Newspaper Coverage of the Effects of Sunscreen Chemicals on Corals (2008-2021) and National Park Service Citations

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In 2008, researchers discovered that sunscreen chemicals could make corals more susceptible to bleaching (Danovaro et al., 2008). In response, Key West, Hawaii, and the U.S. Virgin Islands enacted sunscreen bans, scheduling them to go into effect in 2020 and 2021.[1] We conducted a content analysis of four national elite newspapers and four from regions that enacted bans in order to assess issue coverage and references to the National Park Service (NPS) (see Methodology, p. 4). The sunscreen chemical bans affect national parks in Hawaii and the U.S. Virgin Islands, but not those in Florida and American Samoa.

The U.S. public receives most of its information about science from the media (Russell, 2010). But "the media" is not monolithic; regional and national coverage of science issues often vary (Jerit et al., 2019; Rickard & Feldpausch-Parker, 2016). Similarly, we also found differences in coverage of sunscreen effects on corals between regional and national publications, including reporting that included NPS.

National versus regional coverage:

- **Issue coverage may have peaked in 2019.** Media coverage began building in 2018 (33 articles), reached a high in 2019 (66 articles), and began declining in 2020 and 2021 (respectively, 28 and 24 articles). The vast majority of articles in 2020-2021 appear in regional newspapers (88%).
- **Reporting of sunscreen chemical effects on corals started appearing in 2008 with articles in both national and regional publications**. Articles appeared in 2008 in the *Washington Post* (1 article, "The dark side of sunscreens") and Key West and Hawaii newspapers (3 and 2 articles respectively).
- **Between 2008 and 2021, only 18% of the coverage of sunscreen effects on corals appeared in the national elite papers**. Most of the reporting was conducted by the *Honolulu Star-Advertiser/Star-Bulletin* (40%) or the *Key West Citizen* (34%) (Figure 1).
- **More than half of the coverage from 2008 to 2021 appeared as news stories** (60%, 118 articles of 196 total). Most of those news stories appeared in the Honolulu (49 articles), Key West (42 articles), and Virgin Island (12 articles) papers (Figure 2). However, the national newspapers—*New York Times* (5), *Washington Post* (4), *Wall Street Journal* (1), and *USA Today* (2)—also published news articles.
- **Almost all editorials that reference sunscreen and corals appear in the Key West and Hawaii publications** (10 and 16 articles respectively). The discourse appears in these papers

[1] Florida's legislature subsequently prohibited state localities from doing so (Gross, 2020).

across editorials, letters to the editor, and opinion columns. The *Key West Citizen* also ran a column titled "Citizen voices"—coded separately from news and editorial—that frequently included quotes on the sunscreen ban (11 articles). A *New York Times* opinion column on "Sunscreen and the sea" from 2017 and two *Washington Post* letters to the editor (2014, 2019) served as the few national outliers.

- **Little coverage of sunscreen effects on corals appears in travel sections—less than 5%.** Of the eight travel articles, four were published in the *New York Times*, three in the *Honolulu Star-Advertiser/Star-Bulletin*, and one in the *Washington Post*.
- **The issue appears in the health sections of national newspapers only**. *The Wall Street Journal* (1), *New York Times* (3), and *Washington Post* (3) all ran articles that mention corals and sunscreen in health sections with titles like "Pick your poison: Sunscreens can prevent skin damage, but how safe are they?"

NPS in issue coverage:

- **Eight articles referring to sunscreen effects on corals from 2008 to 2021 cite NPS (4% of all articles)**. Seven of the eight articles appear in newspapers from Key West, Hawaii, and the Virgin Islands (Table 1). *The New York Times* cited NPS in a 2019 news story titled "Key West bans sunscreen containing chemicals believed to harm coral reefs." Further, two of the eight articles cite NPS, but not in relation to corals and sunscreen.
- **NPS is cited as an authority on the amount of sunscreen entering reef ecosystems,** e.g. "The National Park Service estimates that 4,000 to 6,000 tons of sunscreen enters reef areas every year" (*Key West Citizen*, *New York Times*).
- **NPS is cited when newspapers make recommendations which sunscreens—or sun-protective behaviors—are appropriate**, for example: *"*The National Park Service recommends mineral-only sunscreens in its 'Protect Yourself/Protect the Reef' campaign" (*Honolulu Star-Advertiser/Star-Bulletin*).
- **Visitor recommendations attributed to NPS are conflicting.** For example, an NPS staff member told the Virgin Islands paper that the public should use protective clothing and products without oxybenzone. In the *Key West Citizen*, the agency is quoted: "No sunscreen has been proven to be completely 'reef-friendly' … but those with titanium oxide or zinc oxide, which are natural mineral ingredients, have not been found to be harmful to corals." While the *New York Times* reported "The park service and environmental groups recommend wearing protective clothing and opting for sunscreens that are labeled eco-friendly."

Recommendation:

- National media coverage is relatively low, which may make it more difficult for NPS visitors to obtain information about park policies before they arrive. Consider reaching out to national media in the months prior to travel season for highly visited coral parks to suggest stories about sunscreen effects on corals and current park policies.

Figure 1. Newspaper coverage of the effects of sunscreen chemicals on corals has been highest in Hawaii and Key West newspapers, especially in recent years.

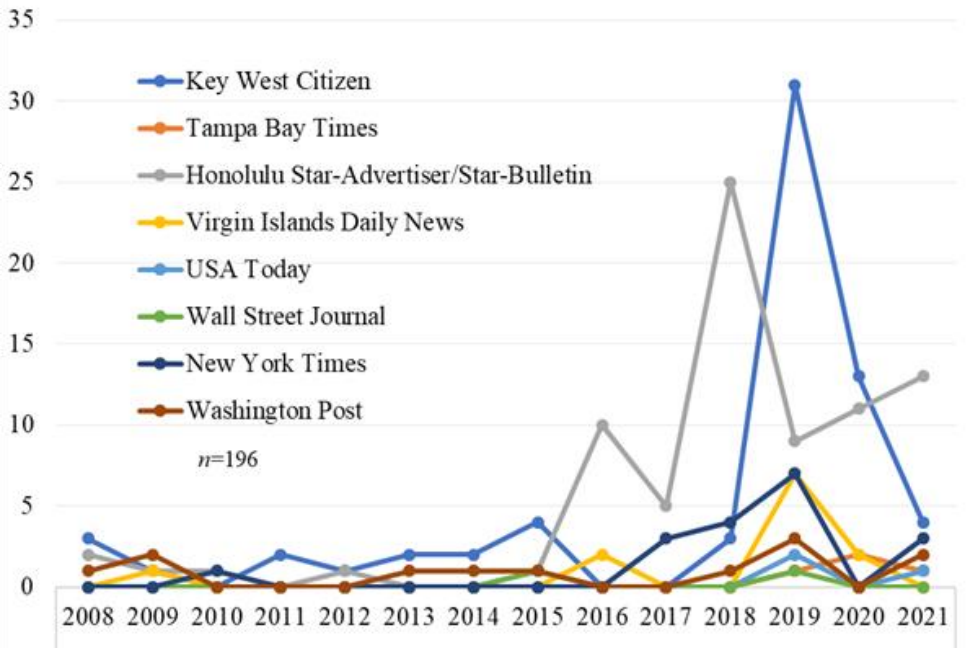
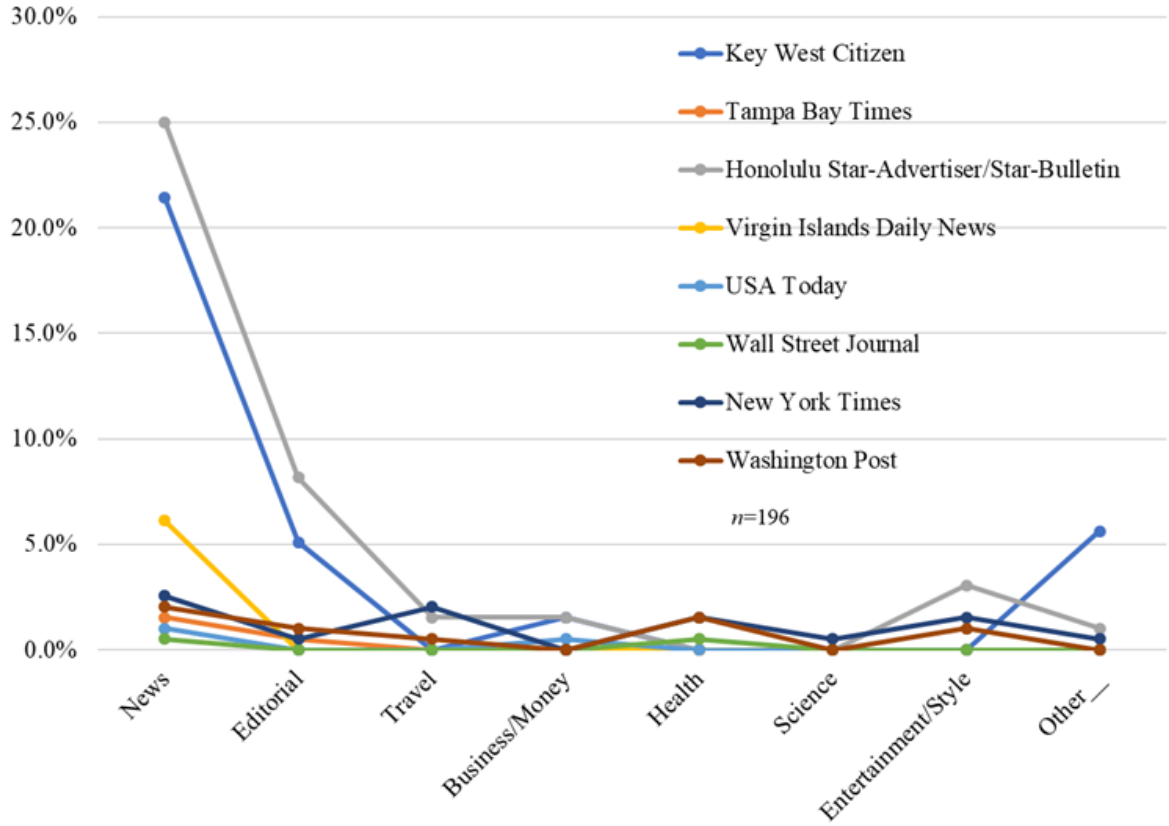


Figure 2. Most of the coverage of sunscreen and corals occurred in news articles in the Honolulu and Key West newspapers, but 7% and 6% (respectively) also appeared in editorials.



Methodology:

We evaluated national elite media and local coverage from areas in which sunscreen bans have been passed (Key West, FL; Hawaii; U.S. Virgin Islands). The list of national elite media included the top three newspapers in national circulation—*USA Today, Wall Street Journal, New York Times*—plus the *Washington Post*, which is among the top 10 and has a policy-oriented audience. We also selected the highest circulation newspapers for Key West and Florida, Hawaii, and the U.S. Virgin Islands: *Key West Citizen, Tampa Bay Times*; *Honolulu Star-Advertiser/Star-Bulletin*; and *Virgin Islands Daily News*. Using ProQuest Newsstream, LexisNexis, and Newsbank Access World News Research Collection we conducted searches for all articles between 1/1/2008 and 12/31/2021 with the search string coral* AND sunscreen*. Of 322 articles originally collected, 105 were off-topic (not referring to the effects of sunscreen chemicals on corals) and 21 were duplicates, typically between *New York Times* print and digital platforms. At least two coders recorded each article's information, classified the article type or section (news, editorial, etc.), and located any references to the National Park Service. Inconsistencies in coding then were resolved.

References:

Danovaro, R., Bongiorni, L., Corinaldesi, C., Giovannelli, D., Damiani, E., Astolfi, A., Greci, L., & Pusceddu, A. (2008). Sunscreens cause coral bleaching by promoting viral infections. *Environmental Health Perspectives, 116*(4), 441–447. https://doi.org/10.1289/ehp.10966

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Russell, C. (2010). Covering controversial science: Improving reporting on science and public policy. In D. Kennedy & G. Overholser (Eds.), *Science and the media* (pp. 13–43). American Academy of Arts and Sciences. https://www.amacad.org/sites/default/files/academy/multimedia/pdfs/publications/researchpapersmonographs/scienceMedia.pdf#page=26

Table 1. NPS citations in articles addressing corals and sunscreen in local, state, and national newspapers (2008-2021).

Newspaper	Article	Citations
Key West Citizen	**Date:** 11/28/2015 **Section:** News **Author:** Timothy O'Hara **Headline:** Study: Keys reef continues to suffer from bleaching	• The Nature Conservancy, Florida Department of Environmental Protection's Coral Reef Conservation Program, National Oceanic and Atmospheric Administration (NOAA), and **National Park Service** surveyed 250 sites throughout the Florida reef tract for instances of paling, bleaching, disease and recent mortality. • Local scientists reported observations of unusually high occurrence of coral disease beginning in 2014 and continuing through fall 2015. High disease prevalence, defined as greater than 10 percent of corals infected, occurred at survey sites in the Upper and Lower Keys, Miami-Dade, Broward and **Biscayne National Park**, the report states.
	Date: 10/24/2015 **Section:** News **Author:** Gwen Filosa **Headline:** Study: Sunscreen toxic to baby coral	• The **National Park Service** estimates that 4,000 to 6,000 tons of sunscreen enters reef areas every year and 90 percent of snorkeling and diving tourists are concentrated on 10 percent of the world's reefs. • No sunscreen has been proven to be completely "reef-friendly," the **federal agency** says, but those with titanium oxide or zinc oxide, which are natural mineral ingredients, have not been found to be harmful to corals.
Honolulu Star-Advertiser/ Star-Bulletin	**Date:** 7/1/2018 **Section:** Entertainment/ Style **Author:** Mindy Pennybacker **Headline:** How to choose a reef-friendly sunscreen that also protects skin	• The **National Park Service** recommends mineral-only sunscreens in its "Protect Yourself/Protect the Reef" campaign, and the gift shop at Hanauma Bay sells only mineral sunscreen.
	Date: 6/20/2018 **Section:** News **Author:** Christine Donnelly **Headline:** Governor yet to take action on bill affecting sunscreens	• Many beachgoers aren't waiting for an official ban, giving up oxybenzone- or octinoxate-based sunscreens in favor of mineral--based ones, such as titanium dioxide or zinc oxide. These are safer for coral reefs and other marine life, according to the **National Park Service** and other agencies. Read why at 808ne.ws/reefsafer.

Newspaper	Article	Citations
Honolulu Star-Advertiser/ Star-Bulletin	**Date:** 4/30/2017 **Section:** News **Author:** N/A **Headline:** House kills funding for study on coral	• Oxybenzone-free sunscreens, comprised of alternatives such as zinc oxide or titanium oxide, have not proven as toxic to reef health, according to the **National Park Service**.
Virgin Islands Daily News	**Date:** 7/2/2019 **Section:** News **Author:** Elliott Davis **Headline:** Coral disease affecting V.I. reefs is 'a dire threat'	• Henderson said that CZM, which has taken on the role of coordinating the response to the disease and communicating information about it, has also partnered with the **National Park Service**, The Nature Conservancy, and Caribbean Oceanic Restoration and Education Foundation, among other organizations.
	Date: 7/11/2016 **Section:** News **Author:** Cyana Francis-Berkitt **Headline:** Sunscreen is killing the territory's coral reefs	• **Virgin Islands National Park** has a team dedicated to monitoring marine life, including coral reefs. • **Jeff Miller, a fisheries biologist at the park**, observed local coral reefs in the midst of an immense outbreak. • "Between 2005 and 2007 we had a major bleaching event which ended in a disease outbreak," **Miller** said noting there was a 60 percent loss in the national park's coral reefs. • There was a similar incident in 2010, **Miller** said, with significant bleaching in coral reefs, but there was no disease outbreak -- due to a storm soon after causing the waters to cool. • Though **Miller** has reported an increase in coral cover from 2010, he still advises that Virgin Islanders do all they can to protect the reefs. • "We hope that people can protect themselves using summertime clothing and products that don't contain oxybenzone," said **Miller**. He also strongly advised other preventative measures, like buying sustainably sourced seafood, avoid walking on or around coral and abstaining from dropping anchors in areas with coral reefs. • Soon after the Downs showed the data to the **National Park Service** they launched the "Protect Yourself, Protect the Reef" social campaign to encourage people to use gentler sunscreens.

Newspaper	Article	Citations
New York Times	**Date:** 2/8/2019 **Section:** News **Author:** Karen Zraick **Headline:** Key West Bans Sunscreen Containing Chemicals Believed to Harm Coral Reefs	• The **National Park Service** says that 4,000 to 6,000 tons of sunscreen enter reef areas each year, and studies have found that the chemicals they contain can damage coral reefs, contributing to "bleaching" and death. • The **park service** and environmental groups recommend wearing protective clothing and opting for sunscreens that are labeled eco-friendly.