Supplementary Material

Table S1. Traits selected for the models and hypotheses followed in this paper, with references and data sources.

Trait	Justification	Reference	Source
naivety to humans	Species that survived a previous contact had more time to adapt to humans and their commensal species	Diamond, 1984; Steadman, 1995; Steadman, 1999; Biber, 2002	Milberg & Tyrberg, 1993, Biber 2002, Appendix 2; Kouvari & van der Geer, 2018, Appendix A; and other online resources
clutch size	Large and slow reproductive species are expected to be more at risk because they have been found to require larger area requirements, have smaller population sizes and high habitat specificity, and need greater food intake. Large and slow reproductive species are expected to be more impacted by hunting and introduced predators.	Pimm *et al.*, 1988; Gaston & Blackburn, 1995; Bennett & Owens, 1997; Owens & Bennett, 2000; Sodhi *et al.*, 2004; Lee & Jetz, 2011	Taylor & van Perlo, 1998
body size			Taylor & van Perlo, 1998
flightlessness	Flightlessness species will be more threatened than volant species, generally associated with predator naivety. Flightless rails are suspected to be less capable of relocation, hence would be more impact by habitat loss than volant rails.	Duncan *et al.*, 2002; Steadman, 2006; Boyer, 2008	Taylor & van Perlo, 1998; Livezey, 2003
island size	Small islands can only support small population sizes that would not buffer human impacts, making them intrinsically at greater risk of extinction	MacArthur & Wilson, 1967; Biber, 2002; Blackburn, 2004; Blackburn *et al.*, 2008	ArcMap v10.5.1
island isolation	Species on isolated islands are more likely to have evolved in the absence of predators, and less likely to have experience of immigrants in general. People on isolated islands depend on the islands' natural resources more and can lead to overexploitation. Isolated islands have seen more extinctions of the modern avifauna and have more threatened species.	MacArthur & Wilson, 1967; Steadman, 1999; Blackburn *et al.*, 2004, 2008	ArcMap v10.5.1
island endemic	Island endemic species would be more threatened than mainland ones because of intrinsic small range size and low abundance. They are likely to have particular insular adaptations that make those species vulnerable to changes, especially naivety to predators, including humans. They have a lower genetic diversity and inbreeding depression that can be associated with higher extinction rates.	Diamond, 1989; Green, 1996; Cronk, 1997; Frankham, 1998; Blackburn *et al.*, 2004; Lee & Jetz, 2011; Duncan *et al.*, 2013; Lomolino *et al.*, 2017	Taylor & van Perlo, 1998
habitat diversity	Habitat specialists will be more threatened than non-specialists, especially by habitat loss and degradation	Owens & Bennett, 2000	Taylor & van Perlo, 1998; IUCN, 2019
migratory behaviour	Migrant species can relocate with changing conditions	Pimm *et al.*, 1988; Green, 1996; Sekercioglu, 2007; Newton, 2010; Lee & Jetz, 2011; Barshep *et al.*, 2017	Taylor & van Perlo, 1998; IUCN, 2019
socio-economic status of countries	Developing or human dense countries will carry more threatened species because of higher rates of wildlife hunting/poaching and habitat loss.	Kerr & Currie, 1995; Green, 1996; Blaikie & Jeanrenaud, 1997; Davies *et al.*, 2006; de Lima *et al.*, 2011; Olah *et al.*, 2016	CIA[1], The World Bank[2]
naivety to predators	Island species whose islands hold native predators will be less threatened by invasive predators due to their co-evolution	Balmford, 1996	GISD[3], TIB[4], WWF[5], and other online resources
artificial habitat	Species tolerant to disturbance and able to exploit man-modified environments and disturbed habitat would be less impacted by habitat modification and loss	Fischer & Lindenmayer, 2007; Newbold *et al.*, 2018	Taylor & van Perlo, 1998; IUCN, 2019

[1]CIA: https://www.cia.gov/the-world-factbook/references/guide-to-country-comparisons/ ; [2]The World Bank: https://data.worldbank.org/indicator/EN.POP.DNST ;
[3]GISD (Global Invasive Species Database): https://www.iucngisd.org/gisd/; [4]TIB (Threatened Island Database): http://tib.islandconservation.org/;
[5]WWF (World Wide Fund): https://www.worldwildlife.org/biomes

Table S2. List of rail species excluded or reclassified for the analyses. IUCN status: DD: Data Deficient; CR: Critically Endangered; VU: Vulnerable; EX: Extinct.

Common name	Latin name	IUCN status	Adaptations in the analyses
Brown-banded rail	*Lewinia mirifica*	DD	Excluded from the analyses (data deficiency)
Colombian crake	*Neocrex colombiana*	DD	Excluded from the analyses (data deficiency)
New Caledonian rail	*Gallirallus lafresnayanus*	CR	Reclassified 'extinct' (has not been seen with certainty since the 19th century and is suspected to be already extinct by some authors)
Samoan moorhen	*Pareudiastes pacificus*	CR	Reclassified 'extinct' (has not been seen with certainty since the 19th century and is suspected to be already extinct by some authors)
Gough moorhen	*Gallinula comeri*	VU	Reclassified 'Not Threatened' (originally classified 'Vulnerable' on the basis of potential future threats only - outside of the scope of this study)
Auckland rail	*Lewinia muelleri*	VU	Reclassified 'Not Threatened' (originally classified 'Vulnerable' on the basis of potential future threats only - outside of the scope of this study)
Henderson crake	*Zapornia atra*	VU	Reclassified 'Not Threatened' (originally classified 'Vulnerable' on the basis of potential future threats only - outside of the scope of this study)
Inaccessible rail	*Atlantisia rogersi*	VU	• Reclassified 'Not Threatened' for the analyses of Parts 2, 3 (originally classified 'Vulnerable' on the basis of potential future threats only -outside of the scope of this study) • Excluded for analysis of extinction risk (Part 1; did not have significant contacts with humans, considered 'naïve')
Guam rail	*Hypotaenidia owstoni*	CR	• Excluded from the analyses of Parts 2, 3 (considered extinct since it was initially classified as extinct in the wild 'EW'. Only in 2019 it was upgraded back to CR). Considered extant in Part 1. • Considered 'savvy' (Part 1) as its extinction was the result of a recent contact with people since it resisted contact with European settlers.
Wake island rail	*Hypotaenidia wakensis*	EX	Considered 'savvy' (Part 1) as it went extinct in 1945, after previous contacts with European settlers.

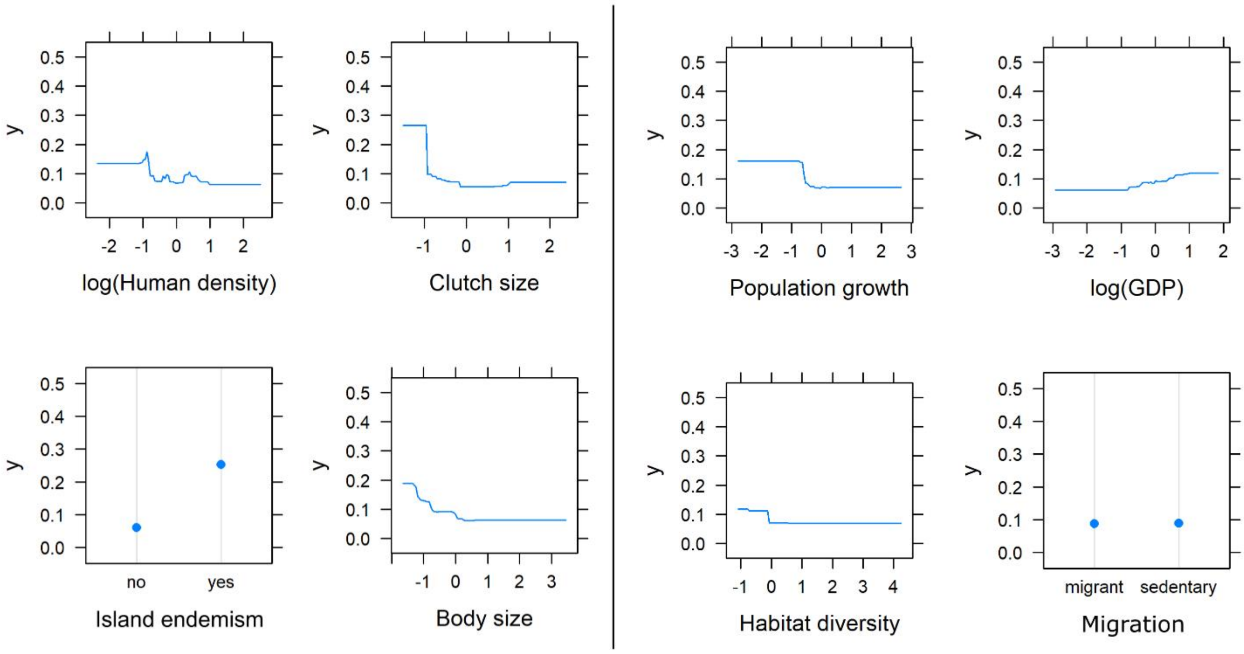

Fig. S1. Global vulnerability: partial dependence plots for all predictor variables for the boosted regression tree model on rails' global vulnerability. Y is the probability of being threatened. All continuous variables were standardised using z-scores.

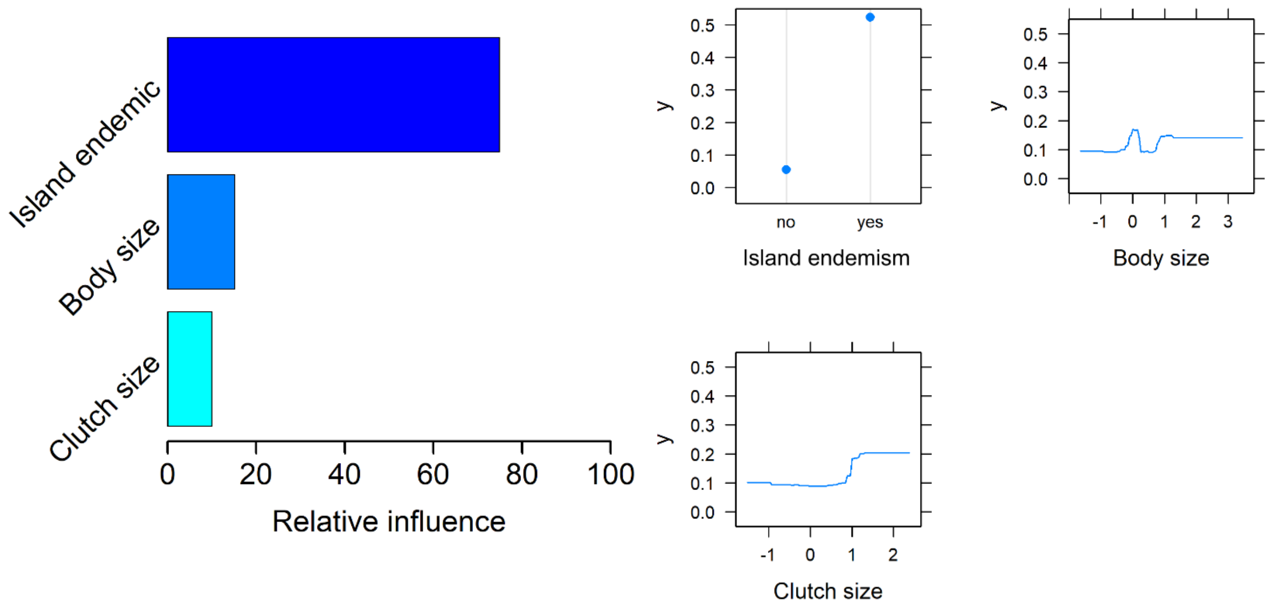

Fig. S2. Global vulnerability to introduced species: relative influence (left) and partial dependence plots (right) of predictor variables for the boosted regression tree model on rails' vulnerability to introduced species globally. Y is the probability of being threatened by introduced species. All continuous variables were standardised using z-scores.

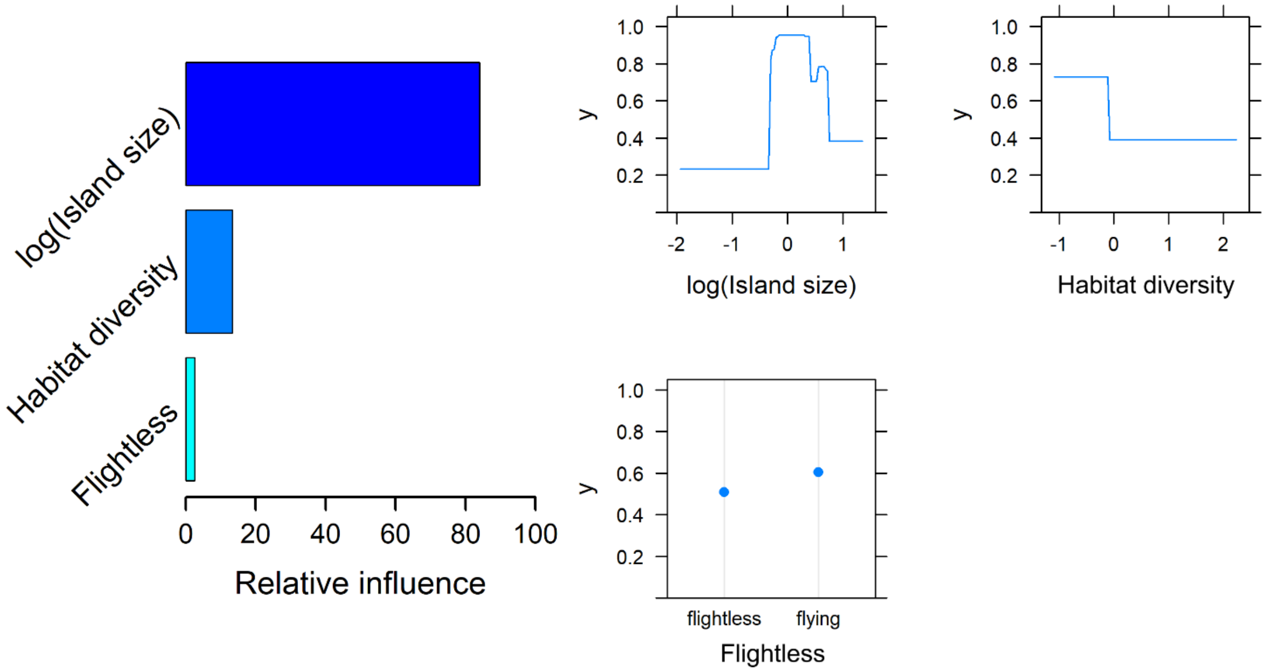

Fig. S3. Vulnerability of island endemic rails to habitat loss: relative influence (left) and partial dependence plots (right) of predictor variables for the boosted regression tree model on rails' vulnerability to habitat loss on islands. Y is the probability of being threatened by habitat loss. All continuous variables were standardised using z-scores.

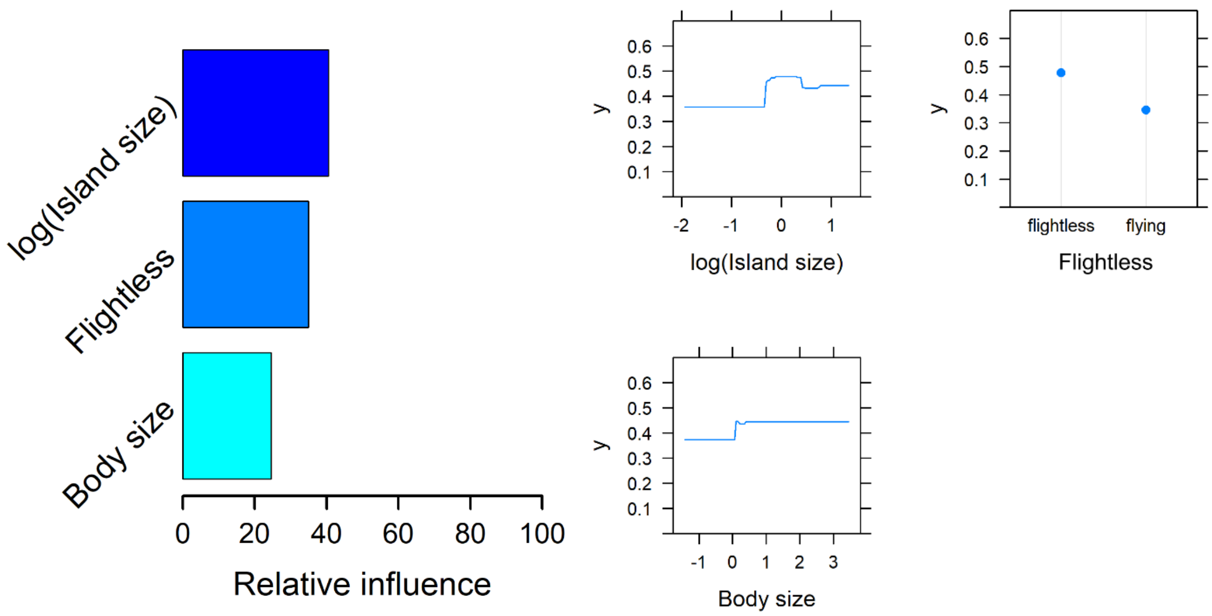

Fig. S4. Vulnerability of island endemic rails to over-hunting: relative influence (left) and partial dependence plots (right) of predictor variables for the boosted regression tree model on rails' vulnerability to over-hunting on islands. Y is the probability of being threatened by over-hunting. All continuous variables were standardised using z-scores.

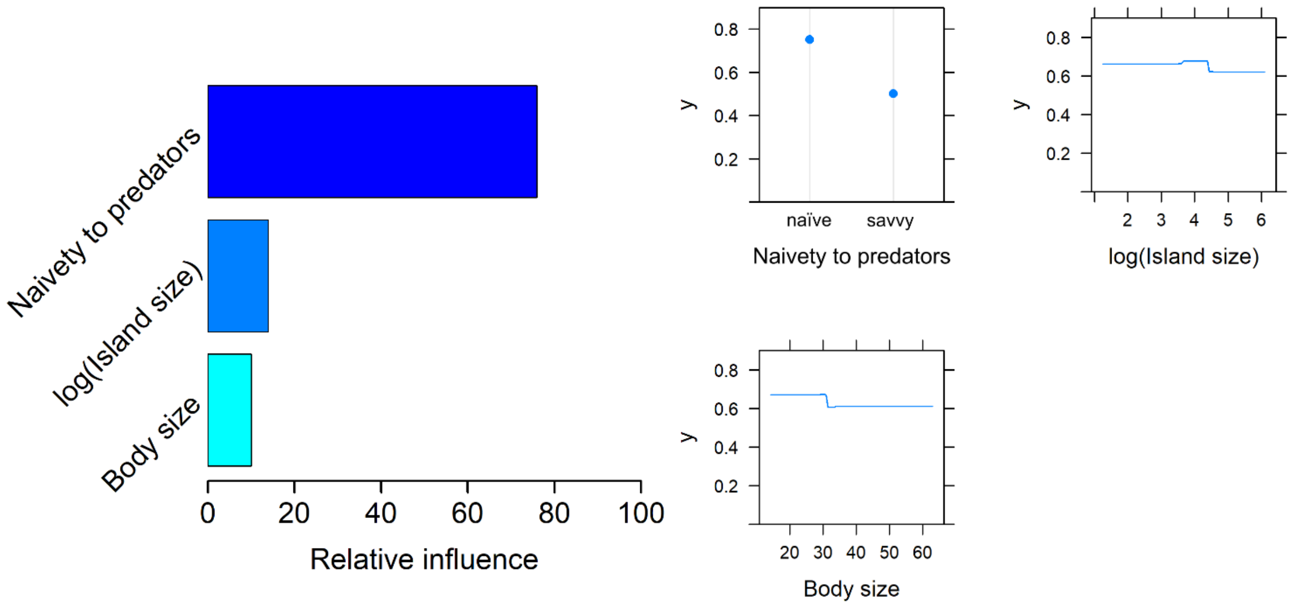

Fig. S5. Vulnerability of island endemic rails to introduced predators: relative influence (left) and partial dependence plots (right) of predictor variables for the boosted regression tree model on rails' vulnerability to introduced predators on islands. Y is the probability of being threatened by introduced predators. All continuous variables were standardised using z-scores.

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