

1 **Supplementary Information**

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3 **Title:** The global contribution of invasive vertebrate eradication as a key island restoration tool

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8 **This document contains:**

9 • Supplementary Table S1: Invasive vertebrate eradication targets and eradication status

10 reported for 1550 events, 1872 - 2019.

11 • Supplementary Figures 1 - 4

12 • Supplementary Discussion

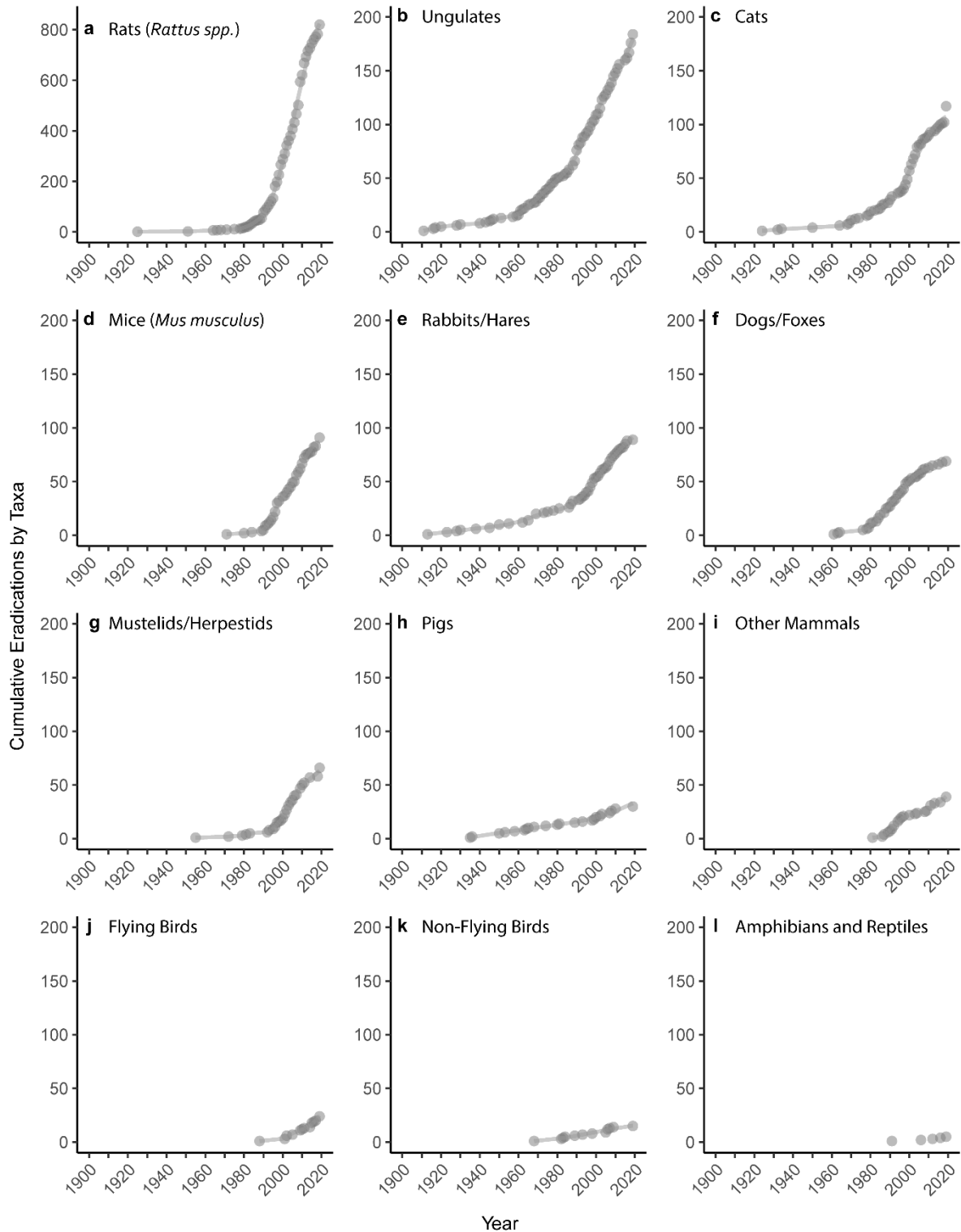
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14 **Supplementary Table S1.** Invasive vertebrate eradication targets and eradication status reported
 15 for 1550 events, 1872 - 2019. Completed events include the event status of successful, successful
 16 and subsequently reinvaded, or failed. Ongoing events include the event status of in progress or
 17 to be confirmed.

Invasive target groups	Completed Events	Incomplete Events	Ongoing Events	Planned Events	Total # Events
Rats (<i>Rattus</i> spp.)	754	1	39	26	820
Ungulates	167	9	6	3	185
Cats	97	4	7	9	117
House Mice (<i>Mus musculus</i>)	77	6	0	8	91
Rabbits & Hares	82	5	1	1	89
Dogs & Foxes	68	0	1	0	69
Stoats, Weasels, Mink & Mongoose	58	0	7	1	66
Other mammals	30	1	5	3	39
Pigs	27	1	0	2	30
Flying birds	17	2	4	1	24
Non-flying birds	14	0	1	0	15
Frogs & Toads	2	1	1	0	4
Lizards	1	0	0	0	1
TOTALS	1394	30	72	54	1550

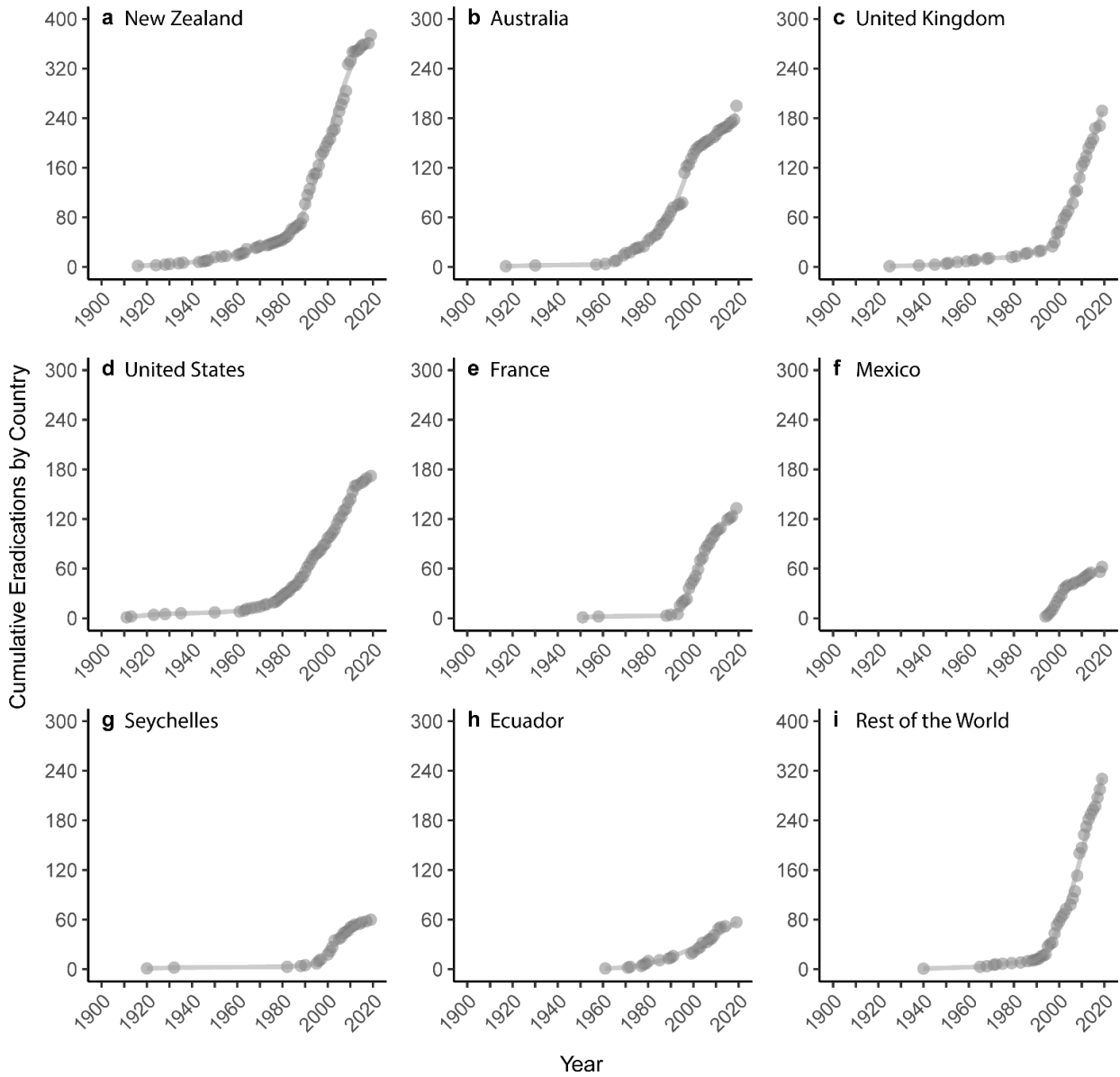
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32 **Supplementary Figure 1.** Eradication events by invasive vertebrate taxa, 1900 – 2019. Rats
33 (*Rattus spp.*) y-axis scaled to 800 eradication events due to high eradication event totals,
34 remaining panels scale to 200 events.



35 **Supplementary Figure 2.** Eradication events by implementing country, distinguishing the top
36 eight countries by frequency, 1900 – 2019.

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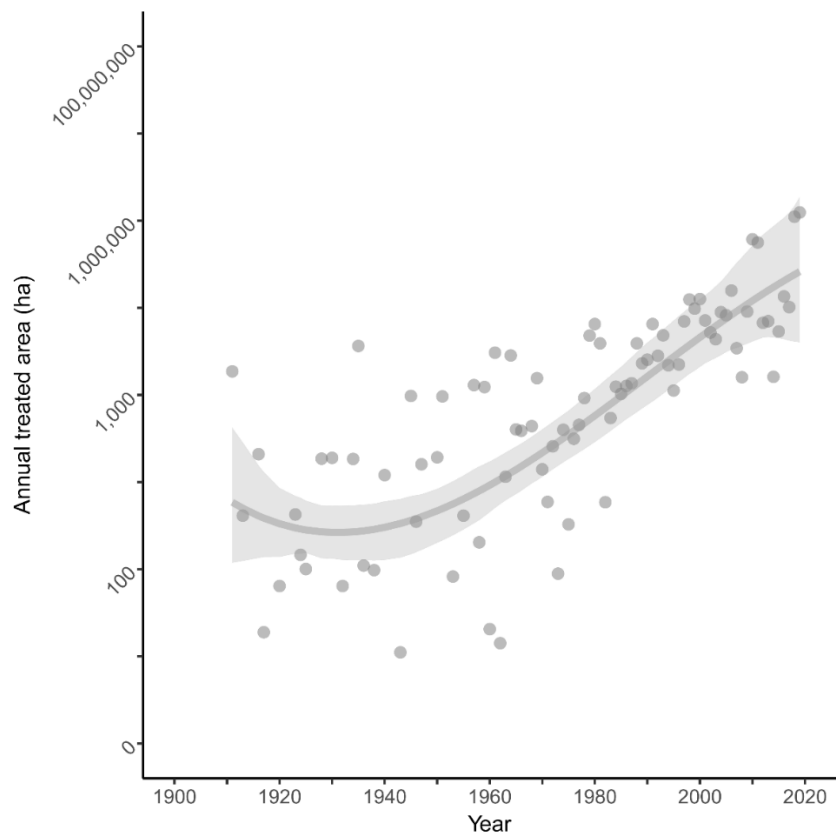
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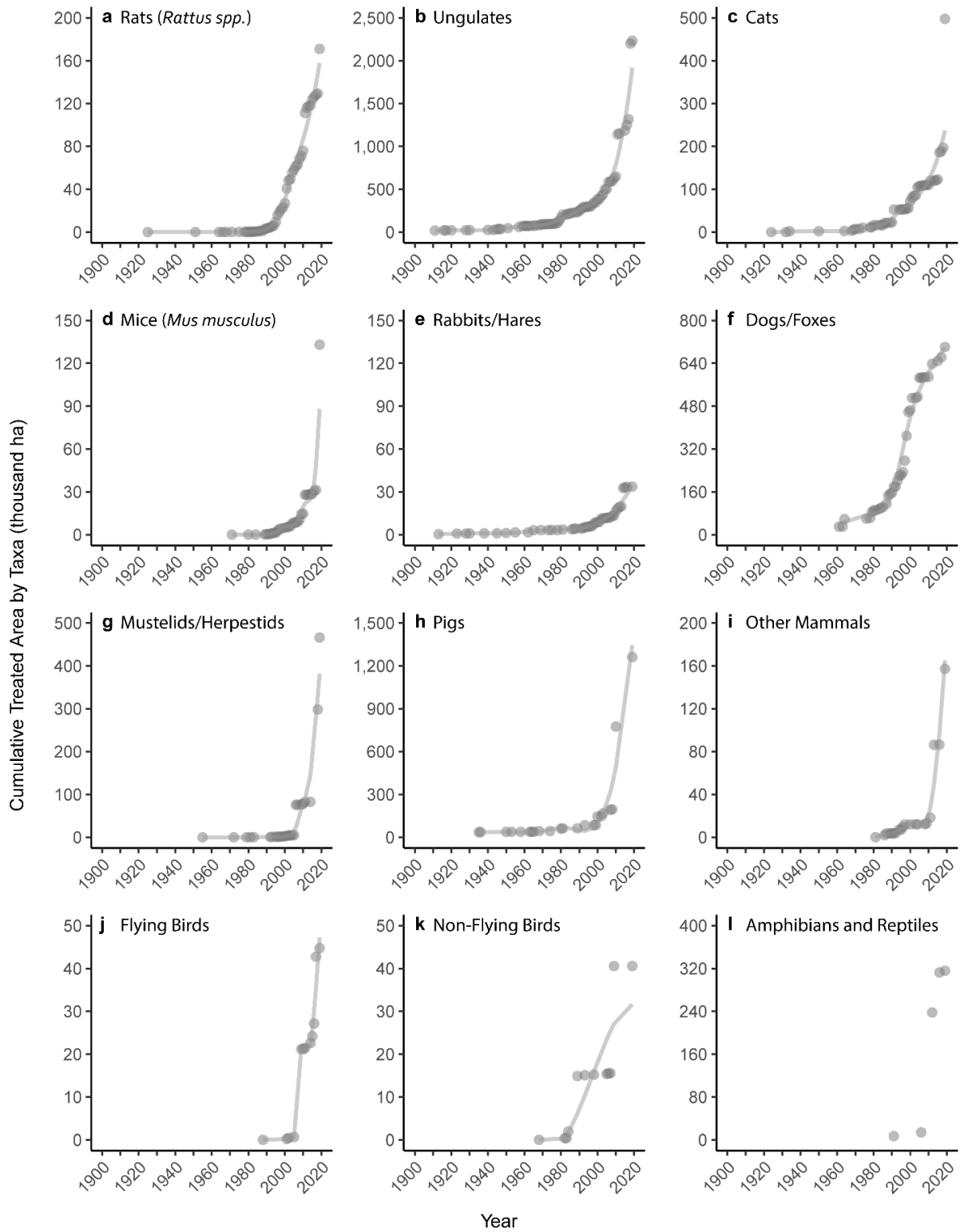
43 **Supplementary Figure 3.** Treated island area (ha), log scale, 1900 – 2019.

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46 **Supplementary Figure 4.** Treated island area by taxa, 1900 – 2019.



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49 **Supplementary Discussion**

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51 Excluded data and notable eradication events

52 A total of 2166 eradication events were documented in the database, of which 449 were
53 excluded because of poor data quality. An additional 167 events were removed because the
54 activity did not aim to remove an invasive wild animal from an entire island, the activity was a
55 trial or had an unknown outcome, and/or the activity did not treat the entire island. Of those that
56 did not treat an entire island, 59 were incursion responses and 49 were restricted range
57 eradications. These activities do ultimately clear an island of an invasive species, but the invasive
58 species is only targeted on part of an island, making these activities operationally different from
59 and statistically unrepresentative as “whole island” eradications. However, notable restricted
60 range eradication efforts do include the successful rat, mouse, and reindeer eradications from the
61 3,500 km² South Georgia Island and the failed removal of cats and rabbits from the 6,715 km²
62 Grande Terre Island. These projects play important roles in improving practitioner knowledge
63 regarding invasive vertebrate eradication “restricted range” techniques, particularly on these
64 relatively large islands.

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66 A brief summary of invasive mouse eradication successes and failures

67 Invasive rodent eradications include rats (*Rattus*) with an 88% success rate, and mice (*Mus*
68 *musculus*) with a 73% success rate, the latter representing the lowest among all eradication
69 targets analyzed. This low success rate occurred during early rodent eradication efforts when
70 mouse eradications were initially attempted concurrently with eradications for the larger bodied
71 rat species, typically the primary target given impact^{1,2}. However, it is now known that these

72 operational designs may not have catered to the ecology of mice, including differences in food
73 preferences and smaller home ranges compared to rats². In New Zealand, when these factors
74 were considered and changes in operational techniques were subsequently undertaken, mouse
75 eradication success rate was >90%³. Since the mid-2000s mouse eradication success rates
76 globally have dramatically improved thanks to developed best practice techniques
77 (Supplementary Table 1)¹.

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79 A brief summary of invasive avian eradications

80 This study primarily focuses on mammal eradications as they make up over 97% of invasive
81 vertebrate eradication activities on islands. However, other invasive vertebrate taxa have been
82 targeted for eradication. Notably, 64 eradication attempts of invasive birds occurred since the
83 1960s, primarily since the 2000s (n=31, 48%), with an 83.7% success rate. Sixty-two percent of
84 these invasive bird eradications targeted *Acridotheres tristis* (common myna) and *Gallirallus*
85 *australis* (weka). However, 23 of these events (36%) were removed from our analysis because
86 they were either incursion responses (n=5) or restricted range activities (n=18). Invasive birds
87 are a major threat on islands⁴, with particularly negative impacts on agriculture, and hence food
88 security for human communities^{5,6}. hence, the ongoing removal of invasive bird populations
89 from islands could be an important means of progressing towards both biodiversity and
90 sustainable development goals^{7,8}.

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92 **Supplementary Discussion References**

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94 failure. *Conserv. Sci. Pract.* **3**, 1–12 (2021).
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