

TABLE IV.  
Habitat trends in North Europe  
(total site records in brackets).

Nature of site	<i>umbratus</i> (20)	<i>mixtus</i> (25)	<i>rabaudi</i> (20)
Woodland including old trees, stumps and wooded banks .....	55%	12%	5%
Open sites including stony pasture, open scrub, quarries and sea coast .....	40%	88%	30%
Sandy heath .....	5%	0	65%

To sum up, the evidence for the specific separation of *L. mixtus* Nyl. from *L. umbratus* Nyl. is less clearcut than that for the separation of *L. affinis* Sch. from either. The majority of series however are easily distinguished and only about 5 out of more than 100 series of workers and/or queens examined show intergrading characters which are open to a variety of explanations. While final judgment must be deferred until cytogenetical studies or interbreeding experiments provide additional evidence, it appears to me sounder at the present time to assume that, in addition to *L. rabaudi* Bond., there are at least two other species in North Europe which should continue to be named *L. umbratus* Nyl. and *L. mixtus* Nyl. according to the presence or absence of scape and tibial hairs and other criteria given in the keys at the end of this paper. The American population should, in my view, be excluded from identification with either on the grounds that the male at least appears to be distinctively different. The male caste of all members of this species group has been given insufficient attention and should repay further study. It will be noted that in the keys, I have endeavoured to separate all castes of *L. rabaudi* from *L. umbratus* which are very similar in the worker caste, but I am confident that this can easily be done with a little experience. If the single queen from north Spain alluded to earlier is representative of the south *L. distinguenda* Em., it may be separated from *L. mixtus* by the flat scape and abundant body hairs and from *L. affinis* by the abundant genal hairs and shorter body hairs.

#### Keys to *Chthonolasius* species in Europe

##### Males

- Mandibles with single apical tooth ..... *Lasius*, *Dendrolasius*,  
*Cautolasius*
- Mandibles with five more or less distinct teeth ..... *Chthonolasius*
1. Petiole in side view thick and convex; length 3-3.4 mm. ....  
*carniolicus* Mayr
  - Petiole in side view thin and tapered above; length  
3.6-4.8 mm. .... 2
  2. Hind tibiae and scapes with suberect hairs ..... 3
  - Hind tibiae with one or two occasional hairs at most, scapes  
without suberect hairs ..... 4