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## Generic Relationships of *Phenacomys albipes*<sup>2</sup>

The white-faced vole (*Phenacomys albipes* Merriam, 1901) has always been included in the genus *Phenacomys*. The genus also includes the heather vole (*Phenacomys intermedius* Merriam, 1889), and has included the red tree vole (*Arborimus longicaudus* (True, 1890)). With separation of the genera *Arborimus* and *Phenacomys* (Johnson, 1973), it is germane to analyze the taxonomic status of the white-footed vole.

*Phenacomys albipes* is one of the rarest voles in institutional collections, despite its occurrence in northwestern California and western Oregon, where much collecting has been done. Maser and Johnson (1967) located only 28 catalogued specimens, and only 11 additional specimens have been mentioned in the literature, including examples reported by Maser and Hooven (1969) and Sherrel (1970). In addition, Maser (unpub. data) trapped 22 specimens during 1970 through 1972. Thus, our field experience has increased; our collection now totals 42 catalogued specimens.

Taylor (1915), on the basis of two specimens, suggested that the closest ally of *P. albipes* was the red tree vole (*A. longicaudus*). Howell (1926), after studying eight specimens, declined to state affinities, but considered *P. albipes* to be a distinct species within the genus *Phenacomys*.

We studied skeletal elements (N = 25), bacula (N = 8), and preserved soft parts (N = 10) of *P. albipes*. Although the series is small, analysis of relationship is possible using multiple characters (Table 1). Most of the traits that we selected were also used in comparing the heather vole (*Phenacomys*) with the red tree vole (*Arborimus*) (Johnson, 1973).

Criteria of age determination have been established: the termination of the re-entrant angle of the molars becomes visible beyond the level of the alveolus at full maturity; at senescence, the occlusal pattern becomes worn and lost. It was important to compare skulls of matching age because some of the measurements change with advancing maturity. Fourteen skulls of mature individuals were studied.

On the basis of data presented in Table 1, there is little doubt that the relationship of *P. albipes* is with the *Arborimus longicaudus* complex (including *silvicola* and a new sibling species to be described elsewhere). In conformity with the International Code of Zoological Nomenclature, Article 23 (1964), the white-footed vole is placed in the genus *Arborimus* and becomes *Arborimus albipes*.

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TABLE 1. Congruity of characters: *Arborimus albipes* related to *Arborimus longicaudus* complex (A) and *Phenacomys intermedius* (B).

Character	A. longicaudus complex (A)	Congruence of A. albipes	Phenacomys intermedius (B)
Geographic distribution	Restricted to humid N.W. Calif. and W. Oregon	A	Boreal North America south of the Arctic
Habitat	Humid, temperate forests	A	Boreal, timberline areas
Habits	Arboreal	B But is an arboreal feeder (Voth et al. 1980)	Terrestrial
External form	Tail long, more than half length of head and body	A	Tail short, less than half length of head and body
Ear	Small (10-12 mm); scantily haired	A (11-13 mm)	Large (13-16 mm); clothed with short straight hairs
Flank glands (Quay, 1968)	Absent	A	Present
Color of upper parts	Orange to red brown	A Rich brown	Brownish gray to plumbeous
Gastric mucous membrane pouch	Proximal flaps with long, irregular, deep serrations; distal rim with small, broad serrations	A	Proximal flaps with regular, short serrations; distal rim narrow, without serrations
Cecal villi	Delicate, unbranched	A A few branched	Robust, frequently branched
Anterior nasals viewed from above	Protrude well beyond anterior surface of incisors	A	Do not protrude beyond anterior surface of incisors
Length of diastema	6.7-7.5 mm	A (6.5-7.2 mm)	7.3-8.4 mm
Premaxilla-maxillary suture	Angle acute (ventrally about 25° to vertical axis of skull)	A	Angle less acute (ventrally about 70° to vertical axis of skull)
Width of palatine foramina	More than 1.5 mm	A	Less than 1.5 mm, frequently constricted posteriorly
Distance from root of incisor to nasal bone	Less than 2.05 mm, moderately smooth	A (1.6-1.8 mm)	More than 2.1 mm, indented
Distance between squamosals anteriorly	More than 7.7 mm	A	Less than 3.9 mm
Interparietal width	More than 7.7 mm	A	Less than 7.4 mm
Paraoccipital process	Close to bulla, not flaring posteriorly	A	Flaring posteriorly
Incisors (Howell, 1926)	More recurved	A	Less recurved
Third upper molar	Wide and short; posterior prism transversely placed and wide	A	Narrow and long; posterior prism long and narrow
Third lower molar	Wide and short	A (not so extreme)	Narrow and long

TABLE 1—(Continued)

Cervical vertebrae	More compressed antero-posteriorly	A (not so extreme)	Less compressed
Sacral foramina	Large	A	Small
Sternum	Wide	A (not as marked)	Narrow
Acromion process of scapula	Narrow	A	Wide
Hyoid bone	Medial spine absent or reduced; lateral processes short and nearly at right angles	A	Medial spine present and pronounced; lateral processes longer and flaring
Baculum	Separate medial osseous process absent; short lateral processes frequently fused	A	Well separated median and two lateral terminal processes (typical microtine)
Testes	Small; length x width less than 30 mm	A	Large; length x width more than 40 mm
Teats	Four	A 4, 5, and 6 recorded	Eight
Litter size	Two to three usual	A Two in one specimen; (Foster 1961) three in each of seven specimens; four in one specimen	Average 4.8 (2-8)
Karyotype, diploid number	52. In <i>A. longicaudus</i> "Quite different from <i>P. intermedius</i> " (Hsu, personal communication, 1968)	A 52. Compared to <i>A. longicaudus</i> , "similar but not identical" (Hsu, personal communication, 1971)	56

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