

International news media framing of invasive rodent eradications

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Abstract Invasive rodents threaten global island biodiversity and have been eradicated from hundreds of islands. Eradication efforts can be contentious due to animal welfare concerns and risk to non-target species. The news media plays a critical role by providing context for eradications. To better understand how the news media frame invasive rodent eradications, we conducted a thematic content analysis of 462 newspaper articles published in newspapers from 13 countries between 1993 and 2014. Although the media typically frames environmental stories as conflicts between stakeholders, the media tended to use “conquest frames” for rodent eradications. Articles often emphasized key elements of the conquest frame, including recast rules and norms, being on frontiers, positioning heroes against nature, creating drama by questioning the success of heroes, orienting towards the future, and positioning the audience as an

awestruck witness. We detected international differences for some themes. Articles from Canada and Australia often included costs of eradication, articles from New Zealand were less likely to include endemic species, and articles from the United States were most likely to include conflict. Our results suggest that unique aspects of rodent eradications may encourage conquest framing, and cultural contexts of place shape framing between countries. We conclude that conquest framing by the media has largely supported rodent eradication efforts on islands, but that may change when new eradication methods are developed or when eradications are planned for islands with human populations.

Keywords News media analysis · Invasive rodents · Framing · Conquest framing

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Introduction

Islands provide critical habitat to a high proportion of the world's biodiversity and have disproportionately high rates of endemic species (Kier et al. 2009). Islands contain 20% of terrestrial plants and vertebrate species within 5% of the world's land mass. Unfortunately, extinction rates on islands are also extremely high, largely due to anthropogenically introduced invasive species (Clavero and García-Berthou 2005; Grosholz 2005; Sax and Gaines 2008). Among invasive species, rodents are a leading threat to biodiversity on islands (Towns et al. 2006), occurring on over 80% of the world's major islands (Atkinson 1985). They have caused extinctions and extirpations of flightless invertebrates, ground-dwelling reptiles, land birds, and burrowing seabirds (Towns et al. 2006).

Eradicating invasive species on islands represents the most effective approach for protecting biodiversity on islands, though this approach can be contentious, and its success is not guaranteed. Rodent eradications were pioneered in the late 1950s and early 1960s (Ross 1993; Thomas and Taylor 2002; Lorvelec and Pascal 2005). The first documented rodent eradication was completed on Maria Island, New Zealand (1 ha) (Thomas and Taylor 2002), and more recent eradications occurred on larger islands including the UNESCO World Heritage site, Macquarie Island, Australia (approx. 12,785 ha) (Parks and Wildlife Service 2014). As of 2014, over 470 successful rodent eradications have been completed (Campbell et al. 2014). A typical rodent eradication deploys rodenticide via bait stations, hand broadcast, or aerial broadcast, across an entire island, attempting to expose every individual to a lethal dose of rodenticide (Howald et al. 1999). Rodent eradications are high-stakes, multi-million dollar campaigns coordinated between multiple government and non-government entities. Eradication attempts are dramatic interventions because they are one-time events, and there is a stark contrast between success and failure. Success only occurs when every individual has been removed: even a very small surviving population (possibly even a single pregnant rodent) can re-populate an island in a short period, rendering the eradication effort a failure, with no conservation gain. From an animal welfare perspective, failure means a high level of animal suffering and only a brief reprieve for native species

predated by rodents (Cowan and Warburton 2011). Successful eradication of an invasive rodent population leads to ecological changes, and can include dramatic recoveries among native species populations (Smith et al. 2006).

In addition to the potential to incur significant financial costs, animal welfare issues can make rodent eradications contentious among stakeholders (Simberloff 2011). Concerns of non-target impacts and animal rights are especially pertinent to rodent eradications (Salmon et al. 2010; Howald et al. 2005; Cowan and Warburton 2011). Anti-coagulants such as brodifacoum are the most often used rodenticides for island eradications (Howald et al. 2007). Death of a rodent ingesting brodifacoum may take 3–14 days (Meerburg et al. 2008; Frankova et al. 2017), and is a potentially painful process for the rodents (Littin et al. 2002). Brodifacoum is a non-discriminate poison that has killed individuals of numerous species following rodent eradications (Eason and Spurr 1995). For example, following the rodent eradication on Rat Island (United States), renamed Hawadax Island following the successful rodent eradication, more dead bald eagles (*Haliaeetus leucocephalus*) were found than were known to have inhabited the island prior to the eradication (Salmon et al. 2010).

As rodent eradications are attempted on larger islands and contemplated for human-inhabited islands (Howald et al. 2005; Ogden and Gilbert 2011; Wilkinson and Priddel 2011), public interpretation of these events will become a more pressing issue for conservation practitioners. Opposition has impeded proposed rodent eradications in the past. For example, the United States National Park Service was sued and forced to obtain a Migratory Bird Treaty Act permit after proposing a rat eradication on Anacapa Island, off the coast of California (Howald et al. 2010). Prior to the eradication on Anacapa, an animal rights activist landed on the island and spread bait pellets with Vitamin K in an attempt to prevent the lethal effects of the anticoagulant rodenticide (Stolzenburg 2011). Rodent eradications are typically conducted on uninhabited islands. In Australia, a proposed rodent eradication for Lord Howe Island, a human inhabited island, was withdrawn amidst concerns of risk to humans and endemic species (Wilkinson and Priddel 2011).

Media framing may influence perceptions of eradications. Framing is a process where certain aspects of

an issue or event are emphasized and thereby made more salient (Entman 1993). Although all forms of communication contribute to framing, mass media plays a significant role when deciding how to present, interpret, and ultimately influence the understanding of issues and events. A media frame is the central organizing idea or storyline that provides meaning to events (Garrison and Modigliani 1994; Scheufele 1999). News articles may adhere to common media frames such as conflict, attribution of responsibility, human interest, morality, and economic frames, or articles can follow unique, topic-specific frames (Semetko and Valkenburg 2000). News articles covering environmental issues are often framed as conflicts (Cox 2012; Lester and Hutchins 2013).

News frames can be identified by a few attributes within an article. For example, a conflict frame might be identified by disagreement between parties, a reproach from one party to another, and the presentation of two sides of a single issue (Semetko and Valkenburg 2000). Dayan and Katz (1994) suggest that media events are framed as contests, conquests, or coronations. Events framed as contests focus on conflict, are often political, are governed by rules and invite the audience to rationally judge the contestants. Events framed as conquests are rare, and represent an advancement for society if accomplished, whereas events framed as coronations are highly ceremonial and invoke previous, similar events (Dayan and Katz 1994).

Although no research has addressed media framing linked to island eradications, research on the framing effects associated with other conservation issues suggests it has powerful effects on public perceptions. News framing is the process of communicating the news, and framing effects are the potential impacts on the audience's knowledge, attitudes, and behaviors (De Vreese 2005). For instance, Gore et al. (2005) found that public perceptions of bear attack risk actually decreased after a fatal black bear (*Ursus americanus*) attack on an infant in New York and attributed this outcome to news media frequently highlighting the extremely low risk of bear attacks. Conversely, research on news reporting of wildlife commonly ascribes negative valence to predatory animals (e.g., sharks, mountain lions) and describes risk and danger to humans (framing wildlife predators as a threat), thereby damaging conservation efforts (Muter et al. 2013; Jacobson et al. 2012).

In this article, we explore international news media framing of rodent eradications on islands. We use Dayan and Katz's (1994) media event frames—conquest and contest (hereafter we use the term “conflict” instead of “contest” to align with conservation terminology)—as theoretical grounding for our analysis. We also highlight differences in reporting frame attributes among the nations coordinating most rodent eradications. We then consider how perceptions of charismatic wildlife and environmental risk, newsworthiness, and local values may influence rodent eradication framing. We conclude by forecasting potential changes in future media framing, as methods for island rodent eradications advance.

Methods

We used LexisNexis® Academic to collect newspaper articles (hereafter articles) reporting on island rodent eradications. We collected articles reporting on eradications of black, Norwegian, and Pacific rat species (*Rattus rattus*, *R. norvegicus*, and *R. exulans*) and house mice (*Mus musculus*), the most common rodents introduced to islands worldwide (Atkinson 1985). The search was limited to the period after 1993, given the paucity of both rodent eradications (Howald et al. 2005) and media coverage of them prior to that point in time. A Boolean keyword search for ‘island’ AND ‘eradication’ AND ‘rodent’ OR ‘rat’ OR ‘mouse’ OR ‘mice’, was conducted in February 2015. This search yielded 462 articles after removing non-relevant articles (e.g., rats in cities) and excluding non-news articles (e.g., letters to the editor).

We used thematic content analysis to systematically identify and group passages across the media articles (Krippendorff 2012; Dayan and Katz 1994) into media event frames. Dayan and Katz's (1994) media event frames are typically used to analyze broadcast news television. However, these frames are appropriate for print news articles when the news media attempts to create media events (Hamilton 2000). Media event frames provide an appropriate lens for this study because they focus on contexts involving large-scale, pre-planned events, which allow news media time to develop a frame for the event, and these two attributes characterize rodent eradications. As mentioned above, media event framing typically includes a three-part typology of conflict, conquest,

and coronation (Dayan and Katz 1994). Conquest frames focus on recast rules (e.g., spreading toxicants on an island to conserve wildlife), occur on thresholds of frontiers, present hero versus nature, invoke drama by emphasizing the challenge, position the audience as an awestruck witness, and orient audiences to the future (e.g., outcome of successful conquest) (Dayan and Katz 1994). Conflict frames focus on agreed rules (e.g., public debate), occur in established arena or forums (e.g., a town hall), position human interests at odds, invoke drama by emphasizing the uncertainty of who will win, position the audience as a judge over a conflict, and orient audiences to the present (Dayan and Katz 1994). Coronation frames focus on customs and traditions (e.g., the staged process of funerals and weddings), occur in areas with large human audiences (e.g., city streets, churches), invoke drama by questioning whether the ritual will succeed (e.g., funeral lays leader to rest, can society reconcile the loss), and invite viewers to pledge allegiance to societal values (Dayan and Katz 1994). We focused only on conflict and conquest frames. We included a conflict frame because environmental articles are typically framed as conflicts (Cox 2012; Lester and Hutchins 2013) and both non-fictional and fictional accounts of rodent eradications have been explicitly described as conflicts (Stolzenburg 2011; Boyle 2012). We included conquest framing because rodent eradications on islands logically include key elements of a conquest frame (e.g., isolated locations, challenging circumstances, and heroes vs nature). We did not include coronations because the framing did not emerge in preliminary review of articles, likely because rodent eradications lack three key elements of this event frame: focus on traditions and customs, occurrence in areas with large human audiences, and inclusion of rituals. We considered the inclusion of other common news frames—economic, morality, attribution of responsibility, and human interest (Semetko and Valkenburg 2000), but these frames seemed less relevant to rodent eradications based on our understanding of media covering the events. Specifically, considering costs of multiple options (economic), religious and ethical prescriptions for behavior (morality), descriptions of who introduced rodents (attribution of responsibility), and human stories (human interest) were typically absent from rodent eradication news media.

Within the conquest framing, we coded text addressing eradication cost as “recasting the rules.” This coding decision stemmed from media accounts describing the immense cost of eradications as warranting new rules for approaching conservation decisions, such as normative support for completely covering a natural area with pesticides. We coded text describing islands as isolated or rugged in the conquest frame attribute, “threshold of frontier” because isolation and ruggedness reflect commonly accepted descriptors for frontiers. We coded text addressing conservation practitioners (e.g., dog handlers, helicopter pilots), conservation departments (e.g., United States Fish and Wildlife Service, New Zealand Department of Conservation), non-governmental organizations (NGO), and scientists in the conquest frame attribute “hero versus nature” because these were the actors working to eradicate rodents. We coded text describing an eradication as challenging in the conquest frame attribute “will hero succeed?” We coded text describing the scale of eradication and the size of the island as the conquest frame attribute, “awestruck witness,” because these descriptions invite the audience to marvel at the scope of eradication efforts. Finally, we coded text addressing endemic species and extirpated species as the conquest frame attribute for time orientation, “future” because the descriptions of these species were related to future recovery or future re-introductions of native species after the rodent eradication is completed.

We coded text describing stakeholder conflict over rodent eradications in the conflict frame attribute “conflict between groups”. This excluded disagreements about funding, because in these contexts all groups were in-favor of rodent eradication. We coded text regarding the effects of rodenticide, and positive descriptions of rodents as the conflict frame attribute, “who will win?” because these are points that were made if there was an argument against an eradication. Themes that might indicate conflict frame attributes—agreed rules, the locus of an arena, and the audience’s role as a judge—were not identified within our sample of articles. All coding was performed using QSRI Nvivo Version 10.

We generated definitions for each theme to train coders and assess intercoder reliability (Krippendorff 2012). We chose a small sample ($n = 8$) to practice coding until intercoder reliability for themes was greater than 95%. We then randomly selected 49

articles to measure intercoder reliability. Using the standard error proportion to estimate minimal sample size, we calculated 49 articles as the necessary number of articles to ensure a 95% confidence interval for reliability measurements between two coders (Lacy and Riffe 1996). We used Cohen's Kappa to measure agreement between two coders (Banerjee et al. 1999). Cohen's Kappa was calculated to be above 0.70 for all themes and above 0.90 for 55% of all themes, indicating a high level of intercoder reliability (Lombard et al. 2002).

We conducted further analysis on country origin of the articles by comparing themes between countries using Chi square tests. We compared articles from New Zealand (NZ) (n = 152), Australia (AU) (n = 124), United Kingdom (UK) (n = 110), the United States (US) (n = 20), and Canada (CA) (n = 13). Articles that were originally printed in one country and re-printed in a different country were excluded from analysis. We only included conquest and conflict themes appearing in enough articles to yield valid statistical inferences from Chi square tests. Themes with expected values of less than 5 in more than 20% of contingency cells were excluded from analysis. All statistical analysis was performed using STATA Data Analysis and Statistical Software Version 14.1.

Results

Articles and utterances within them more often framed rodent eradications as conquests compared to conflicts (440 articles include conquest frame attributes; 46 articles include conflict frame attributes). Some articles contained conquest and conflict frame attributes, but conquest attributes were included in articles more frequently than conflict attributes (Table 1). Specifically, articles focused on recast rules, occurring on frontiers, pitting heroes against nature, invoking drama by questioning the success of heroes, future orientation, and positioning the audience as an awe-struck witness. The conquest theme of high financial costs, which recast the financial rules of conservation efforts, was included in 44.8% of articles. Similarly, the conquest theme of overcoming challenges associated with the large scale of an eradication occurred in 20.4% of articles (Table 1). For instance, an article from New Zealand describes why a rodent eradication

is different from typical conservation work, "The project would be New Zealand's largest pest-eradication campaign 'by a wide margin', would cost millions and would be a major logistical challenge due to the [Auckland] islands' size and isolation." Articles described islands as isolated and rugged to ground these stories on the thresholds of frontiers (Table 1). For example, an article from Australia describes the island for a proposed eradication, "Macquarie Island: a sliver of land conjured abruptly from the vast watery wilderness of the Southern Ocean...Dangers posed by climate and terrain are accentuated by its extreme isolation." Conservation practitioners were sometimes explicitly described as heroes (Table 1), exemplified in this article's introduction, "A team of experts is bound for a remote island, with \$24.6 million of government funding, helicopters, guns and dogs, and eradication on their minds. And they're the good guys." Opinions voiced from conservation departments, NGOs, and scientists were often implicitly given authority and positive valence, because less than 10% of articles included stakeholders opposed to eradication (Table 1). The drama of the conquest is whether the eradication will succeed, so articles described eradications as challenging (Table 1), as written in this Australian article, "It meant flying five helicopters for more than 5 hours over the roughest ocean in the world in the middle of winter, but the world's largest rat eradication programme on Campbell Island has gone to plan." Focusing on the size of islands, the enormous scale of an eradication, and inherent challenge to the hero all worked to invoke awe (Table 1). This opening line about the Macquarie Island eradication is one example, "It will take seven years, cost \$25 million and is the world's largest program to eradicate feral animals from an island." Most articles (72.5%) included endemic species that would benefit from rodent eradication. The conquest frame orients readers to the future by describing how wildlife populations will thrive in the future (Table 1). For example, "It is hoped bird species such as kakapo, saddleback, mohua, kokako and teal may eventually be reintroduced to Stewart Island [NZ]."

Few articles included any aspect of a conflict frame. Conflict between stakeholders was mentioned in only 9.7% of articles (Table 1). The few articles with opposition stakeholders included multi-faceted arguments against eradications. An article covering the Lundy Island (UK) eradication quoted an animal

Table 1 Conquest and conflict frame attributes and corresponding rodent eradication themes with article frequency and percent of all articles

Dimension	Event frame	Frame attributes	Rodent eradication themes	Article frequency (n)	Percent
Rules	Conquest	Recasting the rules	High cost	207	44.8
	Conflict	Agreed rules	N/A	0	0
Locus (stage)	Conquest	Threshold of frontier	Isolated	64	13.9
			Rugged	30	6.5
Opponents	Conflict	Arena	N/A	0	0
	Conquest	Hero versus nature	Conservation practitioner versus invasive rodents	110	23.8
			Conservation department versus invasive rodents	144	31.2
			NGO versus invasive rodents	139	30.0
			Scientist versus invasive rodents	93	20.1
	Conflict	Conflict between groups	Stakeholder conflict	45	9.7
Drama	Conquest	Will hero succeed?	Challenging	59	12.8
	Conflict	Who will win?	Will Maori or animal rights groups lose rodents	13	2.8
Role of audience	Conquest	Awestruck witness	Scale of eradication	94	20.4
			Size of island	63	13.6
	Conflict	Judge	N/A	0	0
Time orientation	Conquest	Future	Endemic species recovery	335	72.5
			Extirpated species re-introduction	41	8.9
	Conflict	Present	N/A	0	0

rights group, “Not only is the toxic poison used causing great suffering to the targeted animal, it is bound to affect other wildlife and the ecosystem/food chain...Humans do not have the right to massacre other species”. Themes that represented objections to rodent eradications were similarly rare. Only 2.8% of articles mentioned stakeholders with an interest in protecting the invasive rodents (Table 1). Only two stakeholder groups argued for rodent protection, animal rights groups, and the native Maori of New Zealand, as described here, “The plan is opposed by local iwi Ngati Wai, who argue that kiore [Pacific rat] are taonga (treasure) and the department should opt for control rather than eradication.” Although, non-target impacts were included in 23.6% of all articles, the narratives did not clearly fit conflict or conquest frame attributes. We expected that the harmful effects of rodenticide would be included in arguments against rodent eradications. But only 18.8% of articles

describing rodenticide effects also included conflict among stakeholders; we did not detect a significant statistical relationship between the themes ($\chi = 1.5587$, $p = 0.212$). Many conflict frame attributes, agreed rules, arena as stage, and audience’s role as judge, were not part of any rodent eradication articles (Table 1).

Beyond the general analysis of our dataset, our assessment of how media framing differed among nations, notably for Canada and New Zealand. Chi square analysis of conquest and conflict themes and articles from different countries suggest that articles from Canada more frequently included conquest themes relative to other nations, and articles from the United States were more likely to include conflict between groups (Table 2). Articles from Canada and Australia most often included collective efforts aimed at overcoming challenges associated with costs of rodent eradication (Table 2). All articles from Canada

Table 2 Frequency of themes and results of Chi square analysis of conquest and conflict themes for five countries' coverage of rodent eradications

Attribute	All		New Zealand		Australia		United Kingdom		United States		Canada		χ^2
	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	
<i>Conquest themes</i>													
High cost	189	45	45	29.6	78	62.9	52	47.3	6	30.0	8	61.5	34.0815***
Extirpated species re-introduction	36	9	23	15.1	6	4.8	4	3.6	3	15.0	0	0.0	16.2085**
Endemic species recovery	298	71	76	50.0	91	73.4	102	92.7	16	80.0	13	100.0	64.3728***
<i>Conflict theme</i>													
Stakeholder conflict	42	10	22	14.5	3	2.4	12	10.9	5	25.0	0	0.0	17.8051***

*** $p < .001$

included emphasis on how endemic species would benefit from rodent eradication in the future, whereas only half of the New Zealand articles included endemic species (Table 2). However, New Zealand articles more often included future orientations in contexts of describing potential reintroduction of extirpated species following a rodent eradication (Table 2). Articles from the United States included extirpated species at a rate similar to articles from New Zealand (Table 2). Stakeholder conflict over rodent eradications never appeared in articles from Canada (Table 2) and appeared in a quarter of all articles from the United States.

Discussion

Conquest framing organizes perceptions of rodent eradications on islands by reducing moral ambiguity. Island eradications, unlike most conservation efforts, are high-stakes, can have permanent effects, and often occur far from people. The conquest frame highlights the drama, scope of action, and concentration of human labor and resources that are associated with eradications. Within this frame, completing the conquest becomes an inherent good. Positioning the conquest as inherently good allows the outcomes of an eradication to go unquestioned, suggesting that there is little need for public deliberation about removing invasive species to protect native biodiversity. For rodent eradications framed as conquests, the outcomes are the removal of an invasive species and higher native biodiversity, which aligns with

widespread preferences for conserving native species (Meuser et al. 2009).

News articles framing rodent eradications as conflict may be uncommon because invasive rodents are perceived as pests and the environmental risks incurred by rodent eradication methods are likely abstract to most audiences. Unlike articles about rodent eradications, media coverage often frames wildlife and environmental issues as conflicts (Cox 2012) by presenting opposing, yet compelling interests. For example, climate change articles portray economic concerns versus environmental concerns (Brossard et al. 2004), and carnivore management articles often discuss wildlife conservation in contrast to human safety (Jacobson et al. 2012). Rodents, however, are widely considered to be pests—a category that inspires distancing rather than connection. House mice and brown rats have been ranked as the least charismatic mammal species among international audiences (Macdonald et al. 2015), but birds, the most frequent beneficiaries of eradications, are considered charismatic (Gray 1995). The methods used to manage invasive species may be a source of conflict because of the harm that they can cause to both target and non-target species (Gobster 2011). Rodenticide use was occasionally questioned in articles, but our results indicate that rodenticide effects were not often associated in arguments against rodent eradication. The most common theme that could generate conflict regarding invasive species management in other contexts, non-target impacts, usually goes unseen on isolated islands. Non-target impacts occur during rodent eradications (Eason and Spurr 1995) but

are typically managed so that native populations are not endangered. Therefore, rodent eradications can be described as unobtrusive events, which typically go unseen and impact few people's day-to-day lives, especially when occurring on uninhabited islands (Cox 2012).

Although conquest framing utilizes newsworthy attributes of rodent eradications, it de-emphasizes risks to human health and native wildlife. The risks that eradications pose to human health and native wildlife are taken seriously by conservation professionals and researchers (Salmon et al. 2010; Cowan and Warburton 2011), but they may not be considered newsworthy by journalists (Yopp and McAdams 2002). Criteria for newsworthiness include prominence, timeliness, proximity, impact, magnitude, conflict, oddity, and emotional impact (Yopp and McAdams 2002). Because rodent eradications are unobtrusive events, framing them as conflicts highlights only one criteria of newsworthiness, conflict, but does not elevate the others. On the other hand, a conquest frame can be used to highlight the impact, magnitude, and oddity of a rodent eradication. Conquest framing may be interpreted as an attempt to maximize newsworthiness, and this framing is likely to influence broader perceptions of rodent eradications.

By choosing conquest frames over conflict frames, news media provide support for native wildlife conservation on islands. The conquest frame privileges viewpoints that aim to make rodent eradications more acceptable by suggesting that there are no alternatives, and that normal rules do not apply. Thus, where other contexts may raise concerns about spreading poison that causes slow painful deaths among mammals, island eradications are depicted as exceptional events, where heroes operating on the edge of frontiers make their own rules to win against overwhelming odds. To some degree, conquest framing impacts and reinforces the positive perceptions of island conservation that it creates, deflects public concern about island eradications, and creates latitude for practitioners to operate in. Some invasive species researchers have been skeptical of news media, suggesting that journalists seek to oversimplify and sensationalize their work (Rotherham and Lambert 2012). Although articles on rodent eradications tended to simplify the events by excluding details and rodent eradication histories, the portrayals of rodent

eradications largely followed narratives offered by conservation agencies and scientists.

Differences in the themes that were emphasized between countries suggest that, to some extent, the cultural context of nations shapes media framing of rodent eradications. Canada has a shorter rodent eradication history and has attempted fewer rodent eradications compared to the other countries analyzed (DIISE 2015). The relative novelty of a rodent eradication may have contributed to frequent mentions of cost and endemic species, which invoke awe and demonstrate the importance of the events. Differences in the frequency of reporting financial costs may reflect differences in conservation policy. Articles from the United States infrequently reported costs, and funding for rodent eradications in the United States often comes from an oil spill liability trust fund (OPA 1990). Articles from Australia may have reported costs more often because the Macquarie Island eradication involved political debates over funding. The Australian federal government and the Tasmanian state government clashed over who would fund the eradication. Interestingly, although funding is often a limiting resource for conservation efforts, funding mechanisms for rodent eradications were typically obscured in conquest frames. Articles from New Zealand often did not mention the endemic species to benefit from rodent eradication. This was surprising, considering the country's leading role in developing and implementing rodent eradications. It may be that the purpose of a rodent eradication is well-known among local audiences, and the news media did not feel obligated to explicitly include endemic species. Opposition to a proposed rodent eradication on the Farallon Islands, off the coast of San Francisco, largely explains the higher percent of United States articles that include conflict. Newspapers from urban areas are more likely to include conflict in news articles on wildlife (Corbett 1995). The tendency for wildlife agency headquarters to be located in urban areas (the Farallon Islands are part of the San Francisco Bay National Wildlife Refuge Complex, headquartered in the San Francisco area), coupled with high levels of pluralism in personal values, including wildlife value orientations favoring protectionism in urban areas (Manfredo et al. 2003), make discussions of conflict more likely (Tichenor et al. 1980).

Moving forward, conservation stakeholders should be aware that the news media can provide positive

coverage of conservation work, particularly through conquest framing. Rodent eradications have been favorably framed by de-emphasizing environmental risks, and conquest framing in media coverage helps to secure the dominance of this perspective. If larger islands or island systems are targeted in the future, the conquest framing may not change. As we observed in this study, conquest framing characterized complex eradications on larger islands (e.g., Macquarie Island, South Georgia Island, and the Galápagos Islands). But this trend may change. As more human-inhabited islands are considered for rodent eradications, including renewed plans to eradicate rats from Lord Howe Island (Airhart 2017) and the ambitious plans to eradicate all invasive predators from New Zealand (NZ DOC 2018), concerns about the risks of pesticides and voices of opposition are more likely to emerge (Varnham et al. 2011) rendering conflict frames more common. Alternate methods of rodent eradication might also change eradication framing. Potential novel systems for rodent eradication, such as self-limiting genetically-engineered rodents (Campbell et al. 2014; Leitschuh et al. 2018) have several advantages over traditional pesticide approaches. This approach could reduce non-target impacts, by eliminating the need to use pesticides, and scale to larger and potentially more geographically diverse islands (broadcasting pesticides is especially difficult on mountains, near seaside cliffs, in complex cave systems, etc.). Although this method could decrease the risks to native wildlife, domestic animals, and human health, the use of genetically engineered rodents might also create new sources of conflict rooted in moral norms about interfering in nature or playing god (Macnaghten 2004). Although conquest frames currently dominate the coverage of rodent eradications on islands, they may also apply to zoonotic disease management, and some forms of invasive species control in continental locations. Attention and funding for zoonotic disease management is limited for many diseases (Mableson et al. 2014) and re-framing the issue as a conquest may help draw increased interest without threatening public support. Similarly, some continental invasive species, such as Asian longhorned beetles (*Anoplophora glabripennis*) in the United States (Antipin and Dilley 2004), may fit conquest frames, and control efforts may benefit from the increased attention generated by media coverage. Conservation efforts that engage in public relations may be well-served by

messages focusing on recast rules, frontiers, and whether heroes will succeed and ensure a better future as alternatives to more traditional “fearful” policy narratives (Mableson et al. 2014). On one hand, these conquest messages can oversimplify the work of conservation. On the other hand, they may work to build and strengthen cooperative efforts between stakeholders who are interested in positive conservation outcomes.

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