MATERIAL, TECHNIQUE
AND
PROCEDURE OF STUDY
The material for the present study consists of 73 species under 7 genera of subfamily Alciodinae. The collected and loaned weevils represent fauna of different states and Union Territories of India i.e., Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh, Uttar Pradesh, Madhya Pradesh, West Bengal, Assam, Nagaland, Manipur, Arunachal Pradesh, Maharashtra, Karnataka, Tamil Nadu and Pondicherry. The sampling has been done in the plains, valleys and hilly tracts upto 7000 feet above sea level. The weevils were collected mostly by handpicking or by sweeping the crops, grasses and wild bushes.

The collected specimens were killed with ethyl acetate vapours in a test tube and pasted or pinned on hard paper slips supported by paper pins. The relevant labels indicating source, locality and date of collection were tagged to the paper pins. The mounted beetles were dried for a few hours in an oven at 60°C and subsequently
preserved in air tight wooden boxes treated with creosote and naphthalene. Sometimes the killed specimens were preserved in alcohol for pinning and mounting later on. Most of the specimens were collected during the years 1976-1981 under a US PL 480 Project on Curculionids and by the author. Some material was loaned from the unidentified collection in the entomological museums of Forest Research Institute, Dehra Dun and identified collection from British Museum (Natural History), London.

2. Technique

The genitalia of some of the species were taken out from freshly killed specimens by inserting the forceps from the tip of the abdomen. In most cases, the genitalia were extracted from the dead and preserved specimens. Such specimens were relaxed by placing them in hot water for an hour or so. The abdomen was detached by inserting a fine needle between metacoxae and sternum 1 and placed in 10% KOH for about half an hour. The abdominal sternites were detached from genital segments with the help of needles. The detached abdominal sternites were washed in H₂O, treated with 1% acetic acid, dried and pasted along with the insects to which these belonged. The genital segments were left in 10% KOH to dissolve the muscles and decolorize the cuticle till the parts turned yellowish. The potashed
material was washed in \( \text{H}_2\text{O} \) and traces of \( \text{KOH} \) were later removed by putting it in 1% glacial acetic acid. The material was again washed in \( \text{H}_2\text{O} \) and then dehydrated in alcohol. After dehydration, the material was cleared in clove oil for a few hours. The required parts were separated by fine needles and mounted in Canada Balsam. The slides were kept in an electric oven set at 60°C for a few days for drying the mounting medium. The figures of genitalia were outlined under a trisimplex projector but the details were studied and drawn under the microscope. The pencil sketches were traced on ivory sheets, inked and labelled for the preparation of photo-copies of reduced size. The enlargement of the figures have been indicated by magnification lines alongside the diagrams.

The external morphological characters were studied under a stereobinocular of high magnification. The specimens were photographed using a Bausch and Lomb zoom type stereobinocular with a 35 mm Contax camera fitted with MF attachment. ORWO NP 22 ASA-125 films were used for exposing while printing has been done on Agfa (normal or glossy) single weight photographic paper. The measurements of the body parts were made using a stage micrometer and an ocularometer. The total length of the insect is based on a straight line extending from the front margin of the eye to the tip of elytra and the width on the widest point of
elytra in dorsal view. The length of rostrum is taken from its apex to the anterior margin of eyes.

3. Procedure of study

The present investigations present a brief account of the morphological features of subfamily Alcidodinae in the beginning which is followed by keys to different taxa and their characteristic features. The keys to the known species have been followed from the works of Haaf (1961a, 1964a). As regards the division of the large genus Alcidodes, the important works of workers such as Haaf (1961d, 1964b), Voss (1953, 1956, 1957, 1958, 1962a) and Heller (1917) have been taken into consideration. The characters of higher taxa have also been taken from the aforesaid works, but some changes have been incorporated by omitting the variable characters and adding the stable ones wherever required. An attempt has been made to prepare a new key for all the 7 genera including three new proposed genera and one upgraded one and to the species under each genus, by utilizing the structure of genitalia as far as possible. The structure of genitalia has been the ultimate reliable character in discriminating closely allied species on account of noted variation in size, colour and pattern among various species. The descriptions of the already known as well as new species have been recorded in
detail. The previous data on distribution, type depository and host plant etc. in case of already known species is also given along with additional information. The new taxa have been named and the type species for new genera and subgenera designated. The name of the collector is omitted because much of the collection has been made during collection trips by a number of workers collectively under a US PL 430 Project during 1976 to 1981.

The terminology used in describing the different morphological characters is the one followed by leading workers in the field. However, it will be worthwhile to clarify a few points pertaining to the interpretation and the use of important taxonomic characters that have been frequently used in this work. The colour of the body relates to ground colour or the colour of integument irrespective of the colour of vestiture. With regard to insertion of antennae, the terms 'before' or 'behind' the middle have been used for their insertion in the apical or basal half of rostrum respectively. The same terminology has been used for apical basal half of the front tibia. The 7th funicular segment of the antenna is taken as separate (Fig. 78) from the club when there is a discontinuity in the outline of the two on account of the shape of the funicular segment. The same is continuous (Fig. 79) with the club when the two are closely applied and have a
common outline. The distance between the coxae is taken in the middle at the minimum point. The metasternum is considered as plane (Fig. 80), bulged (Fig. 81), tuberculate (Fig. 82) or toothed (Fig. 83) when it is plane, raised, produced tubercle-like or tooth-like towards hind coxae. The terms apical tooth and subapical tooth (Hasaf, 1961a) have been used in place of uncus and macro respectively.

Different terminologies have been used for the various parts of male and female genitalia by different workers. The nomenclature of male genitalia followed in this study has been largely taken from Pajni and Bhateja (1973) which is basically a modification of the terminology given by Snodgrass (1935). The terms used by other workers viz. Sharp and Muir (1912), Michener (1944), Brünn (1947), Wood (1952), Lindroth (1957), Morimoto (1962a) and Kissinger (1968) for corresponding parts of the male genitalia are given in the following table for the sake of comparison and to remove any confusion. The terminology of Scudder (1961) has been mainly used for naming different parts of female genitalia. The nomenclature of Spett and Lěvít (1926) has been used for naming different parts of spermatheca.