

# JAY (*GARRULUS GLANDARIUS*) AND ZOOCHORY IN FOREST COMMUNITIES (A CASE STUDY OF THE NERUSSA-DESNA POLESIE)

## O. I. Evstigneev

State Nature Reserve "Bryanskii Les",  
Nerussa Station, Bryansk Oblast, 242180, Russia  
E-mail: quercus\_eo@mail.ru

## I. A. Murashev

Scientific and Research Zoological Museum of Lomonosov Moscow State University,  
2 Bolshaya Nikitskaya, Moscow, 125009, Russia  
E-mail: ilyamurashev@gmail.com

## M. S. Romanov

Institute of Mathematical Problems of Biology, Russian Academy of Sciences,  
Keldysh Institute of Applied Mathematics, Russian Academy of Sciences,  
1 Prof. Vitkevich street, Puschino, 142290, Russia  
E-mail: michael\_romanov@inbox.ru

**Abstract.** The Eurasian Jay (*Garrulus glandarius*) is an important agent of zoochory and participant of the succession processes in European forests. To clarify the cenotic role of the Jay, we 1) determined the distance of plant diaspora dispersal; 2) described features of the stocking of oak acorns (*Quercus robur*); 3) identified biotopic preferences of jays for seed stock in vegetation cover. Studies were performed on sample plots of different size (from 2.3 to 33.1 ha) located in different vegetation types of the Nerussa-Desna Polesie (Bryansk region, Russia). Locations of biotopes (parcels) and of jays' storerooms were mapped on sample plots. Biotopic preferences at acorn hiding were estimated using Ivlev-Jacobs electivity index. Analysis of the data showed that Jays participate in the diaspora dispersal of fifty species of vascular plants; among these are many forest-dwelling species and a smaller number of meadow and marsh species. Jays transfer seeds of the summer-ripening species (*Malus sylvestris*, *Padus avium*, *Rubus idaeus* and others) endozoochorically over a distance of up to 900–1100 m that corresponds to the radius of summer home range of a jay. Seeds of the autumn-ripening species (*Quercus robur*, *Corylus avellana*, *Sorbus aucuparia* and other) are carried over a distance up to 200–480 m. It corresponds to the radius of a jay's autumn home range. One jay carries between 1 and 9 acorns per flight. Jays create most of their pantry at the bases of tree trunks and shrubs, sometimes – in the trees at the base of branches and under the fallen trees. This distribution of pantries is not random. In winter, when the ground is covered with thick, dense snow, the dark trunks are heated by the sun rays, forming thawed patches around their base, from where it is easier to retrieve stored acorns. Jays usually bury one acorn, rarely two, in their hiding place. At the watershed, jays prefer to hide acorns in the old spruce/broad-leaved forest, less so in the young and middle-aged birch or pine forest. This is due to the greater availability of suitable burial places in the old forest. In the spruce/broad-leaved forest, jays tend to hide acorns in treefall gaps and on small glades with virginile undergrowth of birch. In the floodplain jays completely avoid using large open meadows for hiding places; they prefer to hide acorns in the thickets of willow on the riverine alluvium and on marshy oxbows as well as in the sparse park-type oak forest with meadow grass cover. It is known that the vegetation communities, preferred by jays for acorn hiding, are the initial stages in the formation of the closed floodplain oak forest dominated by nemoral herbs. Jay is the main participant of these succession processes as it is only one transporter of large numbers of acorns for hundreds of meters.

**Key words:** Eurasian Jay, *Garrulus glandarius*, *Quercus robur*, zoochory, acorns, succession, coniferous-broadleaf forest.