

The Hidden Cost of Fireworks

A Guide to Protecting Wildlife, Pets, and the Environment



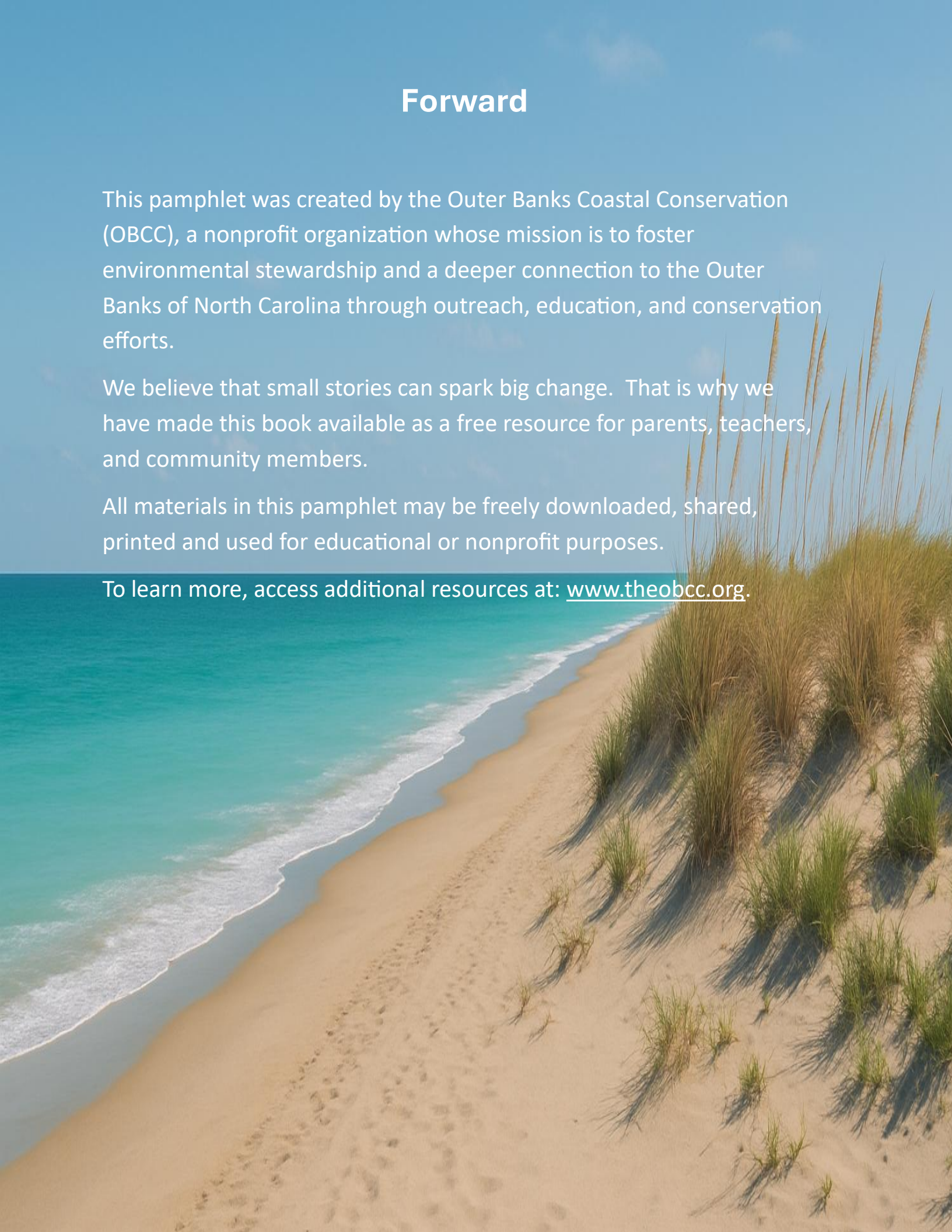
Forward

This pamphlet was created by the Outer Banks Coastal Conservation (OBCC), a nonprofit organization whose mission is to foster environmental stewardship and a deeper connection to the Outer Banks of North Carolina through outreach, education, and conservation efforts.

We believe that small stories can spark big change. That is why we have made this book available as a free resource for parents, teachers, and community members.

All materials in this pamphlet may be freely downloaded, shared, printed and used for educational or nonprofit purposes.

To learn more, access additional resources at: www.theobcc.org.



A composite image featuring a brown tabby cat sitting on a wooden floor in the foreground, looking out a window. The window view shows a night scene with a pier over water and several large, colorful fireworks exploding in the dark sky. The cat's expression is one of alertness or concern.

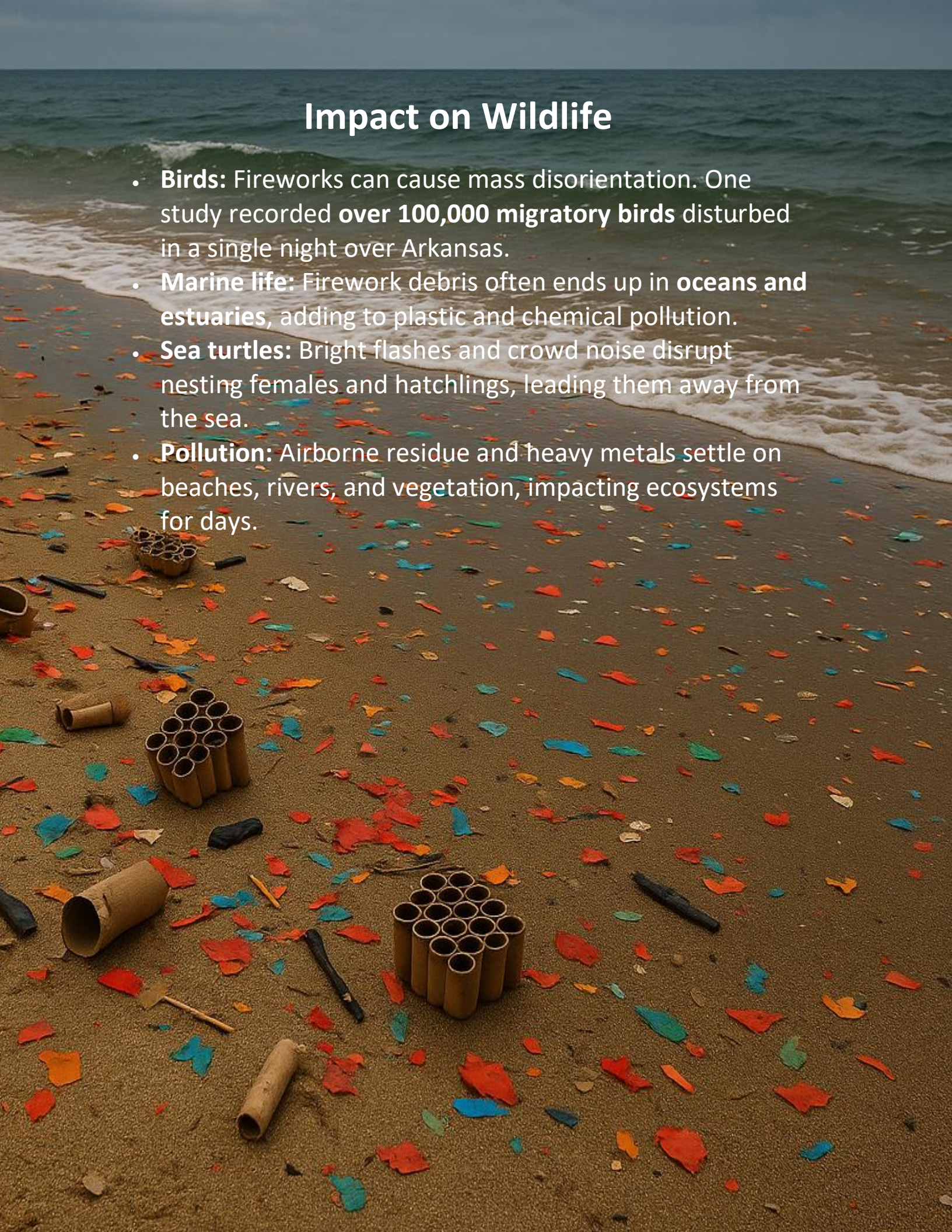
The Problem

Fireworks are more than just a dazzling display—they release toxic chemicals, frighten animals, and leave behind harmful debris.

- Each year, **thousands of wild and domestic animals experience severe stress** from loud explosions.
- Studies show that **noise from fireworks can reach 150–170 decibels**, louder than a jet engine.
- Fireworks contribute to **air and water pollution**, releasing heavy metals like copper, barium, and strontium that contaminate soil and waterways.

Impact on Wildlife

- **Birds:** Fireworks can cause mass disorientation. One study recorded **over 100,000 migratory birds** disturbed in a single night over Arkansas.
- **Marine life:** Firework debris often ends up in **oceans and estuaries**, adding to plastic and chemical pollution.
- **Sea turtles:** Bright flashes and crowd noise disrupt nesting females and hatchlings, leading them away from the sea.
- **Pollution:** Airborne residue and heavy metals settle on beaches, rivers, and vegetation, impacting ecosystems for days.



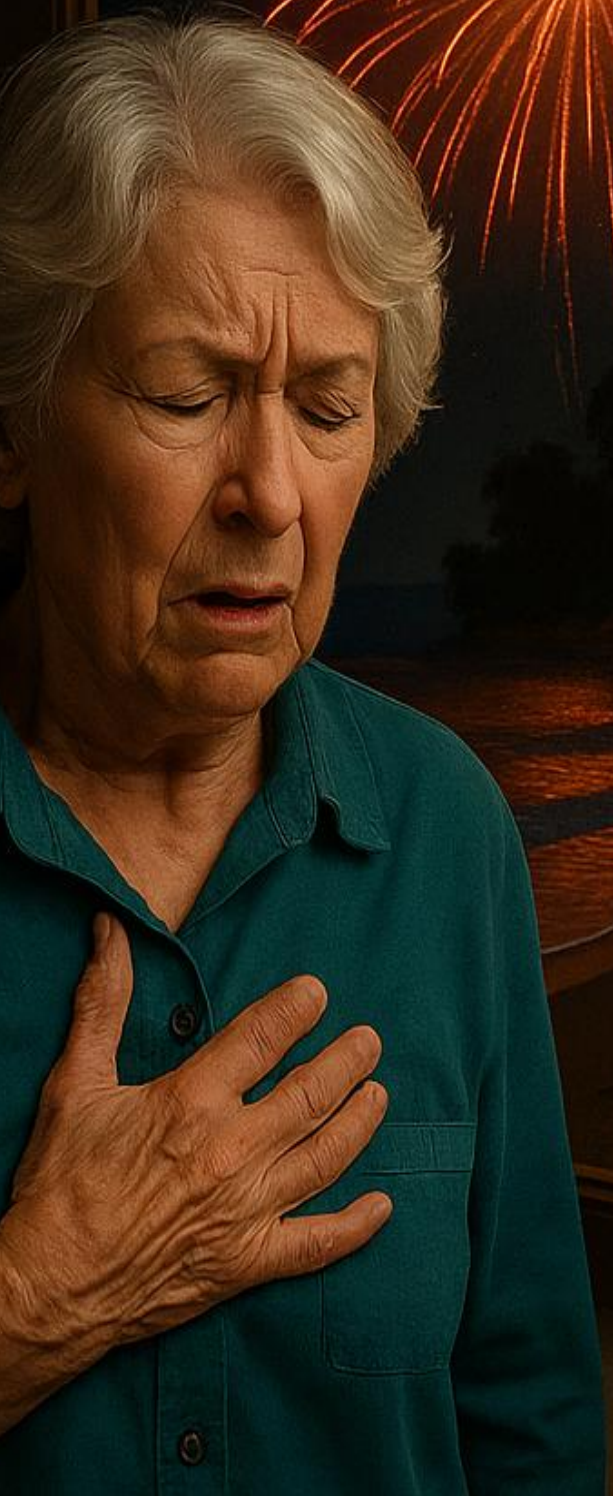
Environmental Damage

- Fireworks produce **PM2.5 particles** (fine air pollutants) that can linger for hours or days.
- In some coastal areas, air pollution levels **spike by 40–60%** after fireworks shows.
- Spent casings, paper, and plastics often wash into waterways, harming fish and birds.
- Fire risk: fireworks spark **thousands of wildfires annually**, destroying wildlife habitats.



Health Effects on Humans

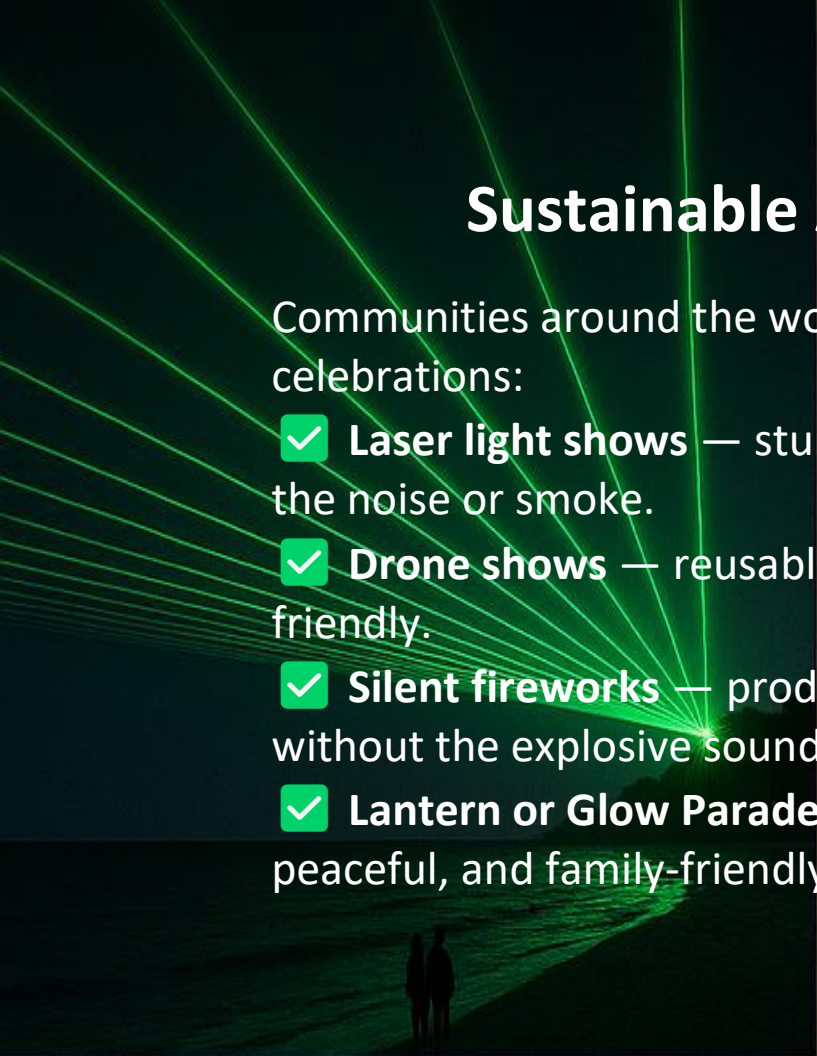
- People with asthma or heart conditions are at higher risk from inhaling particulate matter.
- Veterans and trauma survivors often experience **anxiety and PTSD symptoms** triggered by fireworks.
- Local emergency rooms report a **rise in burn and injury cases** each holiday season.



Sustainable Alternatives

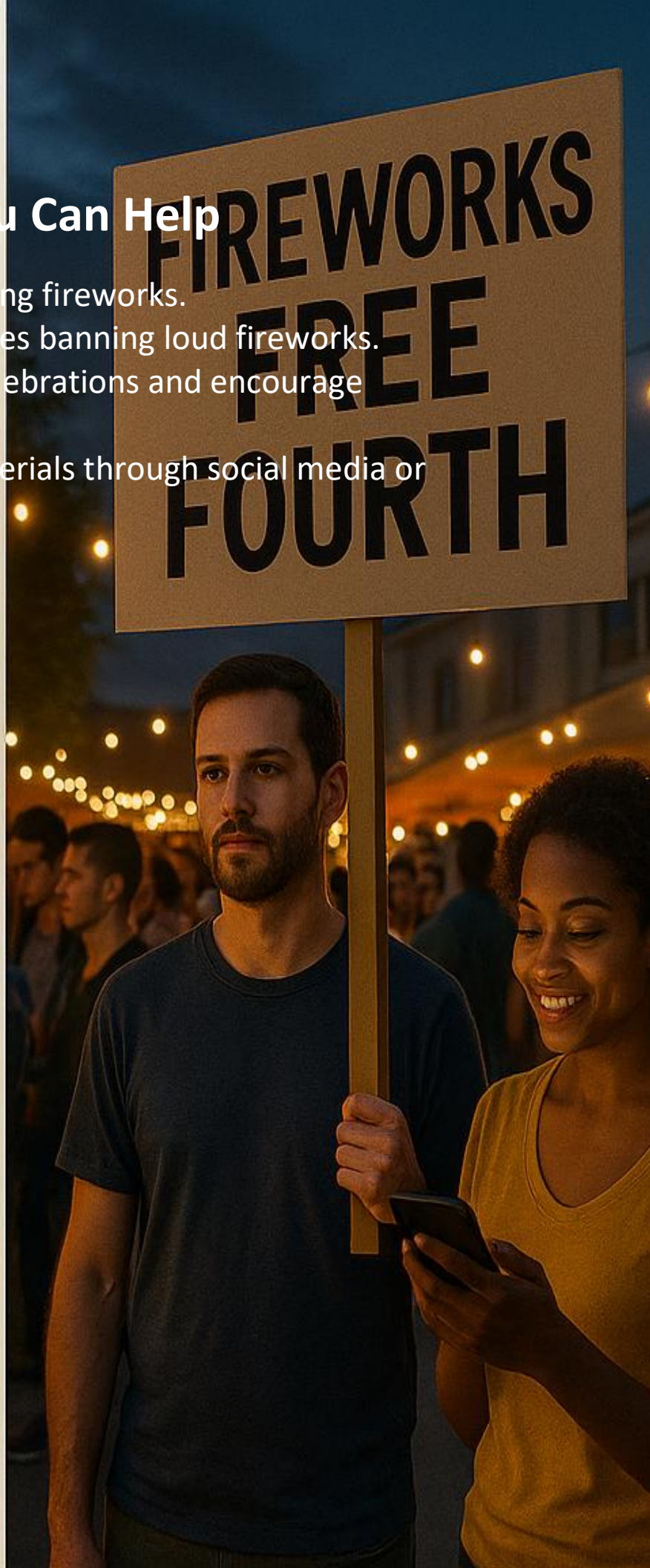
Communities around the world are embracing safer celebrations:

- ✓ **Laser light shows** — stunning visual effects without the noise or smoke.
- ✓ **Drone shows** — reusable, programmable, and eco-friendly.
- ✓ **Silent fireworks** — produce beautiful visuals without the explosive sound.
- ✓ **Lantern or Glow Parades** — community-based, peaceful, and family-friendly.



How You Can Help

- Keep pets indoors during fireworks.
- Support local ordinances banning loud fireworks.
- Attend eco-friendly celebrations and encourage community change.
- Share educational materials through social media or local groups.



Together for Change

When we protect wildlife, pets, and our planet, we make celebrations meaningful for everyone.

The night sky belongs to all living beings. Let's keep it peaceful, clean, and alive.



References

American Lung Association. (2023). *Particle pollution and health*. Retrieved from <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>

Anderson, R. C., & Brown, T. (2021). *Wildlife responses to noise and light pollution during public celebrations*. *Journal of Environmental Management*, 287, 112357. <https://doi.org/10.1016/j.jenvman.2021.112357>

Beutel, K., & Rossi, L. (2020). *Environmental effects of pyrotechnic displays: A review of pollutants and alternatives*. *Environmental Science & Technology*, 54(9), 5795–5808. <https://doi.org/10.1021/acs.est.9b06738>

Centers for Disease Control and Prevention. (2024). *Fireworks-related injuries: Data and prevention*. <https://www.cdc.gov/factsheets/fireworks-injuries>

National Fire Protection Association (NFPA). (2023). *Fireworks fire safety statistics*. <https://www.nfpa.org/fireworks>

National Oceanic and Atmospheric Administration (NOAA). (2023). *Fireworks, debris, and marine life: Protecting coastal ecosystems*. <https://oceanservice.noaa.gov>

North Carolina Wildlife Resources Commission. (2024). *Protecting nesting sea turtles from artificial light and noise*. <https://www.ncwildlife.org>

Sijtsma, N. P., & van der Toorn, W. (2019). *Bird disturbance caused by fireworks: Case studies from the Netherlands*. *Ecology and Society*, 24(4), 12. <https://doi.org/10.5751/ES-11235-240412>

United States Environmental Protection Agency (EPA). (2024). *Air quality impacts of fireworks and pyrotechnics*. <https://www.epa.gov/air-research>