



Avian Use of Nantucket Sound

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Bird Use of Nantucket Sound

- Regionally significant waterfowl concentrations
- Regionally significant seabird & shorebird concentrations (either rare or very abundant)
- Millions of migrants (songbirds & others)

MA Laws Pertaining to Endangered Species

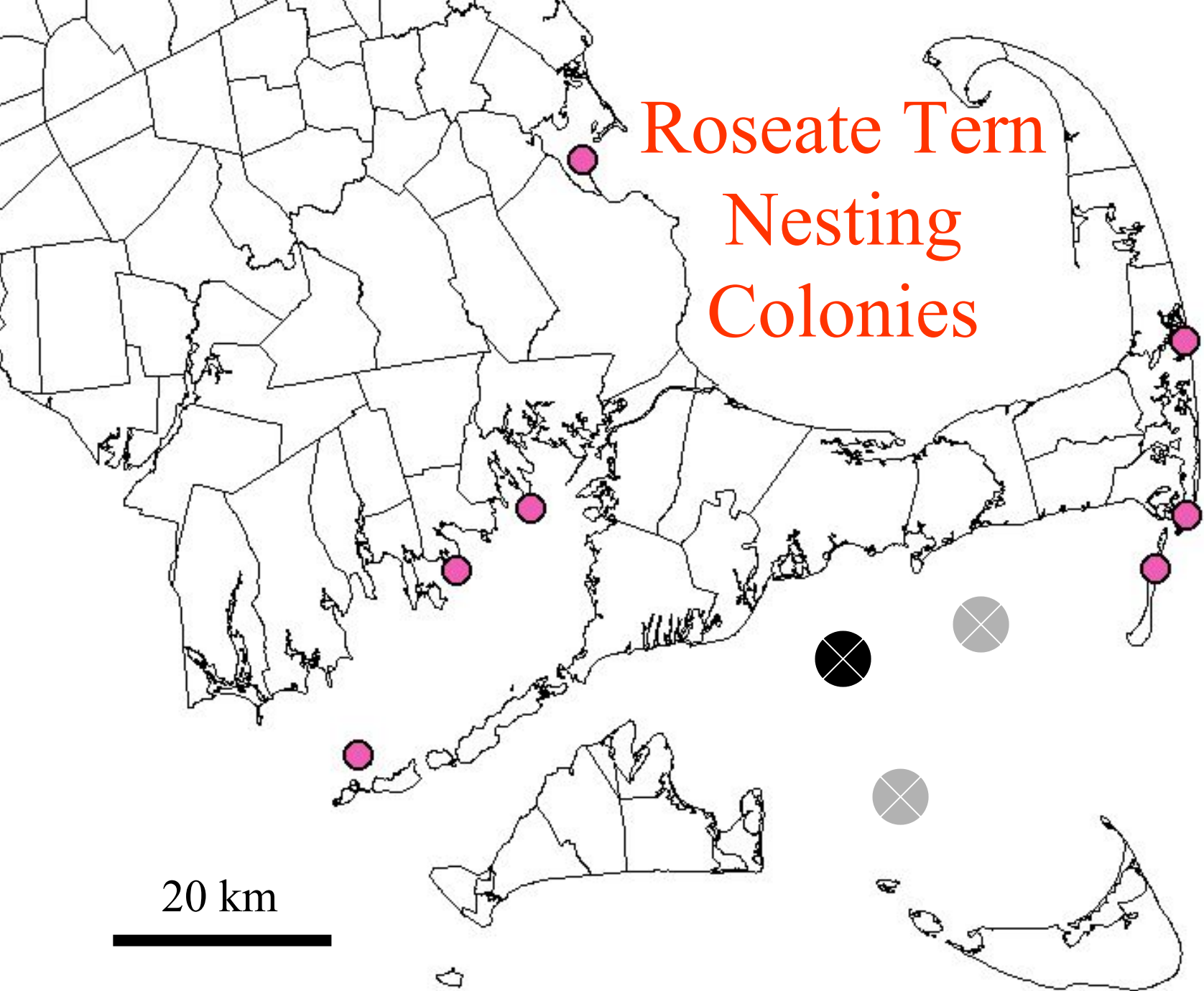
- MA Endangered Species Act
 - Prohibits “take” (harass, harm, kill, collect, disrupt activity, etc.)
- MA Wetlands Protection Act
 - Protects upland & coastal wetlands, beaches, dunes, intertidal areas
 - No short- or long-term adverse effects on rare species habitat
- MA Coastal Zone Management – Federal Consistency Review
 - Any coastal project that is federally licensed, implemented, or funded must comply with state policies

Roseate Tern



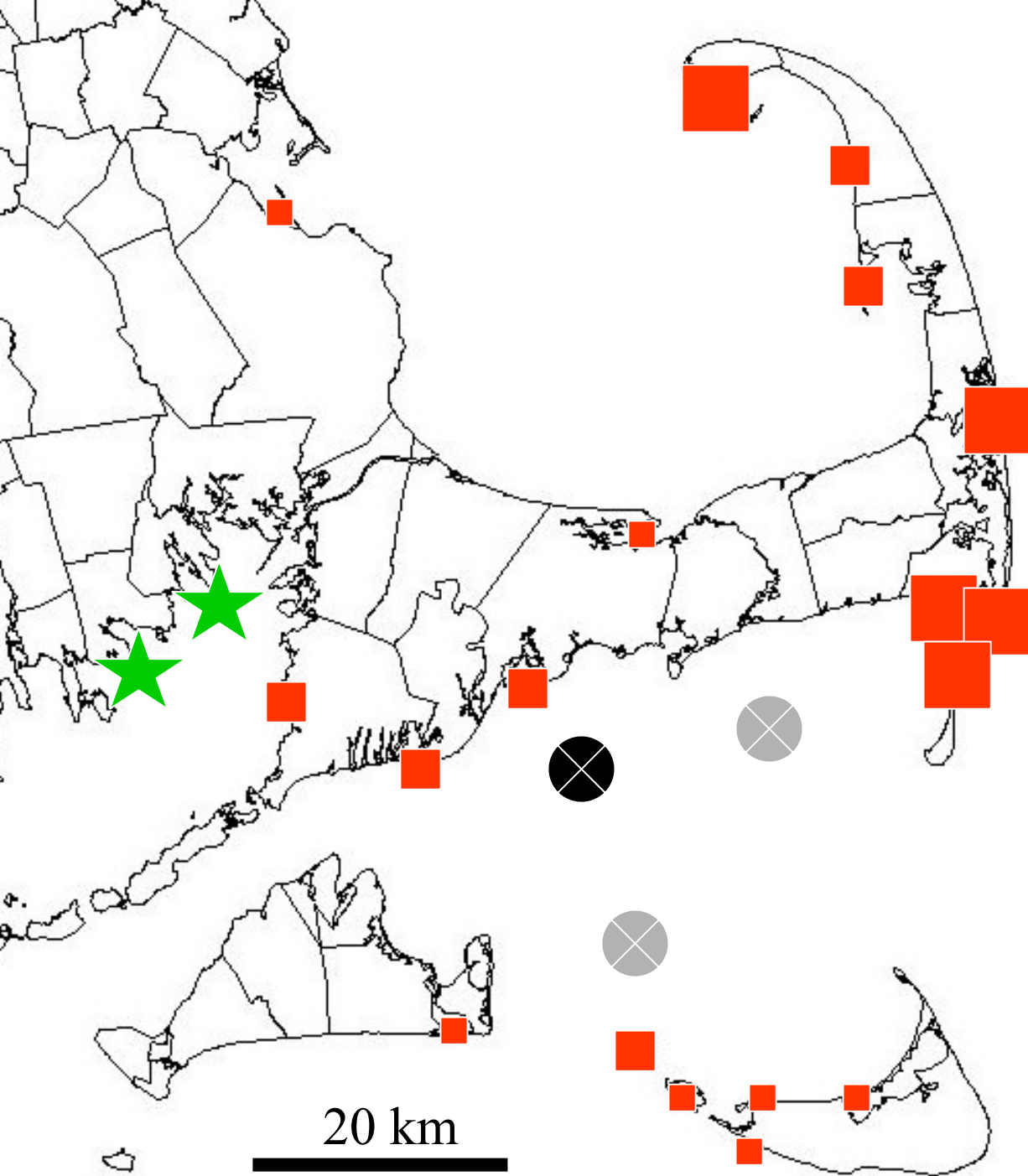
- Migratory seabird
- Fish-eater, up to 95% sandlance
- **NE pop.: state- and federally listed as Endangered**
 - concentrated into few sites
 - decline in numbers
- NE pop.: 3,500 pairs
- MA: 1,600 pairs

Roseate Tern Nesting Colonies



20 km

Roseate Tern Staging Areas (Trull et al. 1999)

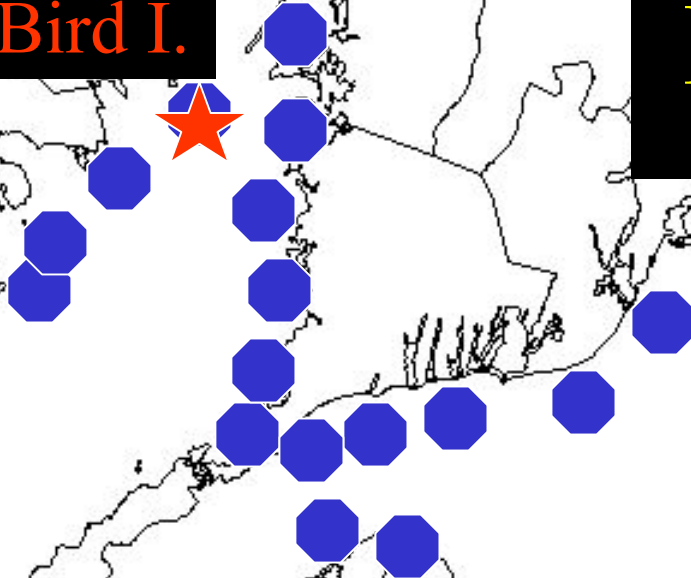


- > 1000 terns
- 100-1000 terns
- < 100 terns
- ★ Major nesting colony

Significant
proportion (all?)
of NE pop. stages
in Chatham

Bird I. Roseate Tern Feeding Areas (Heinemann 1992)

Bird I.

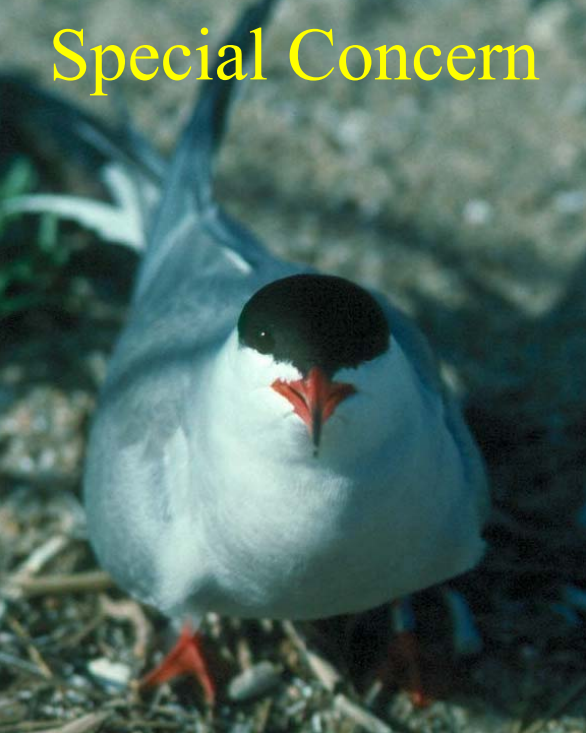


- Feeds over sandbars, shoals, inlets, tidal rips, schools of predatory fish
- Forages up to 30km from colony

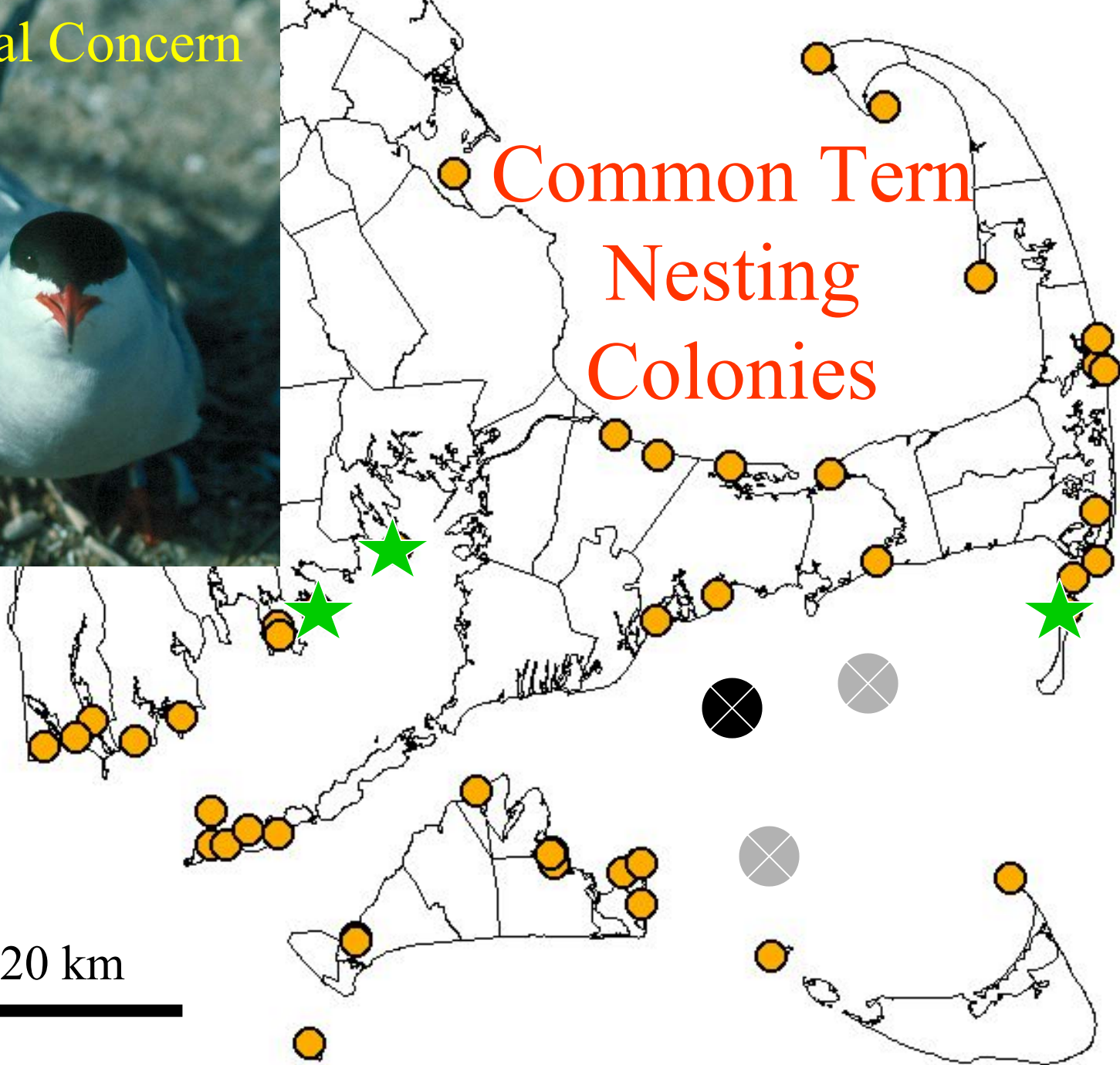
20 km



Special Concern



Common Tern Nesting Colonies



20 km

Roseate & Common Tern Restoration Sites

Bird I.

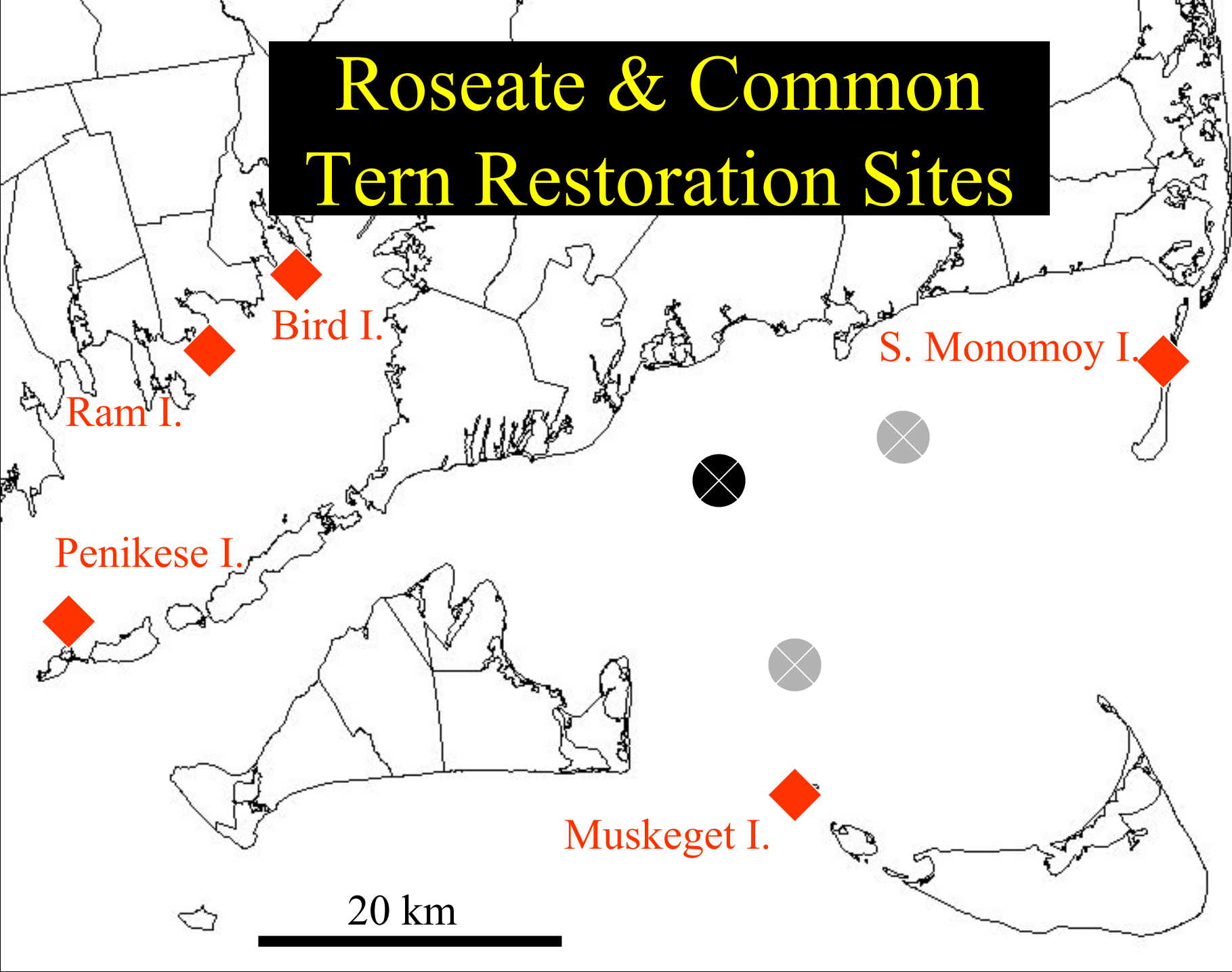
S. Monomoy I.

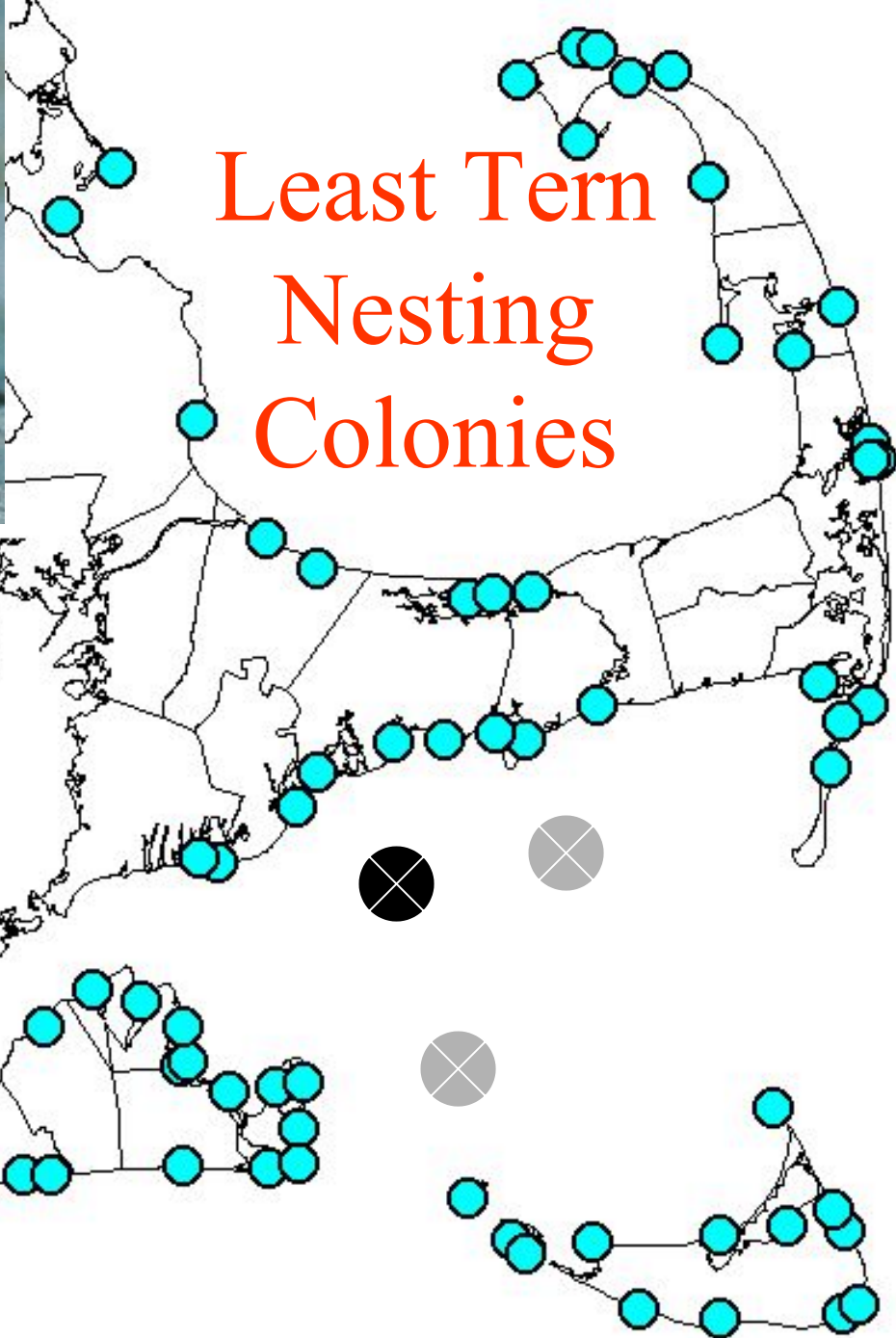
Ram I.

Penikese I.

Muskeget I.

20 km





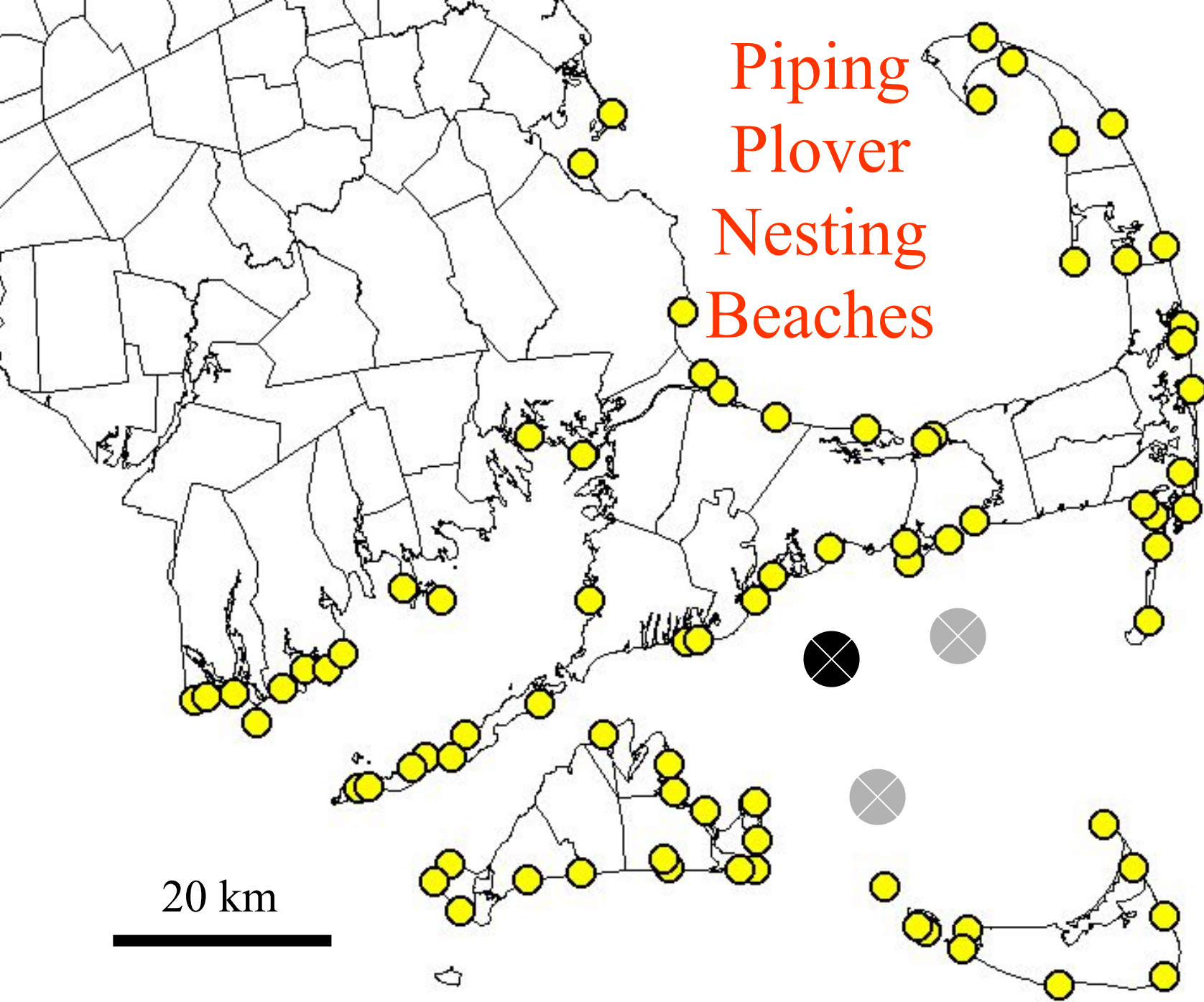
20 km

Piping Plover



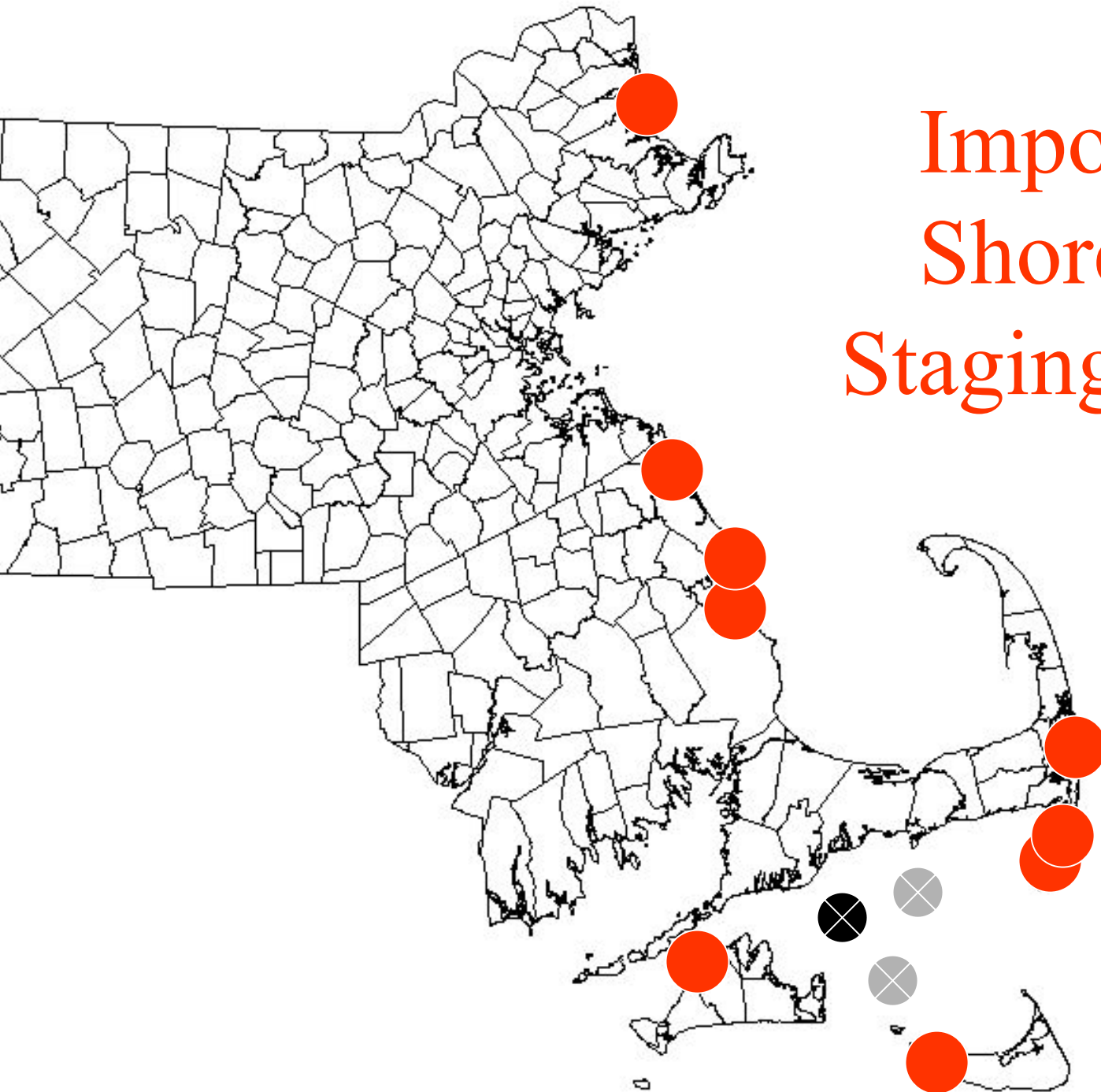
- Migratory shorebird
- Feeds on invertebrates in intertidal and wrack line
- **Atlantic Coast pop.: state- & federally listed as Threatened**
- 500 pairs in MA (35% of Atlantic Coast pop.)

Piping
Plover
Nesting
Beaches



20 km

Important Shorebird Staging Areas



Sources of Waterfowl Data for Nantucket Sound



- MADFW & USFWS winter surveys
- Bird Observer database
- Christmas Bird Counts
- Ferry counts (R. Veit)

Waterfowl Surveys

A map of the eastern United States and parts of Canada, showing state and provincial boundaries. A thick red line outlines a large area along the Atlantic coast, extending from the Gulf of Mexico up to the Canadian Maritimes. This red outline encompasses the survey areas mentioned in the text.

- MADFW – Mid-winter Waterfowl Survey
- mid-January
- USFWS – Atlantic Flyway Seaduck Survey
- late-January/early-February

Long-tailed Duck (Oldsquaw)



- Diving duck
- Foraging: waters <50m
- Prey: amphipods, mollusks, some fish
- Up to 250,000 birds in Sound in winter
- Feed in open ocean during day, roost in Sound at night (precise location unk.)

Eiders & Scoters

- Diving ducks
- Winter habitat: shallow coastal & open waters, marine shoals
- Prey: mostly mollusks
- Foraging: usu. waters <10m deep; sandy, muddy or coarse substrates; undersea ledges
- Flocks of 100s-10,000s in Sound
- Locations vary



Waterfowl in Nantucket Sound

- Data almost entirely limited to coastline
- Many data not rigorously collected, largely anecdotal

Inadequate data from project area

Other Waterbirds



- Gulls
- Cormorants
- Loons
- Grebes
- Mergansers
- Gannets

Radar Studies & Visuals: Migratory Landbirds & Waterbirds

(Nisbet & Drury 1963-1969)



- 1,000,000s pass over Sound, esp. in fall
- Most groups fly on broad front, some more concentrated
- Most flight nocturnal

A group of white birds, possibly terns, are captured in flight over a dark, rippling body of water. The birds are in various stages of their wing strokes, with some wings fully extended and others tucked. The background is a deep, dark blue-green, suggesting a night or low-light environment. The overall scene is dynamic and focused on the movement of the birds.

Data Gaps: Movements

- Weather (fog, rain, wind speed & direction)
- Geographic features
- Season
- Time of day

- Numbers of birds
- Precise routes
- Flight altitudes
- Timing

Data Gaps: Foraging Ecology & Dynamics

- **Preferred foraging areas**
 - Depth
 - Substrate
- **Routes to foraging areas from breeding or roosting areas**
- **Temporal & geographical variability in food resources vs. distribution**

School of sand lance

Data Gaps: Effects of Turbines



- **Mortality & effects on populations**
- **Habitat loss**
- **Changes in prey abundance, distribution**

Needed Avian Data

- Abundance & distribution
- Movement patterns
- Foraging ecology & dynamics
- Assessment of risks & population impacts