SI 3: Decision Trees with assumptions for inclusion criteria for the United Nations SDGs that align with invasive vertebrate eradications on islands

[Goal 1. 2](#_Toc25838856)

[Goal 2. 3](#_Toc25838857)

[Goal 3. 4](#_Toc25838858)

[Goal 4. 5](#_Toc25838859)

[Goal 6. 6](#_Toc25838860)

[Goal 8. 7](#_Toc25838861)

[Goal 9. 8](#_Toc25838862)

[Goal 11. 9](#_Toc25838863)

[Goal 12. 10](#_Toc25838864)

[Goal 13. 11](#_Toc25838865)

[Goal 14. 12](#_Toc25838866)

[Goal 15. 13](#_Toc25838867)

[Goal 17. 14](#_Toc25838868)

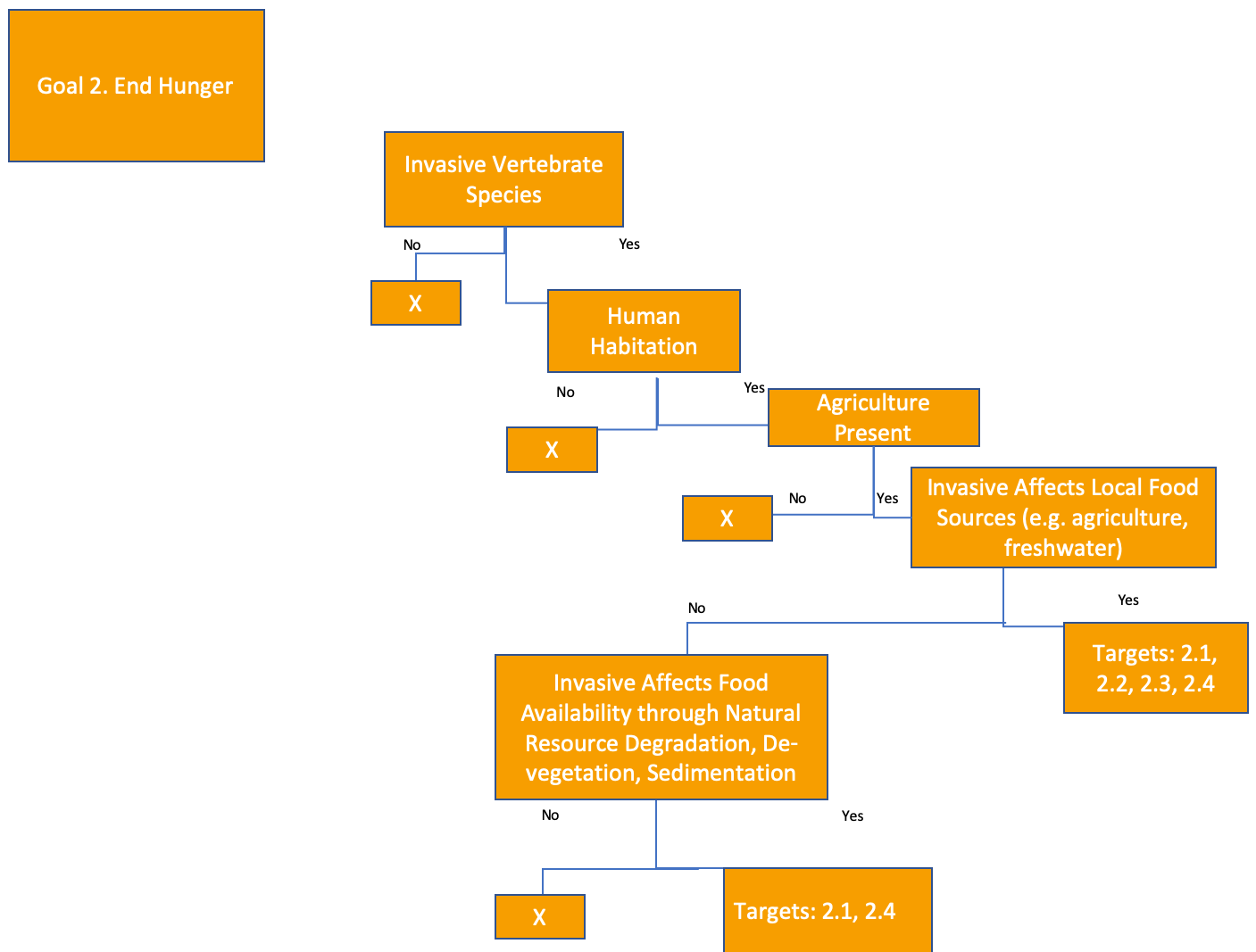
[References 15](#_Toc25838869)

A screenshot of a cell phone

Description automatically generated

Goal 1. Assumptions and inclusion criteria

1. We used the TIB (Threatened Island Biodiversity Database Partners 2019) or DIISE (DIISE 2019) databases to obtain information on presence of humans and considered an island inhabited if at least one person was present. Using the poverty threshold of USD 1.90 day-1 (2011 PPP) established by the World Bank, we considered islands with impoverished communities if any percentage of the population of a country an island was part of lived at or with less than this threshold (World Bank Group 2019) except for islands identified in the TIB or DIISE databases as a Research Station or Military installation. Islands for which country-level poverty data was lacking were not included in the analysis. Islands were classified as SIDS based on the United Nations classification (United Nations 2015) regardless of whether the island was a UN Member or Associate Member.
2. Invasive vertebrate impacts food sources or health
   1. We assumed the invasive vertebrate will have impacts on health if it is a carrier of zoonotic pathogens (cats, rodents, dogs) (McCarthy and Moore 2000, Meerburg et al. 2009, Tappe and Büttner 2009, Lv et al. 2009, Deplazes et al. 2011, Beltrán-Beck et al. 2012, Duffy and Capece 2012, Julius, Rolanda et al. 2012, Billeter et al. 2014, Süld et al. 2014, Sutor et al. 2014, Hulme 2014, Morand et al. 2015, Blasdell et al. 2015, de Wit et al. 2017, Cassan et al. 2018).
   2. We assumed the invasive vertebrate will have impacts on food sources through contamination or consumption (rodents) (Stenseth et al. 2003, Jojola et al. 2005, Pimentel et al. 2005, Khlyap and Warshavsky 2010, Capizzi et al. 2014, Witmer et al. 2014).



Goal 2. Assumptions and inclusion criteria

1. The island must have agriculture. To establish whether agriculture was present on those islands inhabited by humans we used Google Earth imagery to survey entire islands for areas where agricultural plots were visible at an eye altitude of approximately 8 km. We defined agricultural plots as human-made and geometrically distinguishable areas with barren soil or vegetation growing in defined rows (e.g. uniform lines of vegetation or sharp boundaries between native vegetation and crops), and confirmed them at an eye elevation of approximately 1.5 km. We defined agricultural plots as human-made and geometrically distinguishable areas with barren soil or vegetation growing in defined rows (e.g. uniform lines of vegetation or sharp boundaries between native vegetation and crops).
2. The invasive vertebrate must be a rodent species to directly affect local food sources (Stenseth et al. 2003, Jojola et al. 2005, Pimentel et al. 2005, Khlyap and Warshavsky 2010, Capizzi et al. 2014, Witmer et al. 2014).
3. We assumed the invasive vertebrate has an impact on food availability through natural resource degradation (Stenseth et al. 2003, Jojola et al. 2005, Pimentel et al. 2005, Khlyap and Warshavsky 2010, Capizzi et al. 2014, Witmer et al. 2014).

A picture containing screenshot

Description automatically generated

Goal 3. Assumptions and inclusion criteria

1. We assumed the invasive vertebrate was a zoonotic disease reservoir if the invasive vertebrate was cat, rodent, dog, pig, racoon, macaque or mongoose (Table S1, (McCarthy and Moore 2000, Meerburg et al. 2009, Tappe and Büttner 2009, Lv et al. 2009, Deplazes et al. 2011, Beltrán-Beck et al. 2012, Duffy and Capece 2012, Julius, Rolanda et al. 2012, Billeter et al. 2014, Süld et al. 2014, Sutor et al. 2014, Hulme 2014, Morand et al. 2015, Blasdell et al. 2015, de Wit et al. 2017, Cassan et al. 2018).
2. We assumed the invasive vertebrate-transmitted zoonotic disease will affect marginalized populations, women, or causes mental illness if the invasive vertebrate was either a cat, rodent, dog, pig, racoon, macaque, or mongoose (McCarthy and Moore 2000, Meerburg et al. 2009, Tappe and Büttner 2009, Lv et al. 2009, Deplazes et al. 2011, Beltrán-Beck et al. 2012, Duffy and Capece 2012, Julius, Rolanda et al. 2012, Billeter et al. 2014, Süld et al. 2014, Sutor et al. 2014, Hulme 2014, Morand et al. 2015, Blasdell et al. 2015, de Wit et al. 2017, Cassan et al. 2018).
3. For the invasive vertebrate-transmitted zoonotic disease to be associated with mental illness, invasive vertebrate must be a cat (Duffy and Capece 2012, de Wit et al. 2017).

A screenshot of a cell phone

Description automatically generated

Goal 4. Assumptions and inclusion criteria

1. We assumed island and country residents have been or will be trained and/or employed in eradications, biosecurity and monitoring (e.g. government officials, local residents) (Tershy et al. 2002, Iriarte et al. 2005, Howald et al. 2007, Witmer et al. 2009, Aguirre-Muñoz et al. 2011, Carrion et al. 2011, Samaniego-Herrera et al. 2017).

A screenshot of a cell phone

Description automatically generated

Goal 6. Assumptions and inclusion criteria

1. We assumed the invasive vertebrate impacts watersheds directly through pathogen pollution (Meerburg et al. 2009, Semenza and Menne 2009, Thompson and Smith 2011, Duffy and Capece 2012, Shiels et al. 2014, Witmer et al. 2014, Góralska and Błaszkowska 2015, Thompson 2015).
2. We assumed the invasive vertebrate impacts watersheds through degradation/de-vegetation if invasive vertebrate was an herbivore (goat, sheep, cow, rabbit, deer), pig, or rodent (Donlan et al. 2002, Iriarte et al. 2005, Meerburg et al. 2009, Semenza and Menne 2009, Zavaleta et al. 2010, Thompson and Smith 2011, Duffy and Capece 2012, Beltran et al. 2014, Witmer et al. 2014, Shiels et al. 2014, Góralska and Błaszkowska 2015, Thompson 2015).

A screenshot of a cell phone

Description automatically generated

Goal 8. Assumptions and inclusion criteria

1. We established whether an island had tourism by performing a Google search (in English) using each island’s name or archipelago followed by the terms “tourism”, “tours”, “visits”, “dive”, “diving”, “snorkeling”, “fishing”, “bird watching”. We determined tourism was present if at least one search indicated that any of the above forms of tourism were present.
2. We assumed the invasive vertebrate impacts tourism quality of experience (Castley et al. 2001, Simberloff and Simberloff 2010, Russell et al. 2017, Zengeya et al. 2017, Benedicto Royuela et al. 2019, Nattrass et al. 2019).
   1. We assumed invasive carnivores (cat, dog, mongoose) and rodents consume charismatic species of value to tourism and herbivores (goats, sheep, rabbit, deer) create barren islands denuding landscapes and vistas (Keitt et al. 2002, Medina et al. 2014, Croll et al. 2016, Luna-Mendoza et al. 2019).

A screenshot of a cell phone

Description automatically generated

Goal 9. Assumptions and inclusion criteria

1. We assumed the fisheries industry can use invasive vertebrate eradication to mitigate their impacts on seabird species through bycatch (Wilcox and Donlan 2007, Donlan and Wilcox 2008, Pascoe et al. 2011). Island must:
   1. Contain breeding seabirds documented as fisheries bycatch (e.g. albatross or petrels) (BirdLife International 2019, Threatened Island Biodiversity Database Partners 2019).
   2. Invasive vertebrate must be carnivore (dog, cat, mongoose) rodent or pig that impacts seabird populations on islands (BirdLife International 2019).
2. We assumed all invasive species eradications can facilitate or induce the creation of innovative technologies for safe and effective control of invasive vertebrates (Lapidge et al. 2004, Saunders et al. 2007, Saunders and Lane 2011, Blackie et al. 2014, Campbell et al. 2015, Holmes et al. 2015, Martinez et al. 2018).

A screenshot of a cell phone

Description automatically generated

Goal 11. Assumptions and inclusion criteria

1. We used the UNESCO definition of Natural Heritage: A site must have values such as superlative natural phenomena; represent major states of earth’s history, demonstrate significant ecological and biological processes and contain important natural habitats (UNESCO 2019). Invasive vertebrates have impacts on Natural Heritage sites if:
   1. We assumed invasive carnivores (cat, dog) or rodents consume native and charismatic species, and invasive herbivores (goat, sheep, cow, rabbit, deer) create barren islands (Coomes et al. 2003, Nogales et al. 2006, Butchart 2008, Broome 2009, Beltran et al. 2014, Jones et al. 2016, Russell et al. 2017).

A screenshot of a cell phone

Description automatically generated

Goal 12. Assumptions and inclusion criteria

1. We assumed all invasive vertebrate eradications include community education during implementation and to prevent re-introduction (Tershy et al. 2002, Iriarte et al. 2005, Howald et al. 2007, Witmer et al. 2009, Aguirre-Muñoz et al. 2011, Carrion et al. 2011, Samaniego-Herrera et al. 2017) .
2. If the invasive vertebrate was a rodent species we assumed it impacts food storage through contamination or consumption (Stenseth et al. 2003, Jojola et al. 2005, Pimentel et al. 2005, Khlyap and Warshavsky 2010, Capizzi et al. 2014, Witmer et al. 2014)

A screenshot of a cell phone

Description automatically generated

Goal 13. Assumptions and inclusion criteria

1. We assumed invasive vertebrates can affect carbon sinks and rates of carbon sequestration through de-vegetation:
   1. The invasive vertebrate must be an herbivore (goat, sheep, cow, deer, rabbit) (Clout 2002, Grant-Hoffman et al. 2010, Mainka and Howard 2010, Peltzer et al. 2010, Holdaway et al. 2012).
2. We assumed the invasive vertebrate can impair the resilience of native ecosystems to climate change through natural resource degradation or de-vegetation:
   1. The invasive vertebrate must be an herbivore (goat, sheep, cow, deer, rabbit), rodent, or pig (Clout 2002, Brook 2008, Pyke et al. 2008, Grant-Hoffman et al. 2010, Mainka and Howard 2010, Peltzer et al. 2010, Holdaway et al. 2012, Russell et al. 2017, Spatz et al. 2017, McClelland et al. 2018).

A screenshot of a social media post

Description automatically generated

Goal 14. Assumptions and inclusion criteria

1. We assume all invasive vertebrates impact coastal ecosystems (Crooks 2002, Jojola et al. 2005, Gedan et al. 2009, Gomez et al. 2010, Peltzer et al. 2010, Carrion et al. 2011, Brown et al. 2015).
2. For the invasive vertebrate eradication to mitigate bycatch impact of the fisheries industry (Wilcox and Donlan 2007, Donlan and Wilcox 2008, Carrion et al. 2011, Pascoe et al. 2011), the island must:
   1. Contain breeding seabirds documented as fisheries bycatch (e.g. albatross or petrels) (BirdLife International 2019).
   2. The invasive vertebrate must be a carnivore (dog, cat, mongoose), rodent, or pig that impacts seabird populations on islands (BirdLife International 2019).
3. For the invasive vertebrate to impact marine nutrient input:
   1. The invasive vertebrate must be a pig or herbivore that increases sedimentation and sediment input into ocean (Crooks 2002, Alava et al. 2014)
4. Small Island Developing States as defined by UN

A picture containing screenshot

Description automatically generated

Goal 15. Assumptions and inclusion criteria

1. We assumed invasive vertebrate management has and will be inclusive of local (country) communities (Tershy et al. 2002, Iriarte et al. 2005, Howald et al. 2007, Witmer et al. 2009, Aguirre-Muñoz et al. 2011, Carrion et al. 2011, Samaniego-Herrera et al. 2017):
   1. We assumed all past (and future) eradications have involved (or will involve) at least local government officials
2. All invasive vertebrates directly impact terrestrial ecosystems and native species (Ford and Grace 1998, Zavaleta et al. 2001, Clout 2002, Donlan et al. 2002, 2003a, Fukami et al. 2006, Parker et al. 2006, Howald et al. 2007, Jones et al. 2008, Becerra and Bustamante 2009, Broome 2009, Drake and Hunt 2009, Harrington et al. 2009, Hulme et al. 2010, Kardol and Wardle 2010, Aguirre-Muñoz 2011, Keitt et al. 2011, Glen et al. 2013b, Beltran et al. 2014, Brown et al. 2015, Norbury et al. 2015, Russell and Holmes 2015, Doherty et al. 2016, Hollings et al. 2016, Jones et al. 2016, Hämäläinen et al. 2017, Thibault et al. 2017)
3. To identify whether invasive vertebrate affected mountain ecosystems (target 15.4), we assumed islands contain mountain ecosystems if altitude, slope and local elevation range fell within Class 1 through 6 as described by Kapos et al. (2000).
   1. We obtained elevation data for target 15.4 from <https://unstats.un.org/sdgs/metadata/files/Metadata-15-04-02.pdf>
   2. We used GIS Raster Layer “Mountain Area” , data: <http://www.fao.org/mountain-partnership/our-work/focusareas/foodsecurity/en/> (Mountain Partnership 2019)

A screenshot of a sign

Description automatically generated

Goal 17. Assumptions and inclusion criteria

1. We used the United Nations classification of Small Island Developing State and the World Economic Situation and Prospects report to classify Developing Countries (United Nations 2013, 2019)
   1. We assumed all past (and future) eradications have involved (or will involve) at least local government officials and that eradication will facilitate cross-border transfer of skills, techniques and knowledge (Donlan et al. 2003b, Lapidge et al. 2004, Aguirre-Muñoz et al. 2008, 2011, Samaniego-Herrera and Aguirre-Munoz 2011, Glen et al. 2013a, Samaniego-Herrera et al. 2014, 2017, Kark et al. 2015).
2. Multi-stakeholder partnerships to undertake invasive vertebrate eradications:
   1. We assumed more than one entity or stakeholder have or (will be) involved in the invasive vertebrate eradication (Donlan et al. 2003b, Lapidge et al. 2004, Aguirre-Muñoz et al. 2008, 2011, Samaniego-Herrera and Aguirre-Munoz 2011, Glen et al. 2013a, Robertson et al. 2014, Samaniego-Herrera et al. 2014, 2017, Kark et al. 2015).

# References

Aguirre-Muñoz, A. 2011. Island restoration in Mexico: ecological outcomes after systematic eradications of invasive mammals. Pages 250–258 *in* D. R. Veicht, C.R.; Clout, M.N.; Towns, editor. Island invasives: eradication and management. IUCN, Gland, Switzerland.

Aguirre-Muñoz, A., D. A. Croll, C. J. Donlan, R. W. Henry, M. A. Hermosillo, G. R. Howald, B. S. Keitt, L. Luna-Mendoza, M. Rodríguez-Malagón, L. M. Salas-Flores, A. Samaniego-Herrera, J. A. Sanchez-Pacheco, J. Sheppard, B. R. Tershy, J. Toro-Benito, S. Wolf, and B. Wood. 2008. High-impact conservation: Invasive mammal eradications from the islands of Western México. Ambio 37:101–107.

Aguirre-Muñoz, A., A. Samaniego-Herrera, L. Luna-Mendoza, A. Ortiz-Alcaraz, M. Rodríguez-Malagón, M. Félix-Lizárraga, F. Méndez-Sánchez, R. González-Gómez, F. Torres-García, J. C. Hernández-Montoya, J. M. Barredo-Barberena, and M. Latofski-Robles. 2011. Eradications of invasive mammals on islands in Mexico: the roles of history and the collaboration between government agencies, local communities and a non-government organisation. Island invasives: eradication and managemen:386–394.

Alava, J. J., C. Palomera, L. Bendell, and P. S. Ross. 2014. Pollution as an Emerging Threat for the Conservation of the Galapagos Marine Reserve: Environmental Impacts and Management Perspectives. Pages 247–283 *in* J. Denkinger and L. Vinueza, editors. The Galapagos Marine Reserve: A Dynamic Social-Ecological System. Springer International Publishing, Cham.

Becerra, P. I., and R. O. Bustamante. 2009. The effect of herbivory on seedling survival of the invasive exotic species Pinus radiata and Eucalyptus globulus in a Mediterranean ecosystem of Central Chile. Forest Ecology and Management 256:1573–1578.

Beltrán-Beck, B., F. J. García, and C. Gortázar. 2012. Raccoons in Europe: Disease hazards due to the establishment of an invasive species. European Journal of Wildlife Research 58:5–15.

Beltran, R. S., N. Kreidler, D. H. Van Vuren, S. a. Morrison, E. S. Zavaleta, K. Newton, B. R. Tershy, and D. a. Croll. 2014. Passive Recovery of Vegetation after Herbivore Eradication on Santa Cruz Island, California. Restoration Ecology 22:790–797.

Benedicto Royuela, J., S. Herviás Parejo, A. De La Cruz, P. Geraldes, L. T. Costa, and A. Gil. 2019. The socio-economic impact of conservation: The Safe Islands for Seabirds LIFE project. Oryx 53:109–116.

Billeter, S. A., J. N. Borchert, L. A. Atiku, J. T. Mpanga, K. L. Gage, and M. Y. Kosoy. 2014. Bartonella species in invasive rats and indigenous rodents from Uganda. Vector-Borne and Zoonotic Diseases 14:182–188.

BirdLife International. 2019. Unintentional effects of fishing & harvesting aquatic resources.

Blackie, H. M., J. W. B. Mackay, W. J. Allen, D. H. V. Smith, B. Barrett, B. I. Whyte, E. C. Murphy, J. Ross, L. Shapiro, S. Ogilvie, S. Sam, D. Macmorran, S. Inder, and C. T. Eason. 2014. Innovative developments for long-term mammalian pest control. Pest Management Science 70:345–351.

Blasdell, K., F. Bordes, K. Chaisiri, Y. Chaval, J. Claude, J. F. Cosson, A. Latinne, J. Michaux, S. Morand, M. Pagès, and A. Tran. 2015. Progress on research on rodents and rodent-borne zoonoses in South-east Asia. Wildlife Research 42:98–107.

Brook, B. W. 2008. Synergies between climate change, extinctions and invasive vertebrates. Wildlife Research 35:249–252.

Broome, K. 2009. Beyond kapiti - a decade of invasive rodent eradications from new zealand islands. Biodiversity 10:14–24.

Brown, M. B., T. A. Schlacher, D. S. Schoeman, M. A. Weston, C. M. Huijbers, A. D. Olds, and R. M. Connolly. 2015. Invasive carnivores alter ecological function and enhance complementarity in scavenger assemblages on ocean beaches. Ecology 96:2715–2725.

Butchart, S. H. M. 2008. Red List Indices to measure the sustainability of species use and impacts of invasive alien species. Bird Conservation International 18:S245–S262.

Campbell, K. J., J. Beek, C. T. Eason, A. S. Glen, J. Godwin, F. Gould, N. D. Holmes, G. R. Howald, F. M. Madden, J. B. Ponder, D. W. Threadgill, A. S. Wegmann, and G. S. Baxter. 2015. The next generation of rodent eradications: Innovative technologies and tools to improve species specificity and increase their feasibility on islands. Biological Conservation 185:47–58.

Capizzi, D., S. Bertolino, and A. Mortelliti. 2014. Rating the rat: Global patterns and research priorities in impacts and management of rodent pests. Mammal Review 44:148–162.

Carrion, V., C. J. Donlan, K. J. Campbell, C. Lavoie, and F. Cruz. 2011. Archipelago-wide island restoration in the galápagos islands: Reducing costs of invasive mammal eradication programs and reinvasion risk. PLoS ONE 6.

Cassan, C., C. A. Diagne, C. Tatard, P. Gauthier, A. Dalecky, K. Bâ, M. Kane, Y. Niang, M. Diallo, A. Sow, C. Brouat, and A. L. Bañuls. 2018. Leishmania major and Trypanosoma lewisi infection in invasive and native rodents in Senegal. PLoS Neglected Tropical Diseases 12:1–21.

Castley, J. G., A. F. Boshoff, and G. I. H. Kerley. 2001. Compromising South Africa’s natural biodiversity - Inappropriate herbivore introductions. South African Journal of Science 97:344–348.

Clout, M. N. 2002. Biodiversity loss caused by invasive alien vertebrates. Zeitschrift fur Jagdwissenschaft 48:51–58.

Coomes, D. A., R. B. Allen, D. M. Forsyth, and W. G. Lee. 2003. Factors preventing the recovery of New Zealand forests following control of invasive deer. Conservation Biology 17:450–459.

Croll, D. A., K. M. Newton, M. McKown, N. Holmes, J. C. Williams, H. S. Young, S. Buckelew, C. A. Wolf, G. Howald, M. F. Bock, J. A. Curl, and B. R. Tershy. 2016. Passive recovery of an island bird community after rodent eradication. Biological Invasions 18.

Crooks, J. A. 2002. Characterizing ecosystem-level consequences of biological invasions: The role of ecosystem engineers. Oikos 97:153–166.

Deplazes, P., F. van Knapen, A. Schweiger, and P. A. M. Overgaauw. 2011. Role of pet dogs and cats in the transmission of helminthic zoonoses in Europe, with a focus on echinococcosis and toxocarosis. Veterinary Parasitology 182:41–53.

DIISE. 2018. The Database of Island Invasive Species Eradications, developed by Island Conservation, Coastal Conservation Action Laboratory UCSC, IUCN SSC Invasive Species Specialist Group, University of Auckland and Landcare Research New Zealand. http://diise.islandconservation.org/.

Doherty, T. S., A. S. Glen, D. G. Nimmo, E. G. Ritchie, and C. R. Dickman. 2016. Invasive predators and global biodiversity loss. Proceedings of the National Academy of Sciences of the United States of America 113:11261–11265.

Donlan, C. J., D. A. Croll, and B. R. Tershy. 2003a. Islands, exotic herbivores, and invasive plants: Their roles in Coastal California restoration. Restoration Ecology 11:524–530.

Donlan, C. J., B. R. Tershy, K. Campbell, and F. Cruz. 2003b. Research for Requiems: The Need for More Collaborative Action in Eradication of Invasive Species. Conservation Biology 17:1850–1851.

Donlan, C. J., B. R. Tershy, and D. A. Croll. 2002. Islands and introduced herbivores: Conservation action as ecosystem experimentation. Journal of Applied Ecology 39:235–246.

Donlan, C. J., and C. Wilcox. 2008. Integrating invasive mammal eradications and biodiversity offsets for fisheries bycatch: Conservation opportunities and challenges for seabirds and sea turtles. Biological Invasions 10:1053–1060.

Drake, D. R., and T. L. Hunt. 2009. Invasive rodents on islands: Integrating historical and contemporary ecology. Biological Invasions 11:1483–1487.

Duffy, D. C., and P. Capece. 2012. Biology and Impacts of Pacific Island Invasive Species. 7. The Domestic Cat ( Felis catus ) 1. Pacific Science 66:173–212.

Ford, M. A., and J. B. Grace. 1998. Effects of vertebrate herbivores on soil processes, plant biomass, litter accumulation and soil elevation changes in a coastal marsh. Journal of Ecology 86:974–982.

Fukami, T., D. A. Wardle, P. J. Bellingham, C. P. H. Mulder, D. R. Towns, G. W. Yeates, K. I. Bonner, M. S. Durrett, M. N. Grant-Hoffman, and W. M. Williamson. 2006. Above- and below-ground impacts of introduced predators in seabird-dominated island ecosystems. Ecology Letters 9:1299–1307.

Gedan, K. B., C. M. Crain, and M. D. Bertness. 2009. Small-mammal herbivore control of secondary succession in New England tidal marshes. Ecology 90:430–440.

Glen, A. S., R. Atkinson, K. J. Campbell, E. Hagen, N. D. Holmes, B. S. Keitt, J. P. Parkes, A. Saunders, J. Sawyer, and H. Torres. 2013a. Eradicating multiple invasive species on inhabited islands: the next big step in island restoration? Biological Invasions 15:2589–2603.

Glen, A. S., R. P. Pech, and A. E. Byrom. 2013b. Connectivity and invasive species management: Towards an integrated landscape approach. Biological Invasions 15:2127–2138.

Gomez, J. J., A. C. Gozzi, D. W. Macdonald, E. Gallo, D. Centrón, and M. H. Cassini. 2010. Interactions of exotic and native carnivores in an ecotone, the coast of the Beagle Channel, Argentina. Polar Biology 33:1371–1378.

Góralska, K., and J. Błaszkowska. 2015. Parasites and fungi as risk factors for human and animal health. Annals of parasitology 61:207–220.

Grant-Hoffman, M. N., C. P. Mulder, and P. J. Bellingham. 2010. Invasive rats alter woody seedling composition on seabird-dominated islands in New Zealand. Oecologia 163:449–460.

Hämäläinen, A., K. Broadley, A. Droghini, J. A. Haines, C. T. Lamb, S. Boutin, and S. Gilbert. 2017. The ecological significance of secondary seed dispersal by carnivores. Ecosphere 8.

Harrington, L. A., A. L. Harrington, N. Yamaguchi, M. D. Thom, P. Ferreras, T. R. Windham, and D. W. Macdonald. 2009. The impact of native competitors on an alien invasive: Temporal niche shifts to avoid interspecific aggression? Ecology 90:1207–1216.

Holdaway, R. J., L. E. Burrows, F. E. Carswell, and A. E. Marburg. 2012. Potential for invasive mammalian herbivore control to result in measurable carbon gains. New Zealand Journal of Ecology 36:252–264.

Hollings, T., M. Jones, N. Mooney, and H. McCallum. 2016. Disease-induced decline of an apex predator drives invasive dominated states and threatens biodiversity. Ecology 97:394–405.

Holmes, N. D., R. Griffiths, M. Pott, A. Alifano, D. Will, A. S. Wegmann, and J. C. Russell. 2015. Factors associated with rodent eradication failure. Biological Conservation 185:8–16.

Howald, G., C. J. Donlan, J. P. Galván, J. C. Russell, J. Parkes, A. Samaniego, Y. Wang, D. Veitch, P. Genovesi, M. Pascal, A. Saunders, and B. Tershy. 2007. Invasive rodent eradication on islands. Conservation biology : the journal of the Society for Conservation Biology 21:1258–68.

Hulme, P. E. 2014. Invasive species challenge the global response to emerging diseases. Trends in Parasitology 30:267–270.

Hulme, P. E., M. Vilà, W. Nentwig, and P. Pyšek. 2010. Are the aliens taking over? Invasive species and their increasing impact on biodiversity.

Iriarte, J. A., G. A. Lobos, and F. M. Jaksic. 2005. Invasive vertebrate species in Chile and their control and monitoring by governmental agencies. Revista Chilena de Historia Natural 78:143–154.

Jojola, S., G. Witmer, and D. Nolte. 2005. Nutria: An Invasive Rodent Pest or Valued Resource? Proceedings of the 11th Wildlife Damage Management Conference:120–126.

Jones, H. P., N. D. Holmes, S. H. M. Butchart, B. R. Tershy, P. J. Kappes, I. Corkery, A. Aguirre-Muñoz, D. P. Armstrong, E. Bonnaud, A. A. Burbidge, K. Campbell, F. Courchamp, P. E. Cowan, R. J. Cuthbert, S. Ebbert, P. Genovesi, G. R. Howald, B. S. Keitt, S. W. Kress, C. M. Miskelly, S. Oppel, S. Poncet, M. J. Rauzon, G. Rocamora, J. C. Russell, A. Samaniego-Herrera, P. J. Seddon, D. R. Spatz, D. R. Towns, and D. A. Croll. 2016. Invasive mammal eradication on islands results in substantial conservation gains. Proceedings of the National Academy of Sciences 113:4033–4038.

Jones, H. P., B. R. Tershy, E. S. Zavaleta, D. A. Croll, B. S. Keitt, M. E. Finkelstein, and G. R. Howald. 2008. Severity of the effects of invasive rats on seabirds: A global review. Conservation Biology 22:16–26.

Julius, Rolanda, S., D. Bastos, Armanda, T. Chimimba, Christian, and H. Brettschneider. 2012. Dynamics of Rodent-Borne Zoonotic Diseases and Their Reservoir Hosts: Invasive Rattus in South Africa. Proceedings of the Vertebrate Pest Conference 25:261–266.

Kapos, V., J. Rhind, M. Edwards, M. F. Price, and C. Ravilious. 2000. Developing a map of the world’s mountain forests; Forests in sustainable mountain development: a state of knowledge report for 2000. Pages 1–6 CAB International, Wallingford: 4-9.

Kardol, P., and D. A. Wardle. 2010. How understanding aboveground-belowground linkages can assist restoration ecology. Trends in Ecology and Evolution 25:670–679.

Kark, S., A. Tulloch, A. Gordon, T. Mazor, N. Bunnefeld, and N. Levin. 2015. Cross-boundary collaboration: Key to the conservation puzzle. Current Opinion in Environmental Sustainability 12:12–24.

Keitt, B., K. Campbell, A. Saunders, M. Clout, Y. Wang, R. Heinz, K. Newton, B. Tershy, I. Conservation, S. Cruz, W. M. Centre, I. Species, S. Group, T. Campus, and P. Bag. 2011. The Global Islands Invasive Vertebrate Eradication Database: A tool to improve and facilitate restoration of island ecosystems. Pages 74–77 *in* M. N. Clout and D. R. Towns, editors. Island invasives: eradication and management. IUCN, Gland, Switzerland.

Keitt, B. S., C. Wilcox, B. R. Tershy, D. a Croll, and C. J. Donlan. 2002. The effect of feral cats on the population viability of black-vented shearwaters (Puffinus opisthomelas) on NativN1ad Island, Mexico. Animal Conservation 5:217–223.

Khlyap, L. A., and A. A. Warshavsky. 2010. Synanthropic and agrophilic rodents as invasive alien mammals. Russian Journal of Biological Invasions 1:301–312.

Lapidge, S., S. Humphrys, and D. Dall. 2004. Global harmonisation in the field of invasive species management product development. Page *in* G. W. Witmer, W. C. Pitt, and K. A. Fagerstone, editors. Managing vertebrate invasive species. Fort Collins, CO, USA.

Luna-Mendoza, L., A. Aguirre-Muñoz, F. Méndez-sánchez, J. C. Hernández-Montoya, M. Torres-Aguilar, J. S. García-Carreón, O. Puebla-Hernández, S. Luvianos-Colín, and A. Cárdenas-Tapia. 2019. Ten years after feral goat eradication : the active restoration of plant communities on Guadalupe Island , Mexico. Proceeding of the Island Conference:567–571.

Lv, S., Y. Zhang, H. Liu, L. Hu, K. Yang, P. Steinmann, Z. Chen, and X. Zhou. 2009. Invasive Snails and an Emerging Infectious Disease : Results from the First National Survey on Angiostrongylus cantonensis in China. PLoS Neglected Tropical Diseases 3:1–8.

Mainka, S. A., and G. W. Howard. 2010. Climate change and invasive species: Double jeopardy. Integrative Zoology 5:102–111.

Martinez, B., A. Dehgan, B. Zamft, D. Baisch, C. McCormick, A. J. Giordano, R. Aicher, S. Selbe, and C. Hoffman. 2018. Advancing federal capacities for the early detection of and rapid response to invasive species through technology innovation. National Invasive Species Council Secretariat: Washington, D.C.:1–43.

McCarthy, J., and T. A. Moore. 2000. Emerging helminth zoonoses. International Journal for Parasitology 30:1351–1359.

McClelland, G. T. W., R. Altwegg, R. J. Van Aarde, S. Ferreira, A. E. Burger, and S. L. Chown. 2018. Climate change leads to increasing population density and impacts of a key island invader: Ecological Applications 28:212–224.

Medina, F. M., E. Bonnaud, E. Vidal, and M. Nogales. 2014. Underlying impacts of invasive cats on islands: Not only a question of predation. Biodiversity and Conservation 23.

Meerburg, B. G., G. R. Singleton, and A. Kijlstra. 2009. Rodent-borne diseases and their risks for public health Rodent-borne diseases and their risks for public health. Page Critical Reviews in Microbiology.

Morand, S., F. Bordes, H. W. Chen, J. Claude, J. F. Cosson, M. Galan, G. A. Czirják, A. D. Greenwood, A. Latinne, J. Michaux, and A. Ribas. 2015. Global parasite and Rattus rodent invasions: The consequences for rodent-borne diseases. Integrative Zoology 10:409–423.

Mountain Partnership. 2019. Mountain Partnership. Working together for mountain peoples and environments. http://www.fao.org/mountain-partnership/en/.

Nattrass, N., J. Stephens, and J. J. Loubser. 2019. Animal welfare and ecology in the contested ethics of rodent control in Cape Town. Journal of Urban Ecology 5:1–10.

Nogales, M., J. L. Rodríguez-Luengo, and P. Marrero. 2006. Ecological effects and distribution of invasive non-native mammals on the Canary Islands. Mammal Review 36:49–65.

Norbury, G. L., R. P. Pech, A. E. Byrom, and J. Innes. 2015. Density-impact functions for terrestrial vertebrate pests and indigenous biota: Guidelines for conservation managers. Biological Conservation 191:409–420.

Parker, J. D., D. E. Burkepile, and M. E. Hayt. 2006. Opposing effects of native and exotic herbivores on plant invasions. Science 311:1459–1461.

Pascoe, S., C. Wilcox, and C. J. Donlan. 2011. Biodiversity offsets: A cost-effective interim solution to seabird bycatch in fisheries? PLoS ONE 6.

Peltzer, D. A., R. B. Allen, G. M. Lovett, D. Whitehead, and D. A. Wardle. 2010. Effects of biological invasions on forest carbon sequestration. Global Change Biology 16:732–746.

Pimentel, D., R. Zuniga, and D. Morrison. 2005. Update on the environmental and economic costs associated with alien-invasive species in the United States. Ecological Economics 52:273–288.

Pyke, C. R., R. Thomas, R. D. Porter, J. J. Hellmann, J. S. Dukes, D. M. Lodge, and G. Chavarria. 2008. Current practices and future opportunities for policy on climate change and invasive species. Conservation Biology 22:585–592.

Robertson, P. A., T. Adriaens, A. Caizergues, P. A. Cranswick, K. Devos, C. Gutiérrez-Expósito, I. Henderson, B. Hughes, A. C. Mill, and G. C. Smith. 2014. Towards the European eradication of the North American ruddy duck. Biological Invasions 17:9–12.

Russell, J. C., and N. D. Holmes. 2015. Tropical island conservation: Rat eradication for species recovery. Biological Conservation 185:1–7.

Russell, J. C., J. Y. Meyer, N. D. Holmes, and S. Pagad. 2017. Invasive alien species on islands: Impacts, distribution, interactions and management. Environmental Conservation 44:359–370.

Samaniego-Herrera, A., and A. Aguirre-Munoz. 2011. Rodent eradications on Mexican islands: advances and challenges. Pages 350–355 Island invasives: eradication and management.

Samaniego-Herrera, A., M. N. Clout, A. Aguirre-Muñoz, and J. C. Russell. 2017. Rodent eradications as ecosystem experiments: a case study from the Mexican tropics. Biological Invasions 19:1761–1779.

Samaniego-Herrera, A., J. , C. Russell, D. Choquenot, A. Aguirre-Muñoz, and M. , N. Clout. 2014. Invasive Rodents on Tropical Islands: Eradication Recommendations from Mexico. Proceedings of the Vertebrate Pest Conference 26.

Saunders, G., and C. (eds) Lane. 2011. 15th Australasian Vertebrate Pest Conference Sydney, June 2011. Page Security from the impact of vertebrate pest animals.

Saunders, G., S. Lapidge, W. Fulton, E. Murphy, S. Sarre, C. Buller, and T. Peacock. 2007. The Invasive Animals CRC: a New Research Initiative for Managing some old Problems. Pest or Guest:88–93.

Semenza, J. C., and B. Menne. 2009. Climate change and infectious diseases in Europe. The Lancet Infectious Diseases 9:365–375.

Shiels, A. B., W. C. Pitt, R. T. Sugihara, and G. W. Witmer. 2014. Biology and Impacts of Pacific Island Invasive Species. The Black Rat, Rattus rattus (Rodentia, Muridae). Pacific Science 68:1–99.

Simberloff, D., and D. Simberloff. 2010. Invasive species.

Spatz, D. R., N. D. Holmes, B. G. Reguero, S. H. M. Butchart, B. R. Tershy, and D. A. Croll. 2017. Managing Invasive Mammals to Conserve Globally Threatened Seabirds in a Changing Climate.

Stenseth, N. C., H. Leirs, A. Skonhoft, S. A. Davis, R. P. Pech, H. P. Andreassen, G. R. Singleton, M. Lima, R. M. Machangu, R. H. Makundi, Z. Zhang, P. R. Brown, D. Shi, and X. Wan. 2003. Mice and rats : the dynamics and bio- economics of agricultural rodents pests In a nutshell : Frontiers in Ecology and the Environment 1:367–375.

Süld, K., H. Valdmann, L. Laurimaa, E. Soe, J. Davison, and U. Saarma. 2014. An invasive vector of zoonotic disease sustained by anthropogenic resources: The raccoon dog in Northern Europe. PLoS ONE 9.

Sutor, A., S. Schwarz, and F. J. Conraths. 2014. The biological potential of the raccoon dog (Nyctereutes procyonoides, Gray 1834) as an invasive species in Europe-new risks for disease spread? Acta Theriologica 59:49–59.

Tappe, D., and D. W. Büttner. 2009. Diagnosis of human visceral pentastomiasis. PLoS Neglected Tropical Diseases 3.

Tershy, B. R., C. J. Donlan, B. S. Keitt, D. a Croll, J. a Sanchez, B. Wood, M. a Hermosillo, G. R. Howald, and N. Biavaschi. 2002. Island conservation in north-west Mexico: a conservation model integrating research, education and exotic mammal eradication. Turning the Tide: the eradication of invasive species.:293–300.

Thibault, M., F. Brescia, H. Jourdan, and E. Vidal. 2017. Invasive rodents, an overlooked threat for skinks in a tropical island hotspot of biodiversity. New Zealand Journal of Ecology 41:74–83.

Thompson, R. C. A. 2015. Neglected zoonotic helminths: Hymenolepis nana, Echinococcus canadensis and Ancylostoma ceylanicum. Clinical Microbiology and Infection 21:426–432.

Thompson, R. C. A., and A. Smith. 2011. Zoonotic enteric protozoa. Veterinary Parasitology 182:70–78.

Threatened Island Biodiversity Database Partners. 2019. The Threatened Island Biodiversity Database. http://tib.islandconservation.org/.

UNESCO. 2019. Natural Heritage.

United Nations. 2013. World Economic Situation and Prospects 2014: Global economic outlook. https://www.un.org/en/development/desa/policy/wesp/wesp\_current/2014wesp\_country\_classification.pdf.

United Nations. 2015. Transforming our world: the 2030 Agenda for Sustainable Development. United Nations Sustainable knowledge platform. Sustainable Development Goals:1-40a.

United Nations. 2019. World Economic Situation and Prospects. Page Journal of Chemical Information and Modeling.

Wilcox, C., and C. J. Donlan. 2007. Compensatory mitigation as a solution to fisheries bycatch-biodiversity conservation conflicts. Frontiers in Ecology and the Environment 5:325–331.

de Wit, L. A., D. A. Croll, B. Tershy, K. M. Newton, D. R. Spatz, N. D. Holmes, and A. M. Kilpatrick. 2017. Estimating Burdens of Neglected Tropical Zoonotic Diseases on Islands with Introduced Mammals. American Journal of Tropical Medicine and Hygiene 96:749–757.

Witmer, G. , W., W. C. Pitt, and G. Howald. 2014. Invasive Rodent Ecology, Impacts, and Management with an Emphasis on the United States. Proceedings of the Vertebrate Pest Conference 26.

Witmer, G., G. M. Keirn, N. Hawley, C. Martin, and J. K. Reaser. 2009. Human Dimensions of Invasive Vertebrate Species Management. Wildlife Damage Management Conferences - Proceedings - Paper 141.

World Bank Group. 2019. Poverty and Equity Data Portal. http://povertydata.worldbank.org/Poverty/Home.

Zavaleta, E. S., R. J. Hobbs, and H. A. Mooney. 2001. Viewing invasive species removal in a whole-ecosystem context. TRENDS in Ecology and Evolution 16:454–458.

Zavaleta, E. S., J. R. Pasari, K. B. Hulvey, and G. D. Tilman. 2010. Sustaining multiple ecosystem functions in grassland communities requires higher biodiversity. Proceedings of the National Academy of Sciences of the United States of America 107:1443–6.

Zengeya, T., P. Ivey, D. J. Woodford, O. Wey, A. Novoa, R. Shackleton, D. Richardson, and B. van Wilgen. 2017. Managing conflict-generating invasive species in South Africa : Challenges and trade-offs. Bothalia - African Biodiversity & Conservation 47:1–11.