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Intraspecific variation in facing-water behaviour of *Spalacopus cyanus* (Octodontidae, Rodentia)[1]

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Individuals of the fossorial, gregarious and monotypic genus *Spalacopus* Wagler, 1832 from the arid north in Chile were more hesitant to swim than individuals from the rainy southern distributional range. This differential behaviour is likely to affect intraspecific genetic and phenotypic variation especially in such a narrow longitudinal distribution along the western slope of the Andes. The latitudinal distribution extends over 1000 km (30° S to 38° S), sectioned by more than 10 large transversal fluvial systems (Fig. 1). It has been suggested that low levels of genetic and phenotypic variability in *Spalacopus* are caused by cohesive gene flow promoted by its alleged high vagility (Reig 1970; Reig et al. 1972). However, this hypothesis does not consider the discontinuous geomorphology of Chile and besides, it conflicts with a preliminary analysis of morphological variation in *Spalacopus* (Reise 1976). In this context, the facing-water behaviour and swimming ability poses interesting questions to the hypothesized high vagility, distributional pattern, and genetic structure of this species.

Spalacopus cyanus (Molina, 1782), the "cururo", lives in various habitats like coastal dunes, dry steppes, prairies, desertic stream beds and cultivated areas from sea-level up to 3400 m above M.S.L. in the Andes. Rainfall averages within its distributional range from scattered showers in the desert to heavy rainfalls in the south.

Nine cururos were caught in northern Chile (Huentelauquén 31° 37′ S – 71° 31′ W and Los Vilos 31° 55′ S – 71° 00′ W) during July and August 1987. Just before sampling this northern region was subjected to unusually heavy rainfalls which flooded wide areas. It was not possible to observe where the animals stayed during inundation. After water level descended the animals reappeared in their burrows. In northern cultivated valleys an analogous situation takes place every springtime when fields are flooded for irrigation. Four additional animals were caught in the isolated and southernmost population of *Spalacopus* (Quirihue 36° 15′ S – 72° 31′ W), in May before the 1987 rainy season.

The cururos' swimming ability was tested in an aquarium (65×45×15 cm) filled with 10 cm water at 25 °C. One animal at the time was placed on a 6×6 cm central stone elavated 1 cm above water level. The facing-water behaviour and swimming ability were observed and the time the animals spend on the stone was recorded. All specimens were taken out of the water after swimming for 1 min. Each animal was subjected to the experiment only once to avoid experience. The observer moved 2 m away from the aquarium and stood motionless while the experiment was taking place.

For gregarious cururos this exposure constituted an extreme situation as they normally disappear down their burrows when any disturbance is perceived. This experimental design stressed the animals and at the same time, forced them to contact water.

It took more than 5 min to four specimens (2 ♀, 2 ♂) from Los Vilos (coastal dunes in northern Chile) to voluntarily slide into the water. The animals repeatedly touched water with their vibrissae and mouth and circled round with tripling steps. One male and one

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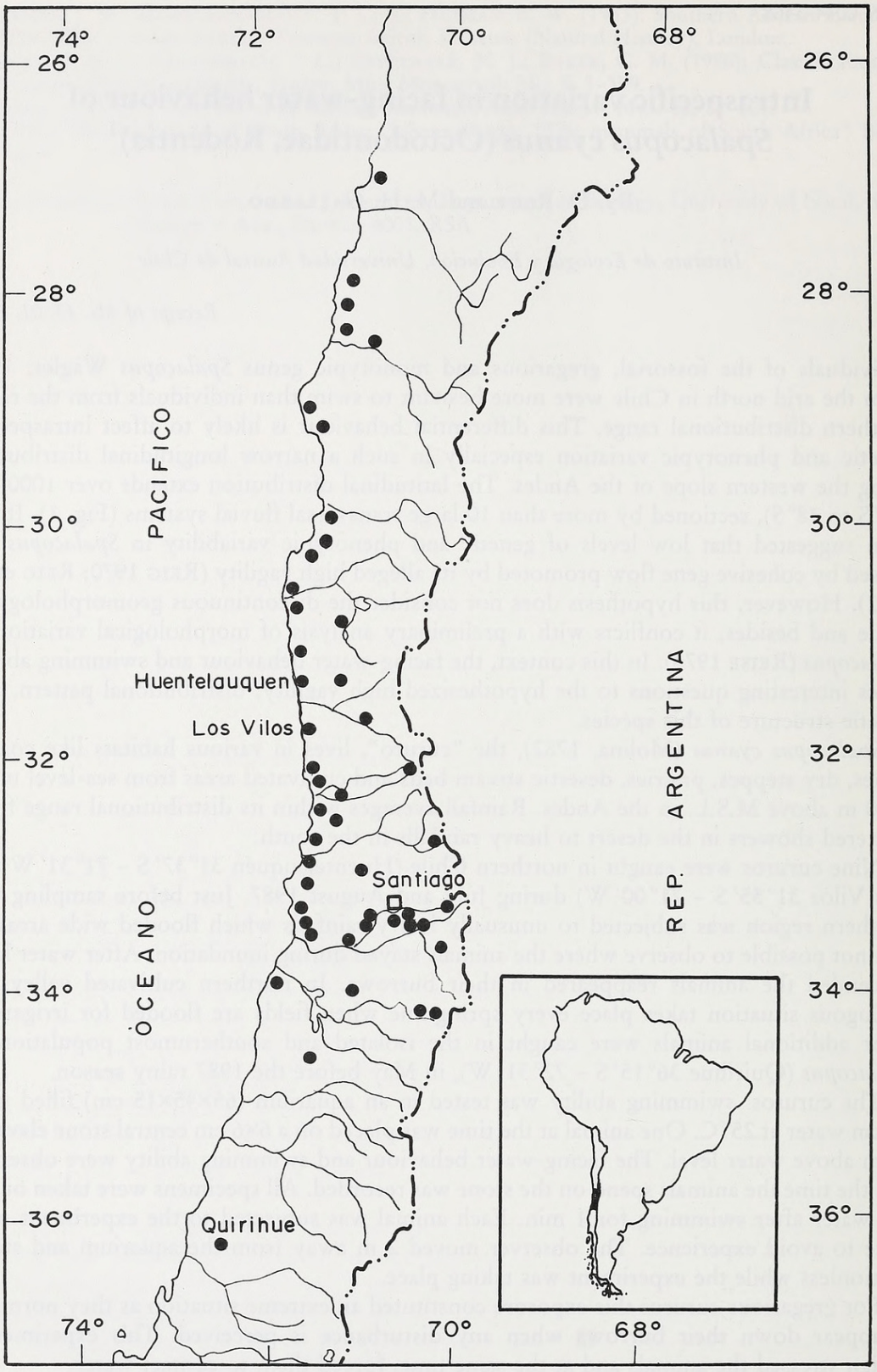

Fig. 1. Records of *Spalacopus cyanus*, in Chile

female emitted their typical warning call for several seconds while still on the stone. After 20 min on the stone, one male jumped up in direction of the nearest wall of the aquarium and started to swim.

Four out of five (3 ♀, 2 ♂) specimens from Huentelauquén (dry steppe with flooded areas) waited around 1 min to voluntarily come into water. Apparantly males required more time than the females (3; 5 min ♂, 1; 2 min ♀). All animals tried water repeatedly. One male emitted the warning call before swimming. A juvenile female animal entered water as soon as she was placed on the central surface.

Southern cururos (2 ♀, 2 ♂) from Quirihue (extensively cultivated mediterranean shrubsteppe) faced water without trying and hesitation. They did not emit their warning calls but started to swim immediately.

All specimens tested had no difficulties in swimmning for 1 min. They swam with strong movements of fore- and hindlegs as described by Hickman (1988). Heads were lifted higher than noted by him. The back had an slightly opisthotonic posture, noses, eyes and ears were always above water. After the test, wet animals wallowed by themselves in dry sawdust and pushed themselves among the bodies of the remaining members of their social group searching for close contact.

The facing-water behaviour differed considerably between the northern and southern population samples tested. Water seemed to be a strange element for northern cururos, as they entered only after hesitation and presumed compulsory stress. Apparently, specimens from the southern population had no difficulties in facing water. This behaviour is probably an indication of familiarity with this element due to frequent rainfalls in their natural habitat.

The poor swimming ability (projected distance 38 m) recorded by Hickman (1988) and our observed rejection to water might be a decisive factor for longitudinal migration too and concomitantly hampers the distribution, at least of the major northern populations of *Spalacopus*. The assumed high migration rates (Reig 1970; Reig et al. 1972) may only occur in restricted areas not dissected by rivers and should not be the basis of general statements concerning the degree of genetic and phenotypic variability in this species.

The small and peripheral population from Quirihue described by Osgood (1943) as *Spalacopus cyanus maulinus* is geographically isolated from the main species distribution. Taking into account the above mentioned geomorphical features of the country the observed familiarity with water probably accounts for its dispersion pattern and actual distant separation from the main distributional area of the species.

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