SURVEY TECHNIQUES FOR THE WORLD'S OWLS - FUNDAMENTALS TO CONSERVATION – A QUESTIONAIRE 15 June 2003 vers.

David H. Johnson, Northwest Habitat Institute, 2344 Summit Lake Shore Rd NW, Olympia, Washington, 98502 USA djnwhi@aol.com

Bruce G. Marcot, USDA Forest Service, Pacific Northwest Research Station, 620 S.W. Main St., Suite 400, Portland OR 97205 brucem@spiritone.com

Abstract: This paper provides a questionnaire for reviewing existing or proposed survey techniques for the worlds owls. Results of this project are being incorporated into a Global Owl Project, that will (1) share findings among owl researchers, and (2) suggest some standard protocols for surveying owls.

Overview: Surveying for owls is fundamental to their conservation. Many techniques to determine the presence (or absence) of owls have been developed. Likewise, a number of techniques are being used to find owl nests and study the demographic performance of owls. Survey techniques differ with the species of owl being surveyed, their habitats, their nocturnal/diurnal habits, the tools and technology available to the surveyors, and the safety concerns of the surveyors. The purpose of this study is to develop an information system around the techniques for locating and studying basic demographic aspects of the owls of the world. Once completed, summaries from this work will provide methodologies and technologies that have proven successful (as well as unsuccessful) in studying owls around the globe. Of particular interest, the authors desire copies of survey protocols, published and unpublished survey techniques, and reports/notes on successful (and unsuccessful) survey efforts. The authors are providing selected questions within a "*Survey Techniques Form*" to solicit specific information in 4 main focus areas: 1) ***Aspects of Owl Biology Relevant to Surveys***, 2) ***Techniques for Presence/Absence Surveys, 3) Surveys as part of Long-term Monitoring Efforts***, and 4) L***ocating Owl Nests.*** As part of this project, the authors will also be developing a network of owl researchers from around the world with experience, or an interest, in survey techniques.

PLEASE CONTRIBUTE TO THIS PROJECT. In this project, we are asking owl researchers for their preferred or usual methods of surveying owls. Your contribution is important to the conservation of the world's owls. The following form is a means for contributing to this endeavor. Please include your name as you would like to see it acknowledged in the final publication. Contributions can be sent to the senior author; digital versions of this form are available from the senior author as well.

Your name (please print) _____

Address _____

_____

_____

email/fax _____

SURVEY TECHNIQUES FORM

ASPECTS OF OWL BIOLOGY RELEVANT TO SURVEYS

In this section, we focus on collecting basic biological information on the owl species.

1. **Owl species**: _____ _____
Common Name Scientific Name (& subspecies, if pertinent)

2. Primary **Activity Period** of the species within your survey area (check one):
_____ Nocturnal
_____ Diurnal
_____ Active both day and night
_____ Other (describe):

3. **Nesting Season** of the species in your survey area. Check all of the months that apply. (NOTE: "nesting season" includes courtship, egg laying, incubation, fledging, up to the dispersal of the young from the natal/nest territory).

_____ January	_____ April	_____ July	_____ October
_____ February	_____ May	_____ August	_____ November
_____ March	_____ June	_____ September	_____ December

4. **Primary Nest Type** of the species in your area (check all that apply):
_____ Cavity in tree
_____ Broken top of tree (exposed skyward)
_____ Nest Box
_____ Stick nests of other species/platforms
_____ Hole in bank
_____ On ledges/cliffs
_____ On ground
_____ Underground
_____ In buildings

5. To what **geographic area** does the following survey information apply?

_____ full range of the species
_____ only a portion of the range of the species; describe where: _____
_____
_____
_____
_____
_____

TECHNIQUES FOR PRESENCE/ABSENCE SURVEYS

In this section, we focus on the specific aspects of conducting presence/absence surveys. Presence/absence surveys are used for determining presence/absence of owls and their general distribution. Presence/absence surveys might include nocturnal calling routes, for example.

6. Are you aware of: any published survey protocols for this species? _____ y/n
unpublished survey guidelines for this species? _____ y/n

If yes to either of the above, please MAIL A COPY of the protocols or guidelines to the senior author at the address on the cover page.

7. What is your **recommended method** of surveying for this species in the field?

_____ Passive Listening
_____ Tape Playback/broadcast, using:
- _____ male calls
- _____ female calls
- _____ both male and female calls
- _____ calls (male or female) of a different owl species
- _____ not specified

_____ Soliciting by Imitative Vocalizations or Other Instrument, imitating:
- _____ male calls
- _____ female calls
- _____ both male and female calls
- _____ imitate a call (male or female) of different owl species
- _____ not specified

_____ Visual Detection

8. What **month(s) of the year** do you recommend for surveying? List any/all months relevant to your area.

_____ January	_____ April	_____ July	_____ October
_____ February	_____ May	_____ August	_____ November
_____ March	_____ June	_____ September	_____ December

9. What **time of night or day** do you recommend for surveying?

Nocturnal:
- _____ 0.5 hr after sunset to 0.5 hr before sunrise
- _____ sunset to sunrise
- _____ other nocturnal, please specify: _____

Diurnal:
- _____ any time during daylight hours
- _____ 0.5 hr before sunrise to 2 hrs after sunrise (early morning)
- _____ 2 hrs before sunset to 0.5 hr after sunset (late afternoon)
- _____ other diurnal, please specify: _____

10. What is your recommended survey design?

_____ calling/listening from selected points
_____ calling/listening from points along a route
_____ continuous calling/listening while traversing an area
_____ calling/listening from points and continuous in between
_____ other. specify: _____

11. If you use a linear survey route or transect, **how far apart** would you recommend the survey
points (or transects) be? _____ km

12. How much **total time** should one spend at each survey station? _____ minutes

13. At each survey station or point:

If you listen passively (no broadcasting), how much time should be spent? ____ minutes
If you broadcast calls (tape playback or imitate calls), how much time
should be spent at the station broadcasting/listening? ____ minutes

Describe the broadcasting/listening sequence: _____
_____
_____
_____
_____
_____
_____.

14. To be reasonably sure of detecting presence or absence of the owls in the area**, how many times** would you recommend visiting each calling station, or each survey route, per season to accurately determine presence/absence? _____ times

15. Some species respond more readily than others to tape playback/imitated calls; what is the ***response rate*** (i.e., likelihood of response) or *detection rate*, of the species (or source of this information), given the above survey protocol? The estimated response rate, or source of this information where this issue has been field tested is:
_____
_____
_____
_____

Surveys as part of Long-term Monitoring Efforts

Surveys can be used for monitoring long-term trends in the presence and distribution (range) of owls. In this section, we are seeking information and insights into techniques that would support long-term tracking of population presence and distribution.

16. Are you aware of any survey protocols/guidelines for use in monitoring long-term trends that would differ from the above information for determining presence/absence? _____ y/n

(If yes, please MAIL A COPY of the protocols/guidelines to the address of the lead author.)

17. Please note what you recommend would be a reliable technique(s) for monitoring long-term trends of presence and distribution (range) for this species (check one or more):

_____ presence/absence surveys as described above
_____ tracking nest site use
_____ observations of owl numbers in seasons other than those for presence/absence surveys
_____ studies conducted at banding or ringing stations
_____ demographic studies
_____ other techniques (e.g., breeding bird surveys, Christmas bird counts, nest box studies).

18. With any long-term study there is always concern about sample sizes, as they are pertinent to statistical confidence and power. What level of statistical confidence would you suggest (e.g., 0.95 or 95% confidence) _____, and what level of statistical power (e.g., 0.80 or 80% power) _____ are acceptable levels for guiding field survey methods? (Skip this question if you do not work with such estimates).

What **sample sizes** would you recommend as optimal:
number of stations or sites sampled per any one season: _____
number of replicate years of samples over which trends will be estimated: _____

19. For long-term trend analysis, surveys should be done:
_____ annually
_____ every other year
_____ every third year
_____ blocks of years (e.g., 3-5 yrs in a row) at some interval; _____
_____ other; specify: _____

20. Has this species undergone long-term (>10 yrs) monitoring to date? _____ y/n

21. Are there any other aspects about the long-term monitoring of this species that you would like to convey? (e.g., sampling issues; biological aspects of the species). If so, please describe:
_____
_____
_____

LOCATING OWL NESTS

22. Are you aware of:
any published protocols for locating nests of this species? ____ y/n
unpublished survey guidelines for locating nests of this species? ____ y/n

(If yes, please MAIL A COPY of the guidelines to the senior author).

23. What would you recommend to be the best practical techniques to locate natural nest sites for this species? (check those that apply):

_____ identifying locations of calling adult owls (day or night) and interpreting their behaviors
_____ identifying locations of calling young owls and interpreting their behaviors
_____ visual search for nests directly (e.g., stick nests, burrows)
_____ scratching/tapping potential cavity-nest trees
_____ food-baiting and following owls back to their nests
_____ radio-tracking owls to their nests
_____ visual search for sign such as pellets, roost sites, etc.
_____ other: _____
_____

24. What sequence of survey steps would you recommend for conducting a nest search? (For example, for some *Otus* species, you might first conduct nocturnal surveys to locate activity areas; then conduct diurnal visual searches in those areas for potential nest trees; then scratch/tap potential nest trees.)
_____
_____
_____
_____

25. What important considerations are there regarding inter-specific interactions with other owl species, other predators, or other wildlife species, when conducting nest location surveys for this species? (For example, soliciting a response with a particular call might entice predators.)
_____
_____
_____
_____

26. What **special tricks or techniques** should be used, or that you use, to find nest sites? (For example, food-baiting; playing a specific call to solicit a response from the female while she is on the nest, etc.) _____
_____
_____
_____
_____