

Guide to Pelicans of the Outer Banks, North Carolina



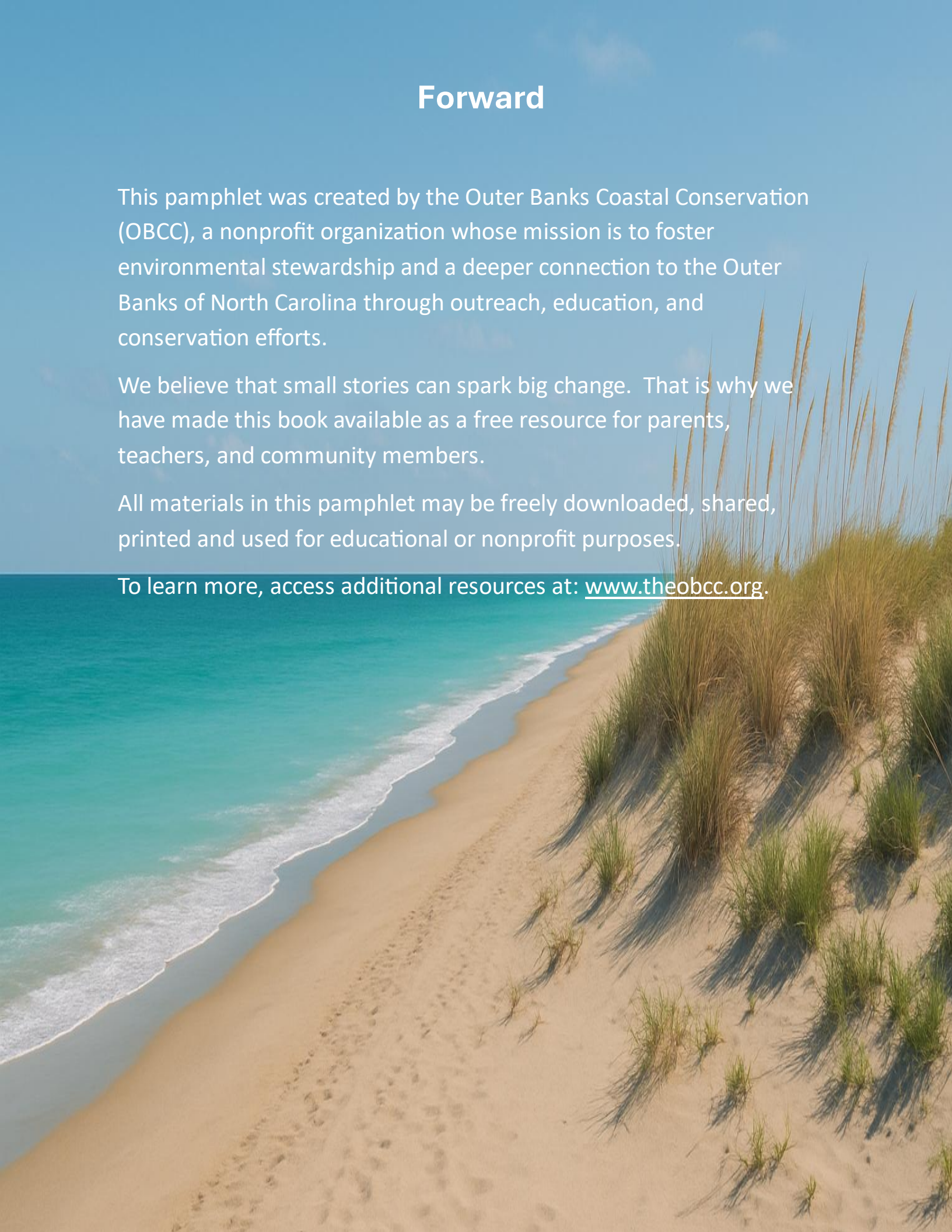
Forward

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.



Introduction: Pelicans of the Outer Banks, NC

Two pelican species are found in the Outer Banks:

1. Brown Pelican (*Pelecanus occidentalis*) – year-round resident
2. American White Pelican (*Pelecanus erythrorhynchos*) – seasonal winter visitor, especially at Pea Island National Wildlife Refuge (NWR)

Pelicans are a signature part of the Outer Banks landscape—soaring over surf, gliding in long lines, roosting on sandbars, and feeding in marshes and shallow sounds.



Brown Pelican of the Outer Banks

Appearance

- Slate-brown feathers
- Massive throat pouch
- Wingspan up to 7.5 feet

Daily Behavior: Where Brown Pelicans Sleep at Night

Brown Pelicans do not sleep on open beaches at night. They prefer safe, elevated, or isolated places free from predators and human disturbance.

Common nighttime roosting sites include:

- Isolated sandbars in Oregon Inlet and Hatteras Inlet
- Channel markers and navigation posts
- Breakwaters and rock jetties
- Small islands in the Pamlico and Roanoke Sounds
- Protected marsh islands with sparse vegetation

These spots offer:

- Safety from terrestrial predators
- Wind-sheltered rest
- Easy takeoff access at dawn

Large flocks often gather in the same sites nightly. Roost selection changes with storms, tides, and disturbance.



Where Brown Pelicans Raise Their Young (Nesting Grounds)

Brown Pelicans nest in colonies, typically on:

- Remote undeveloped islands
- Dredge-spoil islands
- Vegetated marsh islands
- Sandy, shrub-covered barrier island spits

Important Note for the Outer Banks

Brown Pelicans rarely nest directly on the oceanfront beaches of the Outer Banks, because the barrier islands shift too frequently and have high rates of storm overwash.

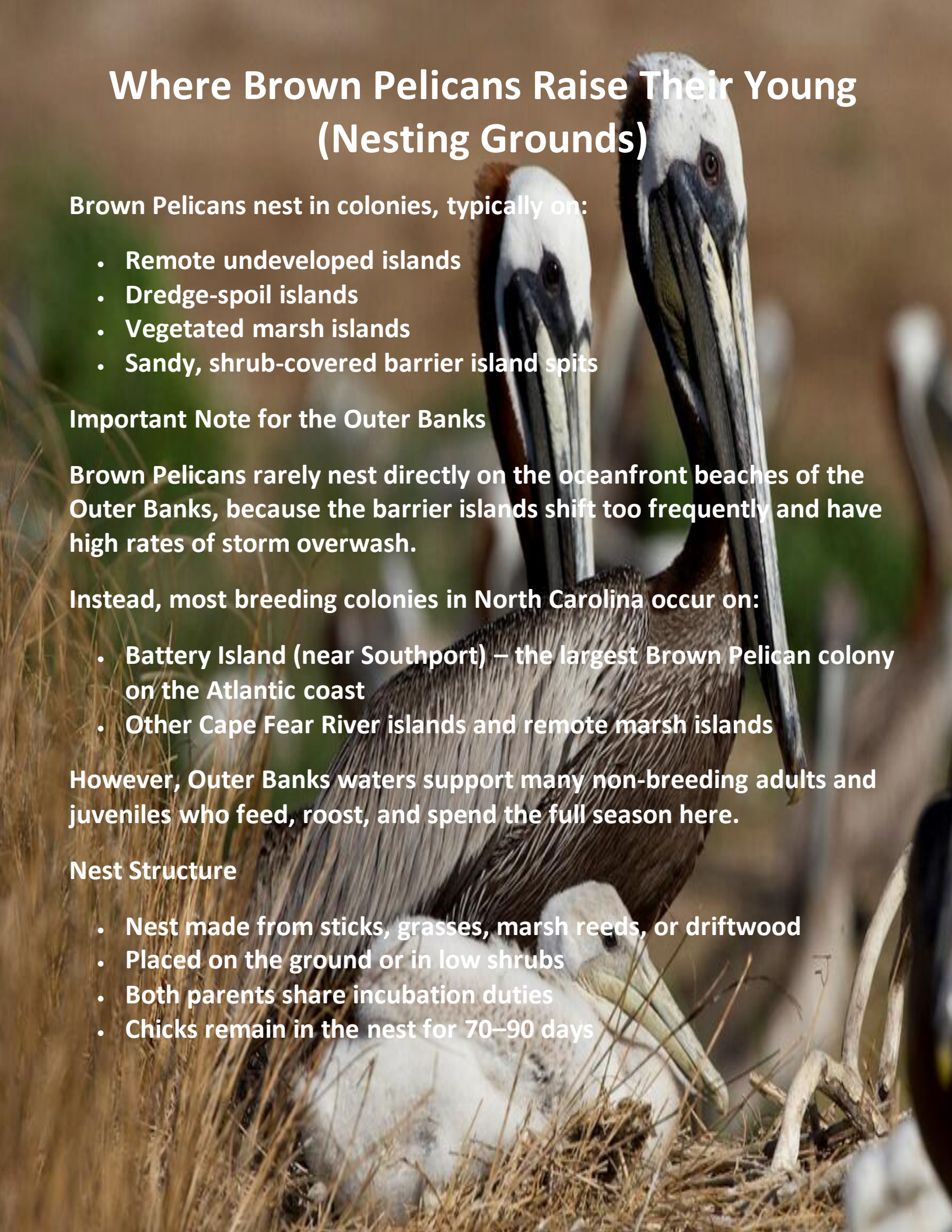
Instead, most breeding colonies in North Carolina occur on:

- Battery Island (near Southport) – the largest Brown Pelican colony on the Atlantic coast
- Other Cape Fear River islands and remote marsh islands

However, Outer Banks waters support many non-breeding adults and juveniles who feed, roost, and spend the full season here.

Nest Structure

- Nest made from sticks, grasses, marsh reeds, or driftwood
- Placed on the ground or in low shrubs
- Both parents share incubation duties
- Chicks remain in the nest for 70–90 days



Brown Pelicans (Outer Banks year-round residents)

Adults in non-breeding season → pale or brownish head

In most of the year (late summer through winter), adult Brown Pelicans have:

- Pale white to light yellow heads
- Brown hind necks
- Dark gray-brown bodies

Some individuals appear whiter, some more brownish — this is normal variation.

Adults in breeding season → bright white/yellow head + dark neck

During spring and early summer, Brown Pelicans develop:

- Bright white heads
- Richer yellow foreheads
- Very dark chestnut or chocolate-brown hind necks

This is their breeding plumage, used to attract mates.

So:

- White head = mature adult, especially in breeding season
- Brownish head = non-breeding adult or juvenile

Juveniles → entirely brown head and neck

Young pelicans (1–2 years old) are:

- Overall brown
- Have brown heads
- Lack the striking white/yellow of adults

They slowly lighten over time as they mature.



Brown Pelican Primary Food Sources

Brown Pelicans are coastal, marine feeders. Their diet focuses almost entirely on small to medium schooling fish near the ocean surface.

Main Prey Species:

- Menhaden (most important forage fish in NC)
- Mullet (stripes & jumping mullet)
- Anchovies
- Sardines
- Herring
- Silversides
- Smelt
- Juvenile bluefish
- Needlefish (occasionally)
- Small spot and croaker (young stages)

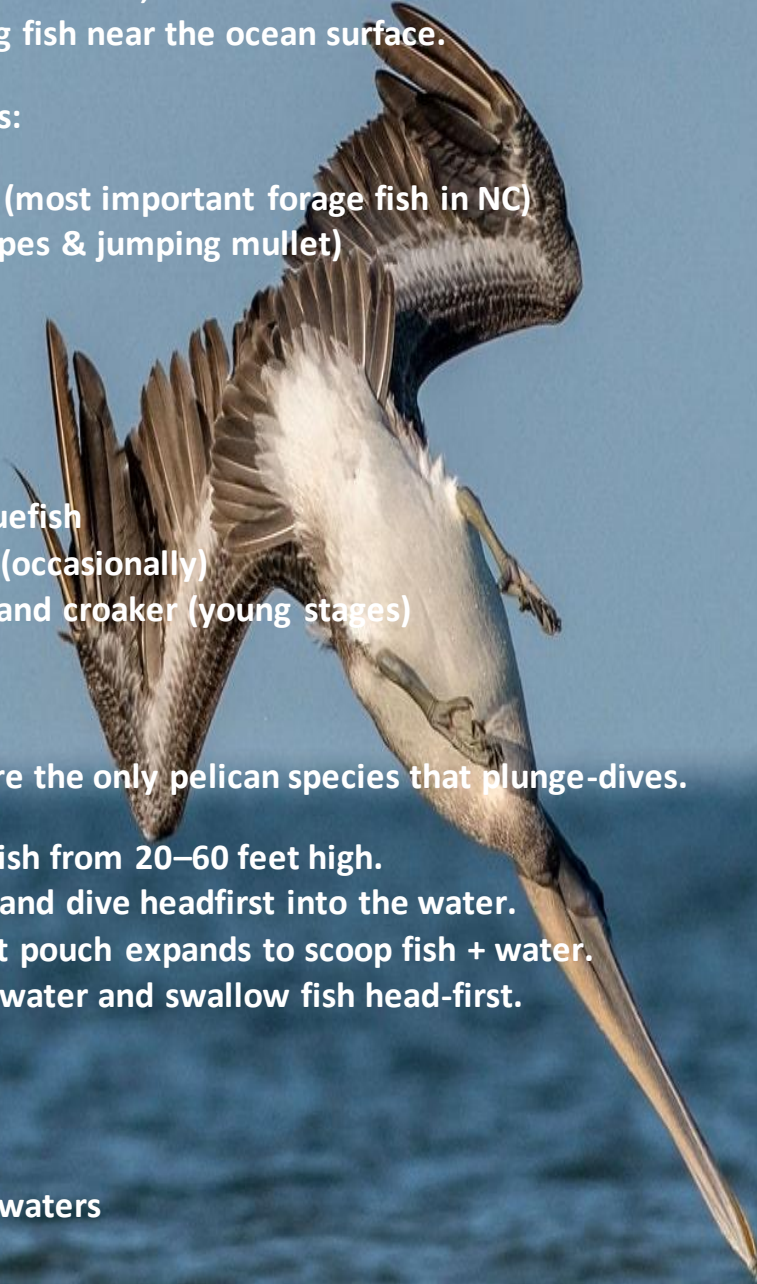
How They Feed

Brown Pelicans are the only pelican species that plunge-dives.

- They spot fish from 20–60 feet high.
- Fold wings and dive headfirst into the water.
- Their throat pouch expands to scoop fish + water.
- They drain water and swallow fish head-first.

Feeding Habitat:

- Surf zone
- Nearshore waters
- Inlets
- Sound margins with schools of baitfish



American White Pelican at Pea Island National Wildlife Refuge (NWR)

Appearance

- Bright white plumage
- Black primary feathers
- Huge orange bill
- Wingspan up to 9 feet

When and Why They Visit

American White Pelicans are winter visitors (October–March). They gather in Pea Island's:

- North Pond
- New Field Pond
- Salt flats and mudflats along NC-1
- Shallow marsh pools

They come for:

- Protected, calm water
- Abundant fish

Where White Pelicans Sleep at Night

At Pea Island NWR, American White Pelicans commonly sleep on:

- Interior refuge islands within impoundments
- Shallow sandbars
- Vegetated dike edges
- Quiet pond shorelines away from public access

They sleep in tight groups, often huddled on open ground where they have clear visibility and safety.



Where White Pelicans Raise Their Young

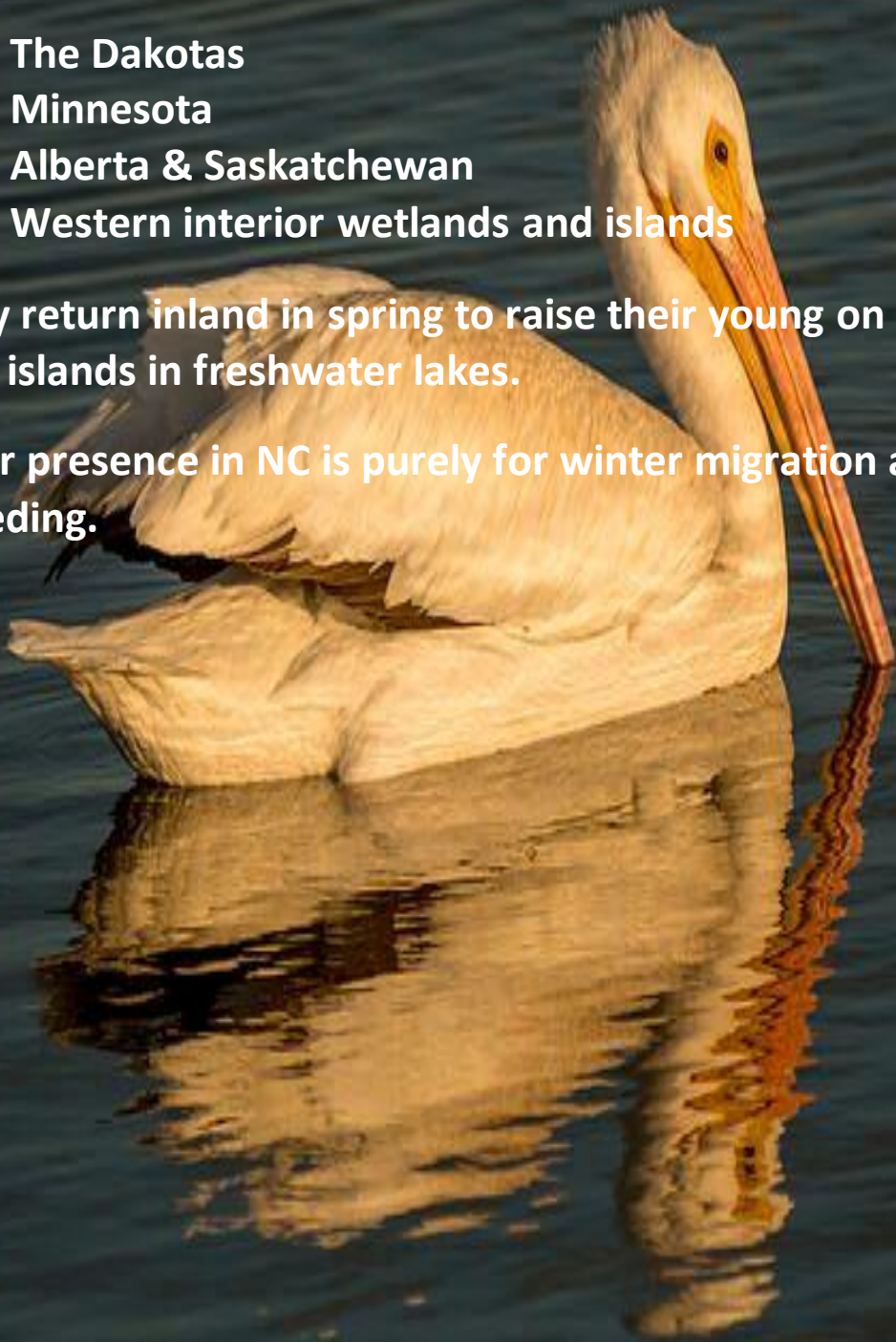
White Pelicans do not nest anywhere in the Outer Banks or North Carolina.

Their nesting sites are far away:


- The Dakotas
- Minnesota
- Alberta & Saskatchewan
- Western interior wetlands and islands

They return inland in spring to raise their young on remote, predator-free islands in freshwater lakes.

Their presence in NC is purely for winter migration and feeding, not breeding.



American White Pelican Primary Food Sources

A large American White Pelican is the central focus, its long neck curved and its bright orange beak pointed downwards. It is surrounded by several smaller, darker-colored ducks or grebes in the blue water. The background is a soft-focus view of the water and more birds.

White Pelicans have a completely different feeding strategy from Brown Pelicans.

Primary Food Sources

White Pelicans prefer freshwater and brackish fish in shallow impoundments, lakes, and marshes.

Main Prey Species:

- Gizzard shad
- Minnows
- Carp (small)
- Catfish (young)
- Smelt
- Perch
- Small bass
- Sticklebacks
- Killifish
- Crayfish (common in inland colonies)
- Amphibians (occasionally)

At Pea Island NWR, they also take:

- Menhaden (when pushed into sound waters)
- Mullet
- Silversides
- Pinfish
- Small flounder juveniles (rare)
- Crabs (very rarely)

How They Feed

White Pelicans do not plunge-dive. Instead, they use cooperative foraging:

- Groups form semicircles or lines.
- They herd fish into tight clusters.
- They dip their heads and scoop prey with synchronized motion.

This is especially visible at Pea Island impoundments, where shallow ponds make fish easier to catch.

Feeding Habitat:

- Inland lakes
- Shallow marsh ponds
- Impoundments at Pea Island NWR
- Quiet soundside waters

Pelican Conservation in the Outer Banks

Major Threats

- Entanglement in fishing gear
- Habitat loss and sea-level rise
- Human disturbance on sandbars
- Storm-driven overwash events
- Marine pollution

Active Protection

- Pea Island's no-disturbance zones
- Seasonal island closures
- Protected dredge-spoil nesting islands (downstate)
- Local wildlife monitoring & rehab efforts

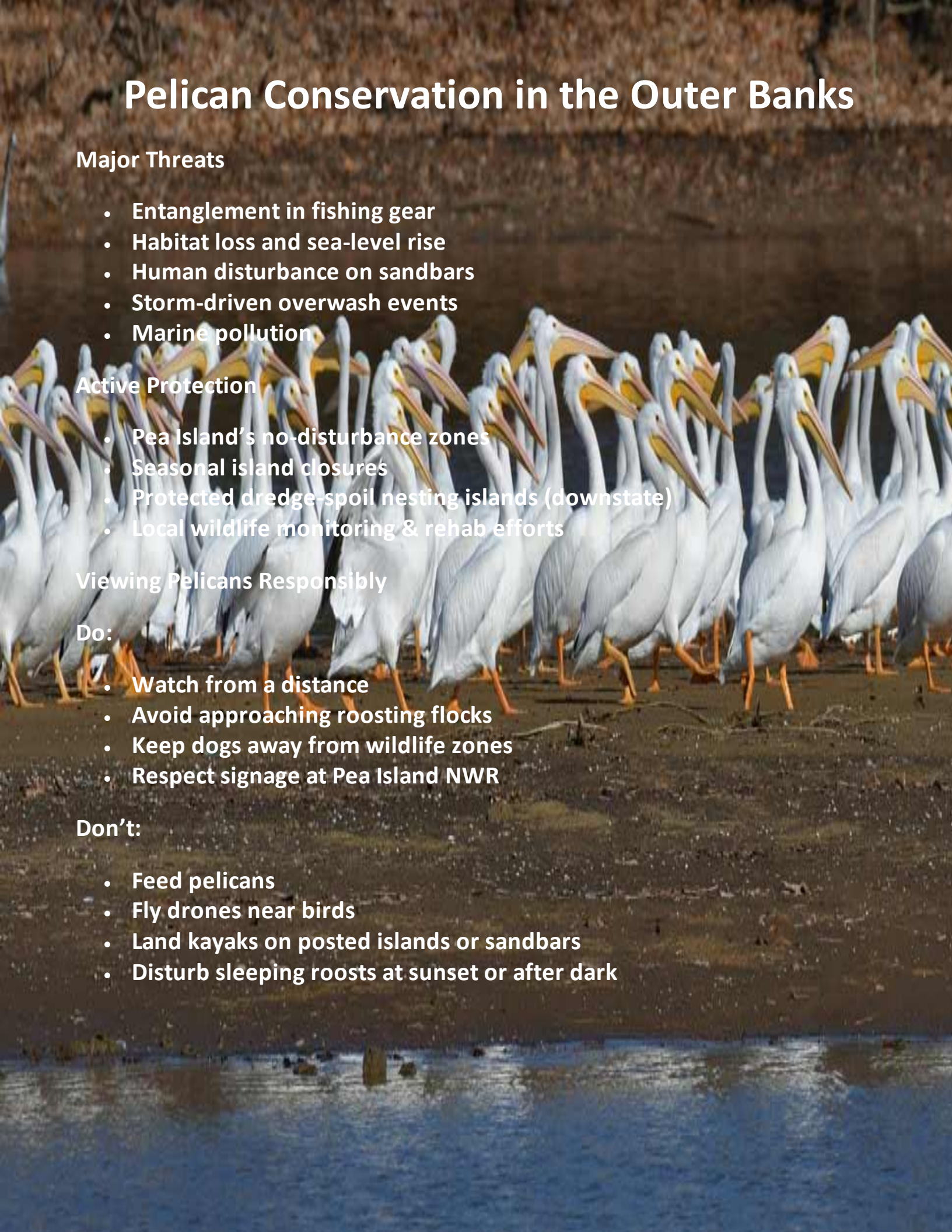
Viewing Pelicans Responsibly

Do:

- Watch from a distance
- Avoid approaching roosting flocks
- Keep dogs away from wildlife zones
- Respect signage at Pea Island NWR

Don't:

- Feed pelicans
- Fly drones near birds
- Land kayaks on posted islands or sandbars
- Disturb sleeping roosts at sunset or after dark



Why Pelicans Fly Near Waves in Formation

Riding the Ground Effect

Flying low over the waves compresses air between wings and water, reducing drag. This allows pelicans to:

- Save energy
- Travel long distances with minimal flapping
- Glide in near-silence over the surf

Using Wave Updrafts

Breaking waves push air upward. Pelicans “surf” this rising air to stay aloft.

Formation Flight Efficiency

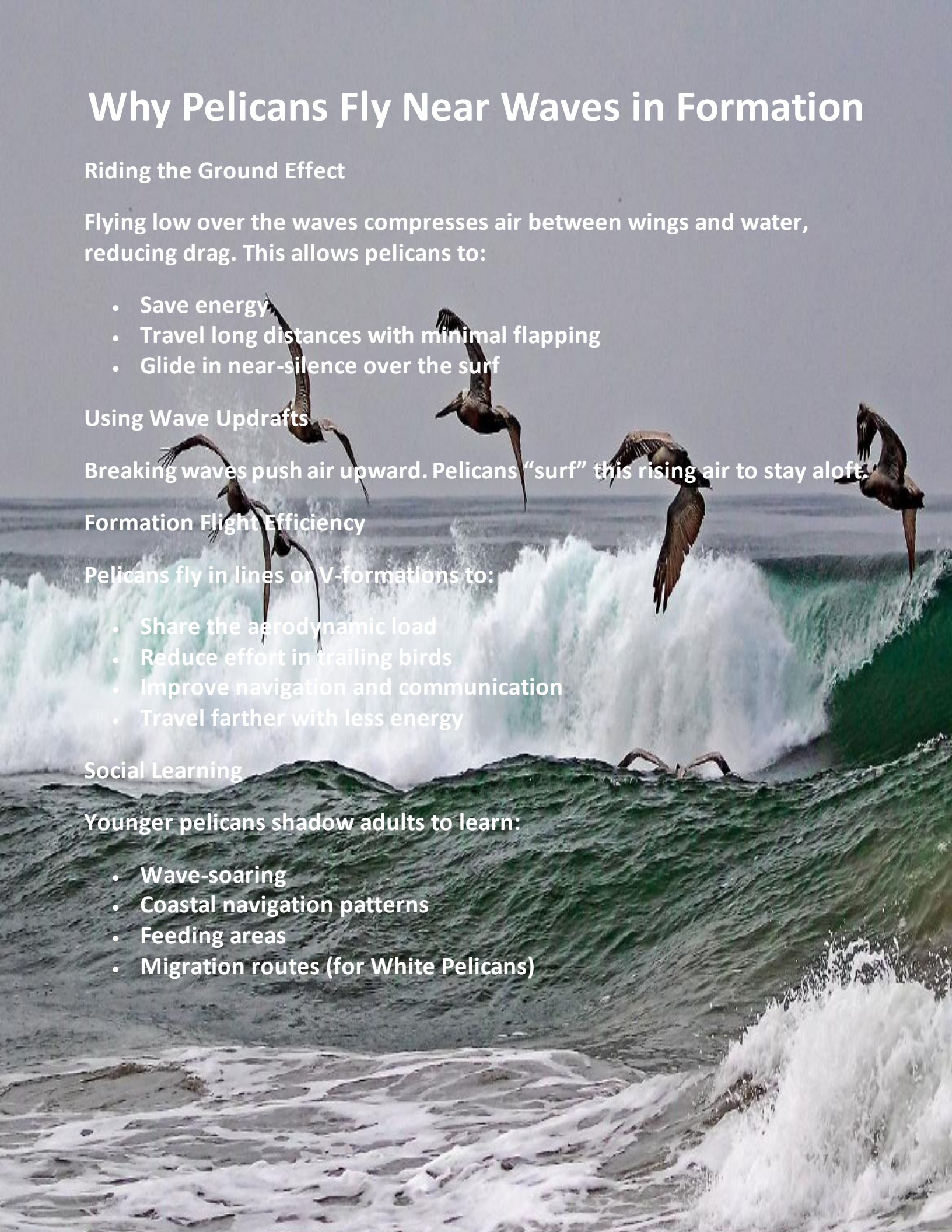
Pelicans fly in lines or V-formations to:

- Share the aerodynamic load
- Reduce effort in trailing birds
- Improve navigation and communication
- Travel farther with less energy

Social Learning

Younger pelicans shadow adults to learn:

- Wave-soaring
- Coastal navigation patterns
- Feeding areas
- Migration routes (for White Pelicans)



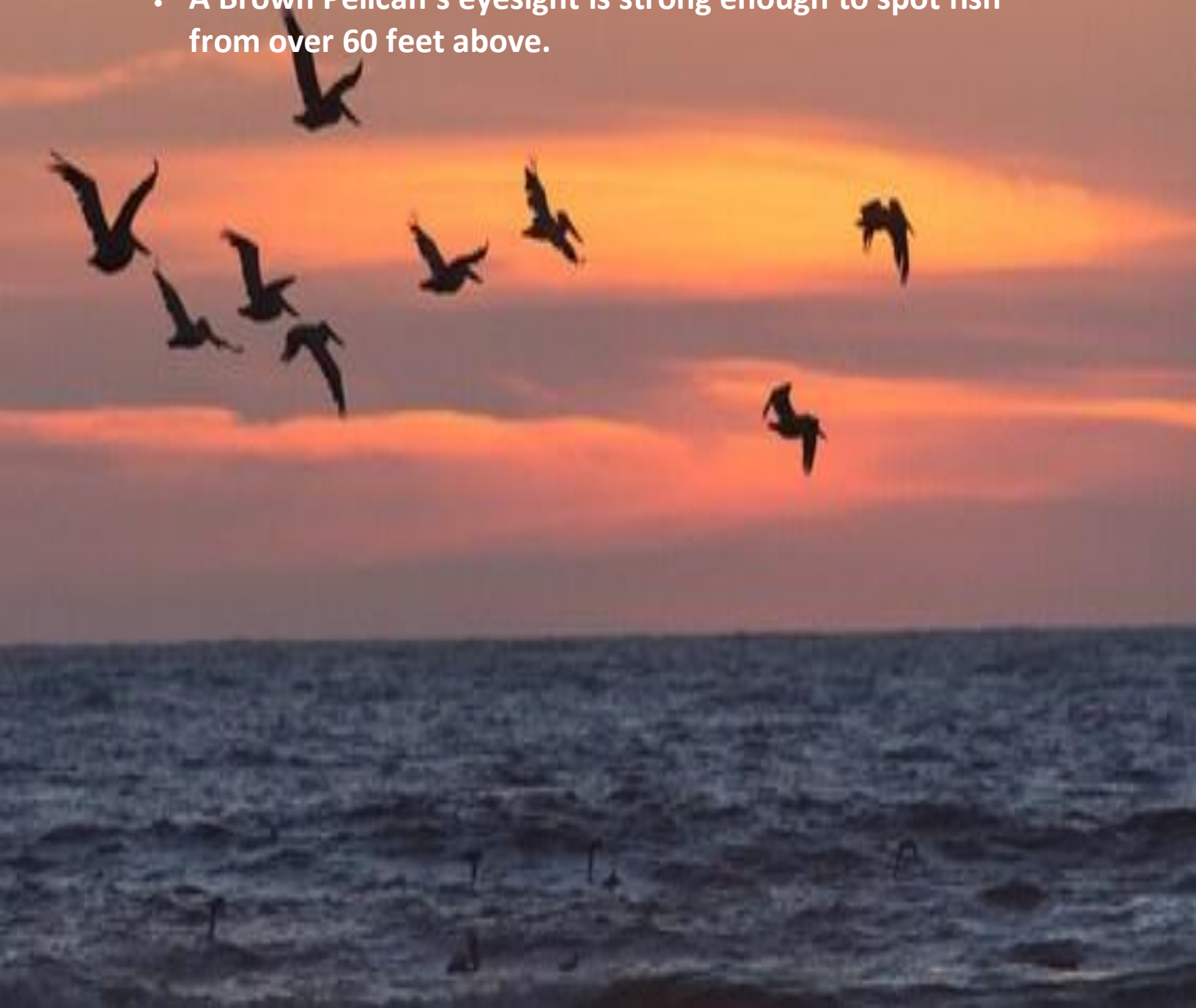
Key Differences Between the Two Species

Feature	Brown Pelican	American White Pelican
Feeding Method	Plunge-dives from the air	Scoops + cooperative feeding
Habitat	Marine coastlines, surf zone	Freshwater & brackish wetlands
Main Prey	Menhaden, mullet, anchovies	Shad, minnows, catfish, carp
Prey Size	Small-medium schooling fish	Larger individual fish in shallow water
Feeding Style	Solitary or loose groups	Highly coordinated group feeding



Fun Facts

- White Pelicans can sleep standing on one leg, like flamingos.
- Brown Pelicans have built-in shock absorbers (air sacs) for plunge-diving.
- A White Pelican's pouch can hold more than three times the volume of its stomach.
- Pelicans often sleep with their heads tucked backward over their shoulders.
- A Brown Pelican's eyesight is strong enough to spot fish from over 60 feet above.



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