

# LANDBIRD MONITORING PROTOCOL FOR THE U.S. FISH AND WILDLIFE SERVICE, MIDWEST AND NORTHEAST REGIONS

*STANDARD OPERATING PROCEDURE (SOP) #5*

*CONDUCTING THE BIRD POINT COUNT*

*VERSION 1.0 (JUNE 2008)*

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## *REVISION HISTORY LOG*

VERSION #	DATE	AUTHOR	CHANGES MADE	REASON FOR CHANGE
1.0	June 2008	Knutson, et al.		

This SOP provides step by step instructions for conducting 10-minute point counts for surveying landbirds. This SOP also describes the procedure for collecting data and completing the “Field Data Form—Point Count” and “Field Data Form—Circular Plot” (included in Appendixes B, C, and D). This SOP was modified from the Passerine Monitoring Protocol for the Central Alaska Network (2004). The protocol is designed for one person (observer and recorder) or a two-person survey crew.

## PROCEDURES:

### 1. Before Surveys Begin:

- 1.1. The Survey Coordinator (SC) is responsible for planning the survey.
- 1.2. If the plot, route, or grid has been sampled in the past, examine the point sequence and times of surveys. The sequence and times should remain consistent with the original sampling sequence.
- 1.3. The SC will discuss the sequence of points and route with field staff. Always plan to survey the maximum number of points possible each day and take advantage of good survey conditions.
- 1.4. Ensure the GPS unit is loaded with the appropriate coordinates. This should be done before entering the field. See SOP #4, Using GPS to Navigate and Mark Waypoints.
- 1.5. Review safety considerations with field staff, including extreme heat and cold, presence of disease-carrying insects, poisonous plants, operation of vehicles in off-road conditions, etc. Field staff should be equipped with food, water, rain gear, appropriate footwear, and a first aid kit, at a minimum.
- 1.6. Organize equipment. See SOP #1, Before the Field Season.

### 2. Weather and Time Considerations:

- 2.1. Consider weather conditions before leaving. When survey conditions are questionable, the primary consideration is the observer’s safety, followed by the ability to hear birds. High winds, heavy rain, or snow may prevent or delay surveys for several hours or even days. The surveys should be postponed if the weather is unacceptable for surveys. It may be necessary to assess survey conditions from the actual survey points, not from the departure point.
- 2.2. Discuss options for continuing surveys when weather is questionable. It may be necessary to go to the first survey points to determine if survey conditions are

acceptable. The crew leader is responsible for deciding if conditions are unacceptable for surveys. Some form of communication among crews and with the office (cell or satellite phones, walkie-talkies) is recommended.

- 2.3. Record your float plan or field itinerary according to station protocols. At a minimum, record who is in the field crew, where you will be sampling that day, when you left, when you expect to return, and who is responsible for checking that you have returned. Record your field and home contact information (phone number or pager) for use if you don't return.
- 2.4. Whenever possible, complete the entire plot, route, or grid before moving on to the next. Sample all accessible points on an entire plot, route, or grid before moving on.
- 2.5. Complete all surveys between 0.5 hr. before sunrise and 6 hr. after sunrise. Survey as many points as the time and weather allow each day. Arriving at a survey point on time often requires leaving your base 1.5 hr. before sunrise or earlier, depending on the time it takes to reach the first survey point. Be prepared with several extra data sheets, equipment batteries, (and markers, if applicable).

### 3. Conducting the Point Count and Recording Data:

- 3.1. Each day before beginning the survey, use your range finder to check your visual estimates of distances. If you can, use the range finder during the surveys to accurately estimate the correct distance band for each observation. If this is not feasible, daily calibrations before beginning surveys will help improve accuracy.
- 3.2. Navigate to the survey point using a handheld GPS unit. See SOP #4, Using GPS Units to Navigate and Mark Waypoints.
- 3.3. Complete a new datasheet for each survey point. The observer prepares a clipboard with the Circular Plot Data Sheet, along with a digital timer, binoculars, laser rangefinder, and compass.
- 3.4. Record all individual birds the *first* time they are observed and use a digital timer to record the minute associated with each bird observation. Small digital timers can be clipped to the clipboard. The observer records the time period when each bird is first observed on the data sheet next to the species code. The first time period (0-1 min.) is coded '0'; the observer records the minute displayed on the digital timer (0, 1, 2, ...9). Record all birds as accurately as possible within each time period. This will require some practice during the training period (SOP #3, Hiring and Training Observers). For

example, recording all the loud birds first will result in biased population estimates. In habitats with many birds, it will be difficult to record all the birds observed in the first minute; do the best you can. Recording the first observation of individual birds among different time periods is the basis for estimating detection probabilities.

- 3.5. Assign each individual bird to the distance band (0-25, 26-50, 51-100,  $\geq 101$ -m) where it was first observed. Use a laser rangefinder to check the accuracy of visual estimates of distances as needed or at least daily. Record all distances as the horizontal distance interval from the observer to the bird. Pay particular attention to accurately estimating the distance band for birds closest to the point. Any birds that flush upon approaching the point, or birds that seem to be attracted by the presence of the surveyors, should be noted in the comments.
- 3.6. In summary, for each individual bird, the observer records the species code, or the observation number on the circular data sheet, in the distance band where it was *first* observed. Record the type of observation (audio, visual, flyover), and the minute either on the chart or on the list to the right of the chart. At the end of the day, bird detections should be legibly transcribed to the list form, either to the right of the circle chart or on Appendix C; the list is easier to use for data entry.
- 3.7. On the data sheet, the species is identified by its 4-letter AOU code, listed on the prepared Bird Species List (Example: Appendix A), for instance, “WCSP” for White-crowned Sparrow. A list of species codes associated with the study area (Example: Appendix A) should be printed, laminated, and carried in the field.
- 3.8. If you are using a 2-person crew, the observer will stand at the survey point and announce all detections to the recorder in a clear yet quiet voice, including species, detection type, distance and direction (for example “White-crowned Sparrow, audio, 125 meters, north”). The observer then marks the detection on the Circular-Plot Data Form to keep track of detections. The recorder is responsible for informing the observer when the 10-minute period has ended.
- 3.9. Record environmental data on the data sheet. The recorder may record environmental data (including temperature, weather, noise, vegetation etc.) while the observer prepares to conduct the point count, or after the point has been completed.
- 3.10. Complete a datasheet for each point, even if no birds are detected. If no birds were detected at a point, complete the ancillary data fields and note, “no birds were detected” in the comments to document that the point was surveyed.

- 3.11. If you have not already permanently marked your survey points, mark them now before moving on to the next survey point (SOP #4, Using GPS to Locate and Mark Sampling Points).
  - 3.11.1. Vegetation/habitat variables should be recorded after the point count. See SOP #6 Vegetation Monitoring.
    - 3.11.1.1. The minimum requirement for vegetation monitoring is to record the primary and secondary land cover class associated with the bird monitoring point, using the National Land Cover Database (NLCD) 2001 classes (SOP #6, Vegetation Monitoring). This information will be permanently linked to the bird data at each point, by visit, in the National Point Count Database.
    - 3.11.1.2. All other vegetation/habitat monitoring is optional.
- 3.12. Complete all fields on the datasheet before departing for the next point. After a point count is completed, check that all fields have been completed on the datasheet. Any additional comments, particularly regarding factors that might affect the quality of the data should be recorded in the notes section.
- 3.13. Ensure that no equipment is left behind. It is useful to attach brightly-colored flagging or spray paint items like thermometers, binoculars, GPS units, and any other equipment that may accidentally be left behind or dropped between points.
- 3.14. Record ancillary observations of other fauna including mammals, fish, amphibian, and invertebrates in the additional notes or notes sections on the data sheets. Identify to species if possible. Note other fauna-related objects including beaver dams, beaver lodges, insect hatches, etc.
- 3.15. Navigate to the next point. Use the GPS to attain a bearing to the next point and hike to the next point at a reasonable pace. The pace between points should be fast enough to get a maximum number of points in days of good weather, but repeatable by other field crews in future surveys. Do not race to points. A good survey day may range from completing as few as 7 points to as many as 14 points in a day, depending on weather, topography, vegetation, and a variety of other factors.
- 3.16. Proof all data and update daily field notes after returning to base. Bird detections should be legibly transcribed from the circular charts to the list, either at the right of the circle chart or on Appendix C; the list is easier to use for data entry.

3.17. Enter data into the Bird Point Count (BPC) database

<http://www.pwrc.usgs.gov/point/> . If you are entering data from a new monitoring plan, the SC should contact the Bird Point Count Regional Data Coordinator. Each FWS Region has a BPC Data Coordinator who will issue the appropriate permissions to the Station Responsible Party. Here is the list of regional data coordinators: (<http://www.pwrc.usgs.gov/point/main/mainPage.cfm?formName=113>). See SOP #7, After the Field Season.

4. Field Descriptions for Point Count field data form:

4.1. Protocol Version number: Record the version number of the protocol at the top of the data sheet.

4.2. Study Name: Record the name of your monitoring effort; this name is used in the database to label all the point counts associated with this effort.

4.3. Grid/Plot/Route: Record the unique plot, route or grid name.

4.4. Point: Record the point number.

4.5. Date (mm/dd/yyyy): Record the month (2 digits), day (2 digits), and year (4 digits) in the format shown.

4.6. Start (hhmm): Record the time when the 10-minute point count begins: use military time and fill in all four digits. For instance, 0630 (6:30 am).

4.7. End (hhmm): Record the time when the 10 minute point count ends; use military time and fill in all four digits. For instance, 0640 (6:40 am).

4.8. Temperature (°C): Record the ambient air temperature at the end of the count in degrees Celsius, rounded to the nearest degree. The thermometer should be placed above the ground and allowed to adjust to ambient air temperature.

4.9. Wind Speed (WS): Record the wind code (Table 5.1) as it applies to the wind speed during the 10-minute point count. The average wind speed is recorded, rounded to the closest single number, not the maximum (gusts). Acceptable conditions for counting birds include a wind code of 0-3. For more information, see the U.S. Fish and Wildlife Service's data standard on wind speed:

[http://www.fws.gov/stand/standards/de\\_windspeed.html](http://www.fws.gov/stand/standards/de_windspeed.html)

- 4.10. Wind Direction (WD): Record the direction from which the wind is blowing (N, S, E, W, NE, NW, SE, SW, VRB=variable) during the 10-minute point count. Wind direction may be considered variable if, during the 2-minute evaluation period, the wind speed is 6 knots (7 mph, Beaufort code <2) or less. In addition, the wind direction shall be considered variable if, during the 2-minute evaluation period, it varies by 60 degrees or more when the average wind speed is greater than 6 knots (7 mph, Beaufort code >2). For more information, see the U.S. Fish and Wildlife Service's data standard on wind direction: [http://www.fws.gov/stand/standards/de\\_winddirection.html](http://www.fws.gov/stand/standards/de_winddirection.html)
- 4.11. Sky Condition (Sky): Record the sky conditions (Table 5.2). Acceptable conditions for counting birds include a sky code of 0-2.
- 4.12. Background Noise: Record the background noise code (Table 5.3) that best describes the noise conditions during the survey. Elevated noise at the survey site can decrease the observer's ability to detect birds. Surveys should not take place when environmental noise levels exceed 50 dB (code  $\geq 3$ ), unless the elevated noise is a permanent attribute of the site (adjacent to industrial site). A sound level meter (decibel meter) can be used to measure sound levels accurately (optional); prices range from \$60-250. See Appendix E for common noises and sound levels in decibels.
- 4.13. Observer/Recorder (Obs/Rec): Record the 3-letter initials of the observer and recorder. Names and contact information for all observers and recorders are stored in the database.
- 4.14. GPS Lat/Long: Record the location (GPS coordinates) of the survey points using the UTM or Geographic (Latitude/Longitude) coordinate system referenced to either the horizontal datum of NAD83 or WGS84. Create data sheets with the sampling points and GPS coordinates pre-printed; recorders generally make mistakes recording numbers with many digits in the field. For more information, see the U.S. Fish and Wildlife Service's data standard on latitude and longitude: [http://www.fws.gov/stand/standards/de\\_latlon.html](http://www.fws.gov/stand/standards/de_latlon.html)
- 4.15. Detection Type: Record the type of detection associated with each bird (Table 5.4). Flyovers include birds flying above the forest canopy, not stopping in the count circle. Birds flying below the forest canopy are counted as visual detections; if they do not appear to stop in the count circle, put them in the 101 distance category. We will assume that low fliers belong to the breeding birds in the count circle. In grasslands, any birds that fly through the count circle below the height of an average tree in the region and do not stop are counted as members of the count circle (101 distance

category). Those that fly higher than the average tree and do not stop are counted as flyovers. Again, we'll assume that low fliers are members of the breeding bird community and high fliers are not.

- 4.16. Distance Category: For each bird detection, record the distance category between the observer and the bird (Table 5.5).
- 4.17. Photos taken? Circle YES if photos taken at the survey point according to SOP#6, Vegetation Monitoring. Circle NO if no photos were taken. If a photo was taken of some other item of interest, record the subject and the reason for taking the photo on the data sheet.

TABLE 5.1 CODES USED TO RECORD WIND SPEED DURING BIRD COUNTS (BEAUFORT SCALE)<sup>1</sup>.

Wind Code	Wind Speed (miles/hr)	Description
0	< 1	Calm; smoke rises vertically
1	1-3	Light air; wind direction shown by smoke drift
2	4-7	Light breeze; wind felt on face
3	8-12	Gentle breeze; leaves in constant motion, light flag extended
4	13-18	Moderate breeze; raises dust; small branches move
5	19-24	Fresh breeze; small trees sway, crested wavelets on inland waters
6	25 or more	Strong breeze; large branches in motion

<sup>1</sup> Acceptable conditions for counting birds include a wind code of 0-3.

TABLE 5.2 CODES USED TO RECORD SKY CONDITIONS DURING BIRD COUNTS<sup>1</sup>.

Sky Code	Description
0	Clear or a few clouds
1	Partly cloudy (scattered)
2	Cloudy (broken) or overcast
4	Fog or Smoke
5	Drizzle
7	Snow
8	Showers

<sup>1</sup> Acceptable conditions for counting birds include a sky code of 0-2.

TABLE 5.3 CODES USED TO RECORD LEVELS OF BACKGROUND NOISE DURING BIRD COUNTS<sup>1</sup>.



BACKGROUND NOISE CODE	DESCRIPTION
0	No background noise (BN) during most of the survey (< 40 decibels [dB])
1	Faint BN during at least half of the survey (~40-45 dB)
2	Moderate BN; difficulty hearing birds > 100 m away (~45-50 dB)
3	Loud BN; difficulty hearing birds > 50 m away (~50-60 dB)
4	Intense BN; difficulty hearing birds > 25 m away (>60 dB)

<sup>1</sup>Acceptable conditions for counting birds include a noise code of 0-2.

TABLE 5.4 CODES USED TO RECORD DETECTION TYPE DURING BIRD COUNTS.

DETECTION	DESCRIPTION
V	Visual detection
A	Auditory detection (singing, chipping, calling, rapping)
B	Both visual and auditory detection
F	Flyover (bird flying above the canopy; not landing in count circle)

TABLE 5.5 CODES USED TO RECORD DISTANCE CATEGORIES USED FOR BIRD COUNTS.

CATEGORY	DISTANCE
25	0-25 m
50	26-50 m
100	51-100 m
101	> 100 m

## APPENDICES:

APPENDIX A: BIRD SPECIES LIST (EXAMPLE)

APPENDIX B: FIELD DATA FORM—POINT COUNT, BACK SIDE

APPENDIX C: FIELD DATA FORM—POINT COUNT, FRONT SIDE

APPENDIX D: FIELD DATA FORM—CIRCULAR PLOT

APPENDIX E. COMMON NOISE LEVELS

## APPENDIX A (EXAMPLE). BIRD SPECIES WITH AOU CODES

This bird list will be customized by the Survey Coordinator prior to initiating surveys. An example of a partial list of avian species present or expected in the Central Alaska Network parks, Alaska is shown below.

AOU SPECIES CODE	COMMON NAME	GENUS SPECIES	TSN
GWFG	Greater White-fronted Goose	<i>Anser albifrons</i>	175020
CAGO	Canada Goose	<i>Branta canadensis</i>	174999
TRUS	Trumpeter Swan	<i>Cygnus buccinator</i>	174992
GADW	Gadwall	<i>Anas strepera</i>	175073
AMWI	American Wigeon	<i>Anas americana</i>	175094
MALL	Mallard	<i>Anas platyrhynchos</i>	175063
CITE	Cinnamon Teal	<i>Anas cyanoptera</i>	175089
NOSH	Northern Shoveler	<i>Anas clypeata</i>	175096
NOPI	Northern Pintail	<i>Anas acuta</i>	175074
AGWT	American Green Winged Teal	<i>Anas crecca</i>	175081
CANV	Canvasback	<i>Aythya valisineria</i>	175129
REDH	Redhead	<i>Aythya americana</i>	175125
RNDU	Ring-necked Duck	<i>Aythya collaris</i>	175128
GRSC	Greater Scaup	<i>Aythya marila</i>	175130
LESC	Lesser Scaup	<i>Aythya affinis</i>	175134
SCSP	Scaup Sp.	<i>Aythya sp.</i>	
HARD	Harlequin Duck	<i>Histrionicus histrionicus</i>	175149
SUSC	Surf Scoter	<i>Melanitta perspicillata</i>	175170
BLSC	Black Scoter	<i>Melanitta nigra</i>	175171
WWSC	White-winged Scoter	<i>Melanitta fusca</i>	175163

APPENDIX B. FIELD DATA FORM—POINT COUNT, BACK SIDE, RAPID VEGETATION ASSESSMENT (FORESTS, OPTIONAL)

TREE DENSITY (> 2.5 CM DBH)	SHRUB DENSITY (< 2.5 CM DBH)	SPECIAL FEATURES
1 None	1 <10 in 10m radius	1 Beaver flooding
2 <5 in 10m radius	2 11 to 100	2 Large downed logs
3 6 to 20	3 101 to 500	3 Small openings
4 21 to 40	4 501 to 1000	4 Snags
5 >40	5 >1000	5 Wetland pocket in site
		6 Woodland pond in site
		7 Natural opening in site
		8 Rock outcrop
		9 Residual hardwood trees
		10 Residual conifer trees
		11 Residual patches
		12 Roads, buildings

VEGETATION STRUCTURE	COMMENTS
Canopy height (m)	
Tree Density (1 = few to 5 = dense) - 10 m radius	
Shrub Density (1 = few to 5 = dense) - 10 m radius	
High canopy cover (%)	
High canopy % deciduous (0% = all conifer)	
Subcanopy cover (lower layer of trees: %)	
Subcanopy % deciduous (0% = all conifer)	
Understory cover (3 ft to 12 ft: %)	
Understory % deciduous (0% = all conifer)	
Ground cover (3 ft to ground: %)	
Tree species (up to 5)	
Shrub species (up to 5)	
Special features (codes)	

APPENDIX C. FIELD DATA FORM – POINT COUNT, FRONT SIDE

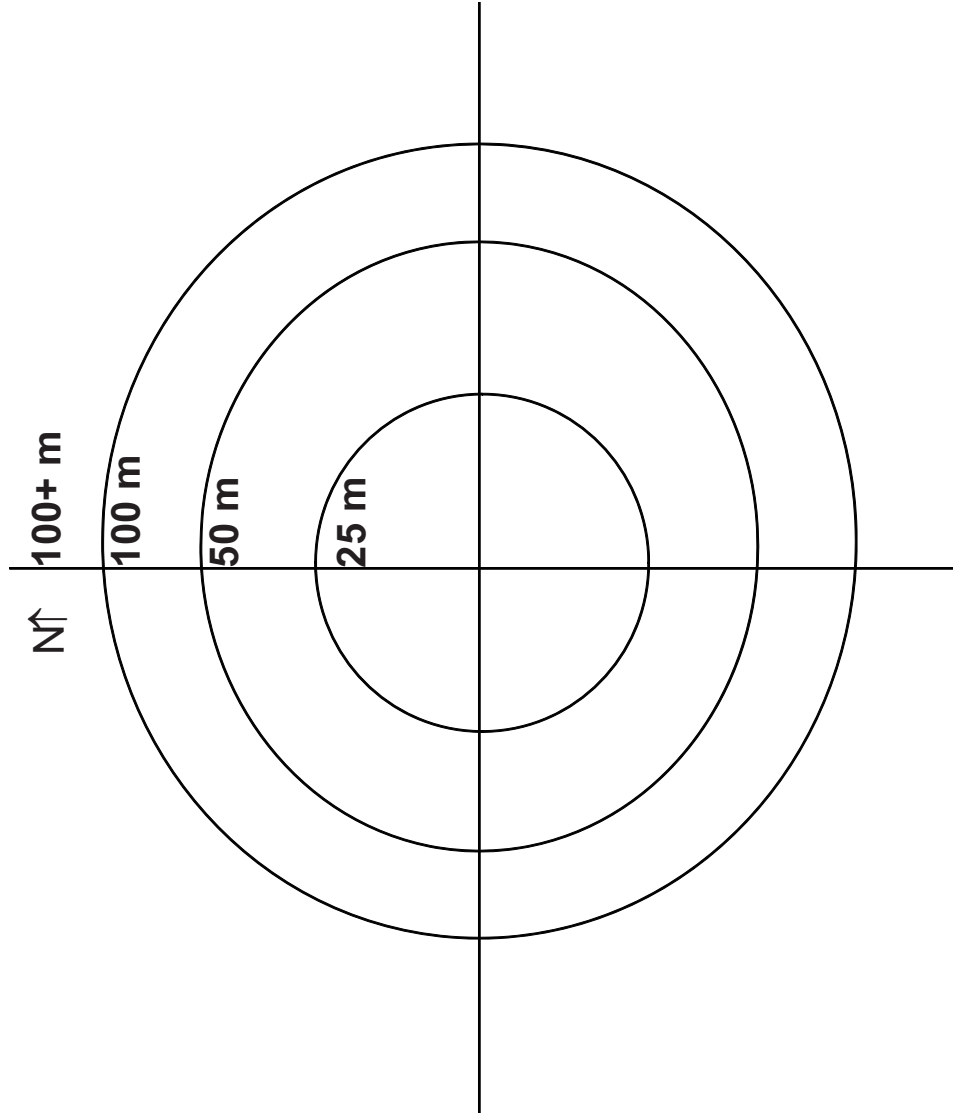
Study Name:	2007 BIRD SURVEYS	GREEN ACRES NWR		Obs	DETECTIONS	Type	Distance	Min. (0,1,2,...9)	Comments
Horiz. Datum	WGS84	NAD83		1	Species				
Plot/rt/grid		Obs:	Rec:	2					
Point		Start:	End:	3					
Date		GPS lat (northing)		4					
Noise		GPS long (easting)		5					
Temp C		Aspect/slope		6					
WS		Other		7					
WD		Photos taken?	Y N	8					
Sky				9					
Noise Code		Detection Type		10					
0	None	V	Visual	11					
1	Faint	A	Auditory	12					
2	Moderate	B	Both	13					
3	Loud	F	Flyover	14					
4	Intense			15					
				16					
				17					
Wind Speed		Distance Band		18					
0	Calm	25	0-25 m	19					
1	Light air	50	26-50 m	20					
2	Light breeze	100	51-100 m	21					
3	Gentle breeze	101	> 100 m	22					
4	Moderate breeze			23					
5	Fresh breeze			24					
Sky Condition		NLCD 2001	(required)	25					
0	Clear	#1		26					
1	Partly cloudy	#2		27					
2	Cloudy	Ecol. System-Alliance	(optional)	28					
4	Fog or Smoke	#1		29					
5	Drizzle	#2		30					
7	Snow			31					
8	Showers	Comments:		32					
				33					
Wind Dir.		Notes:		34					
N, S, E, W,				35					
NW, SW,				36					
NE, SE, VBL				37					
		IN OFFICE	Date & initials	38					
		Data proofed:		39					
		Data entered:		40					

APPENDIX D. FIELD DATA FORM – CIRCULAR PLOT

Date:

Grid: XXXX

Pt.:



Obs	Species	Type	Distance	Min.
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
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26				
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36				

APPENDIX E. COMMON NOISE LEVELS.

(SOURCE: NOISE LEVELS IN OUR ENVIRONMENT FACT SHEET; [HTTP://WWW.LHH.ORG/NOISE/FACTS/ENVIRONMENT.HTML](http://www.lhh.org/noise/facts/environment.html))

*Points of Reference measured in dBA or decibels*

- 0 the softest sound a person can hear with normal hearing
- 10 normal breathing
- 20 whispering at 5 feet
- 30 soft whisper
- 50 rainfall
- 60 normal conversation
- 110 shouting in ear
- 120 thunder

HOME	WORK	RECREATION
50 refrigerator	40 quiet office, library	40 quiet residential area
50 - 60 electric toothbrush	50 large office	70 freeway traffic
50 - 75 washing machine	65 - 95 power lawn mower	85 heavy traffic, noisy restaurant
50 - 75 air conditioner	80 manual machine, tools	90 truck, shouted conversation
50 - 80 electric shaver	85 handsaw	95 - 110 motorcycle
55 coffee percolator	90 tractor	100 snowmobile
55 - 70 dishwasher	90 - 115 subway	100 school dance, boom box
60 sewing machine	95 electric drill	110 disco
60 - 85 vacuum cleaner	100 factory machinery	110 busy video arcade
60 - 95 hair dryer	100 woodworking class	110 symphony concert
65 - 80 alarm clock	105 snow blower	110 car horn
70 TV audio	110 power saw	110 - 120 rock concert
70 - 80 coffee grinder	110 leafblower	112 personal cassette player on high
70 - 95 garbage disposal	120 chain saw, hammer on nail	117 football game (stadium)
75 - 85 flush toilet	120 pneumatic drills, heavy machine	120 band concert
80 pop-up toaster	120 jet plane (at ramp)	125 auto stereo (factory installed)
80 doorbell	120 ambulance siren	130 stock car races
80 ringing telephone	125 chain saw	143 bicycle horn
80 whistling kettle	130 jackhammer, power drill	150 firecracker
80 - 90 food mixer or processor	130 air raid	156 capgun
80 - 90 blender	130 percussion section at symphony	157 balloon pop
80 - 95 garbage disposal	140 airplane taking off	162 fireworks (at 3 feet)
110 baby crying	150 jet engine taking off	163 rifle
110 squeaky toy held close to the ear	150 artillery fire at 500 feet	166 handgun
135 noisy squeeze toys	180 rocket launching from pad	170 shotgun