# Research Priorities for Assessing the Impacts of Oil Spills: Have They Been Achieved?

Gail Fraser, Wyndylyn von Zharen, & Susan Knock
Texas A&M University Galveston

## INTRODUCTION

In 1984, Wiens et al. made several recommendations regarding the types of data required for marine bird populations to adequately model the impact of oil spills during the breeding season. Here, we assess the status of the recommended research priorities for two colonial waterbird species breeding in Texas: Neotropic Cormorants and Royal Terns.

## METHODS

The evaluation of priorities for Neotropic Cormorants and Royal Terns was limited to the North America Species Accounts (Telfair and Morrison 1995, Buckley and Buckley 2002; respectively). The quality of the data was ranked for each priority category from 0 – 4 (0 = absent, 1 = poor, 2 = marginal, 3 = good, 4 = excellent; Wiens et al. 1984). Some priorities are colony-specific (denoted*); for these we focused on information available for colonies in Texas. The remainder of the priorities are not limited geographically.

## DISCUSSION

Wiens et al. (1984) original intent for these priorities was likely directed at true seabirds. Nonetheless, this exercise on two coastal breeding species revealed:

1) Data are seriously lacking, especially for Royal Terns, to accurately model oil spill impacts on Texas populations.
2) Long-term banding studies need to be initiated or continued in multiple locations, particularly in areas with increased risk of oil spills.
3) Each species has its own host of problems (and solutions) related to obtaining this data (e.g., creching in Royal Terns). Some data are likely unobtainable; therefore the focus must be parameters that are achievable.

## RESULTS

| | Neotropic Cormorant | Royal Tern |
|---|---|---|
| ***High Priorities:*** Size of breeding populations at specific colonies* | 4 | 4 |
| At-sea distribution patterns of birds associated with a given colony* | 2 | 0 |
| Probability of death upon encounter with oil | 0 | 0 |
| Age-specific survivorship patterns | 1-2 | 1 |
| Adult foraging trip distribution* | 2 | 0 |
| The response time in a population to a spill (i.e., how long does it take individuals to shift their foraging efforts outside of spill area?) | 0 | 0 |
| ***Intermediate Priorities:*** The distributional dynamics of an oil spill in specific areas* | 4 | 4 |
| The age structure of a population | 0 | 0 |
| The proportion of non-breeders not associated with a colony* | 0 | 0 |
| Reproductive success of specific colonies* | 1-2 | 0 |
| The foraging activity patterns and routes of individuals* | 2 | 0 |
| The metabolic costs of foraging | 0 | 0 |
| How changes in feeding rates affect chick growth and survival | 0 | 0 |

## REFERENCES

Buckley, P.A. & F.G. Buckley 2002. Royal Tern *In* The Birds of North America, no. 700 (A. Poole and F. Gill eds.). The Birds of North America, Inc. Philadelphia, PA

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