Obstacles to removing non-native species from a national park

Lary M. Dilsaver, University of South Alabama

211 Spanish Main
Spanish Fort, AL 36527
ldilsaver@southalabama.edu

ABSTRACT

Throughout its history, the National Park Service has sought to eliminate or control non-native species within its units. The growing influence of science in natural resource management has made this mandate ever more imperative. Removal of invasive vegetation has proven extremely difficult and may never be complete in many parks. Efforts to eliminate domesticated animals and feral or wild invaders have met many obstacles as well. Channel Islands National Park has managed to get rid of sheep, cattle, pigs, burros, horses, deer, elk, rats, cats, rabbits, turkeys, Argentine ants, and European honey bees. In the process, park managers have had to work through or overcome eight types of impediments as well as virulent opposition. Lessons learned from these campaigns can inform other park managers facing the same types of problems.

INTRODUCTION

Non-native species cause myriad problems for a park's native flora and fauna. Removal of invasive vegetation has proven extremely difficult and may never be complete in many parks. Domesticated or invasive fauna have disrupted habitats by enabling the intrusion of non-native vegetation, threatening endemic species, causing soil erosion, and competing with native animals for food. On islands, non-native fauna are especially destructive (Drees 2004; Department of the Interior 2021; Dilsaver and Babalis 2021).

The National Park Service (NPS) has had a long, ever-stricter policy of removing these animals. In 1918, Secretary of the Interior Franklin Lane, using Stephen Mather's words, banned sheep from all NPS areas. Seven years later, Secretary Hubert Work called for an end to ranching. George Wright and his NPS colleagues stated that non-native species should be removed in their seminal 1932 report colloquially called "Fauna No. 1." The 1968 "Administrative Policies for Natural Areas" repeated that mandate (Dilsaver 2016: 36, 51, 94, 316). Every NPS Management Policy directive from 1975 through 2006 has restated it. In 1977, 1999, and 2016, Presidents Jimmy Carter, William Clinton, and Barack Obama, respectively, issued executive orders to eliminate invasive species, demonstrating that the issue was no longer peculiar to NPS (White House 1997; White House 1999). Much of the relevant research and activity on federal lands is now coordinated through the federal National Invasive Species Council (Dennis 1980; Department of the Interior 2021).

Channel Islands National Park provides an important case study of the processes and results of implementing these policies. The five islands off the coast of Southern California that comprise the park—San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara—began to be developed for Euro-American agriculture, settlement, and marine exploitation in the mid-19th century. Non-native species introduced to one or more of the islands included sheep, cattle, pigs, burros, horses, deer, elk, rats, cats, rabbits, turkeys, Argentine ants, and European honey bees. In 1938, the two smallest islands, Anacapa and Santa Barbara, became a national monument. The US Navy controls San Miguel Island but agreed to NPS management of resources and visitors in 1963. Establishment of the unit as a national park in 1980 brought the two privately owned larger islands, Santa Cruz and Santa Rosa, within the boundary. However, years passed before NPS gained ownership of about half the land. In 1978, The Nature Conservancy (TNC) bought 90% of Santa Cruz Island. Significantly, its management goals mirror those of NPS.

Working alone or with TNC, NPS has faced eight types of bureaucratic issues and public-resistance obstacles to removing non-native species from Channel Islands National Park. The stories of these episodes offer a primer on defending the policies of NPS (Dilsaver and Babalis 2021) (Figure 1).

BUREAUCRACY (SANTA BARBARA)

Tiny Santa Barbara Island (652 acres) suffered from feral cats and rabbits. Aggressive removal of the cats beginning in the 1940s protected the rare seabirds that nested on the island but let the rabbit population explode to more than 50,000 by the following decade. Thenceforth sporadic efforts to control the rabbits focused on the use of poison pellets, which also killed some seabirds. Finally, Superintendent William Ehorn, who took command in 1974, initiated a program of using bright lights at night to immobilize the rabbits. Once revealed amidst the overcropped vegetation, rangers shot them. His rangers carried out the aggressive action until only two rabbits kept in cages remained. At one point, while visiting the NPS regional office, Ehorn was reminded that he needed National Environmental Policy Act (NEPA) compliance documentation for this procedure. He quickly called park headquarters and had the forms executed with instructions to carefully protect the two "pets" until the compliance process was finished. The public was largely unaware of this string of events (Dilsaver and Babalis 2021: 229–233) (Figure 2).

MEDIA ANTAGONISM AND INCOMPLETE AUTHORITY (SAN MIGUEL)

San Miguel Island is the furthest west of the chain and is subject to harsh weather conditions. Years of overgrazing by sheep had rendered the island a "barren lump of sand." The Navy ousted the sheep in the 1960s and used the island for artillery and missile target practice. Oddly, this did not eliminate the feral burros that still wandered the landscape. During the 1970s, NPS debated what NEPA meant for its management, with many old-time employees believing that the new law did not apply to the agency.

FIGURE 1. The five islands of Channel Islands National Park in Southern California and the sea floor surrounding them (Dilsaver and Babalis 2021). CARTOGRAPHY BY ROCKNE RUDOLPH

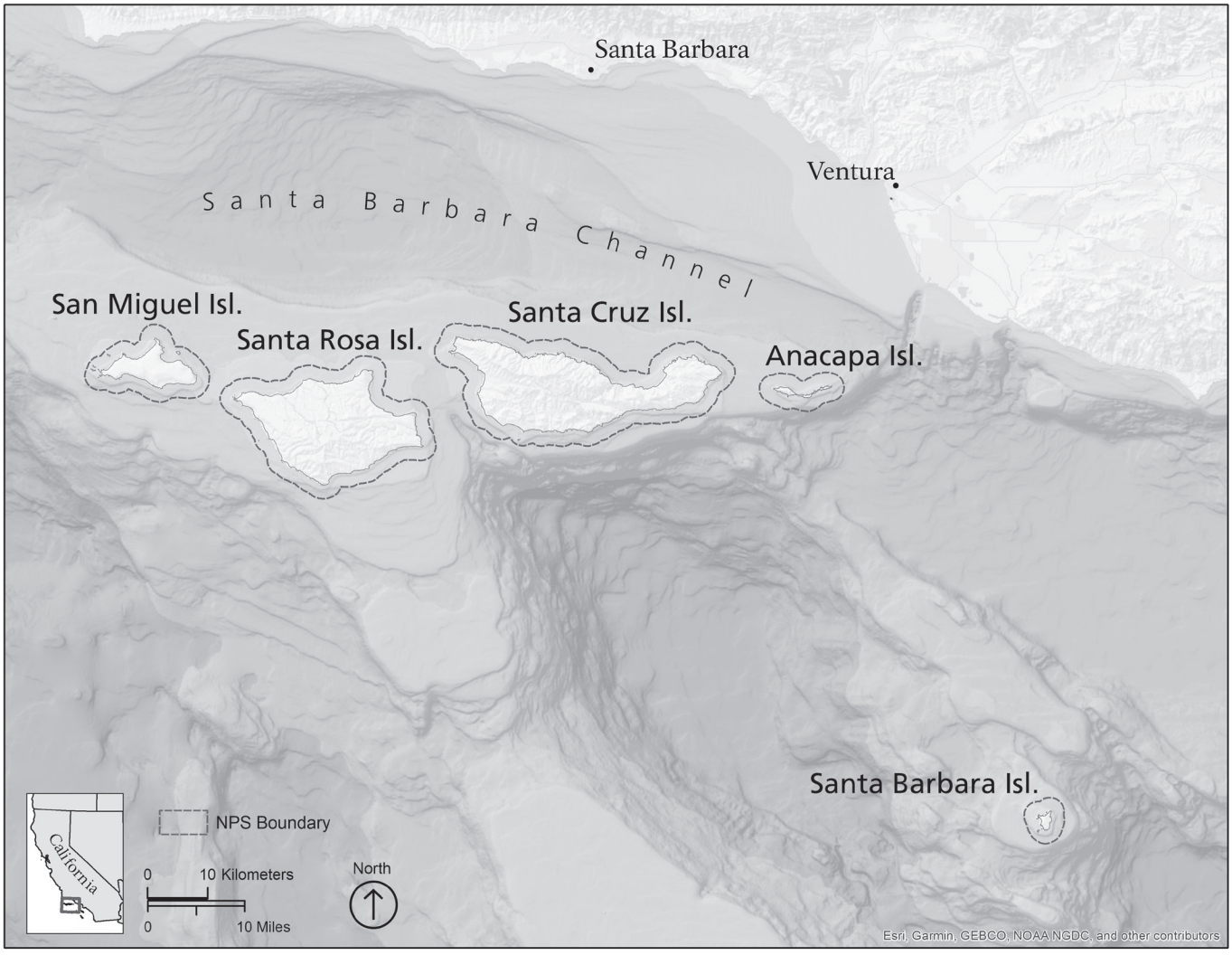


FIGURE 2. Figure 2. Extensive damage from rabbits on Santa Barbara Island left it in the worst condition of the five islands. Photographer and date unknown.
CHANNEL ISLANDS NATIONAL PARK ARCHIVES, ACCESSION NO. 217, CATALOGUE NO. 3157

Prior to that time, agency officials consulted with scientists and wildlife specialists before expeditiously eliminating non-native mammals by shooting them. Superintendent Ehorn decided to follow this course. In 1977, working with a ranger and a veterinary scientist, he shot all the burros they could find. This time he had ordered a NEPA document to be completed but did not inform the Navy. Nevertheless, the Navy found out midway through the operation and asked Ehorn to wait for completion of procedural paperwork. Instead, the NPS team continued shooting for the rest of the day. Ehorn hoped the issue was over, but a woman trespassing without the requisite ranger guidance saw the carcasses and emotionally informed the editor of the *Santa Barbara News-Press.* In addition, a pilot flying over the island reported one burro still standing. Ehorn rushed out to San Miguel Island to dispatch the remaining burro but faced severe criticism from the local news editor. Hoping to placate him, Ehorn organized a trip to the island for the editor to show him the damage wrought by the burros. On the morning of the planned trip, Ehorn was astonished to learn that the editor had died in bed the previous night. Scientists had offered support for Ehorn should the episode become a controversy, but the NPS regional office was distinctly less enthusiastic. As it turned out, the death of the editor left the story unpublished and the local public remained uninformed (Dilsaver and Babalis 2021: 227–229).

CONTINUATION OF TRADITIONAL USE AFTER PRIVATE OWNERSHIP ENDS (SANTA ROSA)

Santa Rosa Island suffered grievous damage from sheep in the late 19th century, but a ranching company known as Vail & Vickers (V&V) shifted to careful cattle ranching in 1901. The company, controlled by two families, owned the entire island, and initially sought to keep the island out of the park during the campaign to establish it during

the late 1970s. The final legislation offered them the opportunity to sell to NPS but keep on raising cattle production and continuing a concession that allowed them to organize for-profit hunts of deer and elk through a Reservation of Use and Occupancy (RUO) agreement, which would have drastically reduced the payment they would receive for the island. Another alternative was a lease that would require a substantial rent to be paid. Both options were contracts that did not prevent NPS from voiding them if the continuation of these activities damaged natural resources. Instead, in 1986 V&V chose to secure a Special Use Permit (SUP). Such permits allow particular uses for a short time (typically five years) with less legal protection and no guarantee of renewal. Somewhere in the negotiations V&V got the idea that they would be able to continue for 25 years, the usual duration of a RUO. NPS split on the legality of this conclusion, with Ehorn, some regional officials, and a large percentage of the local population backing the V&V claim. Park scientists and environmental groups found clear evidence that the non-native animals were endangering vegetation, streamcourses, and endemic species. They fought to see cattle ranching and cervid hunting removed. Finally, a lawsuit by National Parks and Conservation Association against NPS forced the issue to a Los Angeles courtroom in 1997. V&V also sued NPS. The presiding judge warned that his decision would go against the ranchers, so in 1998 the company accepted a settlement to remove the cattle operation the following year in order to save their hunting concession. V&V deliberately focused public attention on the imminent stoppage of its historic ranch operations and encouraged controversy among members of the public and the national media. This brought the park considerable and long-lasting negative prominence (Dilsaver and Babalis 2021: 285–293, 438–444).

POLITICAL INTERFERENCE (SANTA ROSA)

In the 1998 settlement that saw V&V remove its cattle from Santa Rosa Island, the former owners were allowed to continue the hunting concession they controlled. In the early 20th century, the company had imported deer and elk to the island for sport. By the 1980s, the hunting concession produced more income than the cattle operation. Another part of the court settlement mandated that several endangered plant species be carefully monitored while the deer and elk populations were to be annually culled to zero by 2012, when V&V's RUO would terminate. This was separate from a multi-species inventory and monitoring program begun in 1980 by Park Scientist Gary Davis. Both monitoring programs showed evidence of continued floral damage, particularly from deer. However, US Representative Duncan Hunter (R-CA) inserted a last-minute rider into the 2006 Defense Authorization Bill transferring Santa Rosa Island to the military to serve as a hunting reserve for disabled veterans. Republicans in the House of Representatives would not allow the rider to be debated at the late stage of the overall bill, and it went into effect. Military veterans' organizations professed confusion about the rider, since the rugged island was not easily accessible to their disabled members. The following year, Senators Dianne Feinstein (D-CA) and Barbara Boxer (D-CA) introduced a bill that passed easily and restored the island to NPS. The National Rifle Association filed a suit to continue the hunting concession beyond 2012, which a judge quickly dismissed. V&V continued to dispute the court-required population counts of the deer and elk all the way until the company's departure in 2012. It took until 2014 for NPS-hired hunters to eradicate the remaining deer and elk (Dilsaver and Babalis 2021: 589–598).

EXPENSE (SANTA CRUZ)

Four siblings of the Gherini Family co-owned the eastern tenth of Santa Cruz Island. Two of the siblings and the heirs of a third sold their undivided interests to NPS but the fourth, a lawyer named Francis Gherini, refused. This meant that NPS was unable to end the destructive sheep ranching and deer hunting Francis Gherini still insisted were within his rights. Eventually, Congress passed a "Declaration of Taking" in 1997 that allowed NPS to assume full control. However, Francis Gherini appealed to a growing animal rights movement to lobby against the wholesale killing of sheep, and additionally used the rules that apply under a Declaration of Taking to force NPS to spend $2,000,000 shipping 9,278 sheep to Oregon. As a private organization, TNC already had killed 32,000 sheep on its portion of the island. The public response to TNC's actions was muted, but Francis Gherini was able to portray NPS as the villain in this episode (Dilsaver and Babalis 2021: 498–502) (Figure 3).

OPPOSITION FROM ANIMAL RIGHTS SUPPORTERS (SANTA CRUZ)

In the mid-1990s, NPS and TNC confronted a sudden collapse of small endemic island fox populations on the three larger islands. Research showed that golden eagle predation was the cause. The main food source for the eagles were piglets, especially on Santa Cruz Island, but the house cat-sized foxes and non-native turkeys also fell prey. Some 6,000 pigs also consumed or uprooted rare floral species, created ruderal soil conditions that favored non-native floral species, and damaged archaeological sites. The pigs had to go. Fearing porcine disease, the Department of Agriculture would not allow movement of the pigs to the mainland. By 2005, the NPS and TNC decided to cooperatively eliminate both types of invaders. The US Fish and Wildlife Service approved. A coalition of local and national animal rights organizations did not. Their advocates suggested neutering, birth control drugs,

FIGURE 3. Sheep on Santa Cruz Island remained a source of income for Francis Gherini until 1997 through hunting concessions. Final removal depended on technological tools such as helicopters and time-honored cowboy skills. Photographer unknown, 1997. CHANNEL ISLANDS NATIONAL PARK ARCHIVES, PHOTO FILE SHEEP_CLEARING_SCI_19970611_049

or fencing off a sacrifice zone for the animals to save their lives. Scientists called for immediate elimination of individual animals by "a well-placed bullet." NPS and TNC hired a professional New Zealand company to do the job and lawsuits soon proliferated. The courts found no merit in the animals-rights groups' alternatives and rejected the lawsuits. In spite of this, both NPS and TNC received remorseless media criticism and actual death threats to their officials. Unexpectedly, one of the critics was former superintendent Timothy Setnicka, who wrote a three-article series for the *Santa Barbara News-Press* that animal rightists widely cited. The New Zealanders proved remarkably efficient and completed the elimination in 18 months—less than a fourth of the predicted duration (Dilsaver and Babalis 2021: 547–550, 575–585; Krajick 2005).

SCIENTIFIC CHALLENGE

During the century and a half of agricultural use on the larger islands, horses were a necessary and attractive component of the working operations. From time to time, ranchers brought new stock to augment or improve the working herds. As late as the 1970s, new horses arrived on East Santa Cruz Island. By the time Francis Gherini and his sheep left in 1997, the horses formed several feral bands that subsisted on the mostly exotic grasses of the island. A veterinarian named Karen Blumenshine suggested that they might be evolving into a new breed. Citing Blumenshine's research, Francis Gherini insisted that the horses were biologically and culturally significant and had to be protected *in situ*, contrary to the park's proposal to move them to the mainland. Marla Daily, founder of the Santa Cruz Island Foundation, agreed and dubbed the horses "The Heritage Herd." Local newspapers quickly joined in this new criticism of the park and its policies. (By contrast, John Gherini, a nephew of Francis, strongly supported the NPS position and admonished Daily.) Soon a new organization, The Foundation for Horses and Other Animals, filed suit against NPS. The group initially lost its suit but appealed, and thus was able to delay removal of the horses until September 1998, when the 9th Circuit Court of Appeals rejected the suit for good. The court not only allowed removal of the horses then but barred Dr. Blumenshine from any further activity associated with them (Dilsaver and Babalis 2021: 502–509).

CRIMINAL INTERFERENCE (ANACAPA)

A 19th-century shipwreck introduced black rats to Anacapa Island and all efforts to control or eliminate them failed for decades thereafter. Chief of Resources Kate Faulkner received advice from experts who had

worked to remove rats from islands in New Zealand and elsewhere. She planned an operation to, first, sequester a portion of the population of native deer mice and, second, use a controlled series of applications of the rodenticide brodifacuom to poison the rats outside the exclosure. Although many non-sequestered mice would die too, it was believed that the sequestered ones would quickly repopulate the island. The operation began in 2001. Soon afterward, a local bus driver, Robert Puddicombe, who founded the Channel Islands Animal Protection Association, and a fellow animal rightist went to Anacapa Island and spread an antidote to the poison. Another visitor saw them and alerted a park ranger, who arrested them. A lawsuit against NPS by Puddicombe's organization and the Fund for Animals (founded by the author Cleveland Amory) failed in court and the island was rat-free by the end of the following year. Puddicombe's companion pled guilty and was fined and temporarily banned from the park. Because the visitor-witness could not tell which of the two was actually applying the antidote, Puddicombe was not convicted. He later became involved in other campaigns to challenge NPS policy on non-native species. The media and the public followed this episode attentively. Rats still exist on the coastal reaches of San Miguel Island, but the Navy is not interested in trying to remove them (Dilsaver and Babalis 2021: 523–535; Convery 2022).

UNDER THE RADAR

Operating under the glare of a media-enhanced public spotlight, NPS faced almost continuous criticism from anti-NPS organizations like the *Santa Barbara News-Press* and legal obstacles that kept agency solicitors busy. But a pair of non-native species were eliminated without the typical outcry because they were "under the radar." Both were insects—Argentine ants and European honey bees. The ants are widely recognized on the mainland as pernicious pests that wreak havoc on native insects and threaten other species. When the park issued the NEPA-required notification about the plan to eliminate them, it elicited virtually no response except cautionary warnings about potential side effects on island birds and mammals. The use of poison on Santa Cruz Island to kill the ants brought no condemnation, as its use on the mainland is fairly common (Dilsaver and Babalis 2021: 599–601).

European honey bees had been present on Santa Cruz Island since the late 19th century. Researchers comparing the habits of exotic European honey bees with native bees discovered that the non-native honey bees promoted the reproductive success of introduced weeds. In one 1999 study, scientists found that the number of honey bees visiting the exotic yellow star thistle exceeded that of native bees by a ratio of 33 to one. The reverse was true with the native gumplants where native bee visits exceeded those by honey bees by a ratio of 46 to one. Starting in 1994, scientist Adrian Wenner and colleagues used a parasitic mite that had destroyed honey bee colonies in Florida and Wisconsin to eradicate the exotics. The native bees were unaffected. By 2003 the bees were eradicated. An apiary magazine belatedly discovered the program and raised red flags but it went no further. In both of these cases the absence of public concern and the low visibility of the processes muted any negative response. (Barthell et al. 1999; Wenner et al. 2009; Dilsaver and Babalis 2021: 511–513).

DISCUSSION

The National Park Service's successful removal of non-native fauna has had immediate benefits. Anacapa Island saw hatching success for Scripps's murrelets increase 96% within two years. At the same time, Cassin's auklets returned to nest after a 70-year absence. Pelican fledging soared, as nest predation fell from 52% to 7% in spite of the rebounding native deer mice population. In 1995, responding to a California Regional Water Board order, scientists on Santa Rosa Island found six of seven streamcourse reaches subject to cattle grazing to be "non-functional" and the seventh "functional-at-risk." After removal of the cattle, a 2004 reappraisal using the same criteria found all seven in "proper functional condition." Santa Barbara Island lost the Santa Barbara song sparrow to extinction in 1959 and has not improved visually despite the long period since rabbit removal, but the other four islands show distinct ecological improvement (Dilsaver and Babalis 2021: 433, 455, 535) (Figure 4).

Nevertheless, some negative outcomes trouble park managers. Invasive plant species pose nearly intractable problems, especially fennel and five species of iceplant. Some scientists and former ranchers have suggested that the grazing animals kept these plants in check. Another problem is the damage to its reputation suffered by NPS through all the controversies, particularly among the local populace. Thirty years after V&V had to remove its cattle from Santa Rosa Island, the myth of the "handshake agreement" to allow ranching through 2012 continues to resonate loudly throughout the adjacent mainland communities. Of greater significance, when NPS proposed a new national seashore along the Gaviota Coast 26 miles north of the park in 1999, it fell to intense opposition crying foul over the "betrayal" of V&V. It would have been the fifteenth national seashore or lakeshore and the first since 1975 (Figure 5).

Four conclusions can be drawn from Channel Islands National Park's experience with overcoming obstacles to the removal of non-native fauna. First, the ecological

FIGURE 4 (top). Lobo Canyon on Santa Rosa Island in 2018 showing vegetation regrowth after the stream was declared "non-functional" in 1995 and the cattle were removed two years later. LARY M. DILSAVER

FIGURE 5 (bottom). Iceplant is so thick on East Anacapa Islet that heavy machinery is necessary to remove the surface coverage. CHANNEL ISLANDS NATIONAL PARK ARCHIVES, PHOTO FILE U AEM 11 EAI 4244

benefits are outstanding and worthwhile, despite continuing difficulties from ecological side effects, as well as the residual anger among some of the public, which, it may be hoped, is temporary. Second, policy is always controversial to somebody and public exposure will bring a reaction. Several animal removal episodes escaped conflict either because they happened early during the monument period or they affected species that the public did not care about. The other actions brought antagonism, expense, and even threats. Third, the most important word linked to the national park system is "law." The parks are legal entities and the entire system could conceivably be eliminated by an act of Congress and a like-minded president. NPS won every major court case it faced and garnered resolute congressional support, primarily from Democrats. Finally, the experience of NPS at Channel Islands National Park demonstrates an uncomfortable reality for the agency's national program to remove invasive species. Islands offer eradication possibilities that simply cannot be accomplished on the mainland. Pigs, rabbits, and rats reproduce profusely, move with speed and dexterity, and survive extraordinary attempts to kill them. They probably will never be ousted from most areas of the continental United States.

REFERENCES

Barthell, John, Robbin Thorp, Adrian Wenner, and John Randall. 1999. Yellow star-thistle, gumplant, and feral honey bees on Santa Cruz Island: A case of invaders assisting invaders. In *Proceedings of the Fifth California Islands Symposium*. D.K. Browne, K. Mitchell, and H. Chaney, eds. Santa Barbara, CA: Santa Barbara Museum of Natural History, 269–273.

Convery, Ken (Chief of Natural Resources, Channel Islands National Park). Email to Lary M. Dilsaver, 5 April 2022.

Department of the Interior. 2021. *U.S. Department of the Interior Invasive Species Strategic Plan, Fiscal Years 2021-2025*. Washington, DC: US Department of the Interior. https://www.doi.gov/sites/doi.gov/files/doi-invasive-species-strategic-plan-2021-2025-508.pdf

Dennis, John G. 1980. National Park Service research on exotic species and the policy behind that research: An introduction to the special session on exotic species. *Proceedings of the Second Conference on Scientific Research in National Parks,* 26–30 November, 1979, San Francisco, California. Washington, DC: National Park Service, 241–252. http://npshistory.com/publications/wildlife/exotic-species-1980.pdf

Dilsaver, Lary M. 2016. *America's National Park System: The Critical Documents*. 2nd ed. Lanham, MD: Rowman & Littlefield.

Dilsaver, Lary M., and Timothy Babalis. 2021. *The Oceanic Park: An Administrative History of Channel Islands National Park*. Ventura, CA: Channel Islands National Park. http://npshistory.com/publications/chis/adhi.pdf

Drees, Linda. 2004. A retrospective on NPS invasive species policy and management. *Park Science* 22(2): 21–26. https://irma.nps.gov/DataStore/DownloadFile/615751

Force, Jo Ellen, and Deborah J. Forester. 2002. Public involvement in National Park Service land management issues. *Social Science Research Review* 3(1). https://www.researchgate.net/publication/237636964_Public_Involvement_in_National_Park_Service_Land_Management_Issues

Krajick, Kevin. 2005. Winning the war against island invaders. *Science* (New Series) 310(5753): 1410–1413. https://www.jstor.org/stable/3843134

Wenner, Adrian M., Robbin W. Thorp, and John F. Bartell. 2009. Biological control and eradication of feral honey bee colonies on Santa Cruz Island, California: A summary. In *Proceedings of the 7th California Islands Symposium*. C.C. Damiani and D.K. Garcelon, eds. Arcata, CA: Institute for Wildlife Studies, 327–335.

White House. 1997. Executive Order 11987. Exotic Organisms. https://www.archives.gov/federal-register/codification/executive-order/11987.html

White House. 1999. Executive Order 13112. Invasive Species. Federal Register, 8 December 2016: 88609-88614. https://federalregister.gov/documents/2016/12/08/2016-29519/safeguarding-the-nation-from-the-impacts-of-invasive-species

White House. 2016. Executive Order 13751. Safeguarding the Nation from the Impacts of Invasive Species. Federal Register, 8 December 2016: 88609-88614. https://federalregister.gov/documents/2016/12/08/2016-29519/safeguarding-the-nation-from-the-impacts-of-invasive-species

The Interdisciplinary Journal of Place-based Conservation

Co-published by the University of California, Berkeley, Institute for Parks, People, and Biodiversity, and the George Wright Society.
ISSN 2688-187X

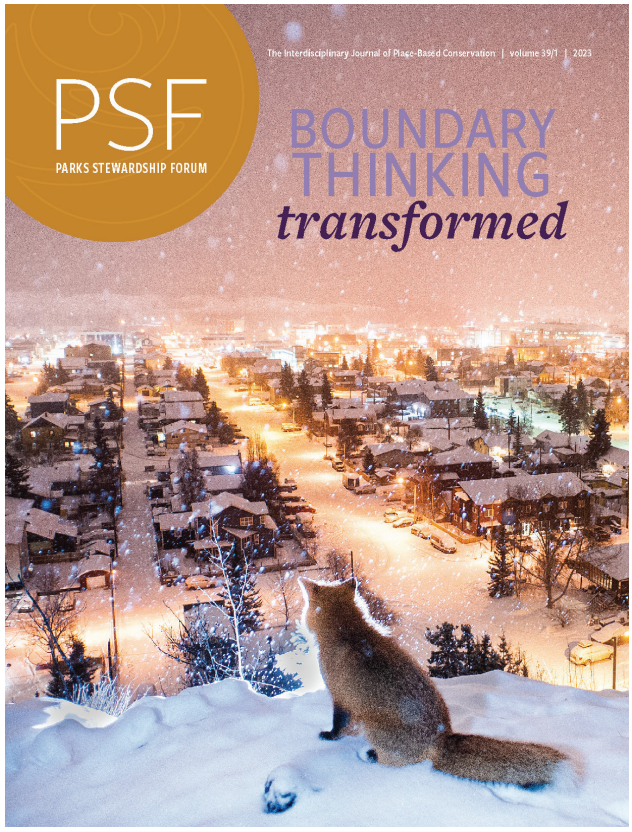
This article is published in Volume 39, Number 1 of *Parks Stewardship Forum*, 2023.

Parks Stewardship Forum explores innovative thinking and offers enduring perspectives on critical issues of place-based heritage management and stewardship. Interdisciplinary in nature, the journal gathers insights from all fields related to parks, protected/conserved areas, cultural sites, and other place-based forms of conservation. The scope of the journal is international. It is dedicated to the legacy of George Meléndez Wright, a graduate of the University of California, Berkeley, and pioneer in conservation of national parks.

Parks Stewardship Forum is published online at https://escholarship.org/uc/psf through eScholarship, an open-access publishing platform subsidized by the University of California and managed by the California Digital Library. Open-access publishing serves the missions of the Institute and GWS to share, freely and broadly, research and knowledge produced by and for those who manage parks, protected areas, and cultural sites throughout the world. A version of *Parks Stewardship Forum* designed for online reading is also available at https://parks.berkeley.edu/psf. For information about publishing in PSF, write to psf@georgewright.org.

The journal continues *The George Wright Forum*, published 1981–2018 by the George Wright Society.

PSF is designed by Laurie Frasier • lauriefrasier.com



On the cover of this issue
A red fox on the clay cliffs above the city of Whitehorse, Yukon Territory.
PETER MATHER