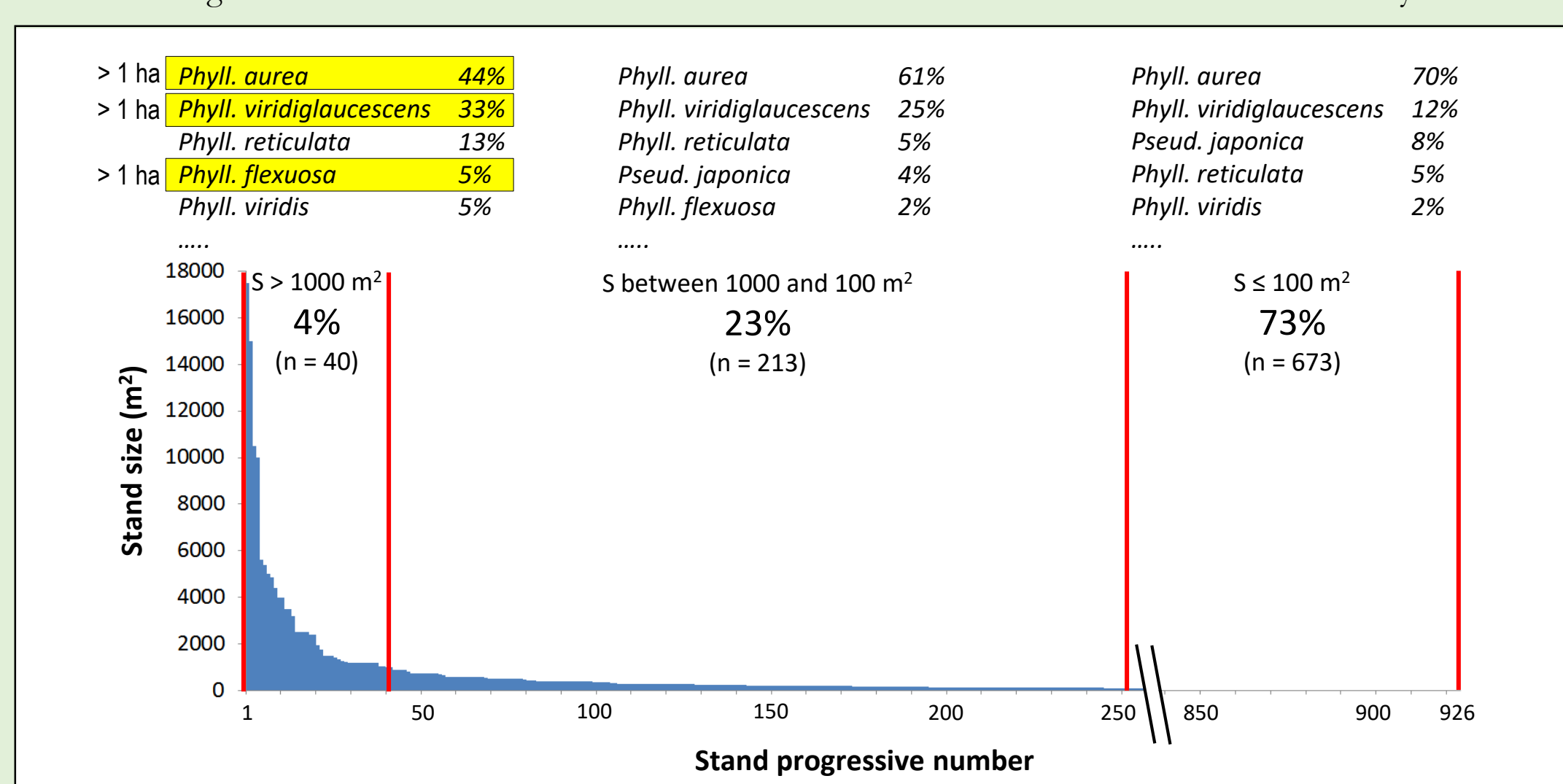


Fig. 4 – Stand extension of the recorded bamboo species in Piedmont and Aosta Valley

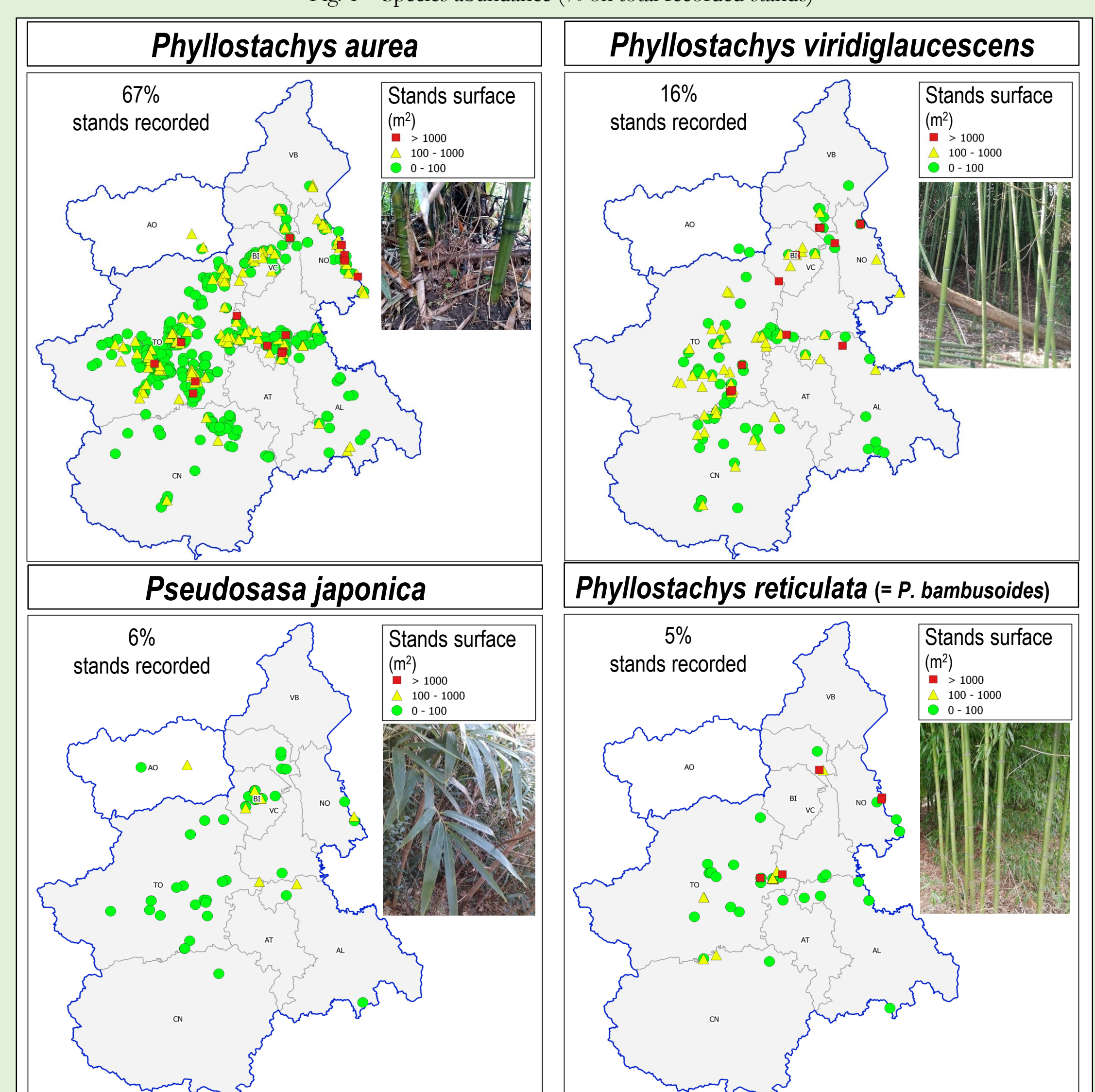


Fig. 2 – Spatial distribution in Piedmont and Aosta Valley of the four most abundant species