

Banding Issues for Colonial Waterbirds in North America

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Banding

Scientific bird banding in North America began with the banding of colonial waterbirds in 1902 when Paul Bartsch, a zoologist with the Smithsonian Institution, banded 23 nestling Black-crowned Night-herons (*Nycticorax nycticorax*) at a Washington, DC rookery. Bartsch used serially numbered bands with a Smithsonian return address. He obtained his first return when a bird was reported shot September 24, 1902 at Abington, MD, about 55 miles northeast of the Washington, DC banding site. Bartsch documented his pioneering work with the first scientific report of bird banding in North America (Bartsch 1904). Innumerable investigators and works followed Bartsch, and today banding is a universal and indispensable technique for studying movement, survival and behavior of colonial waterbirds.

While much has been learned about colonial waterbirds via banding, considerably more could be accomplished with planning and direction to meet the goals and objectives of the Colonial Waterbird Conservation Plan. The basic issue is to make more effective use of banding in the conservation of colonial waterbirds. This could be accomplished with improvements to several aspects of colonial waterbird banding.

Integrate banding into population monitoring. Regardless of the particular species or groups of interest, population monitoring forms an integral part of conservation plans. Population counts, or more often, population indices, allow one to monitor population change, but they usually do not provide information on the two demographic components of population change, recruitment and survival. Banding can be useful in estimating the former, and it is essential for the latter. This is widely recognized in waterfowl conservation where the full integration of banding, population and harvest data has constituted a management paradigm for decades. The current adaptive approach to harvest management (Tautin, Metras and Smith, 1999) (U.S. Fish and Wildlife Service, 2000) provides a good example. For nongame landbirds, demographic data derived from the Monitoring Avian Productivity and Survivorship program (DeSante, *et al.*, 1995) are being used in conjunction with population data (DeSante, O'Grady and Pyle, 1999). As monitoring of colonial waterbirds expands, careful consideration should be given to integrating demographic data obtained through banding with population data. Banding data would also serve the additional purpose of documenting movements, although telemetry is more effective if that is the primary objective.

Plan banding. Whether the banding is for large-scale, cooperative monitoring or small-scale, independent study, planning is the key to a successful banding program. Banding plans should include:

- Well defined objectives that reflect an *a priori* need for information;
- A design that serves the objectives, and specifies assumptions, parameters, sample sizes, time and spatial frames, and analytical models.
- A data management plan that covers collection, editing, storing and dissemination of data;
- Planned analysis using models specified in the plan;
- Reporting of results in a tangible manner such as an agency report or journal publication.

Coordinate the use of auxiliary markers. Auxiliary markers, such as wing tags or colored leg bands, are used commonly by colonial waterbird banders around the world. Because some colonial waterbirds, especially seabirds, have vast ranges, auxiliary marked birds may be observed in parts of the world far removed from the banding site, and beyond the jurisdiction of the national banding scheme under which they were marked. Identifying marked birds, linking them with the national scheme they were marked under, and relaying the sighting information to the bander can be difficult. International marking protocols and an international clearinghouse for sightings of marked colonial waterbirds would help facilitate the use of auxiliary markers and the exchange of information. The protocols could be developed cooperatively by national banding schemes and colonial waterbird working groups. An Internet based reference service and

clearinghouse for reports of marked birds would be relatively easy to establish. Such a system has been established recently by western Atlantic shorebird workers (www.hopscotch.ca/shorebirds/).

Improve band quality. Colonial waterbird banding studies would benefit considerably from improved band quality. Many species are long-lived and frequent harsh marine environments where conventional aluminum bands supplied by the US Geological Survey Bird Banding Laboratory (BBL) do not last. Consequently, worn bands must be replaced on recaptured birds, and illegible or lost bands result in lost data and potentially bias data analyses. The superior qualities of hard metal (stainless steel and Inconel) bands are well known. However, due to budgetary constraints and unreliable domestic supply, BBL band acquisitions have been biased toward the less expensive and more readily available aluminum bands. Some colonial waterbird banders have resorted to purchasing their own hard metal bands following specifications and series numbers provided by BBL. While this offers a partial solution for the more serious and better funded bander, it is an inefficient system for all parties involved, and it does not serve the common good. To maximize the effectiveness and efficiency of banding, BBL should supply hard metal bands to colonial waterbird banders. The resulting gains in data and increased efficiencies in band issue and records management would offset the relatively small financial investment required of BBL and its support agency, the US Geological Survey.

Use satellite telemetry. Colonial waterbird banders whose objectives include defining migration and winter sites, or otherwise studying movements of birds should strongly consider using satellite telemetry. The relatively large size of colonial waterbirds and the long distance movements made by many species make this technique particularly suitable for gaining large amounts of precise location data in a short time. Posting real time location data on the Internet can add an educational component to research and management projects. For example see, <http://www.uct.ac.za/depts/stats/adu/oilspill/index.htm>.

Conserve historical data. The concentrated and synchronous nesting typical of colonial waterbirds often allows for banding on a scale not achievable for other groups of birds. Large numbers of birds, particularly flightless young, can be banded in relatively short periods of time. Long life spans for some species, and the fidelity of adults to breeding colonies allow for the accumulation of large, long-term sets of recapture and resighting data. Numerous such data sets are known to exist on paper. Some, e.g., recaptures of thousands of Laysan (*Phoebastria immutabilis*) and Black-footed Albatrosses (*Phoebastria nigripes*) banded in the 1950s and 1960's, would have relevance to current conservation issues. However, not being in electronic format, these data effectively are not available for analysis. Some of these historical data sets are at risk of being lost, and some probably have been lost. Important sets of colonial waterbird banding data should be identified, converted to electronic format and deposited at BBL.

References.

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