

30 Years of Data from Stranded and Hunter-Harvested Cook Inlet Beluga Whales: Creation of a Web-hosted Database



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Background

The factors limiting the expected recovery of the endangered Cook Inlet beluga whale (CIBW) population remain unknown.

Fortunately, for more than 30 years, thousands of pieces of data were collected about the CIBW population from live and dead stranded, and hunter-harvested whales. This information could help identify the factors limiting the decline, identify trends over time, or important relationships between parameters. These data collected in the Level A stranding reports include:

| | |
|-----------------------------------|--|
| Gender | Genetics |
| Age | Morphological Measurements |
| Spatial and Temporal Distribution | Reports: Necropsy, stomach content, contaminant, reproductive status |

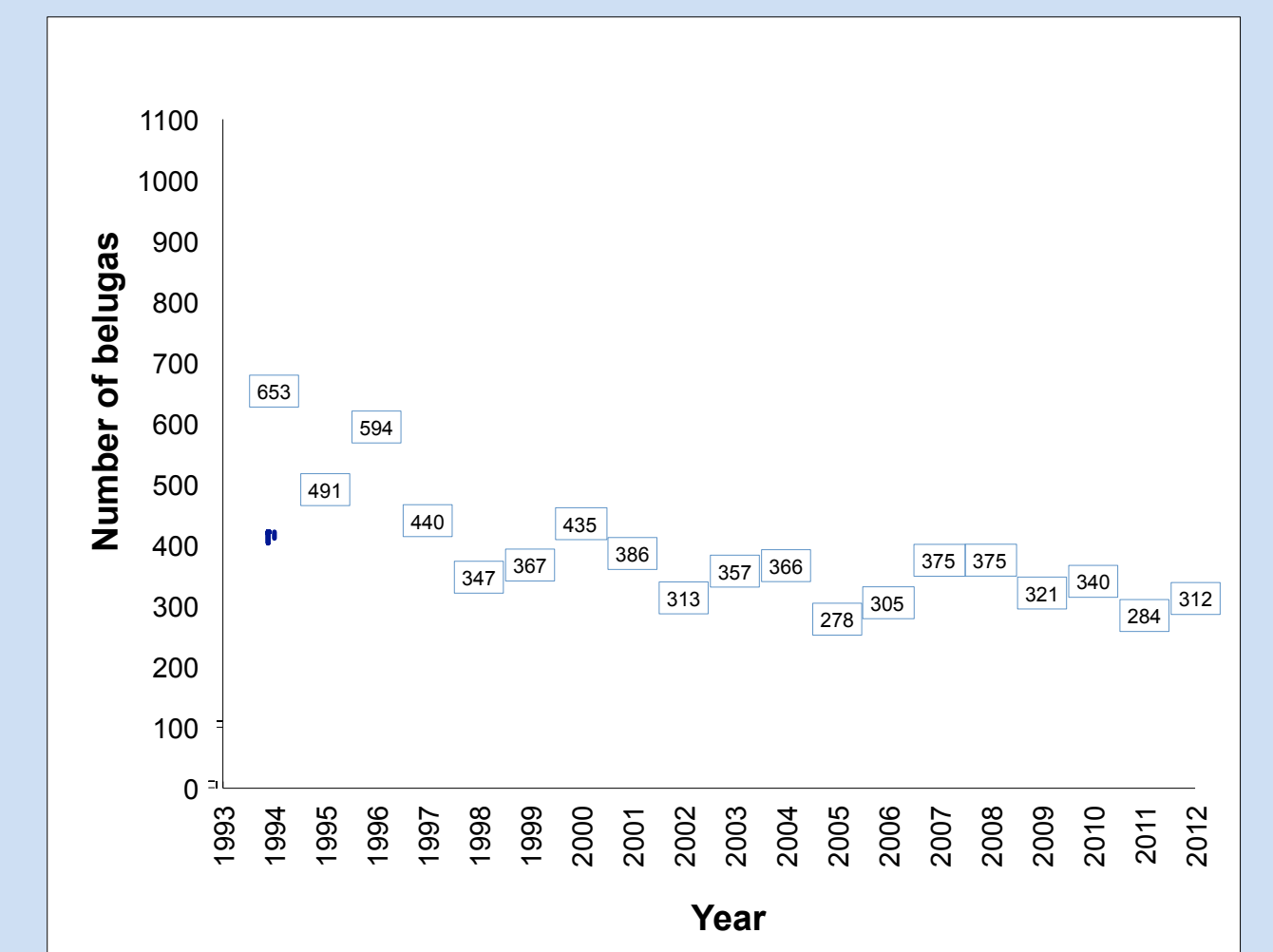


Figure 1. Abundance estimates for Cook Inlet belugas, 1994-2012. The vertical bars represent 95% confidence intervals for each estimate. The red line is the trend for the years 1999-2012. Hobbs et al. 2012

A few examples of the types of CIBW data: Level A, Photos, Necropsy Reports

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Methods and Analysis

All available CIBW stranding records were synthesized, verified, missing reports located, then digitized.

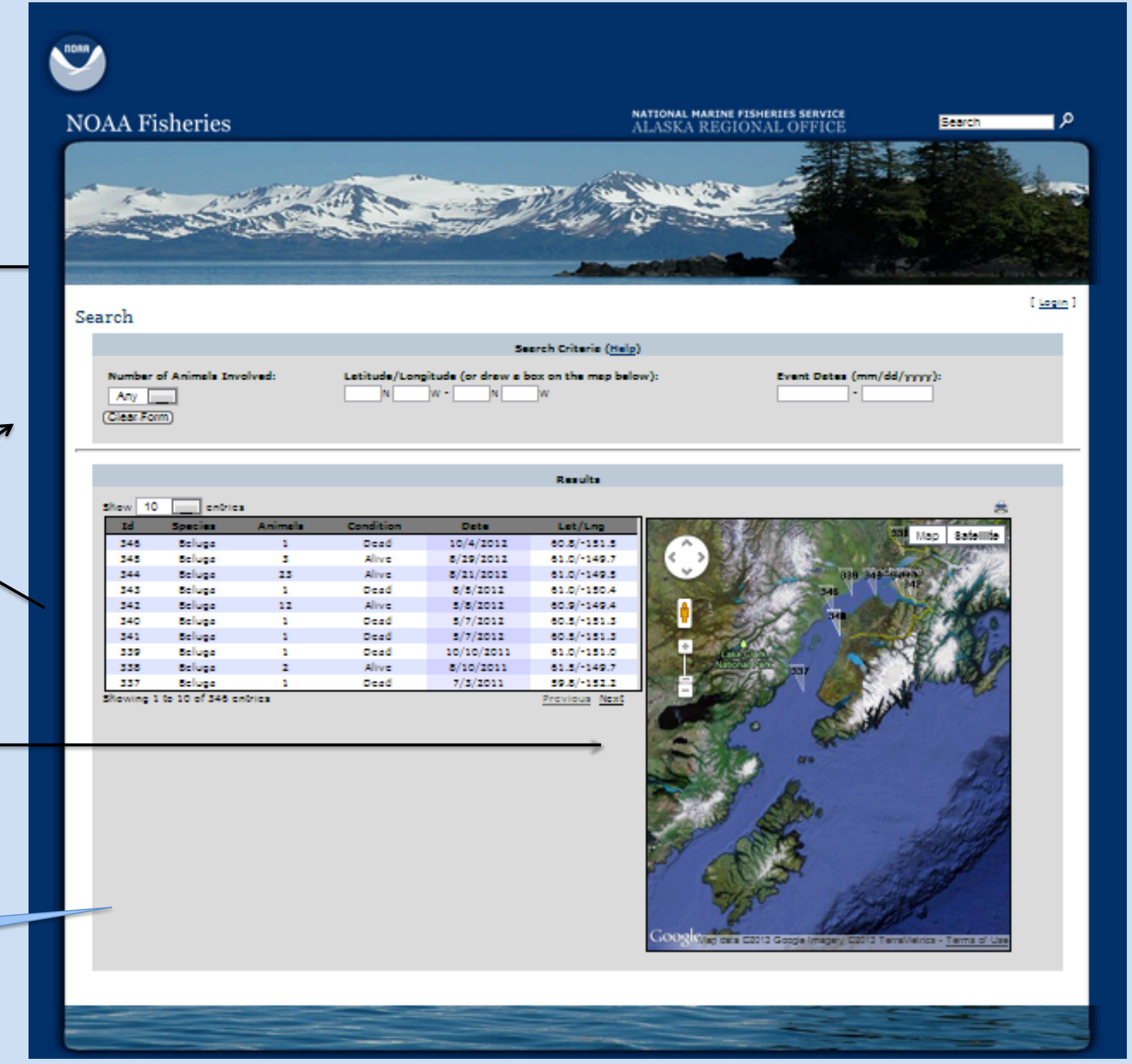
In collaboration with NMFS and Finsight, a query-able database was designed based on the standard Level A form.

Finsight LLC, built an Oracle XE database web application, with Google Maps functions. The database includes built-in access levels: 1) Public access page with limited view of basic stranding data; 2) Administrator and researcher access page with the capability to view all available CIBW data.

Results

- Thousands of pages of data verified, matched, digitized and entered into the created database!

Cook Inlet Beluga Whale Database



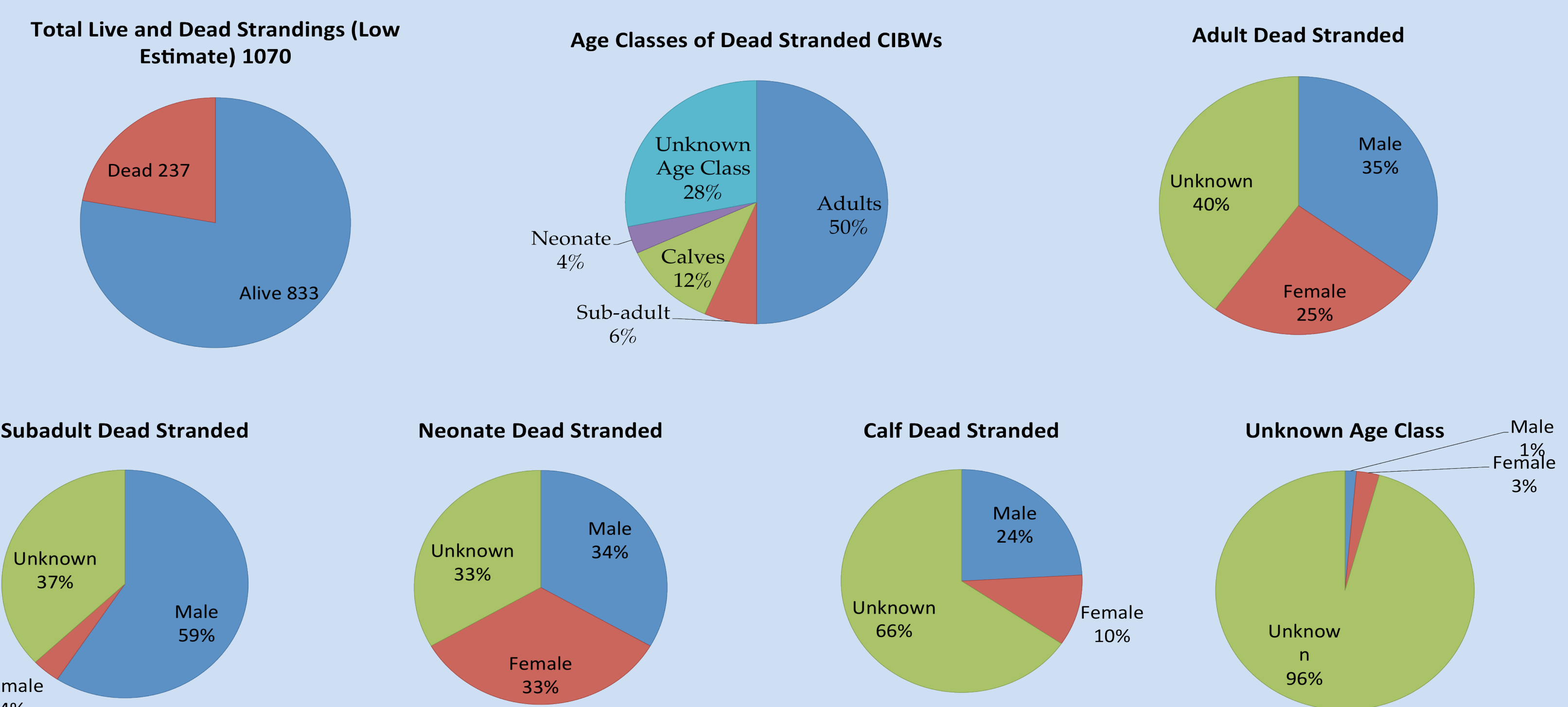
View of Public Access Page

of Whales, Location, Condition, Spatial and Temporal Data

Spatial Data links to Google Maps

Hello, 21st Century!

And, some initial basic descriptive statistics about the strandings, now accessible with only a few key strokes!



Conclusions and Implications

The CIBW stranding and hunter-harvested records, including all accompanying data, are now coalesced into a query-able, web-hosted database. This database will provide NMFS with a tool to store, access, and analyze the CIBW stranding/harvest data to better manage and direct research efforts for this declining population. In addition, researchers could be permitted to use the database to provide further understanding of the CIBW population.

Next steps include: 1) conduct a retrospective analysis of the Level A data to describe the strandings (i.e., summarize total number of whales, including sex, age, locations and timings of strandings), 2) highlight trends, and 3) identify potential correlations between beluga strandings and various parameters (e.g., do certain age/sex strandings occur more in one location/month/year than others). The results from this retrospective analysis may inform future management recommendations and research priorities.

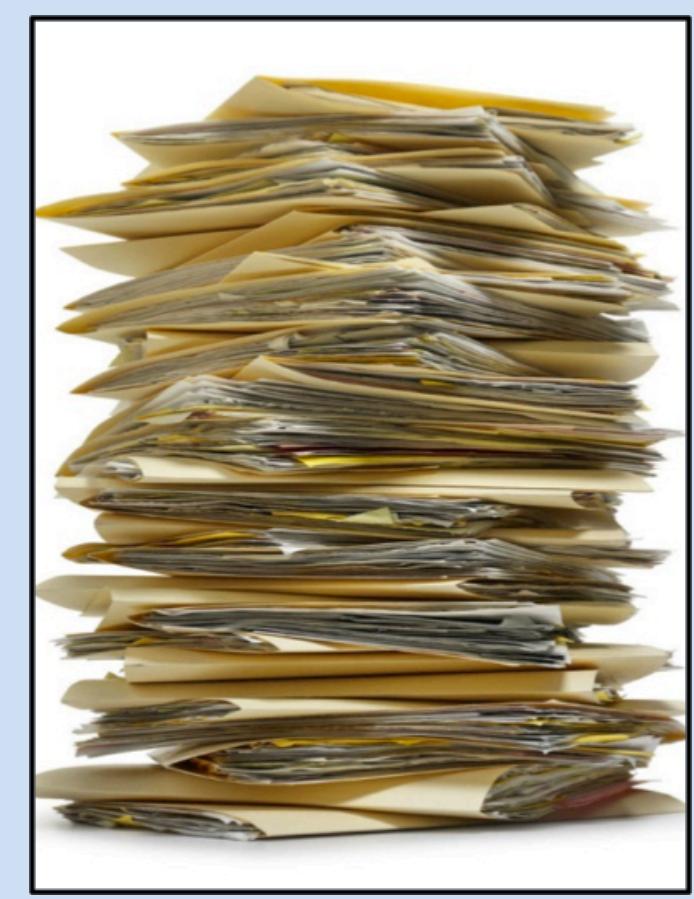
Acknowledgements

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Literature Cited

Hobbs, R. C., C. L. Sims, and K. E. W. Sheldon. 2012. Estimated abundance of belugas in Cook Inlet, Alaska, from aerial surveys conducted in June 2012. NMFS, NMML Unpublished Report. 7 pp.

Problem: Most of the data was filed on paper and so was largely inaccessible and difficult to analyze wholly and comparatively. In addition, some whales had incomplete files (missing reports), and some data were not matched to specific whales.



If you're looking for the answers, you first must have the capability to ask the questions.

Solution: Track down missing information, synthesize and match data with the correct whales. Create a database that can be queried for information and that will a) tie together each whale with its accompanying data, and b) be used as a tool to access and analyze the CIBW stranding/harvest data to better manage and direct research efforts.