

Pudu in a Chilean National Park

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The Chilean pudu *Pudu pudu*, the smallest American deer, is on the world list of endangered species in the IUCN *Red Data Book*. One of its few remaining refuges is in the Vicente Perez Rosales National Park. This is in the Lake District of southern Chile, the 'Switzerland of South America', between the Puyehue National Park to the north, and the Nahuel Huapi National Park in Argentina on the east. There are very few records on the fauna of this park, which covers 243,000 hectares, and is part of the Patagonian Subdivision of the Neotropical Faunal Region.

Like an Island

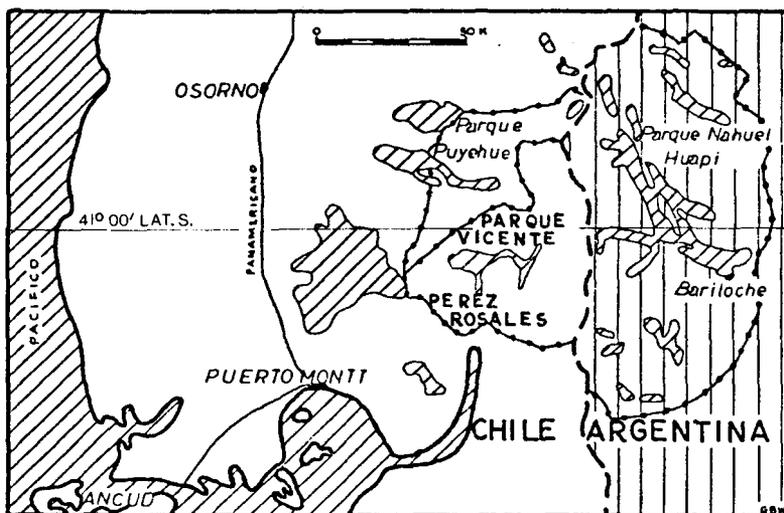
In many ways, Chile is like an island, cut off by the Atacama Desert on the north, the Andes to the east, the Patagonian ice fields and fiords to the south, and the Pacific on the west. This geographical isolation has permitted the development of a unique biota, and Chilean wildlife exhibits some of the characteristics of island fauna such as narrow endemics and few competitors. The pudu is descended from the deer that migrated from North America in the late Tertiary period (Simpson 1950). The species is primarily of Chilean origin and distribution, although it is frequently encountered in adjacent areas of Argentina, and is present in Bolivia (Walker, 1964). It was discovered and named in 1782 by the Jesuit Juan Ignacio Molina, the 'father of Chilean natural history' (Osgood, 1943). Other species of the genus are found in Ecuador and Peru (Grimwood, 1968), and Brazil (Hershkovitz, 1958).

Pudu vary in colour from rufous or brownish red to dark brown.

The average measurements of twenty-one specimens examined by Osgood (1943), eight of them taken in the park, were: head and body length, 820mm; tail 38mm; shoulder height 385mm; and weight about 9.5kg.

Pudu formerly extended well into the Chilean central valley, but as the land was cleared for agriculture they were driven into the low Andes, into areas unsuited for crops and grazing and today, although sightings still occur in the central valley, they are mainly found in the dense forests in the foothills of the Andes and of the coast range.



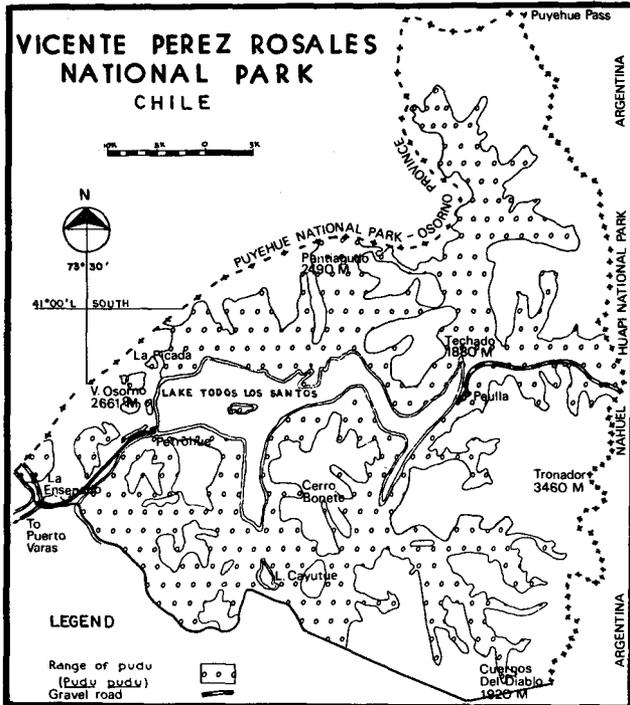


The park straddles the phytogeographic transition zone between the species-rich Valdivian forests of evergreen beeches (principally *Nothofagus dombeyi*), and the southern, species-poor, subantarctic, deciduous beech forests (*N. pumilio* and *N. antarctica*). The forests at latitude 42°S are the most diverse in the country (Godley, 1960). The most favourable pudu habitat in the park is in what the Chilean Ministerio de Agricultura (1966) has classified as the Valdivian Forest Type, and the Coigüe Forest Type. In the lower altitudes, pudu are often found in the understory thickets consisting of small trees of tiaca *Caldcluvia paniculata*, avellano *Guevina avellano*, luma *Amyrtyus luma* arrayan *Myceugenella apiculata*, and huedhued *Pernettya furiens*. I never saw tracks at elevations above 1200m, nor have sightings been reported by others. At these higher ranges, the understory is often quila *Chusquea quila* and colihue *C. coleu*.

The largest known concentration of pudu in Vicente Pérez Rosales National Park is on the privately owned Margarita Island in Lake Todos Los Santos, where there is a herd of 10-15 with no natural predators or dogs to disturb them, and no interference apart from an occasional stick thrown at them when they wander too close to the vegetable garden. Some of these pudu were brought to the island by colonists on the mainland whose dogs had chased them into lakes or streams where they might have drowned.

In April 1969 I saw two captive pudu in the town of Peulla, in a small collection of native wildlife maintained by a resident, and in May of 1969 I spotted two pudu casually walking down the road near the hotel at La Ensenada in the early evening. Local residents reported frequent sightings throughout the park in 1968 and 1969, and tracks were fairly common in forested areas.

Browsed vegetation in their natural habitat indicates that pudu eat herbs, leaves, tender sprouts, shoots, and buds. According to a local packer and guide, they are particularly fond of the fruits of avellano and of bushes of the *Myrtaceae* family. In captivity, they eat grass,



vegetables, and fruit, and relish apples and green peaches. Observations in the Vicente Perez Rosales park substantiate the findings of Greer (1968).

In southern Chile, the lack of trace elements in the geologically recent soils is the cause of numerous deficiency diseases in the plants and the animals that feed on them: 'the rain forest is especially poor in warm-blooded animals requiring cobalt for the manufacture of blood and fluorine for the formation of bone' (Auer, 1958). The small stature of the pudu may be related in part to this shortage.

According to Gay, quoted by Housse, pudu once ran in small herds; 'that would have been true a century ago when they were still abundant; now that they have decreased, these groups of two or three are not a herd in formation, but rather families not yet dispersed' (Housse, 1953). In Vicente Perez Rosales park, I never saw more than two pudu together, nor did the tracks indicate larger groups. They were most often seen in the late afternoon or early evening, and local residents say that the pudu probably spend the day ruminating or sleeping, and leave the thickets in the evening to feed.

Pudu are gently indifferent to man, but are mortally – and rightly – afraid of dogs. Housse reports that the pudu male has been known to turn and hold ground against a pursuing dog, and that in one case, a corralled pudu turned on a worker and 'buried its two sharp horns in his stomach'. These are probably rare exceptions. Pudus are generally docile, and, if captured early, easily domesticated.

The pudu's natural predators include the puma *Felis concolor*



Mt Punttiagudo in the Vicente Perez Rosales National Park
Photographs by Gary B. Wetterberg

puma, Andean wolf *Dusicyon culpaeus culpaeus*, and the Patagonian fox *D. griseus maullinicus*. Osgood (1943) lists other carnivores identified within the park, including south Andean puma *Felis concolor patagonica*, and the Chilean forest puma *F. c. araucanus*, two subspecies that are also believed to prey on the pudu.

Hunting for food or sport in Vicente Perez Rosales National Park is not a major threat to the pudu. There are many colonist families living by subsistence agriculture in the valley bottoms in the park, but they do not actively hunt the pudu, as I learned after talking to them in their homes, although many, at one time or another, have tasted the meat. Dorst (1967) however, says that this is not the case in the adjacent Argentinian national park of Nahuel Huapi: 'The aboriginal deer, *Pudu pudu* and *Hippocamelus bisulcus* have become rather rare as a result of excessive hunting. The Argentinians have therefore introduced European deer *Cervus elaphus* and even fallow deer *Dama dama*. These have multiplied disastrously. As a result of competition from these robust rivals, the aboriginal species have diminished in number'. Fortunately, the European deer have not yet ranged into Chile at this latitude.

Forest fires, at least in this park, are so infrequent that they are not a serious menace to the pudu habitat. The 3½ metres of rain that fall annually at lower elevations keep the forests quite moist. The greatest fire danger follows the flowering and subsequent drying of the quila *Chusquea quila*, which happens at presently unknown intervals. In 1942, dead quila was set aflame by colonists south of Mt Tronador, and about 4000 hectares of prime pudu habitat were burned.

Apart from its natural predators, the pudu still faces formidable odds. In the forest the colonists' dogs often flush them from their resting places; the pudu usually zigzag or run in circles to avoid being caught, without breaking cover, and as a last resort take to the rivers or lakes. They are also taken for household pets, and several instances are known of people travelling to the park area from nearby Puerto Varas and Puerto Montt, and capturing a pudu to take home.

The designation of the area as a national park has probably had little effect on the pudu so far. Although created in 1926, few people living in or near the area realised even as recently as January 1968 that it was a national park! However, Chileans are now beginning to appreciate the wealth they have set aside as a national heritage, and perhaps it is not too late, nor too difficult to maintain the present pudu population in the park. To be an effective sanctuary, further colonisation, particularly in the prime lowland areas, must be stopped, and dogs controlled or eliminated. An educational campaign should be waged to point out the international significance of the pudu, and manned entrance stations to the park would alleviate the pressure of the souvenir-collecting *Homo sapiens*.

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From 1967–69 the author, a Peace Corps volunteer, was in charge of the preparation of a preliminary management and development plan for the Vicente Perez Rosales National Park. The plan, the first of its kind in Chile, was made at the request of Dr Fernando Hartwig, Director of National Parks, and prepared jointly with four other members of a study team.

Editor's Note

The Vicente Perez Rosales National Park was declared in 1926 and could be one of the finest in South America. Unfortunately there are settlers and cultivation inside the park, so that it does not qualify for the U N List of National Parks.