

= Oryzomys =

Oryzomys is a genus of semiaquatic rodents in the tribe Oryzomyini living in southern North America and far northern South America . It includes eight species , two of which ? the marsh rice rat (*O. palustris*) of the United States and *O. couesi* of Mexico and Central America ? are widespread ; the six others have more restricted distributions . The species have had eventful taxonomic histories , and most species were at one time included in the marsh rice rat ; additional species may be recognized in the future . The name Oryzomys was established in 1857 by Spencer Fullerton Baird for the marsh rice rat and was soon applied to over a hundred species of American rodents . Subsequently , the genus gradually became more narrowly defined until its current contents were established in 2006 , when ten new genera were established for species previously placed in Oryzomys .

Species of Oryzomys are medium @-@ sized rats with long , coarse fur . The upperparts are gray to reddish and the underparts white to buff . The animals have broad feet with reduced or absent ungual tufts of hair around the claws and , in at least some species , with webbing between the toes . The rostrum (front part of the skull) is broad and the braincase is high . Both the marsh rice rat and *O. couesi* have 56 chromosomes , lack a gall bladder , and have a complex penis (as is characteristic of the Sigmodontinae) with some traits that are rare among oryzomyines ; these characteristics are unknown in the other species of this genus .

The habitat includes various kinds of wetlands , such as lakes , marshes , and rivers . Oryzomys species swim well , are active during the night , and eat both plant and animal food . They build woven nests of vegetation . After a gestation period of 21 to 28 days , about four young are born . Species of Oryzomys are infected by numerous parasites and carry at least three hantaviruses , one of which (Bayou virus) also infects humans . Two , maybe three , species have gone extinct over the last two centuries and at least one other is endangered , but the widespread marsh rice rat and *O. couesi* are not threatened .

= = Taxonomy = =

Oryzomys is one of about thirty genera within the tribe Oryzomyini , a diverse group of well over a hundred species , many of which were formerly also included in Oryzomys . Oryzomyini is one of several tribes within the subfamily Sigmodontinae of the family Cricetidae , which includes hundreds of other species of mainly small rodents , distributed mainly in the Americas and Eurasia .

Within Oryzomyini , a 2006 phylogenetic analysis by Marcelo Weksler which used both morphological and DNA sequence data found some evidence that Oryzomys is most closely related to a group including *Holochilus* , *Lundomys* , and *Pseudoryzomys* . Although analyses based on morphological and combined data supported this relationship , sequences of the Rbp3 gene alone instead placed Oryzomys among a group that included *Nectomys* , *Sigmodontomys* , and a few other genera . In all analyses , Oryzomys appeared within clade D of Oryzomyini . The relationship between Oryzomys and the *Holochilus* group was supported by five synapomorphies (shared derived characters) ? absence or reduction of both the hypothenar and interdigital pads ; reduction of ungual tufts of hairs surrounding the claws ; having the back margin of the zygomatic plate of the skull at the same level as the front of the first upper molar ; and the anterocone (front cusp) of the first upper molar divided by an anteromedian fossette . The first three are adaptations to the semiaquatic lifestyle that Oryzomys and the members of the *Holochilus* group share , and may thus be examples of convergent evolution .

= = = Circumscription = = =

The name Oryzomys was introduced in 1857 by Spencer Fullerton Baird for the marsh rice rat (now *Oryzomys palustris*) of the eastern United States , which had been first described twenty years earlier by Richard Harlan . The name combines the Greek *oryza* " rice " and *mys* " mouse " and refers to the feeding habits of the marsh rice rat . Baird placed Oryzomys as a subgenus of the now

@-@ defunct genus *Hesperomys* and included only the marsh rice rat in it , a classification which was followed by Elliott Coues in 1874 and 1877 . In 1890 , *Oryzomys* was raised to generic rank , and in subsequent years numerous additional species were ascribed to it , many of which were soon moved to separate genera . In the 1898 *Catalogus Mammalium* , Édouard Louis Trouessart listed 67 species of *Oryzomys* , including some that are now placed in *Calomys* , *Necomys* , *Thomasomys* , and other genera unrelated to *Oryzomys* . Some of the new genera proposed were soon subsumed in *Oryzomys* again , and in *The Families and Genera of Living Rodents* (1941) , John Ellerman listed *Microrizomys* , *Oligorizomys* , *Melanomys* , *Nesorizomys* , and *Oecomys* as synonyms of *Oryzomys* and included about 127 species in it . In 1948 , Philip Hershkovitz suggested that other oryzomyines like *Nectomys* and *Megalomys* could as well be included in *Oryzomys* , and Clayton Ray followed this suggestion in 1962 .

Hershkovitz and Ray 's classification was never widely followed , and from 1976 on authors started to reinstate some of the other groups lumped in *Oryzomys* as separate genera . The genus was reduced to 43 species (out of 110 in *Oryzomyini*) in the third edition (2005) of *Mammal Species of the World* , but it was still not a natural , monophyletic group ; rather , it mostly united those oryzomyines that lacked the conspicuous specializations of other genera . In 2006 , Marcelo Weksler 's comprehensive phylogenetic analysis produced further evidence that the genus was polyphyletic , as species of *Oryzomys* were dispersed all over the oryzomyine tree . He proposed that eleven new genera should be created to accommodate those species that were not closely related to the type species of *Oryzomys* , the marsh rice rat ; he considered other options that would require fewer new genera , but argued that that would result in less meaningful genus @-@ level groups in *Oryzomyini* . Later in the same year , Weksler , Percequillo , and Voss created ten new genera ? *Aegialomys* , *Cerradomys* , *Eremoryzomys* , *Euryoryzomys* , *Hylaeamys* , *Mindomys* , *Nephelomys* , *Oreoryzomys* , *Sooretamys* , and *Transandinomys* ? for species formerly placed in *Oryzomys* and placed six more species related to " *Oryzomys* " *alfaroi* in *Handleymys* pending the description of more new genera for them . They left only five species in *Oryzomys* , which was now finally a natural , monophyletic group . Because of subsequent taxonomic work , the number of species has since increased to at least eight .

Some problems remain : ? *Oryzomys pliocaenicus* , a Miocene fossil from Kansas , is of uncertain identity but may belong in *Bensonmys* , and fossils from the Miocene of Oregon and Pliocene of New Mexico have also been ascribed to *Oryzomys* , but probably incorrectly . A possible *Oryzomys* has been recorded from the Irvingtonian (Pleistocene) of Saskatchewan .

= = = Species = = =

The current concept of *Oryzomys* derives from the *palustris* @-@ *mexicanus* group recognized within a much larger genus *Oryzomys* by Merriam (1901) and the *palustris* group proposed by Goldman (1918) . Merriam recognized 21 species within his group , but Goldman consolidated them into eight ? the marsh rice rat in the United States , *O. couesi* in far southern Texas , Mexico , and Central America , and six others with small distributions . In 1960 , Raymond Hall united *O. couesi* and the marsh rice rat into a single species , *Oryzomys palustris* , and thereafter , other localized forms were also included in *O. palustris* . Hershkovitz described another species in the group , *O. gorgasi* from Colombia , in 1970 and the next year he noted that *O. dimidiatus* , previously classified as a *Nectomys* , was similar to *O. palustris* . After 1979 , the marsh rice rat and *O. couesi* were again regarded as separate as a result of further work in Texas , where their ranges meet . While reviewing *O. gorgasi* in 2001 , J. Sánchez H. and colleagues redefined and characterized the *O. palustris* group and listed *O. couesi* , *O. dimidiatus* , *O. gorgasi* , and the marsh rice rat as its members ; Guy Musser and Michael Carleton in the 2005 third edition of *Mammal Species of the World* additionally listed *O. nelsoni* from María Madre Island in western Mexico .

In 2006 , Weksler and colleagues followed the 2001 definition by Sánchez and others for the restricted genus *Oryzomys* , but added *O. antillarum* from Jamaica as a species . Carleton and Joaquin Arroyo @-@ Cabrales reviewed *Oryzomys* from western Mexico in 2009 and in this context provided an extended diagnosis of *Oryzomys* . They recognized eight species : the six previously

mentioned plus *O. albiventer* and *O. peninsulae* . Also in 2009 , Robert Voss and Weksler identified the subfossil *Oryzomys curasoae* from Curaçao as an island population of *O. gorgasi* . The next year , Delton Hanson and colleagues published a study using DNA sequence data from the cytochrome b , interphotoreceptor retinoid @-@ binding protein , and alcohol dehydrogenase 1 genes to assess relationships within *Oryzomys* . They recommended that the marsh rice rat be split into two species and that *O. couesi* be split into four species on the basis of the observed sequence divergence and other data .

Merriam divided his palustris @-@ mexicanus group in two " series " according to the color of the underparts (white or fulvous) . Goldman divided his palustris group in two " sections " ? a couesi section with *O. couesi* and six related species , and a palustris section with *O. palustris* only . He noted that the latter differed from the former in the generally darker , more brownish , longer fur , and larger sphenopalatine vacuities (openings in the mesopterygoid fossa , the gap behind the end of the palate) . As Weksler 's 2006 analysis included only *O. couesi* and the marsh rice rat among species of *Oryzomys* in the strict sense , he could not test those groups . Carleton and Arroyo @-@ Cabrales concurred with Goldman 's division , listing additional characters , and noted that the palustris group may be more semiaquatically adapted than the members of the couesi group are . In the latter , the fur is usually reddish @-@ brown , as opposed to grayish @-@ brown in the palustris group . Members of the couesi group have smaller sphenopalatine vacuities and a smaller sphenopalatine foramen , a foramen (opening) in the side of the skull above the molars , and a more highly developed anterolabial cingulum on the third lower molar (a crest at the front of the tooth) . The hypothenar pad of the hindfoot , located on the sole far from the fingers , is present in the couesi group , but absent in the palustris group . Interdigital webbing may be more highly developed in the palustris group . Using morphological data , Voss and Weksler found a closer relationship between *O. couesi* and *O. gorgasi* to the exclusion of *O. palustris* , but with low confidence . The DNA sequence data of Hanson and colleagues supported a deep separation between the palustris and couesi groups , but a Costa Rican sample (assigned to *O. couesi*) was about as distant from the two groups as they were from each other .

The genus currently includes the following species :

= = Description = =

Oryzomys contains medium @-@ sized , semiaquatically specialized oryzomyine rodents . They have long , coarse fur that is grayish to reddish on the upperparts and white to buff on the underparts . The marsh rice rat superficially resembles the introduced species black rat and brown rat , but has larger differences in color between the upper- and underparts . The vibrissae (whiskers) are short and the ears are small and well @-@ haired . The tail is usually as long as or longer than the head and body and is sparsely haired , but the hairs on the lower side are longer than those above . Females have eight mammae , as in most oryzomyines . The hindfeet are broad and have the first and fifth digits notably shorter than the middle three . The upper surface is hairy , but the underside is naked and covered with small irregularities (squamae) . The pads are generally poorly developed , as are the ungual tufts . Interdigital webbing may be present , but its development is variable within the genus .