Final Report for Service Purchase Contract MF #389212

Pennsylvania Society for Ornithology
Special Areas Project

Wild Resource Conservation Fund
Final Report - 2000

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31 March 2001

Abstract

The PSO Special Areas Project's (SAP) main goal is to increase public knowledge about the state's birds by gathering and sharing bird inventory data on specific lands. The SAP database serves as a public file for each location that can be put to a variety of uses, including conserving bird habitat and producing educational materials. The PSO initiated the Special Areas Project in 1990 at the inception of the organization. SAP continues the tradition of the volunteer-based projects like the Breeding Bird Atlas. SAP locations are inventoried for birds in all seasons of the year. Birders obtain information about the numbers and migratory / breeding status of birds at each location. These data are entered into the SAP database and shared with many organizations and individuals, particularly the responsible agencies, landowners, and supporting organizations. This location-based data are beneficial to government agencies as an information-based way to improve management activities. Participating organizations enjoy many benefits from collecting the data and becoming more familiar with local sites potentially managed to benefit birds. In 1998, the PSO and Bureau of State Parks began to work together to produce park checklists using SAP data. A template for park checklists was drafted for this use of SAP data.

The PSO Special Areas Project database has grown to 111 locations. By the end of 2001, 4755 field trips have been entered into the SAP database. This includes 41 State Parks; 25 State Game Lands; 19 DCNR Forests, Natural, Wild, or Scenic Areas; 11 County or Municipal Parks; 3 Fish and Boat Commission sites; 3 Federal sites; 3 environmental education centers; 2 private reserves; 2 Nature Conservancy Preserves: and 2 corporate sites. Birders have taken almost half (46.5%) of the total SAP trips in State Parks and 59% of their trips on DCNR lands of some type. The second most popular type of area is state game lands where almost one-quarter of the SAP trips have been taken (23.8%).

By the end of 2000, there have been 1,139,263 birds entered into the SAP database. This includes 291 species, 9 collective taxa (e.g. Chickadee sp.), 3 hybrids, and 2 forms. SAP volunteers have reported many Pennsylvania Species of Special Concern (SSC) including Endangered / Threatened species on SAP field trips. There have been 28 species on the current SSC list reported on SAP trips. The lack of Sedge Wren, Black Tern, and Long-eared Owl reports in appropriate habitat suggest that these species are in deep trouble.

There are 14 SAP locations with over 100 field trips in the database. An additional 18 locations have over 50 field trips reported. The information gathered at remote natural areas and preserves, including old growth forests and wetlands, are also valuable even if they represent fewer trips. The project stimulates birders to gather data at locations they do not normally visit or report. Forty-seven Special Areas are listed as Pennsylvania Important Bird Areas with 2740 field trips to IBA locations in the database. Information gathered at these locations allow bird community profiles for locations previously little studied. The efforts made by avocational naturalists on behalf of the Special Areas Project are considerable. Birders have contributed approximately 13,852 party-hours of field work. The value of the time volunteers have devoted to the project is worth at least $531,928. The value of SAP as a means of involving and motivating birders to do goal-oriented field work is inestimable.

as migrant bird stopover sites, rare breeding bird nesting areas, and fragile habitats which need special protection. Site specific information has been exchanged between the Bureau of State Parks and Local SAP Coordinators.

In addition to the proposed Special Area Project products, there are many other possible products and benefits that might be produced. Some of these have already been realized. A few potential benefits of the Special Area Project include:

- ☑ Increase in the information about Pennsylvania Species of Special Concern, including Endangered and Threatened species. This would aid the work of the Ornithological Technical Committee of the Pennsylvania Biological Survey as well as the abilities of the Pennsylvania Game Commission (PGC) and Department of Conservation and Natural Resources (DCNR) to manage and conserve the state's biodiversity.

- ☑ Higher quality State Park and Game Land management plans which include more information about wildlife populations and habitats of management interest.

- ☑ Increase in well-substantiated reports about the Pennsylvania's rare birds, aiding the work of the Pennsylvania Ornithological Records Committee (PORC).

- ☑ Improved relationships between the state's birding / naturalist community and the government agencies responsible for land management, outdoor recreation, wildlife management, and education. More birdwatchers would be likely to become State Park volunteers as they have good experiences in the park and with park staff.

- ☑ More local bird guidebooks and annotated checklists. SAP data will provide abundant and detailed information that could be used to write educational materials about the area's birds. The data are organized in a fashion readily transferable to other projects, even in rough form.

- ☑ Information that could be used in other education, information, and conservation efforts. For instance, the Special Areas Project data could be immediately used in the National Audubon Society's Important Bird Areas project. The Nature Conservancy and the Pennsylvania Natural Diversity Inventory would also benefit from the additional reports on rare birds, especially those on the Pennsylvania Species of Special Concern List. Data collected on Nature Conservancy and Audubon Society lands could be used for educational or research data for those organizations.

- ☑ More documented evidence of how much birdwatchers and naturalists use Pennsylvania's state parks and other public lands for recreation.

- ☑ A more experienced, aware, and active birdwatching community ready to contribute valuable technical information about the state's wildlife.

Project (IBA). SAP has become the technique of choice for inventorying IBAs and prospective IBAs. Some participating clubs present SAP bird news through their own newsletters.

Forms, instructions, and guidelines are provided to potential volunteers and coordinators through mailings, personal encounters, and meetings. Most forms presented previously in a grant proposal (Gross 1994) were updated and improved in 1997 and 2000. When data are received from Local Coordinators, I contact the sender and thank him or her for the contribution of data. I often write a letter or e-mail that answers questions and offers advise on the local project effort. Some quality control issues are also ironed out in continued communications. The data are checked for ornithological accuracy by comparing the bird data against the known phenology and regional occurrences of birds in the state. I rely on my own experience for much of this quality control, but also refer to state and regional references about Pennsylvania birds. This includes Todd (1940), Poole (1964), Wood (1979, 1983), Morris et al. (1984), Leberman (1988), Morrin (1991), Brauning (1992), Santner et al. (1992), and *Pennsylvania Birds* editions. This aspect of the Special Areas Project is one of the most time-consuming, but it increases interest, enhances data quality, and continues contributions by the volunteers. Bird reports must meet the high standard of quality set by the PORC as documented by its *Official List of Pennsylvania Birds* (Kwater 1990, Pulcinella 1995, PORC 2000, Pulcinella 2000).

Organizations or individuals adopt a local management area (state park, natural area, state game land, state forest, municipal park, or private sanctuary). Usually this Special Area is close to the volunteer's home. Many SAPs are conducted in parks in or near metropolitan areas. These parks are islands of bird habitat in an otherwise inhospitable human-altered landscape. Each park offers opportunities for outdoor recreation and education where it would not otherwise exist. The project brings more attention to the state's rural and out-of-the-way parks in the state's less populated counties (Pennsylvania's "Best Kept Secrets"). Ecotourism is promoted through SAP.

Volunteers inventory birds throughout the year and record the number of individuals of each species observed. They also document any breeding behavior that is observed. After several visits to the Special Area, the local volunteers will have produced a list of species that generally occur there (the core species). The data collected will be used to determine the status, abundance, frequency, and seasonal occurrence of each species. This information will then be analyzed and used to help educate the general public about Pennsylvania birds and help manage and conserve the habitats these birds need to survive.

The methodology is fairly simple and straightforward. The instructions and forms used to conduct the Special Areas Project have already been used by hundreds of volunteers. The manner of counting birds in a specific area roughly follows the format of the Audubon Christmas Count, a popular citizen science project. Volunteers visit their Special Area at least six times a year with at least two visits occurring in the breeding season (May through July) and one in the winter. Volunteers are encouraged to visit the Special Area as often as twice each month in order to build a good bird list and accurately depict changes in its bird community through the seasons. The simple methodology encourages broad participation. Groups often use the Special Areas Project to educate their members on the identification of birds and various birdwatching and

their own entries. Sections of the Quality Control form are initialed and dated at the various steps in this process.

The Special Areas Project data are being managed with a Windows database, Lotus Approach. The fields are stored in standardized dBase format which can be accessed by other MS-DOS and Windows database programs and spreadsheets. It is easy to make queries of the database to obtain species- or site-specific information. The format also allows examination and manipulation of the data with other database products.

Some bird sightings made during SAP trips are reported in *Pennsylvania Birds*, including the Rare Bird Reports. Observations are also reported in Audubon Chapter and bird club newsletters. SAP volunteers, especially Local Coordinators, often share their data with the employees of the state or municipal park they are inventorying. The SAP database will be made available to DCNR for producing bird educational materials.

Results and Conclusions

The Special Areas Project expanded in 1999 and 2000 by adding significant new locations while continuing coverage of locations covered in past years. As of the end of 2000, there were 4755 field trips conducted in 111 locations in the SAP database (Attachment A, Table 1). Since some volunteers sent in all their 1999 data in a single year-end report, the SAP program is still inputting some of the large 1999 data set. Twenty more sites were added to the database since 1998 (Table 2). The new sites give the Special Areas Project broader geographic and habitat coverage with new locations in geographical information gaps throughout the state. Administratively, hundreds of SAP field trips have been checked, input, and rechecked after entry into the database. New SAP forms were designed and distributed at the PSO meeting in May 2000. Changes were made in the forms that should decrease data entry errors and subsequent data quality problems.

The PSO Special Areas Project database has grown to 111 locations (Table 1, Attachment A). By the end of 2000, 4755 field trips have been entered into the SAP database. State Parks represent 37% of the locations adopted for SAP by birders (Table 1). Almost half (46.5%) of the total SAP trips have been take in State Parks. The second most popular type of area is state game lands (N = 25) where almost one-quarter of the SAP trips have been taken (23.8%). If you add the state park, natural area and environmental education centers together, DCNR lands account for a total of 59.1% of the SAP trips (Table 1).

There were twenty new locations added to the SAP database since 1998. Some of these were started by volunteers previously (and listed in previous reports), but the data were not entered until after 1998. More locations have been started by volunteers but not sent into the SAP office by the end of 2000 (e.g. the Scotia barrens of SGL 176). These new locations add to distribution of SAP data, including counties that do not receive good birding coverage. These new efforts add to the quantitative bird data for public lands of all kinds. For example, Black Moshannon State Park is a Pennsylvania Audubon designated Important Bird Area. It was

Park by members of the North Branch Bird Club and the Greater Wyoming Valley Audubon Chapter. Most data were collected by Alan Gregory, a local resident. I sent these data and a summary of the bird community at Nescopeck, highlighting the rare species like Northern Goshawk (*Accipiter gentilis*) and suites of birds that represent the variety of habitats found in this location. Nescopeck State Park was the site of many studies of nesting American Woodcock (*Philohela minor*) by the Pennsylvania Game Commission.

SAP locations contribute to the state's biodiversity in various ways. Popular birding locations often have a large number of species, perhaps because of their large size or habitat diversity. These sites have high alpha diversity (high local diversity) or a gradient of habitats (beta diversity) (Whittaker 1972, Noss 1993). Some natural areas may preserve native ecosystems that contribute to gamma diversity (regional biodiversity) by providing critical habitat for rare or declining species. SAP data allows a biologist to construct a community profile of each locations breeding bird population. There are many similarities between sites with similar vegetation and elevation. SAP data collected at Ricketts Glen and the various game lands on North Mountain (SGL 57 and 13) were similar to other boreal-like sites in the state that are in other physiographic provinces (e.g. Bear Meadows, Long Pond). By contrast, there are riparian sites like Little Pine State Park that have community profiles remarkably similar to sites much farther south. The SAP data are collected in a geographically specific manner that allows an appreciation for what each site contributes to the state's bird populations and the bird community it supports. Some locations also support Species of Special Concern either as breeders or migrants, including post-nesting dispersal of wading birds. Data collected at these game lands will help us gain insight as the benefits of land management practices employed at each location.

Other SAPs are remote natural areas that take effort to visit, but have great conservation value. These sites may not have long species lists, but contribute to regional biodiversity (gamma diversity) by providing critical habitat for rare species or high densities of environmentally sensitive species. They can be studied to understand the potential for Pennsylvania to support bird populations in native ecosystems. Three of these are DCNR Natural Areas that include old growth forest stands: Alan Seeger, Detweiler's Run, and Hemlocks Natural Areas. The first two are in Rothrock State Forest while the latter is in Tuscarora State Forest. These natural areas include virgin hemlock and white pine stands with rhododendron understory (Davis 1993). Volunteers are also surveying birds at Ricketts Glen State Park, including the Glens Natural Area, and Cook Forest State Park, including its Forest Cathedral, Seneca area, and Swamp area old growth. A few field trips have also been conducted at Long Pond Preserve (owned by a municipality), Bruce Lake Natural Area, Adam Swamp, Two Mile Run, and other Poconos sites. Although the number of field trips and inventoried species are not high in some of the small and remote Natural Areas, these Special Areas are important contributions to our knowledge of the state's rare habitats.

The Special Areas Project is supporting Pennsylvania Audubon's Important Bird Areas Project (IBA) by sharing data at SAP locations. Since the Special Areas Project is a data-gathering initiative, it compliments conservation programs like the IBA. The progress and success of Pennsylvania's IBA program has been due in part to SAP participation and cooperation.

well-documented in a *Pennsylvania Birds* article based, in part, on SAP data (Hess et al. 1998). In addition, two species that are possible nominees for the SSC list, Blackpoll Warbler (*Dendroica striata*) and Sandhill Crane (*Grus canadensis*), are also being monitored by birders at SAP locations.

PSO and the Bureau of State Parks have been engaging in a dialogue about state park checklists as SAP data have been collected over the last few years. A prototype state park checklist was presented by Charlie Miller, Environmental Education Specialist. This checklist was, in part, the result of our ongoing dialogue as well as cooperative design work within the bureau. The prototype checklist is actually a template design that will be used for all parks with specific information added for each park. This graphical design should enhance the educational value of the checklist by making the species seasonal occurrence very easy to read. The phenogram approach follows the precedence of successful bird publications such as the A Birder's Guide to Southeastern Arizona (Lane 1965, and subsequent ABA publications), the Birds of the Lehigh Valley Area (Morris and others 1984), and the Annotated list of the Birds of Pennsylvania (Santner et al. 1994). Following the meeting, SAP sent a sample monthly SAP bird report to Sarah Hopkins, Division Chief of Environmental Education and Information Division. The sample report used Yellow Creek State Park data (Attachment B, January report only). This report converts hundreds of bird records into statistical summaries for each species, including the birds per party hour, trip frequency (% of trips a species was found), the first observed date, and the last observed date in each month. The birds per party hour and trip frequency could be converted by an agreed upon formula to "ease of finding" levels (Probably Will Find, Might Find, and Lucky to Find). The bird first and last dates will convert to bird phenograms that show when each species occur at the park. The ease of finding each species will be shown with different shades. The habitat of each species with also be indicated with appropriate icons. The breeding species will be designated by underlining the species name. The resulting checklists will be very useful educational materials with broad approach and appeal. They will add to the DCNR's efforts to promote environmental education and ecotourism in its parks.

In 2000, I developed a method of converting monthly bird reports (see Attachment B of 1998 Annual Report) from database report RTF format to spreadsheet files where they can be converted by formula to "Ease of Finding" codes. The exact formula used (birds per party hour and / or frequency a species is observed) for each of the categories needs to be negotiated with the parties involved. This conversion involves at least four computer programs to enable easy use by DCNR personnel that will be producing the checklists. An easier approach will probably be used for Natural Areas and game lands.

As mentioned above, the Special Areas Project has contributed to publications of the Pennsylvania Audubon Society. In 2000, Marci Mowery of Pennsylvania Audubon requested asssistance with the Pennsylvania Northcentral Mountain Birding Passport project, an educational ecotourism venture. Data collected from SAP trips were sent to PA Audubon for inclusion in the passport packages. SAP also provided birding contact information for more detailed site-specific information about northcentral counties included in this project.

Crossbill (a Candidate - Undetermined species) during the winter of 1997-98 because of the local knowledge of Seneca Rocks Auduboners achieved through SAP inventories. More birders have an appreciation for the need to conserve conifer forests as a result of these experiences. The absence of some SSC species should serve as a warning that these species are particularly vulnerable to extirpation from the state. No Sedge Wrens (*Cistothorus platensis*) were observed in all the SAP field trips conducted at over 100 locations, many of which have extensive wetlands. No Black Terns (*Chlidonias niger*) were noted in SAP surveys, either. Thus far, no breeding Long-eared Owls (*Asio otus*) have been reported in the many SAP forested locations (although some unprocessed data may change this situation). These results, or lack of them, suggest that these species may be in deeper trouble than their current state status may indicate.

SAP has great potential for inventory and monitor surveys of species of conservation, management and recreational interest. The Project will continue to expand its coverage of locations which have a history or the potential for these species. The Important Bird Areas Project has selected 74 locations of particular important to the continued viability of the state's bird populations. There are 47 SAP locations that are part of IBAs. Thus far, 2740 field trips have been made by SAP volunteers in IBAs and input into the SAP database. These include Yellow Creek State Park, Hickory Run State Park, Cook Forest State Park, State Game Lands 211, Ricketts Glen State Park, State Game Lands 13 and 57 (in part), Wyoming State Forest, and Ohiopyle State Park (part of the Youghiogheny River drainage), Thickhead Wild Area including Bear Meadows, Detweiler's Run, and Alan Seeger Natural Areas, Game Lands 137 (on Kittitany Ridge), Game Lands 95 (the Glades), Game Lands 284 (Pennsy Swamp), and the Piedmont Forest Block (including Hay Creek watershed and French Creek State Park). These locations were selected, in part, because SAP data provided information necessary to confirm that they qualified under at least one of the IBA criteria. More recently started SAP locations (Black Moshannon State Park, Moraine State Park, SGL 95, SGL 213, SGL 313, the Piney Tract, and Raccoon Creek State Park) add to the list of locations covered by both programs. SAP should expand to include several locations listed as IBAs which do not have an abundance of bird data.

SAP provides a flexible, but useful, search and survey format for inventorying sites selected as "representative of rare, threatened, or unique habitats, with characteristic birds." It may not be necessary to conduct many field trips to these locations to acquire the kinds of data that IBA monitoring requires. For most "representative areas", the emphasis would be placed on breeding season and relative abundance data. Locations like the Hook Natural Area and Enlow Fork would be well-served by SAP data collection. SAP will emphasize more areas selected as IBAs and those that support Species of Special Concern.

SAP volunteers have noted some bird conservation problems at state parks and other public lands. They have communicated these concerns to the park staff, contributing to changes in policy that will benefit both bird populations and the public enjoyment of the facility. For instance, birders have observed that the fields at Tyler State Park are mown when Eastern Meadowlarks and Bobolinks (*Dolinchonyx orizivorus*) are attempting to nest. The park is now planning to plant warm season grasses that will provide better habitat and later mowing schedules for that park. More recently, SAP data collected at Nescopeck State Park were given to the Bureau to help it formulate a managment plan. More interaction between SAP and state park

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Table 1

A summary of Special Areas Project locations adopted by volunteer organizations in Pennsylvania as of the end of 2000, the number of field trips entered into the SAP database, and the estimated number of party hours for each management area type.

MANAGEMENT AREA TYPE	Number of Locations in SAP Database	Percent of SAP Locations (%)	Number of Trips in SAP Database	Percent of Trips in Database (%)	Party Hours At Location	Percent of Total Party Hrs. (%)
State Parks	41	36.9	2250	47.3	7561.3	54.6
DCNR State Forests, Natural, Wild, and Scenic Areas *	19	17.1	454	9.5	1533.1	11.1
State Game Lands	25	22.5	1133	23.8	3034.4	21.9
Fish and Boat Commission Lands	3	2.7	108	2.3	85.0	0.6
County and Municipal Parks	11	9.9	404	8.5	854.4	6.2
Federal Lands (ACE Lakes and NHS)	3	2.7	179	3.8	342.6	2.5
Private Sanctuaries	2	1.8	13	0.3	48.2	0.3
Corporate Lands	2	1.8	101	2.1	13.3	0.1
Nature Conservancy Preserves	2	1.8	4	0.2	210.4	1.5
Environmental Education Centers	3	2.7	109	2.3	169.5	1.2
Total Special Areas Projects	111	100.0	4755	100.0	13852.3	100

Table 2

New Special Area Projects entered into the database since 1998.

LOCATION	COUNTY	COORDINATOR
Big Flat Laurel Natural Area *	Huntingdon	Greg Grove
Black Moshannon State Park *	Centre	Nick Bolgiano
Blacklick Valley (County) Natural Area	Indiana	Margaret Higbee
Bruce Lake Natural Area *	Pike	Edith Parnum
Buttermilk Falls County Park	Indiana	Margaret Higbee
Conemaugh Dam / Tunnelview County Park	Indiana	Margaret Higbee
French Creek State Park *	Berks	Larry Lloyd
Greenwood Furnace State Park +	Huntingdon	Greg Grove
Laurel Hill State Park +	Somerset	Carol McCullough
McConnell's Mill State Park	Butler	Barb Dean
Penn Roosevelt State Park +	Centre	Greg Grove
Quebec Run Wild Area +	Fayette	Bill Hintze
Raccoon Creek State Park *	Beaver	Bill Hintze
State Game Lands # 151 *	Lawrence	Suzanne Butcher and Barb Dean
State Game Lands # 189 +	Beaver	Bill Hintze
Tamarack Swamp Natural Area *	Clinton	Nick Bolgiano
Thickhead Wild Area *	Huntingdon	Greg Grove
Whipple Dam State Park +	Huntingdon	Greg Grove
Wolf Run Wilderness Area +	Lycoming	Doug Gross

* Locations that are part of Pennsylvania Important Bird Areas.
+ Locations that are near IBAs and might be candidates for inclusion.

Table 3

Species of Special Concern observed on Special Areas Project field trips as of the end of 2000 (including only those records logged into database to that time)..

SPECIES	NUMBER	FREQUENCY
American Coot	44,791	549
Pied-billed Grebe	3,742	634
Red Crossbill	3,449	58
Green-winged Teal	2,692	282
Black-crowned Night Heron *	1,279	60
Great Egret	988	137
Osprey	724	431
Common Snipe	400	119
Yellow-bellied Flycatcher *	370	117
Northern Harrier	278	200
Swainson's Thrush	244	115
Bald Eagle	192	135
Marsh Wren	138	37
Common Tern	93	23
Short-eared Owl	57	28
American Bittern	46	37
Northern Goshawk	46	37
Long-eared Owl	41	20
Black Tern	38	23
Olive-sided Flycatcher	28	20
Northern Saw-whet Owl	27	37
Prothonotary Warbler	22	13
Northern Bobwhite	15	10
Upland Sandpiper	12	7

Table 3 (cont.)

SPECIES	NUMBER	FREQUENCY
Barn Owl	10	3
King Rail	9	7
Yellow-crowned Night-Heron	7	1
Least Bittern	5	5
Peregrine Falcon	3	3
Summer Tanager	2	2
Loggerhead Shrike	1	1

* Species that received special efforts which increased their numbers observed.

SAP Trips by Area

Attachment A

A AM'S SWAMP NATURAL AREA	3
ALAN SEEGER NATURAL AREA	73
ALGERINE SWAMP NATURAL AREA	2
BALD EAGLE STATE PARK	19
BEAR MEADOWS NATURAL AREA	43
BEAVER CREEK NATURE AREA	137
BELTZVILLE STATE PARK	47
BIG FLAT LAUREL NATURAL AREA	25
BLACK MOSHANNON STATE PARK	29
BLACKLICK VALLEY NATURAL AREA	10
I JE MARSH LAKE	133
BLUE SPRUCE COUNTY PARK	79
BRADFORD DAM	14
BRIAR CREEK LAKE	111
BRUCE LAKE NATURAL AREA	12
BUTTERMILK FALLS COUNTY PARK	3
CALLEN RUN RESEARCH AREA	37
CANOE CREEK STATE PARK	16
CLEAR CREEK STATE PARK	21
CODORUS STATE PARK	170
COLONEL DENNING STATE PARK	21

SAP Trips by Area

C ŀEMAUGH DAM/TUNNELVIEW COUNTY PAR	9
COOK FOREST STATE PARK	170
CROOKED CREEK LAKE PARK	41
DETWEILER'S RUN NATURAL AREA	87
DUNLO STRIP MINE	8
EVANSBURG STATE PARK	21
FORT ROBERDEAU COUNTY PARK	27
FRANCIS SLOCUM STATE PARK	97
FRANK MASLAND NATURAL AREA	1
FRENCH CREEK STATE PARK	5
C FORD PINCHOT STATE PARK	84
GREENWOOD FURNACE STATE PARK	33
HEMLOCK LAKE COUNTY PARK	8
HEMLOCKS NATURAL AREA	9
HICKORY RUN STATE PARK	98
HOPEWELL FURNACE NAT. HIST. SITE	5
HUNTSDALE FISH HATCHERY	18
JACOBSBURG ENV. ED. CENTER	17
JAKEY'S HOLLOW NATURAL AREA	2
JENNINGS ENVIRONMENTAL EDUCATION CENT	62

SAP Trips by Area

K /STONE LAKE	29
KEYSTONE STATE PARK	86
KYLE LAKE	61
LACKAWANNA STATE PARK	12
LAUREL HILL STATE PARK	10
LITTLE BUFFALO STATE PARK	35
LITTLE PINE STATE PARK	21
LONG POND PRESERVE	3
MARSH CREEK STATE PARK	77
McCONNELL'S RUN STATE PARK	3
I NT ALTO STATE PARK	1
MORAINE STATE PARK	59
NESCOPECK STATE PARK	128
NOLDE FOREST ENVIRONMENTAL ED. CENTER	30
OHIOPYLE STATE PARK	36
PENN ROOSEVELT STATE PARK	5
PINE CREEK GORGE	10
PINE RIDGE COUNTY PARK	3
PINEY TRACT	64
PLUMMER'S HOLLOW NATURE RESERV	7
PRESQUE ISLE STATE PARK	6

SAP Trips by Area

I NCE GALLITZIN STATE PARK	67
PROMISED LAND STATE PARK	97
QUEBEC RUN WILD AREA	8
RACCOON CREEK STATE PARK	19
REYNOLDS SPRING NATURAL AREA	1
RICKETTS GLEN STATE PARK	84
ROSECRANS BOG NATURAL AREA	5
RYERSON STATION STATE PARK	26
SIZERVILLE STATE PARK	15
STATE GAME LANDS # 110	122
(\TE GAME LANDS # 13	36
STATE GAME LANDS # 137	100
STATE GAME LANDS # 141	8
STATE GAME LANDS # 145	34
STATE GAME LANDS # 151	20
STATE GAME LANDS # 166	184
STATE GAME LANDS # 169	59
STATE GAME LANDS # 172	1
STATE GAME LANDS # 189	6
STATE GAME LANDS # 211	146
S ATE GAME LANDS # 213	7

SAP Trips by Area

S .TE GAME LANDS # 226	5
STATE GAME LANDS # 249	34
STATE GAME LANDS # 250	21
STATE GAME LANDS # 284	121
STATE GAME LANDS # 296	8
STATE GAME LANDS # 313	10
STATE GAME LANDS # 55	1
STATE GAME LANDS # 57	101
STATE GAME LANDS # 58	3
STATE GAME LANDS # 66	28
S .TE GAME LANDS # 95	61
STATE GAMELANDS # 243	2
STATE GAMELANDS # 80	15
SUSQUEHANNA RIVER ISLANDS	41
SUSQUEHANNA STATE PARK	11
SUSQUEHANNOCK STATE PARK	15
SWATARA STATE PARK	27
TAMARACK SWAMP NATURAL AREA	1
THICKHEAD WILD AREA	7
TWO MILE RUN PRESERVE	1
T LER STATE PARK	8

SAP Trips by Area

\ .IPPLE DAM STATE PARK	60
WHITE'S WOODS	6
WOLF RUN WILDERNESS AREA	1
WORLD'S END STATE PARK	23
WYKOFF RUN NATURAL AREA	1
WYOMING STATE FOREST	118
YELLOW CREEK STATE PARK	487
	4755

SAP Observed by Species

Attachment B

SPECIES	Total of OBSERVED
"Blue" Goose	13
"Lawrence's" Warbler	7
Acadian Flycatcher	1469
Alder Flycatcher	403
Amer. Tree Sparrow	4582
American Avocet	1
American Bittern	46
American Black Duck	2495
American Coot	44791
American Crow	33546
American Goldfinch	17957
American Kestrel	706
American Pipit	400
American Redstart	3393
American Robin	43434
American Wigeon	2984
American Woodcock	322
B[illegible]d's Sandpiper	3
Bald Eagle	192
Baltimore Oriole	2000
Bank Swallow	334
Barn Owl	10
Barn Swallow	7778
Barred Owl	186
Bay-breasted Warbler	254
Belted Kingfisher	1988
Bicknell's Thrush	1
Black Scoter	155
Black Tern	38
Black Vulture	696
Black-and-white Warbler	2451
Black-backed Woodpecke	1
Black-bellied Plover	17
Black-billed Cuckoo	286
Blackbird Sp.	60
[illegible]ckburnian Warbler	1615
Black-capped Chickadee	28806

SAP Observed by Species

SPECIES	Total of OBSERVED
Black-cr'd Night-Heron	1279
Black-legged Kittiwake	2
Blackpoll Warbler	360
Black-thr. Blue Warbler	1619
Black-thr. Gray Warbler	18
Black-thr. Green Warbler	5501
Blue Grosbeak	14
Blue Jay	22200
Blue-gray Gnatcatcher	2861
Blue-headed Vireo	3017
Blue-winged Teal	2099
Blue-winged Warbler	1377
Bobolink	442
Bonaparte's Gull	2016
Brant	4
Brewer's Blackbird	5
Brewster's Warbler	18
Broad-winged Hawk	2799
B. .wn Creeper	2021
Brown Thrasher	949
Brown-headed Cowbird	5309
Bufflehead	6003
Canada Goose	100247
Canada Warbler	1609
Canvasback	614
Cape May Warbler	245
Carolina Chickadee	3671
Carolina Wren	1716
Caspian Tern	149
Cattle Egret	3
Cedar Waxwing	27334
Cerulean Warbler	359
Chestnut-sided Warbler	2054
Chickadee Sp.	31
Chickadee Spp.	141
C. 'mney Swift	3867
Chipping Sparrow	9152

SAP Observed by Species

SPECIES	Total of OBSERVED
Clay-colored Sparrow	5
Cliff Swallow	1113
Common Goldeneye	627
Common Grackle	81623
Common Loon	2139
Common Merganser	10207
Common Moorhen	56
Common Nighthawk	82
Common Raven	1023
Common Redpoll	3865
Common Snipe	400
Common Tern	93
Common Yellowthroat	11552
Connecticut Warbler	10
Cooper's Hawk	412
Crossbill Sp.	710
Dark-eyed Junco	24928
Double-crested Cormoran	1585
Downy Woodpecker	6444
Dunlin	366
Eared Grebe	8
Eastern Bluebird	6562
Eastern Kingbird	1271
Eastern Meadowlark	861
Eastern Phoebe	4714
Eastern Screech-Owl	252
Eastern Towhee	10292
Eastern Wood-Pewee	2709
Empidonax Sp.	11
Eurasian Wigeon	10
European Starling	54545
Evening Grosbeak	1085
Field Sparrow	5413
Fish Crow	831
Forster's Tern	591
[illegible] Sparrow	688
Franklin's Gull	9

SAP Observed by Species

SPECIES	Total of OBSERVED
Gadwall	681
Glaucous Gull	7
Glossy Ibis	4
Golden Eagle	8
Golden-crowned Kinglet	5928
Golden-winged Warbler	191
Gr. White-fronted Goose	11
Grasshopper Sparrow	261
Gray Catbird	14411
Gray-cheeked Thrush	29
Great Black-backed Gull	246
Great Blue Heron	2879
Great Cormorant	13
Great Crested Flycatcher	1191
Great Egret	988
Great Horned Owl	289
Greater Scaup	332
Greater Yellowlegs	501
Green Heron	997
Green-winged Teal	2692
Hairy Woodpecker	1989
Harlequin Duck	2
Harris's Sparrow	1
Henslow's Sparrow	216
Hermit Thrush	3350
Herring Gull	7869
Hoary Redpoll	17
Hooded Merganser	2703
Hooded Warbler	1587
Horned Grebe	1474
Horned Lark	201
House Finch	7333
House Sparrow	1390
House Wren	2740
Hudsonian Godwit	2
Iceland Gull	27
Indigo Bunting	2942

SAP Observed by Species

SPECIES	Total of OBSERVED
Kentucky Warbler	334
Killdeer	5809
King Rail	9
Lark Sparrow	1
Laughing Gull	18
Least Bittern	5
Least Flycatcher	1208
Least Sandpiper	205
Least Tern	2
Lesser Black-backed Gull	9
Lesser Golden Plover	13
Lesser Scaup	3897
Lesser Yellowlegs	180
Lincoln's Sparrow	60
Little Blue Heron	18
Loggerhead Shrike	1
Long-eared Owl	41
Louisiana Waterthrush	813
Magnolia Warbler	1624
Mallard	35155
Mallard/Black Hybrid	1
Marsh Wren	138
Merlin	13
Mountain Bluebird	12
Mourning Dove	7349
Mourning Warbler	51
Mute Swan	43
N. Rough-winged Swallo	1745
Nashville Warbler	591
Northern Bobwhite	15
Northern Cardinal	13201
Northern Flicker	5379
Northern Goshawk	46
Northern Harrier	278
Northern Mockingbird	1131
Northern Parula	336
Northern Pintail	711

SAP Observed by Species

SPECIES	Total of OBSERVED
Northern Saw-whet Owl	27
Northern Shoveler	194
Northern Shrike	47
Northern Waterthrush	648
Oldsquaw	603
Olive-sided Flycatcher	28
Orange-crowned Warbler	11
Orchard Oriole	153
Osprey	724
Ovenbird	8713
Palm Warbler	274
Pectoral Sandpiper	536
Peregrine Falcon	3
Philadelphia Vireo	65
Pied-billed Grebe	3742
Pileated Woodpecker	1717
Pine Grosbeak	4
Pine Siskin	2203
Pine Warbler	275
Pomarine Jaeger	1
Prairie Warbler	1051
Prothonotary Warbler	22
Purple Finch	1593
Purple Martin	594
Red Crossbill	3449
Red Phalarope	2
Red-bellied Woodpecker	2909
Red-breasted Merganser	5973
Red-breasted Nuthatch	1143
Red-eyed Vireo	13301
Redhead	1113
Red-headed Woodpecker	35
Red-necked Grebe	109
Red-necked Phalarope	1
Red-shouldered Hawk	298
Red-tailed Hawk	2098
Red-throated Loon	44

SAP Observed by Species

SPECIES	Total of OBSERVED
Red-winged Blackbird	57553
Ring-billed Gull	53400
Ring-necked Duck	14738
Ring-necked Pheasant	508
Rock Dove	2887
Rose-breasted Grosbeak	2183
Ross's Gull	1
Rough-legged Hawk	26
Ruby-crowned Kinglet	3128
Ruby-thr'd Hummingbird	915
Ruddy Duck	5728
Ruddy Turnstone	40
Ruffed Grouse	1329
Rusty Blackbird	2168
Sanderling	84
Sandhill Crane	8
Savannah Sparrow	278
Scarlet Tanager	4545
Scaup Sp.	173
Sedge Wren	1
Semipalmated Plover	98
Semipalmated Sandpiper	137
Sharp-shinned Hawk	734
Short-billed Dowitcher	5
Short-eared Owl	57
Snow Bunting	74
Snow Goose	7066
Snowy Egret	9
Solitary Sandpiper	269
Song Sparrow	18665
Sora	105
Spotted Sandpiper	688
Summer Tanager	2
Surf Scoter	22
Swainson's Hawk	3
Swainson's Thrush	244
Swainson's Warbler	3

SAP Observed by Species

SPECIES	Total of OBSERVED
Swamp Sparrow	3348
Tennessee Warbler	262
Traill's Flycatcher	8
Tree Swallow	22423
Trumpeter Swan	1
Tufted Titmouse	10551
Tundra Swan	9378
Turkey Vulture	4992
Unknown Buteo	6
Unknown Sparrow	16
Unknown Warbler	90
Upland Sandpiper	12
Varied Thrush	6
Veery	2582
Vesper Sparrow	80
Virginia Rail	158
Warbling Vireo	226
Water Pipit	47
W tern Kingbird	3
Western Palm Warbler	6
Western Sandpiper	3
Whimbrel	17
Whip-poor-will	57
White-breasted Nuthatch	6592
White-crowned Sparrow	761
White-eyed Vireo	856
White-rumped Sandpiper	7
White-throated Sparrow	12226
White-winged Crossbill	3254
White-winged Scoter	21
Wild Turkey	1673
Willet	24
Willow Flycatcher	602
Wilson's Warbler	77
Winter Wren	1127
W od Duck	7757
Wood Thrush	5026

SAP Observed by Species

SPECIES	Total of OBSERVED
Worm-eating Warbler	374
Yellow Warbler	5144
Yellow-bell'd Flycatcher	370
Yellow-bellied Sapsucker	1356
Yellow-billed Cuckoo	385
Yellow-breasted Chat	255
Yellow-cr'd Night-Heron	7
Yellow-rumped Warbler	7578
Yellow-throated Vireo	309
Yellow-throated Warbler	72
	1139263

SAP Field Trip Frequency

Attachment C

SPECIES	Count of TRIP
"Blue" Goose	7
"Lawrence's" Warbler	6
Acadian Flycatcher	435
Alder Flycatcher	163
Amer. Tree Sparrow	501
American Avocet	1
American Bittern	37
American Black Duck	367
American Coot	549
American Crow	3437
American Goldfinch	2421
American Kestrel	409
American Pipit	45
American Redstart	846
American Robin	2935
American Wigeon	309
American Woodcock	142
Baird's Sandpiper	3
Bald Eagle	135
Baltimore Oriole	649
Bank Swallow	100
Barn Owl	3
Barn Swallow	939
Barred Owl	133
Bay-breasted Warbler	104
Belted Kingfisher	1186
Bicknell's Thrush	1
Black Scoter	28
Black Tern	23
Black Vulture	93
Black-and-white Warbler	799
Black-backed Woodpecke	1
Black-bellied Plover	14
Black-billed Cuckoo	187
Blackbird Sp.	1
Blackburnian Warbler	509
Black-capped Chickadee	3108

SAP Field Trip Frequency

SPECIES	Count of TRIP
Black-cr'd Night-Heron	60
Black-legged Kittiwake	1
Blackpoll Warbler	166
Black-thr. Blue Warbler	557
Black-thr. Gray Warbler	2
Black-thr. Green Warbler	1138
Blue Grosbeak	7
Blue Jay	3150
Blue-gray Gnatcatcher	751
Blue-headed Vireo	965
Blue-winged Teal	272
Blue-winged Warbler	417
Bobolink	63
Bonaparte's Gull	164
Brant	4
Brewer's Blackbird	3
Brewster's Warbler	16
B[illegible]oad-winged Hawk	407
B[illegible]own Creeper	984
Brown Thrasher	476
Brown-headed Cowbird	1088
Bufflehead	458
Canada Goose	1974
Canada Warbler	392
Canvasback	75
Cape May Warbler	103
Carolina Chickadee	401
Carolina Wren	625
Caspian Tern	49
Cattle Egret	3
Cedar Waxwing	1391
Cerulean Warbler	135
Chestnut-sided Warbler	631
Chickadee Sp.	1
Chickadee Spp.	13
C[illegible]mney Swift	530
Chipping Sparrow	1517

SAP Field Trip Frequency

SPECIES	Count of TRIP
Clay-colored Sparrow	2
Cliff Swallow	159
Common Goldeneye	129
Common Grackle	1280
Common Loon	469
Common Merganser	275
Common Moorhen	31
Common Nighthawk	9
Common Raven	592
Common Redpoll	66
Common Snipe	119
Common Tern	23
Common Yellowthroat	1648
Connecticut Warbler	10
Cooper's Hawk	327
Crossbill Sp.	9
Dark-eyed Junco	1916
Double-crested Cormoran	269
Downy Woodpecker	2554
Dunlin	41
Eared Grebe	6
Eastern Bluebird	1377
Eastern Kingbird	429
Eastern Meadowlark	267
Eastern Phoebe	1554
Eastern Screech-Owl	135
Eastern Towhee	1910
Eastern Wood-Pewee	950
Empidonax Sp.	8
Eurasian Wigeon	10
European Starling	1332
Evening Grosbeak	100
Field Sparrow	1205
Fish Crow	267
Forster's Tern	55
F Sparrow	220
Franklin's Gull	5

SAP Field Trip Frequency

SPECIES	Count of TRIP
Gadwall	141
Glaucous Gull	5
Glossy Ibis	3
Golden Eagle	8
Golden-crowned Kinglet	1084
Golden-winged Warbler	99
Gr. White-fronted Goose	3
Grasshopper Sparrow	49
Gray Catbird	1632
Gray-cheeked Thrush	22
Great Black-backed Gull	23
Great Blue Heron	1251
Great Cormorant	4
Great Crested Flycatcher	571
Great Egret	137
Great Horned Owl	197
Greater Scaup	73
Greater Yellowlegs	197
G. .en Heron	462
Green-winged Teal	282
Hairy Woodpecker	1243
Harlequin Duck	1
Harris's Sparrow	1
Henslow's Sparrow	25
Hermit Thrush	812
Herring Gull	163
Hoary Redpoll	4
Hooded Merganser	335
Hooded Warbler	553
Horned Grebe	265
Horned Lark	39
House Finch	1077
House Sparrow	315
House Wren	784
Hudsonian Godwit	2
I. .nd Gull	11
Indigo Bunting	827

SAP Field Trip Frequency

SPECIES	Count of TRIP
Kentucky Warbler	123
Killdeer	1140
King Rail	7
Lark Sparrow	1
Laughing Gull	6
Least Bittern	5
Least Flycatcher	330
Least Sandpiper	70
Least Tern	1
Lesser Black-backed Gull	9
Lesser Golden Plover	9
Lesser Scaup	242
Lesser Yellowlegs	74
Lincoln's Sparrow	41
Little Blue Heron	15
Loggerhead Shrike	1
Long-eared Owl	20
Louisiana Waterthrush	401
Magnolia Warbler	559
Mallard	1859
Mallard/Black Hybrid	1
Marsh Wren	37
Merlin	13
Mountain Bluebird	4
Mourning Dove	1622
Mourning Warbler	32
Mute Swan	27
N. Rough-winged Swallo	360
Nashville Warbler	268
Northern Bobwhite	10
Northern Cardinal	2467
Northern Flicker	2000
Northern Goshawk	37
Northern Harrier	200
Northern Mockingbird	491
Northern Parula	188
Northern Pintail	128

SAP Field Trip Frequency

SPECIES	Count of TRIP
Northern Saw-whet Owl	19
Northern Shoveler	50
Northern Shrike	42
Northern Waterthrush	210
Oldsquaw	82
Olive-sided Flycatcher	20
Orange-crowned Warbler	11
Orchard Oriole	89
Osprey	431
Ovenbird	1175
Palm Warbler	125
Pectoral Sandpiper	74
Peregrine Falcon	3
Philadelphia Vireo	40
Pied-billed Grebe	634
Pileated Woodpecker	1149
Pine Grosbeak	2
Pine Siskin	107
P..e Warbler	166
Pomarine Jaeger	1
Prairie Warbler	284
Prothonotary Warbler	13
Purple Finch	532
Purple Martin	63
Red Crossbill	58
Red Phalarope	2
Red-bellied Woodpecker	1163
Red-breasted Merganser	290
Red-breasted Nuthatch	444
Red-eyed Vireo	1571
Redhead	89
Red-headed Woodpecker	27
Red-necked Grebe	23
Red-necked Phalarope	1
Red-shouldered Hawk	247
R..-tailed Hawk	1281
Red-throated Loon	32

SAP Field Trip Frequency

SPECIES	Count of TRIP
Red-winged Blackbird	1530
Ring-billed Gull	794
Ring-necked Duck	421
Ring-necked Pheasant	269
Rock Dove	328
Rose-breasted Grosbeak	839
Ross's Gull	1
Rough-legged Hawk	22
Ruby-crowned Kinglet	670
Ruby-thr'd Hummingbird	570
Ruddy Duck	229
Ruddy Turnstone	8
Ruffed Grouse	621
Rusty Blackbird	140
Sanderling	15
Sandhill Crane	6
Savannah Sparrow	77
Scarlet Tanager	1247
S..ap Sp.	6
Sedge Wren	1
Semipalmated Plover	47
Semipalmated Sandpiper	45
Sharp-shinned Hawk	479
Short-billed Dowitcher	5
Short-eared Owl	28
Snow Bunting	15
Snow Goose	32
Snowy Egret	4
Solitary Sandpiper	128
Song Sparrow	2597
Sora	54
Spotted Sandpiper	313
Summer Tanager	2
Surf Scoter	10
Swainson's Hawk	2
S ·inson's Thrush	115
Swainson's Warbler	3

SAP Field Trip Frequency

SPECIES	Count of TRIP
Swamp Sparrow	844
Tennessee Warbler	118
Traill's Flycatcher	4
Tree Swallow	1170
Trumpeter Swan	1
Tufted Titmouse	2229
Tundra Swan	208
Turkey Vulture	1342
Unknown Buteo	2
Unknown Sparrow	3
Unknown Warbler	6
Upland Sandpiper	7
Varied Thrush	1
Veery	602
Vesper Sparrow	42
Virginia Rail	64
Warbling Vireo	137
Water Pipit	3
Western Kingbird	2
Western Palm Warbler	2
Western Sandpiper	3
Whimbrel	1
Whip-poor-will	32
White-breasted Nuthatch	2327
White-crowned Sparrow	165
White-eyed Vireo	330
White-rumped Sandpiper	5
White-throated Sparrow	1273
White-winged Crossbill	45
White-winged Scoter	9
Wild Turkey	347
Willet	6
Willow Flycatcher	239
Wilson's Warbler	49
Winter Wren	536
Wood Duck	956
Wood Thrush	1125

SAP Field Trip Frequency

SPECIES	Count of TRIP
Worm-eating Warbler	181
Yellow Warbler	779
Yellow-bell'd Flycatcher	117
Yellow-bellied Sapsucker	470
Yellow-billed Cuckoo	251
Yellow-breasted Chat	122
Yellow-cr'd Night-Heron	1
Yellow-rumped Warbler	1007
Yellow-throated Vireo	177
Yellow-throated Warbler	37
	124471