Common Tern Survey and Reproductive Monitoring

Reporting Office: Seney NWR (US Coast Guard Station, St. Ignace)
Species: Common Tern (*Sterna hirundo*)

JUSTIFICATION AND OBJECTIVES

The Common Tern is a circumpolar colonial waterbird that in North America breeds in coastal areas of the northern United States and Canada. In the Midwest, the Common Tern is listed as a *Conservation Priority* due to habitat loss (and competition for habitat), predation, and pollution. Within the Great Lakes region, competition with Ring-billed Gulls for breeding habitat is a major influence on Common Tern numbers. Habitat loss is also a result of increased human development along shorelines and on islands. In addition, human disturbance (such as loud noises) near a colony can cause adults to abandon their nests and the colony. Predators are also a threat to Common Terns because they prey upon both eggs and young. Mammalian predators include skunk, coyote, Norway rat, domesticated cat, fox, and mink. Other common predators include owls and gulls. Finally, aquatic pollutants pose a threat to Common Terns as they are mainly piscivorous and are especially vulnerable to pollutants which have an adverse effect on eggs and young.

Starting in 2001, Seney NWR began to work cooperatively with the US Coast Guard at the St. Ignace moorings to protect one of the largest Common Tern colonies in Michigan, with a formal agreement signed between the parties in 2010. According to this agreement: *"……between May 1 and September 30 (very conservative) no activity should be undertaken in the fenced portion of the pier. In addition, no buoys should be moved in or out of this area unless necessary for the safety of human life. During this same time period, the fence should be kept closed and electrified, human activity within the colony should be kept to a minimum. Between May 1 and August 30, subject to the safety of the vessel or the well-being of the crew, cutters not home-ported in St. Ignace will not moor at the St. Ignace mooring. In the event that it is necessary for safety reasons to moor at the pier, cutters should not moor immediately adjacent to the tern colony. During the remaining eight months of the year, there should be few, if any, restrictions to human use of the pier. Minor alterations that need to be made to the pier (such as mowing) or any repair work should occur during these nine months. Routine Station operations and activities do not appear to impact the nesting birds or the nesting area. Routine CGC BISCAYNE BAY operations do not appear to impact the nesting birds or nesting area. Unusual or non-routine operations or activities for Station St. Ignace or CGC BISCAYNE BAY should be coordinated with CEU Cleveland before being undertaken.*" A summary of proposed management actions for the Common Tern colony, U.S. Coast Guard Moorings, St. Ignace, MI is below.

Fairly consistent data have been kept at Seney NWR since 2010.

Timing	Seasonality	Activity
Yearly	mid-May to mid-August	Keep fence closed and electrified
	mid-May to mid-August	Minimize human activity at pier
	mid-May to mid-August	Allow docking of vessels (other than the BISCAYNE BAY) at pier only when the safety of the vessel or well-being of a crewmember is at risk
	mid-May to mid-August	Monitor bird activity (e.g., number of adults, nests, chicks)
	mid-May to mid-August	Communicate with conservation partners
	mid-August to mid-May	Any general maintenance, including mowing, monitoring via digital camera
Every two years	April or September	USFWS will spray approved herbicide to kill ~30% -50% of the vegetation in the colony, with emphasis on woody vegetation

STATISTICAL CONSIDERATIONS

None at this time, although consideration may be given in the future. A small research project is currently underway that investigates the use of fixed-radius ground plots in monitoring nests, but this protocol should not be considered standard operating procedure at this time.

DATA COLLECTION PROCEDURES

For the time being, this survey should simply focus on monitoring the activity of birds to ensure successful breeding occurs at the site. In other words, the "response variable" of sorts is binary: either the colony is successful (i.e., fledge birds are observed in mid-late July) or not (i.e., colony is abandoned by the same time period). Birds seem to have a high degree of site tenacity, even though over the past 4 years there have been 2 failed years (thought to be due to predation) and 2 years where dozens to hundreds of young birds fledged.

Trips should only occur during dry weather and should entail spending 10-20 minutes in the colony (both are meant to minimize negative effects on chicks). When chicks become mobile,

special consideration must be given to not causing frightened chicks to jump off the pier; the pier is perched above the water 10' or so and chicks falling to the water before they are ready to fledge will most likely die.

During each visit, the following should be recorded and done:

1) record weather and general observations on the colony (approximate number of adults and chicks, general number of 1, 2, and 3-egg clutches, status of chicks, etc.);
2) check electric fence with a multi-meter or other device to insure that it is working properly;
3) check small mammal live traps and manage accordingly (a few traps of a few sizes should be used, in the past a cat, a mink, and a skunk have been caught);
4) check and reset 1-2 motion cameras (passive monitoring of potential predators and colony behavior). One camera should be placed within the colony and one should be placed so as to observe any predators approaching the fence.

DATA ANALYSIS AND REPORTING

A yearly report is drafted and shared with US Coast Guard colleagues and with regional colleagues as requested.

MANAGEMENT ACTION THRESHOLDS

Any meso-mammals trapped or observed on camera should be safely and humanely removed.

DATA STORAGE PROCEDURES

A database (Excel file) should be kept and updated at the refuge each year.

SPECIAL CONSIDERATION

See *Memorandum of Understanding* for complete details. Equipment needed:

1. 8 arrays of 4, 1 meter plots (for fixed-plot measurements);
2. 1 spare 1 meter plot (for random plot measurement);
3. Memory cards for motion cameras;
4. Fresh batteries for motion cameras;
5. Herbicide to treat vegetation;
6. Fence tester;
7. Live traps and bait (canned cat food);
8. Digital camera for miscellaneous photos (for vegetation, etc.);
9. Data form;
10. Protective helmets.

LITERATURE USED

Burger, J. and Gochfeld, M. 2003. Spatial and temporal patterns in metal levels in eggs of Common Terns (*Sterna hirundo*) in New Jersey. *The Science of the Total Environment* 311: 91-100.

Cuthbert, F.J., Wires, L.R., and Timmerman, K. 2003. Status assessment and conservation recommendations for the Common Tern (*Sterna hirundo*) in the Great Lakes Region. U.S. Department of the Interior, Fish and Wildlife Service, Ft. Snelling, MN.

Nisbet, I.C. 2002. Common Tern (*Sterna hirundo*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/618>

O'Connel, T.J. and Beck, R.A. 2003. Gull predation limits nesting success of terns and skimmers on the Virginia barrier islands. *Journal of Field Ornithology* 74:66-73.

EFFORT AND COSTS

Surveys should occur weekly from mid-May to whenever birds leave, usually mid-July (~10 weeks). There is 3 hr of drive time and 1 hr of work during each visit per person (4 hr/week or 40 hr of surveying over the field season). Another 10-20 hr per year is necessary to organize data and report results. Miscellaneous fuel costs of $40 are associated with each survey (approximately $400/field season).