V I E W P O I N T

MISLEADING USE OF IUCN RED LIST TERMINOLOGY TO DEFINE NEOTROPICAL OTTER LOCAL CONSERVATION STATUS
in response to Carvalho-Jr *et al*. (2021)

Marcelo Lopes RHEINGANTZ[1,2*]
J. W. DUCKWORTH[3]

[1] *Departamento de Ecologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brasil, CEP 21941-902*
[2] *Programa de Pós-graduação Profissional Biodiversidade em Unidades de Conservação, Escola Nacional de botânica Tropical, Rio de Janeiro, Rio de Janeiro, Brasil, CEP 22460-036*
[3] *6 Stratton Road, Saltford, Bristol, BS31 3BS, U.K.*
** corresponding author: mlrheingantz@gmail.com*

Abstract: The IUCN Red List Guidelines are an important resource to guide the definition of the global, national and even regional conservation status of our biodiversity. However, as with all models, if the assumptions underlying the criteria are not valid, or the guidelines for applying the criteria are not followed correctly, then misleading results will be generated. Carvalho-Jr et al. (2021) mis-used the IUCN Red List Guidelines to define the local status of Neotropical Otter *Lontra longicaudis* in Santa Catarina Island, Santa Catarina province, Brazil. The category generated, Critically Endangered, is groundless, for multiple reasons.
Citation: Rheingantz, M.L. and Duckworth, J.W. (2021). Misleading Use of IUCN Red List Terminology to Define Neotropical Otter Local Conservation Status. *IUCN Otter Spec. Group Bull.* **38** (5): 254 - 257
Keywords: *Lontra longicaudis*, Red List assessment, Santa Catarina island, conservation status

The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (the IUCN Red List) is the most comprehensive source to evaluate the risk of extinction of animals, fungi and plants across the world. This list highlights the species with higher and lower risk of extinction through a series of Categories, and it is much used in combination with other information to define the species that require more conservation efforts. However, the definition of status (assignment of Category) must follow standardized Criteria, that are available in Guidelines for Using the IUCN Red List Categories and Criteria (IUCN, 2019). Each species can be assessed not only globally, but also 'sub-globally', where only a part of its range is considered, *e.g.* national, regional and local scales. These are particularly useful when setting conservation priorities in smaller scales.

Carvalho-Jr. et al. (2021, this journal) made provocative conclusions about the status of Neotropical Otter *Lontra longicaudis* (Olfers, 1818) in Santa Catarina Island, assigning this population the category of Critically Endangered (CR). This assessment is flawed in multiple ways and would lead to erroneous perceptions about the conservation situation of the species in the island and possibly more broadly in its distribution range.

The CR assessment did not mention information source used (a,b,c,d or e; IUCN, 2019) to fit the species as Critically Endangered (CR) under A2 in Santa Catarina island. To be CR in A2, the otter population in the island should have

reduced by 80% or more in the last 10 years or three generations (whichever is the longer). It seems most likely they used 'b', 'an index of abundance appropriate to the taxon' as they focus on spraint numbers. The extent to which spraint counts can be used as an index of population is controversial (e.g. Mason and Macdonald, 1987; Kruuk et al., 1989) but here we focus on the lack of any compelling evidence that a decline in spraint numbers actually occurred, let alone one of sufficient magnitude to suggest a CR category. The first major point is that the purported decline was based on an unreasonable extrapolation. The authors wrote that otter spraints are decreasing, but an inspection of the graphics, in particular Figure 2, the low number of faeces occurred only in the year of 2017. In all the other surveyed years (2004-2009; there was no survey in 2010-2016) the number of spraints show no clear directional trend across years. So, the 'evidence' of decline in spraint numbers rests entirely on one, disjunct, year. Accepting that spraint numbers were lower in 2017 than in 2004-2009 (but see below), it is impossible to tell if 2017 was simply a chance 'bad year' (from which recovery would occur), or a reflection of genuine population decrease. Use of Criterion A requires that the population is in a genuine directional decline: it is not to be used simply for fluctuations. For the island's otter population, this would require more years to show a directional trend with reduction in otter spraints, or in theory a long-enough period after a sudden population collapse to show no recovery was made.

Ideal datasets rarely exist, and IUCN Red List assessors and reviewers take this into account when assessing species status, so spatially erratic ones such as shown in the manuscript are allowable. But the validity of their use in determining population change must be justified, not only presumed, as stated in IUCN Red List Categories and Criteria (IUCN, 2019). Because of the broad stability in the 2004-2009 period the need for such justification in this case is even higher.

The second major issue is that insufficient methodological information is given to know whether spraint numbers available to be counted in 2017 were lower than in 2004-2009, or whether the lower counts reflect differences in survey characters. It is not mentioned if the methods used in all areas and years were standardized. Even if they were, such a bold claim of massive decline by the authors should have been accompanied by a profound discussion of possible confounding factors that could have produced the result, with explanation as to why all could be considered far less plausible than a major decline in the local otter population. Several factors could, if not constant across years, have major effects on 'number of spraints' counted. They include the amount of survey effort, the spatial distribution of survey effort and the seasonal distribution of survey effort; and change in who undertakes the survey. These, and other factors, could have major effects on the number of spraints found which could dwarf any actual change in the number of spraints present to be found, and thereby if not taken in account provide a misleading result and conclusions. Without information on these and other factors, it is not possible to tell whether otter spraints were genuinely lower in number in 2017 than in 2004-2009, or not.

A claim of population change extrapolated to a larger area, as here, requires that the surveyed parts of the island are representative of the island as a whole. This is not discussed, even though they surveyed only a small part of the island. As Neotropical otters can have a 15-30 km linear home range (personal observation; Trinca et al., 2013), the otters in the whole island could be considered to be part of one single population, and one single otter can swim from mainland to island and vice-versa. The otters in that island have behaviour to forage in salt water, and in other areas of Santa Catarina province there are occurrences in rocky shores and other farther

islands (Carvalho-Jr et al., 2012, 2013). In these circumstances, of assessing a non-closed population, application of the IUCN Red List criteria requires consideration of the 'rescue effect': that the extinction risk of the sub-global population under consideration is reduced because of exchange with adjacent populations. IUCN (2012) stated that "Normally, such a downlisting will involve a one-step change in category, such as changing the category from Endangered (EN) to Vulnerable (VU)... if the region is very small and not isolated by barriers from surrounding regions, downlisting by two steps may be necessary... If it is unknown whether or not extra-regional populations influence the extinction risk of the regional population, the category [provisionally assigned before consideration of rescue effect] should be kept unaltered". Carvalho-Jr et al. (2021) did not discuss or even, it seems, consider, this aspect of applying IUCN Red List Criteria, and, even if there were credible evidence of a decline of the claimed magnitude (which there is not; see above), the appropriate IUCN Red List category could be any of Vulnerable, Endangered, or CR.

We recognize the effort of Carvalho-Jr et al. (2021) in providing the use of this important tool, the IUCN Red List criteria, to define the population status of Neotropical Otter in Santa Catarina Island, Southern Brazil. However, the flaws above mean that no credence should be attached to the claim that the island population warrants a categorisation as CR. Based on the information available to the public, the appropriate category cannot be suggested.

REFERENCES

Carvalho-Junior, O., Fillipini, A., Salvador, C. (2012). Distribution of Neotropical Otter, *Lontra longicaudis* (Olfers, 1818) (Mustelidae) in Coastal Islands of Santa Catarina, Southern Brazil. *IUCN Otter Spec. Group Bull.* **29(2)**: 95 – 108

Carvalho-Junior, O., Macedo-Soares, L., Birolo, A.B., Snyder, T. (2013). A comparative diet analysis of the Neotropical Otter in Santa Catarina Island, Brazil. *IUCN Otter Spec. Group Bull.* **30(2)**: 67 - 77

Carvalho Junior, O., Barbosa, P.M.L., Birolo, A.B. (2021). Status of Conservation of *Lontra longicaudis* (Olfers, 1818) (Carnivora: Mustelidae) on Santa Catarina Island. *IUCN Otter Spec. Group Bull.* **38(4)**: 186 - 201

IUCN (2012). *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0*. Gland, Switzerland and Cambridge, UK: IUCN. iii + 41pp.

IUCN Standards and Petitions Committee (2019). Guidelines for Using the IUCN Red List Categories and Criteria. Version 14. Prepared by the Standards and Petitions Committee. Downloadable from http://www.iucnredlist.org/documents/RedListGuidelines.pdf

Kruuk, H., Moorhouse, A., Conroy, J., Durbin, L., Frears, S. (1989). An estimate of numbers and habitat preferences of otters *Lutra lutra* in Shetland, UK. *Biol. Conserv.* **49**: 241–254.

Mason, C., Macdonald SM (1987). The use of spraints for surveying otter *Lutra lutra* populations: an evaluation. *Biol. Conserv.* **41**: 167–177.

Trinca, C.S., Jaeger, C.F., Eizirik, E. (2013). Molecular ecology of the Neotropical otter (*Lontra longicaudis*): non-invasive sampling yields insights into local population dynamics. *Biol. J. Linn. Soc.* **109**: 932–948.

RÉSUMÉ

UTILISATION ERRONEE DE LA TERMINOLOGIE DE LA LISTE ROUGE DE L'UICN POUR DÉFINIR LE STATUT LOCAL DE CONSERVATION DE LA LOUTRE A LONGUE QUEUE - en réponse à Carvalho-Jr et al. (2021)

Les Lignes directrices de la Liste rouge de l'UICN sont une ressource importante pour nous aider à définir le statut de conservation mondial, national et même régional de notre biodiversité. Cependant, comme pour tous les modèles, si les hypothèses sous-jacentes aux critères ne sont pas valides ou si les directives d'application des critères ne sont pas suivies correctement, des résultats erronés seront engendrés. Carvalho-Jr

et al. (2021) ont utilisé à mauvais escient les lignes directrices de la Liste rouge de l'UICN pour définir le statut local de la loutre à longue queue, Lontra longicaudis, sur l'île de Santa Catarina, située en province de Santa Catarina, au Brésil. La catégorie générée, «en danger critique», est sans fondement, pour de multiples raisons.

RESUMEN

USO ERRÓNEO DE LA TERMINOLOGÍA DE LA LISTA ROJA DE LA UICN PARA DEFINIR EL STATUS LOCAL DE CONSERVACIÓN DE LA NUTRIA NEOTROPICAL – en respuesta a Carvalho-Jr *et al.* (2021)

Las Directrices de Uso de las Categorías y Criterios de la Lista Roja de la UICN son un importante recurso para guiar la deinición del status de conservación global, nacional e incluso regional de nuestra biodiversidad. Sin embargo, como con todos los modelos, si los supuestos subyacentes a los criterios no son válidos, o las directrices para aplicar los criterios no son seguidas correctamente, entonces se van a generar resultados erróneos ó engañosos. Carvalho-Jr et al. (2021) utilizaron incorrectamente las Directrices de la Lista Roja de la UICN para definir el status local de la Nutria Neotropical *Lontra longicaudis* en la Isla de Santa Catarina, provincia de Santa Catarina, Brasil. La categoría generada, En Peligro Crítico, no tiene fundamentos, por múltiples razones.