

Ap-A056 823

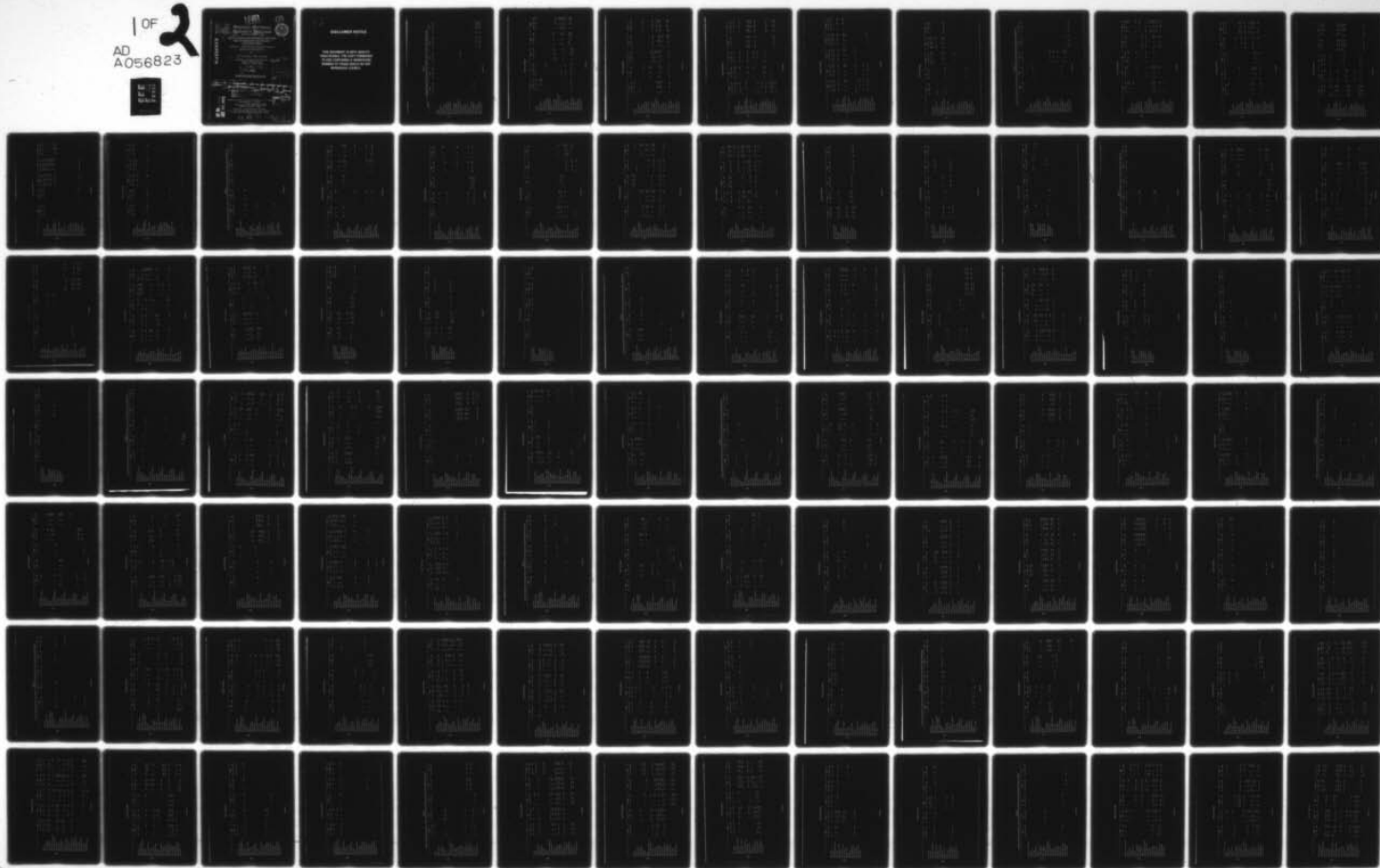
OREGON STATE UNIV CORVALLIS DEPT OF FISHERIES AND WI--ETC F/G 13/2
HABITAT DEVELOPMENT FIELD INVESTIGATIONS, MILLER SANDS MARSH AN--ETC(U)
MAY 78 J A CRAWFORD, D K EDWARDS DACW57-76-C-0180

UNCLASSIFIED

WES-D-77-38

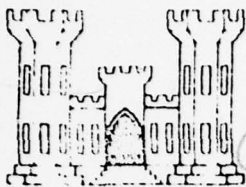
NL

1 OF 2
AD
A056823



LEVEL

①



DREDGED MATERIAL RESEARCH PROGRAM

WES

TECHNICAL REPORT D-77-38



AD A 056823

⑥

HABITAT DEVELOPMENT FIELD INVESTIGATIONS, MILLER SANDS
MARSH AND UPLAND HABITAT DEVELOPMENT SITE,
COLUMBIA RIVER, OREGON.

APPENDIX F. POSTPROPAGATION ASSESSMENT OF WILDLIFE
RESOURCES ON DREDGED MATERIAL.

by

10

John A. Crawford Daniel K. Edwards

Department of Fisheries and Wildlife
Oregon State University
Corvallis, Oregon 97331

410774 New

11

May 1978

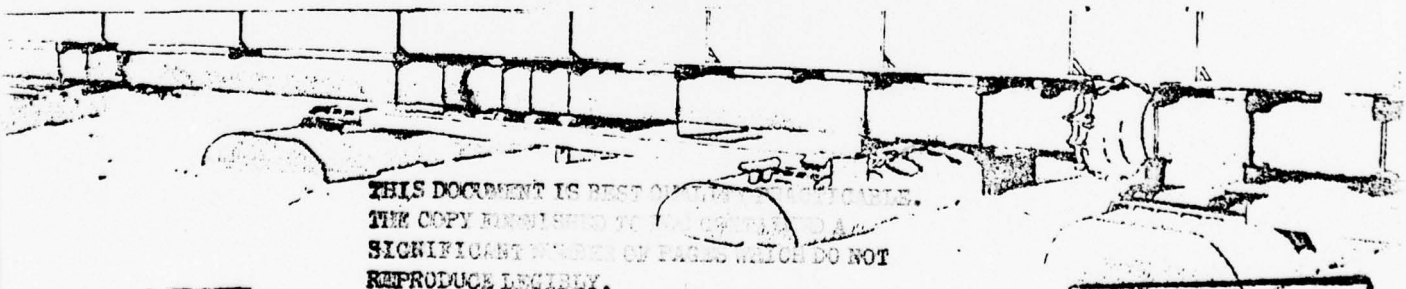
12 122p

9

Final Report

DDC
JUL 12 1978

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED



THIS DOCUMENT IS RESTRICTED TO THE
THE COPY IS LIMITED TO THE
SIGNIFICANT NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.

AD No.
DDC FILE COPY

Prepared for Office, Chief of Engineers, U. S. Army
Washington, D. C. 20314

Under Contract No. DACW57-76-C-0180
(DMRP Work Unit No. 4B051)

Monitored by Environmental Laboratory
U. S. Army Engineer Waterways Experiment Station
P. O. Box 631, Vicksburg, Mississippi 39180

ADDITIONAL	
NTS	White Section ☒
DDC	White Section ☐
UNCLASSIFIED	
JUSTIFICATION	
BY	
DISTRIBUTION AVAILABLE TO	
DATE	AVAIL. DATE
410774	43
A	64

78 07 11 004

DISCLAIMER NOTICE

**THIS DOCUMENT IS BEST QUALITY
PRACTICABLE. THE COPY FURNISHED
TO DDC CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.**

Table A1

Estimates of bird density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, July 1976

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard															
Pintail															
Common merganser															
Bald eagle															
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer															
Greater yellowlegs															
Western sandpiper															
Unidentified Scolopacidae															
Glaucous-winged gull							0	0.17	0.05						
Western gull															
California gull															
Ring-billed gull															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae															
Rufous hummingbird															
Common flicker	0	0	0.01							0	0.17	0.11	0	0.50	0.43
Downy woodpecker										0			0	0.17	0.43
Unidentified Picidae										0.55	0.67	1.18	0	0.17	0.59
Willow flycatcher															

(Continued)

Table A1 (Continued)

	IMAP			IMA			SMAP			SMA			AMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard	0.17	0.17	0.03	0.17	0	0							0.17	0.17	0.03
Pintail															
Common merganser	0	1.33	10.61												
Bald eagle	0	0	0.01												
American kestrel															
Great blue heron				0	0	0.01									
Black-bellied plover															
Semipalmated plover															
Killdeer															
Greater yellowlegs							0	0.17	0.01	0	0	0.03			
Western sandpiper							0.35	0	0				0	1.50	1.91
Unidentified Scolopacidae															
Glaucous-winged gull													0	0	0.01
Western gull				0.21	0	0				0	0	0.01	0.42	0	0.02
California gull										0	0	0.18	0.50	0.33	0.44
Ring-billed gull				0.23	0	0							0	0	0.02
Bonaparte's gull															
Caspian tern										0.33	0	0.02	0	0	0.02
Unidentified Laridae	0	0.83	0.09	2.00	0.17	0.05	0	0.17	0.09	0	0.50	0.05	0	1.00	0.35
Rufous hummingbird							0	0.17	0.85						
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher															

(Continued)

Table A1 (Continued)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard	0.17	0.50	0.08												
Pintail															
Common merganser															
Bald eagle	0.21	0	0												
American kestrel															
Great blue heron				0	0	0.01				0	0	0.12			
Black-bellied plover															
Semipalmated plover															
Killdeer				0	0	0.01									
Greater yellowlegs				0	0	0.01									
Western sandpiper				0	0	0.01				3.17	13.67	17.40	0	6.83	8.70
Unidentified Scolopacidae															
Glauco-winged gull	0	0.17	0.02										0.17	0.17	0.03
Western gull	0	0.83	0.02	0.17	0	0.01				0	0.83	0.01	0	0	0.01
California gull	0.17	1.00	0.48	0	0.17	0.27	1.17	1.00	0.85	0.17	0.50	0.37	0.33	0.50	0.74
Ring-billed gull										0	0	0.02			
Bonaparte's gull															
Caspian tern															
Unidentified Laridae	0	0.50	0.04	0.17	0	0.09	0	0.67	0.06	0	0	0.01	0	0.17	0.01
Rufous hummingbird										0	0.50	0.48	0.83	0	0.07
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher															

(Continued)

Table A1 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Barn swallow	2.70	1.17	0.66	1.23	0.50	0.33	0.25	0.17	1.16				0	0.17	0.15
Cliff swallow	0	0	0.05	0	0	0.05									
Violet-green swallow															
Tree swallow	2.47	1.17	1.08	0	0	0.08	0.62	0.17	0.25				0	0.17	5.31
Bank swallow															
Rough-winged swallow															
Unidentified Hirundinidae	0	0.17	0.24												
Common crow				0	0.33	1.20	0.78	0.17	0.14	6.43	4.17	5.09	0.62	4.17	5.09
Black-capped chickadee										4.49	2.00	1.66	8.33	3.50	6.63
Bewick's wren										0			0	0.17	0.08
American robin				0	0	0.02	0	0.17	0.05						
Swainson's thrush										0.93	1.33	2.32	1.48	2.00	2.98
Starling	0.17	0	0.99				0	0.17	0.02						
Wilson's warbler															
Red-winged blackbird	0	0.67	0.14												
Brewer's blackbird				0	0	0.02									
Brown-headed cowbird	0.37	0.50	0.44	0	0.33	0.29	0.19	1.67	1.47						
Black-headed grosbeak													0.83	0.50	0.64
American goldfinch	0	0.17	0.32												
Savannah sparrow	7.95	3.00	3.82	1.79	0	0									
White-crowned sparrow	0	0.17	0.54							0	0	0.29	0	0.17	0.15
Song sparrow	0.55	0	0.22							2.78	1.67	2.21	6.11	2.00	2.36

(Continued)

Table A1 (Continued)

	INAP			IMA			SNAP			SNA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Barn swallow	1.02	2.67	0.85	4.47	0	0.90	2.24	3.50	1.75	3.25	3.00	1.17	1.83	0.67	0.32
Cliff swallow	0.22	0.17	0.33	0.43	0.50	0.99	1.30	0.83	1.66	2.38	1.00	1.33			
Violet-green swallow															
Tree swallow	2.90	2.00	2.55	1.21	2.17	2.76	3.14	1.67	2.12	2.17	2.00	2.55	0	0.50	0.64
Bank swallow															
Rough-winged swallow															
Unidentified Hirundinidae	0	0	0.31	0	0	0.19	0	0	0.07	0	0	0.40	0	1.83	0.26
Common crow	0	0	0.21	0	0	0.09	0	0	0.05	0	0	0.02			
Black-capped chickadee															
Bewick's wren															
American robin															
Swainson's thrush															
Starling	104.17	0	0	0	0	0.45	0	0	0.59						
Wilson's warbler															
Red-winged blackbird	0	0.17	0.59												
Brewer's blackbird															
Brown-headed cowbird	0	0	0.17	0	0	0.17									
Black-headed grosbeak															
American goldfinch	0.17	0.67	0.33	0	0.83	0.50				0	0	0.32			
Savannah sparrow															
White-crowned sparrow															
Song sparrow															

(Continued)

Table A1 (Concluded)

	IBIP			IBI			SBIP			SBI			SBI		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Barn swallow							2.15	0.67	1.06	1.25	2.67	3.40	0	0.17	0.21
Cliff swallow							0.28	0	0.09	0.56	0.50	0.19			
Violet-green swallow															
Tree swallow	0.48	0	0							0.48	0	0.44			
Bank swallow															
Rough-winged swallow															
Unidentified Hirundinidae							0	0.83	1.66	0	0.17	1.41			
Common crow	0.17	0	0	0	0	0.19	0	0	0.17	0	0	0.02	0.33	0.17	0.12
Black-capped chickadee															
Bewick's wren															
American robin															
Swainson's thrush															
Starling							0	0	0.32						
Wilson's warbler															
Red-winged blackbird															
Brewer's blackbird															
Brown-headed cowbird															
Black-headed grosbeak															
American goldfinch															
Savannah sparrow				0.17	0	0.59									
White-crowned sparrow															
Song sparrow															

Table A2
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, August 1976

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard															
Pintail															
Common merganser															
Bald eagle				0	0	0.09									
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer															
Greater yellowlegs															
Western sandpiper															
Unidentified Scolopacidae															
Glaucous-winged gull							0	0	0.05						
Western gull															
California gull							0	0	0.05						
Ring-billed gull															
Bonaparte's gull							0	0	0.03						
Caspian tern															
Unidentified Laridae															
Rufous hummingbird				0	0	0.15									
Common flicker													0	0	0.11
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher										0.55	1.83	4.13	0.55	1.00	3.54

(Continued)

Table A2 (Continued)

	INAP			INA			SNAP			SNA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard	0	0	0.13	0	0	0.05	0.33	0	1.17	0	0	0.09	1.83	0	0.85
Pintail	0	0	0.08				0	0	0.42				0	0	0.02
Common merganser															
Bald eagle	0	0	0.01												
American kestrel															
Great blue heron				0	0	0.01	0	0	0.01				0	0	0.02
Black-bellied plover															
Semipalmated plover															
Killdeer										0.17	0	0.01			0.03
Greater yellowlegs															
Western sandpiper				0.17	0	0	0	0.50	0.64	0.70	1.67	2.12	0.18	0	0
Unidentified Scolopacidae															
Glaucous-winged gull	0	0	0.01	0	0	0.01							0	0	0.03
Western gull													0.21	0	0.05
California gull	0.50	0.17	0.13	0.17	0	0.04	0	0	0.04	0	0	0.04	0	0	0.04
Ring-billed gull				0	0	0.05				0	0	0.05	0.23	0	0.19
Bonaparte's gull													0	0.17	0.21
Caspian tern	0	0	0.33	0	0	0.09				0.33	0	0.19			
Unidentified Laridae										0	0	0.07	0	0.50	0.28
Rufous hummingbird	0.23	0	0												
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher															

(Continued)

Table A2 (Continued)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard	0	0	0.10				0	0	0.62				0.33	0	0.18
Pintail															
Common merganser															
Bald eagle															
American kestrel										0	0	0.01			
Great blue heron															
Black-bellied plover				0	0	0.02							0.18	0	0.44
Semipalmated plover										0	0.17	0.03	0.17	0.17	0.05
Killdeer															
Greater yellowlegs															
Western sandpiper										0.50	3.67	4.88	3.83	2.67	2.33
Unidentified Scolopacidae															
Glaucous-winged gull	0	0	0.03										0.17	0	0
Western gull	0	0	0.01	0	0	0.04							0	0	0.01
California gull				0	0.17	0.05	0	0	0.11	0.17	0.17	0.11	0	0.50	0.01
Ring-billed gull				0	0	0.02	0	0.17	0.03				0	0	0.04
Bonaparte's gull															
Caspian tern	0	0	0.01	0	0	0.02	0	0	0.01	0	0	0.02	0.50	0	0.03
Unidentified Laridae															
Rufous hummingbird															
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher															

(Continued)

Table A2 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Barn swallow	0	2.50	4.23	0	1.0	1.99	1.47	1.50	1.08				0	0.50	0.74
Cliff swallow															
Violet-green swallow	1.85	0	0.50	0.93	0.67	0.58	0	0	0.08						
Tree swallow	3.43	0	0												
Bank swallow															
Rough-winged swallow															
Unidentified Hirundinidae	0	1.50	0.38												
Common crow	0	0.17	0.07	0.39	0	0.02				0.60	0.50	0.64	0.20	1.00	1.27
Black-capped chickadee										3.21	1.50	1.99	1.67	0.67	1.33
Bewick's wren										0.21	0.33	0.25	0	0	0.33
American robin										0.55	0.33	0.16	0	0.50	0.21
Swinson's thrush										0	1.00	1.33	0	0.33	0.33
Starling	5.83	16.67	5.31	0	0.17	0.18									
Wilson's warbler	0.33	0.17	0.29	0	0	0.35									
Red-winged blackbird															
Brewer's blackbird															
Brown-headed cowbird				0.19	0.17	0.15									
Black-headed grosbeak															
American goldfinch	0.21	2.50	2.49												
Savannah sparrow	5.90	5.50	6.58	0.26	2.17	2.76	1.28	0.50	0.64						
White-crowned sparrow	0.42	0.83	0.65												
Song sparrow										0.56	0.50	0.74	0.56	0.50	0.44

(Continued)

Table A2 (Continued)

	INAP			INA			SMAP			SMA			INMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Barn swallow	2.33	1.50	1.70	1.01	7.07	4.19	16.06	5.67	2.76	12.20	4.33	2.49	0.81	1.33	0.85
Cliff swallow							2.38	1.00	1.66	1.08	0.83	1.66			
Violet-green swallow							0	0.17	0.11	1.30	0.67	0.27			
Tree swallow							2.17	1.17	1.27	0	0.33	0.42			
Bank swallow							0.56	0.33	0.21	0	0.17	0.05			
Rough-winged swallow										0.42	1.00	1.99			
Unidentified Hirundinidae							0	3.50	1.84	0	1.67	1.79	0	0.50	0.33
Common crow										0.23	0.33	0.24			
Black-capped chickadee															
Bewick's wren															
American robin															
Swainson's thrush															
Starling															
Wilson's warbler															
Red-winged blackbird															
Brewer's blackbird															
Brown-headed cowbird															
Black-headed grosbeak															
American goldfinch															
Savannah sparrow				0.17	0	0.58	0	0.50	0.54	0.83	0.17	0.11			
White-crowned sparrow															
Song sparrow															

(Continued)

Table A2 (Concluded)

	IBIP			IBI			SHIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Barn swallow	0.54	1.00	1.06	0	1.17	0.85	1.97	7.33	8.49	1.08	1.50	1.27	1.08	2.50	3.18
Cliff swallow															
Violet-green swallow															
Tree swallow							0	0.33	0.42	0	0.33	0.57			
Bank swallow															
Rough-winged swallow															
Unidentified Hirundinidae															
Common crow	0	0.17	0.02	0	0.50	0.12	0	0	0.02	0	0	0.17	0	0	0.07
Black-capped chickadee															
Bewick's wren															
American robin															
Swinson's thrush															
Starling															
Wilson's warbler															
Red-winged blackbird															
Brewer's blackbird															
Brown-headed cowbird															
Black-headed grosbeak															
American goldfinch															
Savannah sparrow				0	0	0.11									
White-crowned sparrow															
Song sparrow															

Table A3
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, September 1976

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Horned grebe															
Double-crested cormorant															
Whistling swan															
Canada goose															
Mallard	0	0	0.03	0	0	0.04									
Pintail															
American wigeon															
Green-winged teal															
Lesser scaup															
Surf scoter															
Common merganser	0	0	0.01												
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0	0.45												
Greater yellowlegs															
Long-billed dowitcher															
Dunlin															

(Continued)

Table A3 (Continued)

	IMAP			IMA			SNAP			SMA			NMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe	0.21	0	0	0	0	0.03									
Horned grebe															
Double-crested cormorant										0	0	0.42			
Whistling swan															
Canada goose															
Mallard	0.33	0	0.03				0	0.17	0.03	0	0	0.05	0	0	0.58
Pintail										0	0	0.01	0	0	0.21
American wigeon															
Green-winged teal															
Lesser scaup															
Surf scoter															
Common merganser				0	0	0.07							0	0	0.12
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel															
Great blue heron				0	0	0.01				0	0	0.01	0	0	0.01
Black-bellied plover															
Semipalmated plover										0	0	0.08			
Killdeer				0	0	0.32				0	0	0.21	0.33	0.17	0.27
Greater yellowlegs															
Long-billed dowitcher															
Dunlin															

(Continued)

Table A3 (Continued)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Horned grebe															
Double-crested cormorant				0	0	0.01									
Whistling swan															
Canada goose													0	0	0.05
Mallard										0	0	0.09			
Pintail				0	0	0.18									
American wigeon															
Green-winged teal															
Lesser scaup															
Surf scoter															
Common merganser										0	0	0.04	0	0	0.08
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel															
Great blue heron				0	0	0.01				0	0	0.01	0	0	0.01
Black-bellied plover							0	0	0.03						
Semipalmated plover							0.51	0.50	0.16	2.04	1.33	0.95	0	0	0.11
Killdeer				0.56	0.50	0.26	0	0.33	0.22						
Greater yellowlegs															
Long-billed dowitcher															
Dunlin															

(Continued)

Table A3 (Continued)

	IUPPL			IUPV			IUP			ITSIP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper															
Western sandpiper															
Common snipe															
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull															
Herring gull															
California gull															
Ring-billed gull															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae															
Belted kingfisher	0	0	0.08										0	0	0.11
Common flicker	0	0	0.01	0	0	0.01									
Barn swallow	0	0.17	0.64	0	0.33	0.13	0	1.00	1.01						
Common raven				0	0	0.09	0	0	0.07						
Common crow	0	0	0.27	0	0								0	0	0.15
Black-capped chickadee	0	0	0.29							2.44	2.00	0.99	1.56	1.83	2.98
House wren													0.28	0	0
Winter wren															
Bewick's wren										0.21	0.67	0.88	0	0.17	0.15
American robin	0.42	0	0												
Swainson's thrush										0	0	0.22			

(Continued)

Table A3 (Continued)

	IMAP			INA			SMAP			SNA			SMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper							5.49	3.33	1.06						
Western sandpiper							0.24	0.17	0.04				0	0	0.92
Common snipe										0.28	0	0			
Unidentified Scolopacidae															
Glaucous-winged gull				0	0	0.01							0	0	0.01
Western gull	0.17	0	0.50			0.07							0	0	0.02
Herring gull															
California gull	0.17	0	0.09	0	0	0.05							0	0.17	0.07
Ring-billed gull	0	0	0.02	0	0	0.05				0	0	0.02	0	0	0.21
Bonaparte's gull															
Caspian tern	0	0	0.02	0	0	0.03	0	0	0.01				0	0	0.04
Unidentified Laridae				0.17	0	0.05				0	0.33	0.05	0	0.17	0.05
Belted kingfisher															
Common flicker															
Barn swallow	0.17	1.83	0.85	0.33	0	0.37	4.33	2.83	3.08	1.17	2.17	1.96			
Common raven															
Common crow	0	0	0.01			0.02	0	0	0.01	0	0.17	0.05	0	0	0.68
Black-capped chickadee															
House wren															
Winter wren															
Bewick's wren															
American robin															
Swainson's thrush															

(Continued)

Table A3 (Continued)

	IBIP			IBJ			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling				0	0	0.24							1.67	2.17	1.38
Least sandpiper							1.04	0	0.27				0.67	2.17	2.06
Western sandpiper				3.83	2.17	6.93	1.83	1.00	1.33	8.57	5.00	5.16			
Common snipe													0	0	0.68
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull	0	0	0.05	0.17	0	0.02				0.17	0.17	0.05	0.17	0.33	0.21
Herring gull															
California gull	0.33	0	0.05	0	0.33	0.05	0	0	0.02				0.33	0.33	0.09
Ring-billed gull				0	0.17	0.05				0	0	0.05	0.33	0	0.05
Bonaparte's gull															
Caspian tern	0	0.17	0.14	0.17	0	0.05				0	0	0.05	0	0	0.19
Unidentified Laridae	0	0	0.02	0	0	0.02	0	0.33	0.01	0.33	0.17	0.03	0	0.33	0.01
Belted kingfisher															
Common flicker															
Barn swallow				0	0.83	0.74	0	0.83	0.58	2.83	2.83	1.11	0.17	1.33	0.90
Common raven															
Common crow	0	0	0.01							0	0	0.05	0	0	0.03
Black-capped chickadee															
House wren															
Winter wren															
Bewick's wren															
American robin															
Swainson's thrush															

(Continued)

Table A3 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit	0	0	0.05												
Starling	0.21	0.17	0.02	0	0	0.09									
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird															
Brown-headed cowbird	0.83	0.17	0.16												
House finch				0	1.33	1.18									
American goldfinch				1.64	2.00	1.21	1.64	2.67	2.57						
Savannah sparrow	2.73	3.00	2.16							0.17	0.17	0.33	0.33	0.83	1.66
Song sparrow	0	0	0.08												

(Continued)

Table A3 (Continued)

	IMAP			IMA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit										0	0.50	0.16			
Starling															
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird	0.17	0.17	0.05				0	0	0.05						
Brown-headed cowbird				0	0	2.65									
House finch															
American goldfinch	0	0	0.25												
Savannah sparrow							0.88	1.00	0.76	0.44	0.50	0.76			
Song sparrow	0	1.56	1.30												

(Continued)

Table A3 (Concluded)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit															
Starling	0	0	1.89							0.42	0	0.04	0	0	0.94
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird															
Brown-headed cowbird															
House finch															
American goldfinch	1.67	2.12	0							0	0.17	0.21			
Savannah sparrow				0	0	0.07									
Song sparrow															

Table A4
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, October 1976

	IUPPL			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe												
Horned grebe												
Double-crested cormorant												
Whistling swan												
Canada goose				0	0	0.01						
Mallard				0	0	0.53						
Pintail												
American wigeon												
Green-winged teal												
Lesser scaup												
Surf scoter												
Common merganser												
Unidentified Anatidae												
Marsh hawk				0	0	0.03						
Red-tailed hawk				0	0	0.02						
Merlin												
American kestrel												
Great blue heron												
Black-bellied plover												
Semipalmated plover												
Killdeer	0	0	0.14									
Greater yellowlegs												
Long-billed dowitcher												
Dunlin												

(Continued)

Table A4 (Continued)

	IMAP			IMA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Horned grebe				0	0	0.02							0	0	0.01
Double-crested cormorant															
Whistling swan															
Canada goose															
Mallard	0	0	0.09	0	0	0.05				0	0	0.04	0	0	0.36
Pintail										1.25	0	0	0	0	0.02
American wigeon													0	0	0.20
Green-winged teal													0	0	0.14
Lesser scaup															
Surf scoter				0	0	0.02									
Common merganser	0	0	0.19	0	0	0.24									
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel				0	0	0.01				0.01	0	0	0	0	0.01
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0	0.16	0	0	0.16							4.33	0.17	1.01
Greater yellowlegs				0	0	0.03							0	0	0.06
Long-billed dowitcher															
Dunlin										0	0.50	0.09			

(Continued)

Table A4 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe	0	0	0.01												
Horned grebe															
Double-crested cormorant				0	0	0.02							0	0	0.01
Whistling swan															
Canada goose															
Mallard	0	0	0.01	0	0	0.25				0	0	0.01			
Pintail							0	0	0.02	0	0	0.06			
American wigeon										0	0	0.03			
Green-winged teal	0	0	0.01												
Lesser scaup															
Surf scoter															
Common merganser				0	0	0.16				0	0	0.29	0.17	0	0.05
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel				0	0.17	0.21									
Great blue heron										0	0	0.01	0	0	0.01
Black-bellied plover										0	0	0.01			
Semipalmated plover										0	0.17	0.50			
Killdeer	2.41	0.17	0.09	0	0.33	0.18	0	0.17	0.35	0.19	0	0.04			
Greater yellowlegs															
Long-billed dowitcher				0.17	0	0									
Dunlin				0	0.33	0.05									

(Continued)

Table 4 (Continued)

	URPL			URPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper															
Western sandpiper															
Common snipe				0	0										
Glaucous-winged gull							0	0	0.05						
Western gull															
Perring gull															
California gull							0	0	0.09						
Ring-billed gull															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae															
Belted kingfisher															
Common flicker										0.56	0	0	0	0.17	0.11
Unidentified Picidae										0.17	0	0.33			
Barn swallow															
Common raven															
Common crow	0.42	0.17	0.43	0	0					1.25	0.17	0.15			
Black-capped chickadee										4.89	4.17	7.29	1.56	4.83	3.29
House wren															
Winter wren										1.17	0.33	3.54	1.17	1.50	5.31
Bewick's wren										0.42	1.33	0.59	0	0.33	0.29
American robin															
Swainson's thrush															

Table A4 (Continued)

	INAP			INA			SNAP			SMA			MBA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper							0	0.17	0.05	2.35	1.83	0.58	0.20	0	0
Western sandpiper										15.71	17.17	4.91			
Common snipe	0.56	0.17	0.07	1.13	0.17	0.07	1.41	0	0	2.26	0.33	0.07	0.28	0	0
Glaucous-winged gull															
Western gull	0	0	0.02	0	0	0.02	0.17	0	0.02				0	0	0.01
Herring gull													0	0	0.05
California gull	0	0	0.07				0	0	0.02				0	0	0.05
Ring-billed gull	0	0	0.09										0	0	0.07
Bonaparte's gull							0	0	0.07	0	0	0.02	0	0	0.05
Caspian tern				0	0	0.01									
Unidentified Laridae	0	0.17	0.05	0	0.17	0.02							0.17	0	0.05
Belted kingfisher				0.24	0	0				0	0	0.03			
Common flicker															
Unidentified Picidae										0	0	3.29			
Barn swallow															
Common raven															
Common crow	0	0	0.01	0	0	0.01	0	0	0.01	0	0	0.02	0	0	0.09
Black-capped chickadee															
House wren															
Winter wren															
Bewick's wren															
American robin															
Swainson's thrush															

(Continued)

Table A4 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling				0	0	0.35				16.50	6.50	3.77	3.17	11.00	5.49
Least sandpiper															
Western sandpiper										0	0.50	0.44			
Common snipe															
Glaucous-winged gull				0	0	0.01	0	0	0.01						
Western gull	0	0	0.07	0	0	0.02							0.17	0	0.02
Herring gull	0	0	0.01	0	0	0.05							0	0.17	0.01
California gull	0	0.17	0.09	0	0	0.07				0	0	0.02	0.17	0	0.05
King-billed gull	0.33	0	0.05	0	0	0.16	0.17	0	0				0.17	0.17	0.48
Bonaparte's gull															
Caspian tern										0	0	0.09	0	0	0.02
Unidentified Laridae	0.17	0.33	0.05	0	0	0.02				0	0	0.03	0.17	0	0
Belted kingfisher	0	0	0.03												
Common flicker															
Unidentified Picidae										0	0	2.65			
Barn swallow															
Common raven				0	0	0.02									
Common crow													0	0	0.04
Black-capped chickadee															
House wren															
Winter wren															
Bewick's wren															
American robin															
Swainson's thrush															

(Continued)

Table A4 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet													2.50	0	0
Ruby-crowned kinglet													0.48	1.67	3.32
Water pipit	0	1.83	1.22	0	0	0.16									
Starling	0.21	0	0.14	0	0.17	0.12									
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird															
Brown-headed cowbird				0	0	0.05									
House finch															
American goldfinch	0.83	0	0	0	0.17	0.15	0	0	0.29						
Savannah sparrow				0.27	0.17	0.41	0.55	0.50	0.41						
Song sparrow										0.17	0	0	0	1.17	1.99

(Continued)

Table A4 (Continued)

	INAP			INA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit	0	0.33	0.11	0	0.67	0.21				2.17	1.17	0.53			
Starling				0	3.50	8.54									
Yellow-rumped warbler															
Western meadowlark	0	0	0.28												
Brewer's blackbird															
Brown-headed cowbird															
House finch															
American goldfinch	0	0.67	0.50												
Savannah sparrow	0	0	0.22	0.44	0.17	0.11	0	0	0.65	0.44	1.33	0.87			
Song sparrow				0.83	0	0									

Table A4 (Concluded)

[illegible]

Table A5
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, November 1976

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Horned grebe															
Double-crested cormorant															
Whistling swan	0	0	0.22												
Canada goose	0	0	0.31												
Mallard	0	0	0.08	0	0	0.01	0	0	0.36						
Pintail															
American pigeon															
Green-winged teal															
Lesser scaup															
Surf scoter															
Common merganser															
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin				0.17	0	0									
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0.17	0	0.19												
Greater yellowlegs															
Long-billed dowitcher															
Dunlin															

(Continued)

Table A5 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Horned grebe															
Double-crested cormorant															
Whistling swan															
Canada goose				0	0	0.03									
Mallard	0	0	0.04	0	0	0.43	0	0	0.01	0	0	0.04	0	0	0.01
Pintail				0	0	0.06				0	0	0.12			
American pigeon	0	0	0.11												
Green-winged teal													0	0.33	0.66
Lesser scaup															
Surf scoter				0	0	0.05									
Common merganser				0	0	0.04	0	0	0.04	1.00	0	0	0	0	0.13
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel															
Great blue heron															
Black-bellied plover				0	0	0.20									
Semipalmated plover	0	0.33	0.21												
Killdeer	0.37	0	0.09							0	0	0.09			
Greater yellowlegs															
Long-billed dowitcher															
Dunlin	1.67	0	0	0	0	1.46	10.83	15.33	9.95	0.50	0.17	0.26	0.83	39.67	7.92

(Continued)

Table A5 (Continued)

	INAP			IHA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe	0	0.17	0.03												
Horned grebe															
Double-crested cormorant	0	0	0.02												
Whistling swan															
Canada goose	0	0	0.01	0	0	0.02	0.05	0	0	1.67	0	0.03	0	0	1.09
Mallard															
Pintail	0	0	0.03							5.33	0.17	0.12	0	0	0.02
American pigeon	0	0	0.07	1.11	0	0	0	0	0.07				0	0	0.65
Green-winged teal													0	0	0.59
Lesser scaup															
Surf scoter															
Common merganser	0	0	0.02	0	0	0.12				0	0	0.02	0	0	1.31
Unidentified Anatidae															
Marsh hawk															
Red-tailed hawk															
Merlin															
American kestrel															
Great blue heron	0	0	0.01	0	0.17	0.01							0	0	0.01
Black-bellied plover															
Semipalmated plover															
Killdeer															
Greater yellowlegs															
Long-billed dowitcher	0	0	0.35	0	0	0.94	0	6.33	8.98	0	10.83	16.86	0	4.33	1.38
Dunlin															

(Continued)

Table A5 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper															
Western sandpiper															
Common snipe				1.39	0.17	0.19									
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull															
Herring gull	0	0	0.05				0.42	0	0						
California gull															
Ring-billed gull															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae															
Belted kingfisher															
Common flicker	0	0	0.04				0	0	0.01						
Barn swallow															
Common raven							0.17	0	0						
Common crow	0	0	0.03							0	0.50	1.18	0	0.17	0.15
Black-capped chickadee										1.56	1.67	2.98	0.44	1.83	3.65
House wren															
Winter wren										1.17	0.83	1.77	0.58	0.50	0.59
Bewick's wren										0	0.17	0.15			
American robin															
Swainson's thrush															

(Continued)

Table A5 (Continued)

	INAP			INA			SNAP			SNA			MNA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper															
Western sandpiper															
Common sipe	3.39	0.33	0.10	0	0.17	0.09				0.98	0.50	0.16			
Unidentified Scolopacidae				1.13	0.17	0.03	1.98	0	0	0	0.17	0.88	0	2.00	0.70
Glaucous-winged gull	0	0	0.01	0	0	0.01	0	0	0.04	0	0	0.08	0	0	0.07
Western gull	0	0	0.02	0	0	0.02	0	0	0.05	0	0	0.05	0	0	0.02
Herring gull	0	0	0.03										0	0.17	0.02
California gull				0.17	0	0.05	0	0	0.02				0	0	0.12
Ring-billed gull	0	0.17	0.02				0.83	0.17	0.21	0	0	0.02	0	0.33	0.07
Bonaparte's gull	0	0	0.03	0	0	0.03									
Caspian tern															
Unidentified Laridae	0.17	0	0.09	0	0.17	0.09	0	0	0.12				0.50	0.50	0.31
Belted kingfisher															
Common flicker															
Barn swallow															
Common raven															
Common crow	0	0	0.25	0	0	0.03									
Black-capped chickadee															
House wren															
Winter wren															
Reveries wren															
American robin															
Swainson's thrush															

(Continued)

Table A5 (Continued)

	T	100%	PP	Iupp			100			ITSP			ITS		
				T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit	0	"	"	0	0	0.35				0.24	0	0	1.90	0.50	0.99
Starling	0	"	"				0	0.85	0.31				2.22	0	0
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird															
Brown-headed cowbird															
House finch	0.17	"	"	0	5.00	5.02	0	0.67	0.50	1.04	2.50	8.84			
American goldfinch															
Savannah sparrow				0	0.50	0.33							0	0.17	0.33
Song sparrow															

Table A5 (Continued)

	IMAP			IWA			SNAP			SMA			NMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit				0	0	0.42	0	0	2.02						
Starling															
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird															
Brown-headed cowbird															
House finch															
American goldfinch															
Savannah sparrow				3.33	0	0									
Song sparrow															

(Continued)

Table A5 (Continued)

	IBIP			IBI			SBIP			SRI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling	0	0	0.05	0	0	0.09				3.67	0.84	1.06	0	0	0.92
Least sandpiper															
Western sandpiper							0	1.33	1.18	0	1.00	1.33	0	0	1.03
Common snipe										0	0.1	0.21			
Unidentified Scolopacidae															
Glaucous-winged gull	0	0	0.01	0	0	0.01				0.22	0	0.02	0	0	0.04
Western gull										0	0	0.05	0	0	0.07
Herring gull	0	0.17	0.01	0	0	0.01				0	0	0.01			
California gull	0	0	0.07	0	0	0.02	0	0	0.02				0	0	0.09
Ring-billed gull													0	0	0.11
Bonaparte's gull				0	0	0.02							0	0	0.02
Caspian tern															
Unidentified Laridae	0	0.17	0.02	0	0	0.02				0	0	0.01	0	0	0.01
Belted kingfisher															
Common flicker															
Barn swallow															
Common raven															
Common crow				0	0	0.01				0	0	0.03	0	0	0.01
Black-capped chickadee															
House wren															
Winter wren															
Bewick's wren															
American robin															
Swainson's thrush															

(Continued)

Table A5 (Concluded)

	IBIP			IBI			SBIPPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Golden-crowned kinglet															
Ruby-crowned kinglet															
Water pipit															
Starling															
Yellow-rumped warbler															
Western meadowlark															
Brewer's blackbird															
Brown-headed cowbird										0.83	0	0.09			
House finch															
American goldfinch															
Savannah sparrow															
Song sparrow															

Table A6
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, December 1976

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Double-crested cormorant															
Whistling swan															
Canada goose	0	0	0.25												
Snow goose				0	0	0.10									
Mallard							0	0	0.04						
Pintail															
American wigeon															
American green-winged teal															
Canvasback															
Lesser scaup															
Bufflehead															
Common merganser															
Red-breasted merganser															
Ruddy duck															
Marsh hawk							0	0	0.02						
Bald eagle															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer															
Dunlin															
Sanderling															
Western sandpiper															
Common snipe				2.50	0.33	0.07									

(Continued)

Table 10 (Continued)

	INAP			T	VP	TAP			VP	SMAP			VP	SMA			VP	NMA		
	T	S	VP			T	S	VP		T	S	VP		T	S	VP		T	S	VP
Western grebe																				
Double-crested cormorant	0	0	0.02							0	0	0.08		0	0	0.01				
Whistling swan														0	0	0.08		0	0	0.16
Canada goose																				
Snow goose																				
Mallard	0	0.17	0.01	0.33	0	0.33	0	0	0	0	0	0.01		0	0	0.01		0	0	0.38
Pintail														0	0	0.01		0	0	0.18
American wigeon	0	0	0.03	0	0.03									0	0	0.03		0	0	0.14
American green-winged teal	0	0	0.05	0	0.28									0.83	0	0.33				
Canvasback														0	0.17	0.21				
Lesser scaup																				
Bufflehead																				
Common merganser														0	0	0.03		0	0	0.03
Red-breasted merganser														0	0	0.05				
Ruddy duck																				
Marsh hawk																				
Bald eagle																				
Great blue heron	0.23	0	0.01	0	0.01									0	0	0.01		0	0	0.01
Black-bellied plover																				
Semipalmated plover																				
Killdeer																				
Dunlin	0	4.83	2.05	2.17	10.30	8.51	2.50	0	1.37	0	0.33	2.66		3.33	33.33	10.14				
Sanderling														0	0	0.21				
Western sandpiper														0.56	0	0.13		0	0.50	0.13
Common snipe	1.04	0	0																	

(Continued)

Table A6 (Continued)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe	0.18	0	0.17	0.01											
Double-crested cormorant					0	0	0.01	0	0.35	0.01			0	0.17	0.02
Whistling swan															
Canada goose													0	0	0.03
Snow goose															
Mallard	1.33	0	0.31	0	0	0.24									
Pintail	0	0	0.05	0	0	0.03	0	0	0.01				0.17	0	0
American wigeon	0.33	0	0.02	0.67	0	0.04							0	0	0.02
American green-winged teal	3.50	0	0.87												
Canvasback															
Lesser scaup															
Bufflehead															
Common merganser							0.17	0	0				0.17	0	0.01
Red-breasted merganser															
Ruddy duck															
Marsh hawk															
Bald eagle															
Great blue heron															
Black-bellied plover												0.01			
Semipalmated plover															
Killdeer															
Dunlin	0	0	0.59	28.33	3.33	11.27	0	0	2.42				2.67	2.83	12.47
Sanderling				4.67	1.17	2.07							2.67	1.67	0.83
Western sandpiper													0	0.33	0.42
Common snipe															

(Continued)

Table A6 (Continued)

	IOPPL			IOPP			IOP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Clauous-winged gull				0	0	0.07									
Western gull															
Herring gull															
California gull															
Ring-billed gull															
Mew gull															
Black-legged Kittiwake															
Unidentified Laridae															
Belted Kingfisher															
Common flicker															
Downy woodpecker															
Common raven															
Common crow	0	0	0.03							0	0	0.11	0	0.17	0.11
Black-capped chickadee										10.06	7.00	15.25	0.31	1.00	0.99
Winter wren										0.53	1.33	2.65	0.79	1.00	1.99
Bewick's wren										3.33	0.67	0.59	0	0.17	0.15
American robin															
Golden-crowned ringlet										2.50	0.83	2.95			
Ruby-crowned ringlet										1.11	2.50	4.97	0.28	2.25	4.79
Starling	0	0	0.47												
Western meadowlark															
Rufous-sided towhee													1.67	0.50	0.64
House finch				0	1.33	1.40									
Song sparrow										0.75	0.67	0.85	0	1.67	2.12

(Continued)

Table A6 (Continued)

	INAP			INA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Glaucous-winged gull						:	0	0	0.03				0	0	0.03
Western gull	0	0.17	0.01	0.17	0	0.04				0	0	0.01	0	0	0.01
Herring gull	0	0	0.02	0	0	0.05									
California gull	0	0	0.01										0	0	0.05
Ring-billed gull	0.23	0	0							0	0	0.31			
New gull															
Black-legged Kittiwake															
Unidentified Laridae	0	0	0.02	0	0.17	0.02	0	0.17	0.05				0	0.06	0.02
Belted Kingfisher	0	0	0.11												
Common flicker															
Downy woodpecker															
Common raven															
Common crow	0	0.33	0.03										0	0	0.07
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Golden-crowned kinglet															
Ruby-crowned kinglet															
Starling	0	0	0.05										0	0	0.02
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow				1.67	0	0									

(Continued)

Table A6 (Concluded)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Glaucous-winged gull	0.67	0	0	0	0	0.03	0	0	0.03	0	0.17	0.08	0	0.17	0.05
Western gull				0	0	0.01									
Herring gull				0	0	0.01				0	0	0.01	0	0	0.01
California gull	0	0	0.05	0	0	0.05	0	0	0.02				0	0	0.02
Ring-billed gull	0	0	0.03												
New gull															
Black-legged Kittiwake															
Unidentified Laridae							0	0	0.01	0	0	0.01	0.17	0	0
Belted kingfisher															
Common flicker															
Downy woodpecker															
Common raven										0	0	0.01			
Common crow															
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Golden-crowned kinglet															
Ruby-crowned kinglet															
Starling															
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow							0	2.67	0.61						

Table A7
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, January 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Double-crested cormorant															
Whistling swan															
Canada goose	0	0	0.25												
Snow goose							0	0	1.66						
Mallard															
Pintail				0	0	1.70									
American wigeon															
American green-winged eal	0	0	0.02												
Canvasback															
Lesser scaup															
Bufflehead															
Common merganser															
Red-breasted merganser															
Ruddy duck															
Marsh hawk															
Bald eagle															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0.17	0.08												
Dunlin															
Sanderling															
Western sandpiper															
Common snipe	0.42	0	0	0	0	0.04				2.17	0.17	8.29	1.45	0	0
Glaucous-winged gull															

(Continued)

Table A7 (Continued)

	INAP			INA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Double-crested cormorant				0		0	0	0	0.02						
Whistling swan				0		0	0	0	0.12						
Canada goose															
Snow goose															
Mallard	0.17	0	0.04				0	0.17	0.01	0	0	0.02	0	0	0.08
Pintail				0	0	0.02	0	0.17	0.01	0	0	0.03	0	0	1.52
American wigeon				0	0	0.01				0	0	0.03	0	0	0.08
American green-winged teal	0.17	0	0.03	0	0	0.65	0	0	0.03	0	0.33	1.01	0	0.33	0.31
Canvasback															
Lesser scaup															
Bufflehead	0.33	0	0	0	0	0.07									
Common merganser				0		0.03									
Red-breasted merganser															
Ruddy duck															
Marsh hawk															
Bald eagle															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0	0.05	0.83	0.17	0.02							0	0	0.12
Dunlin	2.00	26.83	7.14	2.67	3.67	0.90	0	2.00	1.37	1.00	0	0.42	0	3.00	4.20
Sanderling	0	3.33	1.06							1.33	0	0.37			
Western sandpiper															
Common snipe	0.42	0.17	0.33				0	0	0.01						
Glaucous-winged gull							0	0					0	0	0.03

(Continued)

Table A7 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe	0	0	0.02												0.03
Double-crested cormorant															
Whistling swan															
Canada goose															
Snow goose															
Mallard	0	0	0.07	0	0	0.02									
Pintail	0	0	0.01	0	0	0.02	0	0	0.02	0	0	0.15	0	0	0.05
American wigeon	0.33	0	0.08												
American green-winged teal	0	2.50	1.44				0	0	0.02	0	0	9.03	0	0	0.02
Canvasback															
Lesser scaup															
Bufflehead															
Common merganser				0	0	0.01				0	0	0.11			
Red-breasted merganser															
Ruddy duck										0	0	0.09			
Marsh hawk															
Bald eagle				0	0	0.01									
Great blue heron															
Black-bellied plover															
Semipalmated plover	0.83	1.00	0.53												
Killdeer	1.33	1.00	1.11	0	0.17	0.07									
Dunlin							7.67	18.50	4.76	2.00	0.83	1.65			
Sanderling										1.00	0	0.08			
Western sandpiper															
Common snipe															
Glaucous-winged gull	0.33	0	0.08	0	0	0.03									

(Continued)

Table A7 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western gull	0	0	0.03												
Herring gull															
California gull															
Ring-billed gull															
Mew gull															
Black-legged Kittiwake															
Unidentified Laridae															
Belted kingfisher															
Common flicker	0	0	0.03							0	0.17	0.29	0	0.17	0.15
Downy woodpecker															
Common raven															
Common crow	0	0	0.10	0	0	0.02				0	0	0.32			
Black-capped chickadee										2.20	2.00	2.98	0	1.67	2.98
Winter wren										0	0.33	0.33	0.79	0.33	0.66
Bewick's wren										0	0.33	0.29	0	0.67	0.59
American robin															
Golden-crowned ringlet				0	0.17	0.33									
Ruby-crowned ringlet										0.28	0.17	0.33	0	0.50	0.99
Starling	0	0	0.17												
Western meadowlark				0	0.17	0.29									
Rufous-sided towhee															
House finch															
Song sparrow										3.23	1.83	2.33	0.25	1.17	1.49

(Continued)

Table A7 (Continued)

	INAP			IMA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western gull	0	0	0.03				0	0	0.01				0.83	0	0
Herring gull				0	0	0.05	0	0	0.12	0.17	0	0.02	0.17	0	0
California gull	0	0	0.04												
Ring-billed gull							0	0	0.01						
New gull															
Black-legged Kittiwake															
Unidentified Laridae													0	0	0.02
Belted Kingfisher															
Common flicker															
Downy woodpecker															
Common raven															
Common crow	0	0	0.24				0.17	0	0.05	0.17	0	0.16	0	0	0.08
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Golden-crowned kinglet															
Ruby-crowned kinglet															
Starling										0	0	0.05	0	0.17	0.26
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow				1.67	0	0									

(Continued)

Table A7 (Concluded)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western gull	0	0	0.01	0	0	0.05				0	0.17	0.03	0	0	0.03
Herring gull	0	0	0.03	0	0.17	0.04				0	0	0.09	0	0	0.12
California gull	0	0	0.09	0	0	0.09				0	0	0.02	0	0	0.05
Ring-billed gull				0	0	0.01							0	0	0.01
New uil															
Black-legged kittiwake															
Unidentified Laridae	0.17	0	0							0	0		0	0	0.01
Belted kingfisher															
Common flicker															
Downy woodpecker															
Common raven															
Common crow	0	0	0.03	0	0	0.05				0	0	0.05	0	0	0.01
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Golden-crowned ringlet															
Ruby-crowned ringlet															
Starling	0.33	0	0.15	0	0	0.52							0	0	0.74
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow															

Table A8
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, February 1977

	IUPVL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Double-crested cormorant															
Whistling swan															
Canada goose	0	0	0.28												
Snow goose															
Mallard										0	0.33	0.87			
Pintail															
American wigeon															
American green-winged teal				0	0	0.02									
Canvasback															
Lesser scaup															
Bufflehead															
Common merganser				0	0	0.03									
Red-breasted merganser															
Ruddy duck															
Marsh hawk							0	0	0.02						
Bald eagle															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0	0.01												
Dunlin															
Sanderling															
Western sandpiper															
Common snipe				1.67	0	0	0	0	0.04				1.45	0	0
Glaucous-winged gull															

(Continued)

Table A8 (Continued)

	INAP			INA			SNAP			SHA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe															
Double-crested cormorant	0	0	0.47												
Whistling swan															
Canada goose															
Snow goose															
Mallard										0	0	0.02	0	0	0.04
Pintail													0	0	0.18
American wigeon										0	0	0.01	0	0	0.04
American green-winged teal	0	0	0.03							0	0.33	0.89	0	0	0.08
Canvasback							0	0	0.05						
Lesser scaup															
Bufflehead	0.50	0	0.02	0	0	0.07							0	0	0.02
Common merganser				0	0	0.06							0	0	0.03
Red-breasted merganser													0	0	0.03
Ruddy duck															
Marsh hawk															
Bald eagle															
Great blue heron													0	0	0.01
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0.33	0.09												
Dunlin										2.17	28.33	12.10			
Sanderling										0	0	1.96			
Western sandpiper										11.11	0	0			
Common snipe	0	0.17	0.33				0.21	0	0						
Glaucous-winged gull															

(Continued)

Table A8 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western grebe				0	0	0.65	0	0	0.04						
Double-crested cormorant															
Whistling swan															
Canada goose															
Snow goose															
Mallard															
Pintail	0.17	0	0.45							0	0	0.01			
American wigeon	0	0	0.03							0.17	0	0			
American green-winged teal	0	0	0.05	0	0	0.19	0	0	0.02	0.17	0	1.87	0	0	0.21
Canvasback															
Lesser scaup															
Bufflehead	0	0	0.15												
Common merganser	0	0	0.48	0.17	0	0.25	0.50	0	0	0	0.33	0.02			
Red-breasted merganser	0	0	0.01	0	0	0.03									
Ruddy duck															
Marsh hawk													0	0	0.01
Bald eagle	0.18	0	0	0	0	0.01									
Great blue heron															
Black-bellied plover				0	0.50	0.99									
Semipalmated plover	0	1.00	0.39												
Killdeer															
Dunlin	1.00	4.67	0.83				0	0	2.36	0	0.50	4.13	0	0	0.05
Sanderling	0	3.33	1.66							0	0		0	0	0.17
Western sandpiper															
Common snipe															

(Continued)

Table A8 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western gull															
Herring gull															
California gull							0	0	0.09						
Ring-billed gull															
New gull															
Black-legged kittiwake															
Unidentified Laridae															
Belted kingfisher															
Common flicker										0	0.33	0.29			
Downy woodpecker										1.67	0	0.15			
Common raven							0	0	0.09						
Common crow	0	0	0.01	0	0	0.06							0.50	0.33	0.48
Black-capped chickadee										2.20	2.17	3/65	0.94	1.00	1.66
Winter wren										1.06	1.33	1.99	0.79	1.17	2.32
Bewick's wren										0	0.33	0.29	0	0.33	0.44
American robin										0	0	0.59			
Golden-crowned kinglet															
Ruby-crowned kinglet										1.67	1.83	2.65	0.28	0.33	0.66
Starling				0	0	0.33									
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow							2.24	2.00	2.55	0.75	1.50	1.91			

(Continued)

Table A8 (Continued)

	IMAP			INA			SNAP			SNA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Western gull	0.17	0	0.01	0	0	0.01	0	0	0.05	0	0	0.01	0.83	0.67	0.17
Herring gull				0	0.17	0.05	0	0	0.09	0.17	0	0.17	0.17	0.83	0.42
California gull	0.21	0	0.05	0	0	0.01	0	0.17	0.08	0.21	0	0.05	0	0.33	0.05
Ring-billed gull	0	0	0.01							0	0	0.05			
Mew gull	0.72	0	0	0.54	0	0.42	0	0	0.05	0	0.50	4.08	0	0.67	1.01
Black-legged kittiwake							0	0	0.03				0	0	0.03
Unidentified Laridae				0			0	0	0.02	0	0	0.09	0	0	0.02
Belted kingfisher															
Common flicker															
Downy woodpecker															
Common raven															
Common crow	0	0	0.11	0	0.17	0.04				0	0	0.06	0	0	0.04
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Golden-crowned kinglet															
Ruby-crowned kinglet															
Starling	0	0.17	0.02	0	0.17	0.09				0	0	0.07			
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow				0	0.17	5.31									

(Continued)

Table A8 (Concluded)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Glaucous-winged gull															
Western gull	0.17	0	0.05	0	0.17	0.27	0.17	0	0.03	0.33	0	0	0	0	0.03
Herring gull	0.33	0	0.07	0.50	0.33	0.29				0	0.17	0.07	0	0	0.05
California gull				0.33	0.17	0.02	0	0	0.05	0.33	0	0.25	0	0.17	0.33
Ring-billed gull										0	0	0.17	0	0	0.07
Pew gull	0	0	0.05	0.50	1.50	0.54	0.17	0.17	0.12	0	0	1.51	0.50	0.17	0.40
Black-legged kittiwake															
Unidentified Lariidae				0.33	0	0.64	0	0	0.01	0	0	0.01	0	0	0.01
Belted kingfisher															
Common flicker															
Downy woodpecker															
Common raven															
Common crow	0	0	0.02							0	0	0.16	0	0	0.03
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Golden-crowned kinglet															
Ruby-crowned kinglet															
Starling															
Western meadowlark															
Rufous-sided towhee															
House finch															
Song sparrow															

Table A9
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, March 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Gaviidae															
Horned grebe															
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose															
Mallard	0	0.33	0.05	0	0	0.05	0	0	0.05	1.90	0.33	0.29	0	0.33	0.29
Pintail															
American wigeon															
Blue-winged teal															
Cinnamon teal															
American green-winged teal													3.89	0	0
Greater scaup							0	0	0.07						
Lesser scaup															
Common merganser															
Red-breasted merganser															
Unidentified Anatidae															
Bald eagle				0	0	0.02				0.56	0	0			
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer															
Greater yellowlegs															

(Continued)

Table A9 (Continued)

	INAP			INA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Gaviidae															
Horned grebe															
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose				0	0	0.02				0	0	0.06			
Mallard				0	0	0.07				0	0	0.09	0	0	0.05
Pintail										0	0	0.07	0	0	0.07
American wigeon										0	0	0.05	0	0.08	0
Blue-winged teal															
Cinnamon teal															
American green-winged teal				0.21	2.17	0.50									
Greater scaup															
Lesser scaup															
Common merganser				0.17	0	0	0	0	0.11				0	0	0.09
Red-breasted merganser															
Unidentified Anatidae															
Bald eagle															
American kestrel															
Great Blue heron	0	0	0.01										0	0	0.02
Black-bellied plover							0	0	0.05						
Semipalmated plover															
Killdeer	0.94	0.50	0.11				0.56	0	0.07						
Greater yellowlegs															

(Continued)

Table A9 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Gaviidae															
Horned grebe	0	0	0.02												
Unidentified Podicipedidae															
Double-crested cormorant	0.18	0	0.12	0.18	0	0			0	0	0	0.01			
Canada goose				0	0	0.01									
Mallard	0	0.33	0.03												
Pintail	0	0	0.03												
American wigeon	0	0	0.05												
Blue-winged teal															
Cinnamon teal															
American green-winged teal	0	0	0.04	0	0	0.02			0	0	0	3.05	0	0	0.04
Greater scaup													0	0	0.17
Lesser scaup															
Common merganser	0	0	0.24	0	0	0.09									
Red-breasted merganser	0	0	0.01	0	0	0.11							0	0	0.05
Unidentified Anatidae															
Bald eagle							0	0	0.02						
American kestrel															
Great blue heron										0	0	0.01			
Black-bellied plover															
Semipalmated plover															
Killdeer															
Greater yellowlegs															

(Continued)

Table A9 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Dunlin															
Sanderling															
Least sandpiper															
Western sandpiper															
Common snipe				0.48	0	0			0						
Unidentified Scolopacidae															
Glaucous-winged gull									0.24	0	0				
Western gull				0	0	0.02			0			0.02			
Herring gull													0	0.17	0.59
California gull															
Ring-billed gull															
Mew gull															
Black-legged kittiwake															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae															
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker				0	0	0.09									
Downy woodpecker															
Unidentified Picidae													0.17	0	0.21
Barn swallow															
Cliff swallow															
Violet-green swallow															

(Continued)

Table A9 (Continued)

	INAP			IMA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Bonin													5.00		
Sanderling															
Least sandpiper															
Western sandpiper	0	0.17	0.05				1.83	17.50	15.60						
Common snipe	1.39	0	0				0	0	0.08						
Unidentified Scolopacidae															
Glaucous-winged gull	0	0	0.02	0	0	0.02				0	0	0.02	0	0	0.05
Western gull	0	0.17	0.12	0	0.17	0.05	0	0.17	0.14	0	0	0.02	0.17	0	0.07
Herring gull	0.17	0.50	0.28	0.17	0.67	0.73	0	0	0.28	0.17	0	0.02	0	0	0.38
California gull	0	0	0.06	0	0.17	0.09	0	0	0.06	0	0	0.16	0.33	0	0.09
Ring-billed gull															
Mew gull	0	1.50	0.33	0.17	1.17	0.38	0.17	0.67	0.75	0.67	0	0.54	0.67	0.50	0.45
Black-legged kittiwake															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae	0	0	0.08	0.17	0	0.12	0	0.50	0.15	0	0	0.03	0	0	3.87
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Barn swallow															
Cliff swallow															
Violet-green swallow															

(Continued)

Table A9 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Dunlin				18.83	9.83	6.32							0	21.50	6.11
Sanderling				1.67	0	0.80									
Least sandpiper															
Western sandpiper															
Common snipe															
Unidentified Scolopacidae															
Glaucous-winged gull				0	0	0.01	0	0	0.01	0	0	0.01	0	0.17	0.03
Western gull	0.17	0	0.05	0	0.33	0.12	0.07	0.17	0.28				0.17	0	0.52
Herring gull	0	0	0.07	0.33	0.50	0.17	0.33	1.00	0.40	0.50	0.67	0.21	0.50	1.33	0.40
California gull	0	0	0.02	0	0	0.09	0.17	0	0.09	0.17	0	0.07	0.33	0.33	0.09
Ring-billed gull															
Mew gull	0.33	1.00	0.38	0	0.50	0.09	3.33	3.50	1.91	2.00	1.50	1.25	1.00	0.67	0.80
Black-legged kittiwake	0	0	0.02				0	1.00	0.47	0.67	0	0.19	0	1.00	0.45
Bonaparte's gull															
Caspian tern															
Unidentified Laridae	0	0	0.02	0	0	0.04	1.00	2.00	0.09	0.33	0	1.64	0.67	0.17	0.48
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Barn swallow															
Cliff swallow										0	0	0.11			
Violet-green swallow															

(Continued)

Table A9 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow															
Rough-winged swallow															
Unidentified Hirundinidae															
Common raven															
Common crow	0	0	0.12	0	0	0.03	0	0	0.02	0	1.50	0.99	0.37	2.83	1.74
Black-capped chickadee										1.67	2.17	2.33	0	1.67	1.70
Winter wren										0.42	0.67	0.59	0	1.17	1.03
Bewick's wren										0	0.33	0.29	1.67	0.33	0.29
American robin										0	0.17	0.08	0.17	0.33	0.33
Ruby-crowned kinglet	0	0	0.16	0	0.17	0.21				0.24	0.17	0.17	0.24	0.50	0.25
Water pipit															
Starling							0	0	0.05						
Orange-crowned warbler															
Yellow warbler															
Wilson's warbler															
Red-winged blackbird													0	0.17	5.31
Brown-headed cowbird															
American goldfinch															
Savannah sparrow															
Dark-eyed junco													0	0.33	0.66
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow										0	2.00	2.06	0.33	1.00	0.88

(Continued)

Table A9 (Continued)

	INAP			IMA			SMAP			SMA			NMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0	0.50	0.64												
Rough-winged swallow															
Unidentified Hirundinidae															
Common raven															
Common crow	0	0	0.04	0	0	0.13	0	0	0.05	0	0	0.07	0	0	0.01
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Ruby-crowned kinglet															
Water Pipit															
Starling															
Orange-crowned warbler															
Yellow Warbler															
Wilson's warbler															
Red-winged blackbird															
Brown-headed cowbird															
American goldfinch															
Savannah sparrow															
Dark-eyed junco															
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow				0.83	0.17	0.59									

(Continued)

Table A9 (Concluded)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow															
Rough-winged swallow															
Unidentified Hirundinidae															
Common raven															
Common crow	0	0	0.03	0	0	0.06	0	0.17	0.02	0	0	0.37	0	0	0.02
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Ruby-crowned kinglet															
Water pipit															
Starling															
Orange-crowned warbler															
Yellow warbler															
Wilson's warbler															
Red-winged blackbird															
Brown-headed cowbird															
American goldfinch															
Savannah sparrow															
Dark-eyed junco															
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow															

Table A10
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, April 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Gaviidae															
Horned grebe															
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose															
Mallard	0.50	0	0.21	0	0	0.09				0.24	0	0	0.95	0	0
Pintail															
American wigeon															
Blue-winged teal															
Cinnamon teal															
American green-winged teal															
Greater scaup															
Lesser scaup															
Common merganser													0	0.17	1.35
Red-breasted merganser															
Bald eagle	0	0	0.02												
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0.17	0.17	0.13												
Greater yellowlegs															
Dunlin															

(Continued)

Table A10 (Continued)

	INAP			INA			SNAP			SNA			MNA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Caviidae															
Horned grebe															
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose															
Mallard	0	0.33	0.05	0	0	0.09	0	0	0.02	0.33	0	0.07	0	0	0.01
Pintail															
American wigeon															
Blue-winged teal															
Cinnamon teal	0	0	0.07	0	0.67	0.18									
American green-winged teal	0	0	0.21	0	1.17	0.61	0.42	0	0.14	0	0	0.33	0	0	1.84
Greater scaup															
Lesser scaup							0	0	0.17						
Common merganser															
Red-breasted merganser				0	0.33	0.03	0	0	0.03	0	0	0.03			
Bald eagle							0	0	0.03						
American kestrel															
Great blue heron															
Black-bellied plover				0.23	0.33	0.17	0	0.17	0.09				0	0	0.02
Semipalmated plover															
Killdeer	0.37	0	0.07				0	0	0.04				0	0.17	0.04
Greater yellowlegs	0.42	0	0												
Dunlin	0.50	0	0	14.83	11.83	7.37	72.33	25.67	12.25	8.33	8.33	2.76	4.33	8.67	4.67

(Continued)

Table A10 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon				0	0	0.04							0.33	0	0.01
Unidentified Caviidae															
Horned grebe										0	0	0.08			
Unidentified Podicipedidae													0	0	0.02
Double-crested cormorant															
Canada goose															
Mallard	0	0	0.05												
Pintail				0	0	0.03									
American wigeon										0	0	0.05			
Blue-winged teal															
Cinnamon teal															
American green-winged teal				0	0	0.01	0	0	0.01	0	0	0.50			
Greater scaup				0	0	0.10	0	0	0.42						
Lesser scaup															
Common merganser				0	0	0.01	0	0	0.01	0	0	0.02			
Red-breasted merganser															
Bald eagle													0	0	0.02
American kestrel										0	0	0.08			
Great blue heron															
Black-bellied plover				0.67	0	0.04	0	0	0.03	0	0	0.01			
Semipalmated plover	0.67	0	0.09												
Killdeer															
Greater yellowlegs	5.83	0	0.83	8.33	3.33	2.12	0	0	0.59	0	0	0.02	0	0.33	0.05
Dunlin										20.33	10.83	12.07	5.33	25.50	7.03

(Continued)

Table A10 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper															
Western sandpiper															
Common snipe													5.00	0	0
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull															
Herring															
California gull															
Ring-billed gull															
Mew gull							0		0.17	0.03					
Black-legged kittiwake															
Bonaparte's gull															
Caspian tern				0		0.17	0.21								
Unidentified Laridae	0	0	0.11												
Rufous hummingbird				0		0.17	0.21						0	0.17	5.31
Unidentified Trochilidae															
Common flicker	0	0	0.04												
Downy woodpecker										0	0	0.15			
Unidentified Picidae										0.83	0	0			
Barn swallow				0		0.17	0.59			0	0	0.03			
Cliff swallow															
Violet-green swallow				0		0.33	0								

(Continued)

Table A10. (Continued)

	INAP			IMA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling	7.08	1.67	1.08	0	0.17	0.11	0.42	0	0						
Least sandpiper	4.50	2.33	6.84	18.50	6.33	3.98	13.67	15.67	16.07	6.33	4.00	4.62	5.67	6.00	9.07
Western sandpiper				0.28	0	0									
Common snipe	0	15.67	1.05	0	0	0.02	0	0	2.46	3.33	0	0	0	0	4.19
Unidentified Scolopacidae				0	0	0.09	0.17	0	0.09	0	0.17	0.07	0	0.17	0.09
Glaucous-winged gull	0.17	0	0.05	0	0.33	0.09				0	0	0.02	0	0	0.02
Western gull							0	0	0.03	0	0	0.03	0.17	0	0
Herring gull															
California gull															
Ring-billed gull															
Mew gull	0	0	0.19	0.17	0.17	0.07	0.17	0.33	0.21	0	0.17	0.07	0	0.50	0.47
Black-legged kittiwake															
Bonaparte's gull													0	0	0.02
Caspian tern	0	0	0.01				0	0	0.01	0	0	0.01	0	0	0.03
Unidentified Laridae				0.33	0.83	0.06	0.17	0.33	0.11	0	0	0.06	0	0.33	0.07
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker				0	0.17	0.03									
Downy woodpecker															
Unidentified Picidae															
Barn swallow															
Cliff swallow															
Violet-green swallow															

(Continued)

Table A 10 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Sanderling															
Least sandpiper															
Western sandpiper	2.50	0	0	4.17	5.17	2.97	0.17	7.83	2.71	23.67	22.00	13.16	16.17	12.83	8.33
Common snipe															
Unidentified Scolopacidae															
Glaucous-winged gull	0	0	0.01	0	0	0.01	0	0.17	0.01	0	20.38	8.40	0	0	7.31
Western gull				0.17	0	0	0	0	0.05				0	0	0.01
Herring gull				0	0	0.05	0	0	0.02	0	0.17	0.09	0	0	0.02
California gull				0.17	0	0							0	0	0.02
Ring-billed gull										0.17	0.17	0.12	0.17	0.17	0.07
Mew gull	0	0.17	0.19	0.83	0.33	0.26	0.33	0.50	0.09	0.17	0.17	0.12	0	0	0.26
Black-legged kittiwake															
Bonaparte's gull															
Caspian tern				0	0	0.02	0	0	0.10				0	0	0.36
Unidentified Laridae	0	0	0.01	0	0	0.17	0.67	0.33	0.09	0.33	0.33	0.04	0.33	0.17	0.19
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Barn swallow															
Cliff swallow															
Violet-green swallow															

(Continued)

Table A10 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0	0.17	0.07	0.50	0.17	0.31	0	0	0.02				0	0.17	5.31
Rough-winged swallow															
Unidentified Hirundinidae				0	0	0.08									
Common raven															
Common crow	0	0	0.24	0	0	0.15	0	0	0.01	5.62	5.17	5.22	3.18	4.83	2.32
Black-capped chickadee										2.78	1.50	1.91	1.11	0.67	0.85
Winter wren										0.21	0.17	0.15	0.21	0.33	0.29
Bewick's wren										0	0.17	0.15			
American robin							0	0.17	0.05	0.33	0.50	0.58	0.17	0.33	0.41
Ruby-crowned kinglet										0	0.50	0.25	0	0	0.08
Water pipit	0.56	0.83	1.96												
Starling				0	0	0.07									
Orange-crowned warbler										0	0.50	0.64	0.37	0.83	1.06
Yellow warbler															
Wilson's warbler															
Red-winged blackbird															
Brown-headed cowbird				0	0	0.04	0.42	0	0.13	0	0.67	0.85	0	0.67	0.85
American goldfinch							0	0.17	0.05						
Savannah sparrow	2.00	1.00	1.06	0.17	0.67	0.53	0.50	1.00	0.74						
Dark-eyed junco															
White-crowned sparrow				0.83	0	0.04									
Golden-crowned sparrow															
Song sparrow										1.00	1.00	1.18	0.83	1.33	1.47

(Continued)

Table A10 (Continued)

	INAP			IMA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0	0.17	0.21	0.37	0.67	0.85				0.18	1.50	1.91	0	0.50	0.64
Rough-winged swallow															
Unidentified Hirundinidae	0	0	0.15												
Common raven															
Common crow	0	0	0.07	0	0	0.13	0	0	0.01	0	0	0.19	0	0	0.12
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Ruby-crowned kinglet															
Water pipit															
Starling				0	0	0.11							0	1.17	2.32
Orange-crowned warbler															
Yellow warbler															
Wilson's warbler															
Red-winged blackbird															
Brown-headed cowbird															
American goldfinch															
Savannah sparrow				1.67	0	0									
Dark-eyed junco															
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow															

(Continued)

Table A10 (Concluded)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0	0	0.07				0.17	0.33	0.54	0.17	0.17	0.05	0.17	0	0
Rough-winged swallow							0	0.17	0.21						
Unidentified Hirundinidae															
Common raven															
Common crow	0	0.17	0.03	0	0.17	0.04				0	0	0.03	0	0	0.01
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Ruby-crowned kinglet															
Water pipit															
Starling															
Orange-crowned warbler															
Yellow warbler															
Wilson's warbler															
Red-winged blackbird															
Brown-headed cowbird															
American goldfinch															
Savannah sparrow															
Dark-eyed junco															
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow															

Table All
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, May 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Gaviidae															
Horned grebe															
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose															
Mallard	0.17	0	0.02	0	0.50	0.21	0	0	0.12	0.48	0.33	0.74	0.24	0	0
Pintail							0	0.50	1.77						
American wigeon															
Blue-winged teal															
Cinnamon teal				0	0	0.11									
American green-winged teal															
Greater scaup															
Lesser scaup															
Common merganser															
Red-breasted merganser															
Unidentified Anatidae															
Bald eagle															
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover															
Killdeer	0	0.17	0.07	0.17	0	0	0.33	0	0						
Greater yellowlegs				0	0	0.15									

(Continued)

Table A11 (Continued)

	INAP			INA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon				0	0.33	0.09							0.18	0	0
Unidentified Gaviidae															
Horned grebe				0	0	0.11									
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose	0	0	0.01							0	0	0.01			
Mallard				0	0	0.19				0	0	0.05	0	0	0.05
Pintail															
American wigeon															
Blue-winged teal													0	0	0.09
Cinnamon teal	0.42	0.17	0.07	0	0.50	0.18							0.21	0.17	0.04
American green-winged teal	0.42	0	0										0.42	1.00	0.40
Greater scaup										0	0	0.13			
Lesser scaup							0	0	0.66						
Common merganser										0	0.17	0.05			
Red-breasted merganser													0	0	0.03
Unidentified Anatidae													0	0	1.77
Bald eagle															
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover	0	0.17	0.33												
Killdeer													0	0	0.04
Greater yellowlegs															

(Continued)

Table A11 (Continued)

	IBIP			IBI			SRIPL			SRI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Unidentified Gaviidae															
Horned grebe															
Unidentified Podicipedidae															
Double-crested cormorant															
Canada goose															
Mallard	0	0.33	0.02	0	0	0.08				0	0	0.02			
Pintail															
American wigeon															
Blue-winged teal															
Cinnamon teal															
American green-winged teal	0	0	0.02				0	0.33	0.01						
Greater scaup															
Lesser scaup															
Common merganser				0	0	0.02									
Red-breasted merganser															
Unidentified Anatidae										0	0	0.21			
Bald eagle															
American kestrel															
Great blue heron															
Black-bellied plover															
Semipalmated plover	1.00	1.33	0.35	0	0	0.02				0	0.17	0.07	0.17	0.17	0.02
Killdeer				0	0.17	0.05				0	0	0.02			
Greater yellowlegs															

(Continued)

Table A11 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Dunlin	13.33	0	0												
Sanderling															
Least sandpiper															
Western sandpiper							1.00	7.50	5.89						
Common snipe															
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull							0	0.17	0.02						
Herring gull															
California gull															
Ring-billed gull															
Mew gull															
Black-legged kittiwake															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae															
Rufous hummingbird															
Unidentified Trochilidae										0.42	0	0			
Common flicker															
Downy woodpecker										0	0.50	0.64	0.42	0.50	0.64
Unidentified Picidae										0.24	0.50	0.12			
Barn swallow	0	0	0.02				0	0.33	0.07						
Cliff swallow															
Violet-green swallow															

(Continued)

Table A11 (Continued)

	IMAP			IMA			SNAP			SMA			NMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Dunlin	3.67	5.17	1.91	1.83	6.33	2.44	2.00	1.83	0.90	0	4.17	1.70	0	5.00	1.59
Sanderling													0.83	0	0
Least sandpiper				0	0.17	0.11									
Western sandpiper	7.50	25.33	12.20	13.67	26.00	13.05	2.33	10.83	6.21	1.00	10.00	7.27	0	10.50	3.45
Common snipe							0	0	0.03	0	0	4.19			
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull	0	0.33	0.21	0.33	0.33	0.09	0	0	0.02				0	0	0.07
Herring gull							0	0	0.05						
California gull	0.17	0	0				0	0	0.03				0.17	0	0.05
Ring-billed gull				0	0.17	0.01	0	0.33	0.07	0	0.17	0.09	0.17	0.33	0.05
New gull				0.17	0	0.02									
Black-legged kittiwake															
Bonaparte's gull													0	0.67	0.33
Caspian tern				0	0	0.01							0	0	0.02
Unidentified Laridae	0.33	0	0.02	0	0	0.04	0.17	0.17	0.05	0	0.33	0.11	0.17	0.17	0.11
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Barn swallow	0.28	1.33	0.64				0.28	0	0.16	0	0.33	0.27	1.11	1.17	0.69
Cliff swallow	0	0.17	0.21										0	0.83	1.06
Violet-green swallow															

(Continued)

Table All (Continued)

	IBIP			IBI			SBIPPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Dunlin	0.50	0.33	0.14	1.50	1.33	0.71	0	0	0.02	10.17	3.83	2.66	0	1.67	1.39
Sanderling															
Least sandpiper	0	0.17	0.33												
Western sandpiper	8.00	15.17	8.28	23.67	12.00	12.41	0.83	4.83	2.18	8.00	3.67	5.57	4.83	5.00	7.32
Common snipe															
Unidentified Scolopacidae				0	0	0.61	0	0	1.99	0	0	1.32	0	0	1.52
Glaucous-winged gull							0	0	0.03						
Western gull	0.17	0	0.05	0.33	0.17	0.07				0	0	0.07			
Herring gull	0	0	0.02	0	0.17	0.02	0	0	0.02	0	0	0.02	0	0	0.02
California gull							0	0.17	0.02	0	0	0.02			
Ring-billed gull	0	0	0.05							0	0	0.11			
Mew gull	0.17	0	0	0	1.17	0.38	0	0.17	0.12	0	0.17	0.05	0.17	0.17	0.02
Black-legged kittiwake															
Bonaparte's gull				0.50	0	0.04	0	0.17	0.03	0.17	0	0.02	0	0.67	0.07
Caspian tern															
Unidentified Laridae	0	0	0.05	0.17	0	0.08	0	0.50	0.06	0.33	0	0.04	0.17	0.33	0.06
Rufous hummingbird															
Unidentified Trochilidae															
Common flicker															
Downy woodpecker															
Unidentified Picidae															
Barn swallow				0	0	0.04	0	0.17	0.05	0	0	0.08	0	0	0.04
Cliff swallow							0	0	0.05	1.67	0	0.09	0	0.17	0.04
Violet-green swallow															

(Continued)

Table A11 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0.17	0.50	0.12	0.50	0.33	0.14	0	0	0.02						
Rough-winged swallow															
Unidentified Hirundinidae															
Common Faven															
Common crow	0	0	0.07	0	0.33	0.19	0	0	0.02	3.37	3.83	3.07	3.75	2.33	1.66
Black-capped chickadee										0	1.50	1.91	0	0.33	0.42
Winter wren															
Bewick's wren										0	0.33	0.29			
American robin	0	0	0.11	0.33	0.17	0.16				0	0.17	0.17	0.17	0	0.08
Ruby-crowned kinglet															
Water pipit				0	0.17	0.05									
Starling				0	0	0.21									
Orange-crowned warbler										0.92	1.50	1.91			
Yellow warbler													0.55	1.00	1.27
Wilson's warbler													1.67	0.33	0.42
Red-winged blackbird															
Brown-headed cowbird	0	0	0.09	0.21	0.83	0.48	0	0	0.13	0.71	1.17	1.49	0.24	1.50	1.91
American goldfinch	0	0	0.64	0	1.00	0.37	0.17	0	0.05						
Savannah sparrow	2.50	3.83	2.60	0.33	1.17	0.80	0.67	0.83	0.85						
Dark-eyed junco															
White-crowned sparrow	0.83	0.50	0.15	2.50	0	0							1.67	0	0.05
Golden-crowned sparrow										0.17	0	0			
Song sparrow										0.67	1.33	1.47	0.33	1.67	1.92

(Continued)

Table A11 (Continued)

	IMAP			INA			SNAP			SNA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0.18	0	0										0.18	0.67	1.06
Rough-winged swallow															
Unidentified Hirundinidae															
Common raven															
Common crow	0	0.17	0.12	0	0	0.08	0	0	0.03	0	0	0.08	0	0	0.20
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Ruby-crowned kinglet															
Water pipit															
Starling															
Orange-crowned warbler															
Yellow warbler															
Wilson's warbler															
Red-winged blackbird	0	0	0.05	0	0	0.05									
Brown-headed cowbird				0	0.17	0.33									
American goldfinch															
Savannah sparrow							0	0.17	1.33						
Dark-eyed junco															
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow															

(Continued)

Table A11 (Concluded)

	IBIP			IBI			SB1PL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0	0.17	0.09	0	0	0.02	0	0	0.02	0	0	0.02	0	0	0.02
Rough-winged swallow															
Unidentified Hirundinidae				0	0	0.02									
Common raven															
Common crow	0	0	0.03	0	0	0.02	0	0	0.03	0	0	0.06	0	0	0.01
Black-capped chickadee															
Winter wren															
Bewick's wren															
American robin															
Ruby-crowned kinglet															
Water pipit															
Starling															
Orange-crowned warbler															
Yellow warbler															
Wilson's warbler															
Red-winged blackbird															
Brown-headed cowbird															
American goldfinch															
Savannah sparrow										0.42	0	0			
Dark-eyed junco															
White-crowned sparrow															
Golden-crowned sparrow															
Song sparrow															

Table A12
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, June 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard	0	0	0.04												
Pintail															
Northern shoveler															
Cinnamon teal															
Common merganser															
Bald eagle				0.33	0	0									
Killdeer	0.19	0	0	0.37	0.50	0.99									
Dunlin															
Unidentified Scolopacidae															
Glaucous-winged Gull															
Western gull															
Herring gull															
California gull															
Ring-billed gull															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae	0	0	0.01	0	0	0.01									
Downy woodpecker										0	0.33	0.66	0.67	0.33	0.66
Unidentified Picidae										0	0	0.05			
Willow flycatcher	0	0	0.20							0.94	1.50	2.32	1.64	1.33	2.65
Barn swallow															
Cliff swallow	0.19	0	0.05	0	0.33	0.29	0	0	0.05						
Violet-green swallow															

(Continued)

Table A12 (Continued)

	INAP			INA			SNAP			SMA			NVA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard	0.17	0.33	0.07	0	0	0.02	0	0	0.02	0	0	0.07	0.17	0	0.07
Pintail							0	0	0.08						
Northern shoveler													3.33	0.33	0.13
Cinnamon teal	1.04	1.17	0.66	0.42	0	0	0	0	0.33	0	0	0.17			
Common merganser															
Bald eagle															
Killdeer													0.17	0.50	0.74
Dunlin															
Unidentified Scolopacidae															
Glaucous-winged gull				0.17	0	0	0	0	0.02	0	0	0.05			
Western gull	0	0	0.02	0	0.17	0.09	0	0	0.02	0	0	0.07			
Herring gull	0	0	0.01	0	0	0.01				0.17	0	0			
California gull				0	0.17	0.02	0.17	0	0.02	0	0	0.02	0.17	0	0.12
Ring-billed gull	0.50	0.17	0.21	0.83	0.50	0.24	0.67	0.50	0.33	0.33	0.17	0.68	0.33	0	0.28
Bonaparte's gull				0	0	0.01	0	0.17	0.01	0.83	1.17	0.28	0	0	0.53
Caspian tern										0	0	0.08	0.17	0	0
Unidentified Laridae	1.33	0.50	0.14	0.33	0.17	0.31	0	0.17	0.59	0.17	2.33	7.33	0.17	0	0.28
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher															
Barn swallow	0.50	2.00	2.55				1.67	3.50	3.61	1.17	2.67	2.97	0	0.17	0.21
Cliff swallow	0	0.17	0.21				0.50	0.67	1.06	0.33	2.33	1.49			
Violet-green swallow															

(Continued)

Table A12 (Continued)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Mallard															
Pintail															
Northern shoveler															
Cinnamon teal															
Common merganser				0	0	0.66							0	0	0.01
Bald eagle							0	0	0.07				0.19	0.17	0.33
Killdeer															
Dunlin										0	0	0.05			
Unidentified Scolopacidae															
Glaucous-winged gull				0.17	0	0.02									
Western gull	0	0	0.07	0	0	0.12							0	0.17	0.07
Herring gull							0	0	0.03	0	0	0.06			
California gull	0.33	0	0.13	0	0	1.77				0	0.17	0.13	0	0.17	0.07
Ring-billed gull	0	0	0.17	0.50	0.33	0.54	0	0	0.21	0.50	1.00	0.31	0.17	0.17	0.12
Bonaparte's gull				0	0.50	0.07				2.50	1.67	1.84	0	0	0.02
Caspian tern				0.17	0	0.24	0	0	0.02	0	0.17	0.07	0	0.33	0.07
Unidentified Laridae	0.17	0.17	0.33	0.17	0	1.34	0.17	0.17	0.09	0.67	0.33	1.27	1.17	0.50	0.45
Downy woodpecker															
Unidentified Picidae															
Willow flycatcher															
Barn swallow				2.00	3.50	2.60				0.33	0.83	0.76	0	0.33	0.32
Cliff swallow				0.83	1.33	0.99				0	0	0.08	0.50	0.83	0.83
Violet-green swallow				0	0	0.15									

(Continued)

Table A12 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0.18	0.33	0.29	0	0.67	0.88	0	0.17	0.15						
Bank swallow															
Unidentified Hirundinidae															
Common crow	0	0	0.03	0.33	1.67	0.42	0.17	0	0.04	2.33	3.33	2.33	2.17	2.17	1.70
Black-capped chickadee				0	0	0.06				2.05	0.33	0.42	0.77	1.33	1.70
Bewick's wren										0.30	0.67	1.33	0	0.33	0.66
Long-billed marsh wren															
American robin															
Swinson's thrush				0	0.17	0.21				0.33	0.50	0.50	0.50	1.00	0.75
Starling				0	0	0.13	0.50	0	0						
Yellow warbler										0	0.33	0.42	1.67	0	0
Brown-headed cowbird				0.95	0.17	0.09				0.24	0	0.15			
American goldfinch	0.67	0	0	2.00	1.00	0.75	0	0.33	0.33	0.42	0	0			
Savannah sparrow	4.33	3.50	2.36	0.17	1.17	0.59	2.67	3.00	1.96						
White-crowned sparrow	0	0	0.21	0	0.17	0.05				0	0.17	0.05	0	0.17	0.16
Song sparrow							0	1.67	2.55	0	1.67	2.55	1.70	0.33	0.42

(Continued)

Table A12 (Continued)

	INAP			IMA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow	0.22	0	0	0	0.17	0.21	0.22	1.00	1.27	0.22	0.33	0.42	0.44	0.17	0.21
Bank swallow															
Unidentified Hirundinidae	0	0	0.17	0	0.17	0.05									
Common crow	0	0	0.14	0.19	0	0.05	0	0	0.05	0	0	0.24	0.19	0	0.17
Black-capped chickadee				0	0.33	0.29									
Bewick's wren															
Long-billed marsh wren				0.56	0.17	0.15									
American robin				0	0.17	0.22									
Swainson's thrush													0	0	0.05
Starling															
Yellow warbler															
Brown-headed cowbird															
American goldfinch															
Savannah sparrow	0.21	0.17	0.05	0	0.50	0.16									
White-crowned sparrow															
Song sparrow															

(Continued)

Table A12 (Concluded)

	IBIP			IBI			SBIP/L			SBI			SBI		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Tree swallow															
Bank swallow															
Unidentified Hirundinidae															
Common crow	0	0.17	0.03	0	0.17	0.02	0	0	0.07	0	0	0.02	0	0	0.16
Black-capped chickadee															
Bewick's wren															
Long-billed marsh wren															
American robin															
Swainson's thrush															
Starling															
Yellow warbler							0	0	1.62						
Brown-headed cowbird															
American goldfinch	0	0.17	0.33				0	0.50	0.99						
Savannah sparrow															
White-crowned sparrow															
Song sparrow															

Table A13
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, July 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Double-crested cormorant															
Mallard															
Cinnamon teal															
Bald eagle															
Great blue heron															
Killdeer															
Greater yellowlegs															
Least sandpiper															
Western sandpiper															
Common snipe				0	0	0.02									
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull															
Herring gull															
California gull															
Ring-billed gull															
Bonaparte's gull															
Caspian tern															
Unidentified Laridae	0	0	2.90				0	0	0.01						
Rufous hummingbird													0	0.17	0.33
Downy woodpecker													0.33	0	0

(Continued)

Table A 13 (Continued)

	TNAP			INA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Double-crested cormorant	0	0	0.07	0	0	0.11 :									
Mallard				0	0	0.02				0	0	0.02			
Cinnamon teal													0	0.33	0.17
Bald eagle				0	0	0.03									
Great blue heron													0	0	0.02
Killdeer				0			0	0.17	0.29	0.83	0.50	0.44			
Greater yellowlegs													0	0	0.03
Least sandpiper															
Western sandpiper				0			0	5.50	3.40	10.10	4.17	10.36			
Common snipe															
Unidentified Scolopacidae															
Glaucous-winged gull				0	0	0.02				0	0	0.03	0	0	1.19
Western gull				0	0	0.07				0.17	0	0	0.17	0	0
Herring gull													0.33	0	0.09
California gull	0	0.50	0.09	0	0	0.02	0.17	0.17	0.24	0	0.17	0.09	0.17	0	0.05
Ring-billed gull				0	0	0.09	0	0	0.02	0	0	0.07			
Bonaparte's gull				0	0	0.02	0	0.33	0.05	0	0	0.01	0	0	0.01
Caspian tern	0.33	0	0												
Unidentified Laridae	0.50	0.17	0.17	0.33	0	0.12	0.33	0.17	0.24	0.33	0.67	0.26	0	0.33	0.38
Rufous hummingbird				0			0	0.17	1.33						
Downy woodpecker															

(Continued)

Table A13 (Continued)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Double-crested cormorant															
Mallard				0	0	0.01							0	0	0.01
Cinnamon teal															
Bald eagle															
Great blue heron				0	0	0.01									
Killdeer	0.56	0.17	0.65				0	0	0.13						
Greater yellowlegs															
Least sandpiper				10.71	7.33	22.99									
Western sandpiper				6.00	10.00	0				1.56	15.33	19.52	0	6.83	8.70
Common snipe															
Unidentified Scolopacidae				0	0.17	0.33	0	2.17	0.08				0	0.33	0.17
Glaucous-winged gull										0	0	0.02			
Western gull	0	0.17	0.02	0	0	0.05				0	0.17	0.02			
Herring gull				0	0	0.03				0	0	0.03	0	0	0.03
California gull				0.17	0	0	0.17	0.17	0.07	0.17	0	0	0	0	0.20
Ring-billed gull	0	0	0.05	0.33	0.17	0.38	0	0	0.02	0	0.33	0.05	0	0	0.02
Bonaparte's gull				0	0	0.05				0	0.17	0.14			
Caspian tern	0	0	0.02	0	0	0.02	0	0	0.02				0	0	0.14
Unidentified Laridae	0.17	0.17	0.05	0.17	0	0.24	0.33	0	0.09	0.33	0.33	0.45	0	0.17	0.24
Rufous hummingbird															
Downy woodpecker															

(Continued)

Table A13 (Continued)

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Unidentified Picidae															
Willow flycatcher										0	0	0.05			
Unidentified Tyrannidae										0.70	2.17	2.98	2.35	0.67	1.33
Barn swallow	1.13	0	1.62	0.23	0.50	0.44	0	0.83	0.74	1.67	0	0	0	0.17	21.22
Cliff swallow	0.93	0	0.27	0	0.33	0.16									
Tree swallow	2.11	0	1.33	0.53	0.33	0.29									
Bark swallow															
Unidentified Hirundinidae	6.83	0	0				0	1.17	0.99						
Common crow	0	0.50	0.29	0.50	0.17	0.41	0	0	0.03	3.17	3.17	2.18	2.83	2.50	1.75
Black-capped chickadee										3.08	1.50	1.19	0.26	1.33	1.70
Bewick's wren										1.19	0.17	0	0	0.50	0.99
American robin	0	0	0.05	0	0	0.11									
Swainson's thrush										0.67	0.33	0.91	0.67	1.17	0.83
Cedar waxwing															
Starling				0	0.50	0.20									
Brewer's blackbird													0	0	0.44
Brown-headed cowbird													0.24	0.50	0
Unidentified Icteridae	0	0.33	0.17	0	0.33	0.17	0	0	0.05						
American goldfinch	0	0	0.17	1.67	1.33	0.66	0	0.67	1.08						
Savannah sparrow	5.33	5.00	3.86	1.33	3.17	1.83	1.50	3.17	1.83						
White-crowned sparrow	0	0.17	0.11	0	0	0.05	0.56	0.17	0.05						
Song sparrow	0	0	0.21							0.57	2.33	2.97	0	1.83	2.33
													0.95	0	0

(Continued)

AD-A056 823

OREGON STATE UNIV CORVALLIS DEPT OF FISHERIES AND WI--ETC F/G 13/2
HABITAT DEVELOPMENT FIELD INVESTIGATIONS, MILLER SANDS MARSH AN--ETC(U)
MAY 78 J A CRAWFORD, D K EDWARDS DACW57-76-C-0180

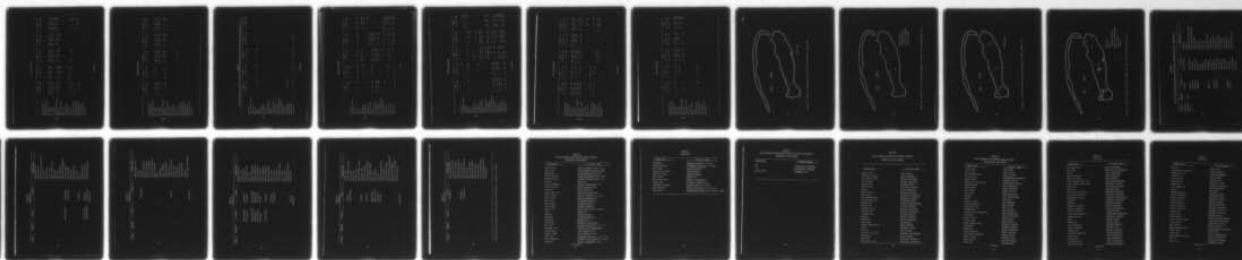
UNCLASSIFIED

WES-D-77-38

NL

2 OF 2

AD
A056823



END
DATE
FILMED

9-78

DDC

Table A13 (Continued)

	INAP			INA			SNAP			SNA			MNA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Unidentified Picidae															
Willow flycatcher															
Unidentified Tyrannidae															
Barn swallow	4.17	6.67	8.28	0.17	0.50	0.64	3.83	8.00	9.97	5.33	2.50	2.76	2.17	0.83	1.27
Cliff swallow	0.83	2.17	2.55	1.17	0.17	0.21	1.17	2.17	2.76	0.33	1.00	1.27	0.33	0.83	1.06
Tree swallow	1.75	2.33	2.55				5.92	3.67	4.24	3.07	2.50	3.18	2.85	3.83	4.67
Bark swallow													0.67	1.17	1.49
Unidentified Hirundinidae	0.17	2.67	1.74	0	0	0.05	1.33	2.50	0.80	3.33	4.83	0.83	2.17	3.11	3.89
Common crow	0	0.33	0.28	0	0.17	0.33	0	0.17	0.31	0	0	0.26			
Black-capped chickadee				0	0.33	0.29									
Bewick's wren															
American robin															
Swainson's thrush															
Cedar waxwing				0.28	0	0									
Starling	0	0.17	0.05	0	2.83	6.10	0.48	0	0.05				0	0	0.05
Brewer's blackbird													0	0	0.09
Brown-headed cowbird	0.33	0	0												
Unidentified Icteridae															
American goldfinch	0	0.17	0.05										0	0.33	0.66
Savannah sparrow															
White-crowned sparrow															
Song sparrow															

(Continued)

Table A13 (Concluded)

	IBIP			IBI			SBTPI			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Unidentified Picidae															
Willow flycatcher															
Unidentified Tyrannidae															
Barn swallow	0	0.33	0.22	0	0.33	0.22	1.50	1.67	1.62	3.83	2.50	2.38	0.33	2.17	2.17
Cliff swallow	0	0.33	0.17				0.67	1.67	1.08	2.17	2.50	1.66	1.33	0.83	1.24
Tree swallow	0	1.83	1.30				8.33	9.67	9.53	5.21	2.83	2.38	0.83	0.83	0.76
Bark swallow															
Unidentified Hirundinidae															
Common crow	0	0.17	0.05	0.17	0	0	2.50	3.50	1.43	0	1.83	3.13	0	0	0.32
Black-capped chickadee							0	0.17	0.12	0	0	0.16	0	0	0.09
Bewick's wren															
American robin															
Swainson's thrush															
Cedar waxwing															
Starling				0											
Brewer's blackbird															
Brown-headed cowbird															
Unidentified Icteridae															
American goldfinch															
Savannah sparrow															
White-crowned sparrow															
Song sparrow															

Table A14
Estimates of Bird Density by Transect, Station, and Variable Plot Methods by Study Area, Miller Sands, Oregon, August 1977

	IUPPL			IUPP			IUP			ITSP			ITS		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Double-crested cormorant															
Canada goose															
Snow goose															
Mallard	0	0	0.38	0	0	0.03	0	0	0	0.09					
Pintail															
Cinnamon teal															
Common merganser															
Bald eagle															
Great blue heron															
Semipalmated plover															
Killdeer															
Long-billed dowitcher															
Least sandpiper															
Western sandpiper															
Unidentified Scolopacidae															
Glaucous-winged gull															
Western gull															
Herring gull															
California gull	0	0.17	0.29												
Ring-billed gull															
Bonaparte's gull															
Caspian tern	0	0	0.01	0	0.17	0.02	0	0.33	0.01	0	0.33	0			

(Continued)

Table A14 (Continued)

	INAP			IMA			SMAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon	0	0	0.08	0	0	0.08									
double-crested cormorant															
Canada goose															
Snow goose															
Mallard	0	0	0.03	0.17	0.17	0.03	0	0.67	0.09	0	0.33	0.50	3.00	1.00	0.50
Pintail															
Cinnamon teal							0.83	0	0				0	1.33	0.66
Common merganser				0	0	0.59							0	0.50	0.44
Bald eagle													0		
Great blue heron															
Semipalmated plover										0.93	0.50	0.91			
Killdeer	0.17	0.17	0.15	0	0.67	0.59	0.17	0.17	0.15	0	0.33	0.29			
Long-billed dowitcher							0	0	0.02	0	0.50	0.44			
Least sandpiper	0.83	1.67	3.32				4.44	1.00	1.99						
Western sandpiper	0	0.17	0.08				4.04	1.50	0.75	4.55	1.50	1.99			
Unidentified Scolopaciidae															
Glaucous-winged gull							0	0	0.02						
Western gull	0	0	0.02							0.17	0	0.05	0.33	0.17	0.07
Herring gull													0	0.17	0.03
California gull				0	0	0.02	0	0.17	0.02	0	0.17	0.02	0	0.17	0.02
Ring-billed gull							0	0	0.02	0	0	0.02	0	0	0.05
Bonaparte's gull							0	0	0.01	0.21	0	0	0	0	0.04
Caspian tern	0	0.33	0.58	0	0.33	2.07				0.67	0.33	0.25	0.17	0.67	0.83

(Continued)

Table A14 (Continued)

	IBIP			IBI			SBIPL			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Common loon															
Double-crested cormorant				0	0	0.03							0	0	0.17
Canada goose													0.17	0	0.01
Snow goose															
Mallard	0	0	0.02	0	0.33	0.42	0	0.50	0.08	0	0	0.46	0	0	0.49
Pintail										0	0.17	0.20			
Cinnamon teal															
Common merganser				0.42	0	0				0	0	0.01			
Bald eagle															
Great blue heron				0	0.17	0.01									
Semipalmated plover				0.33	0.33	0.11				0.50	0.67	0.59			
Killdeer				0.19	0.33	0.13				0.37	0.33	0.39			
Long-billed dowitcher															
Least sandpiper				2.38	1.00	3.54							0	0.50	1.77
Western sandpiper				6.22	13.50	17.19				30.00	40.33	42.23	0.89	1.50	1.91
Unidentified Scolopacidae				0	2.00	3.98									
Glaucous-winged gull	0	0.17	0.02	0.17	0.17	0.02				0	0.17	0.05			
Western gull	0	0	0.02	0	0	0.02				0.17	0	0	0	0.17	0.07
Herring gull	0	0.33	0.06	0	0.33	0.06				0	0.17	0.03	0.42	0	0
California gull	0.17	0.33	0.26	0	0.17	0.07							0	0	0.26
Ring-billed gull	0	0.17	0.05							0	0.33	0.05	0	0	0.02
Bonaparte's gull				0.17	0	0.05				0.83	0.50	0.31	0	0.17	0.12
Caspian tern	1.00	1.00	0.31	1.00	0.17	0.19				0.17	2.67	0.61	0.67	1.17	0.57

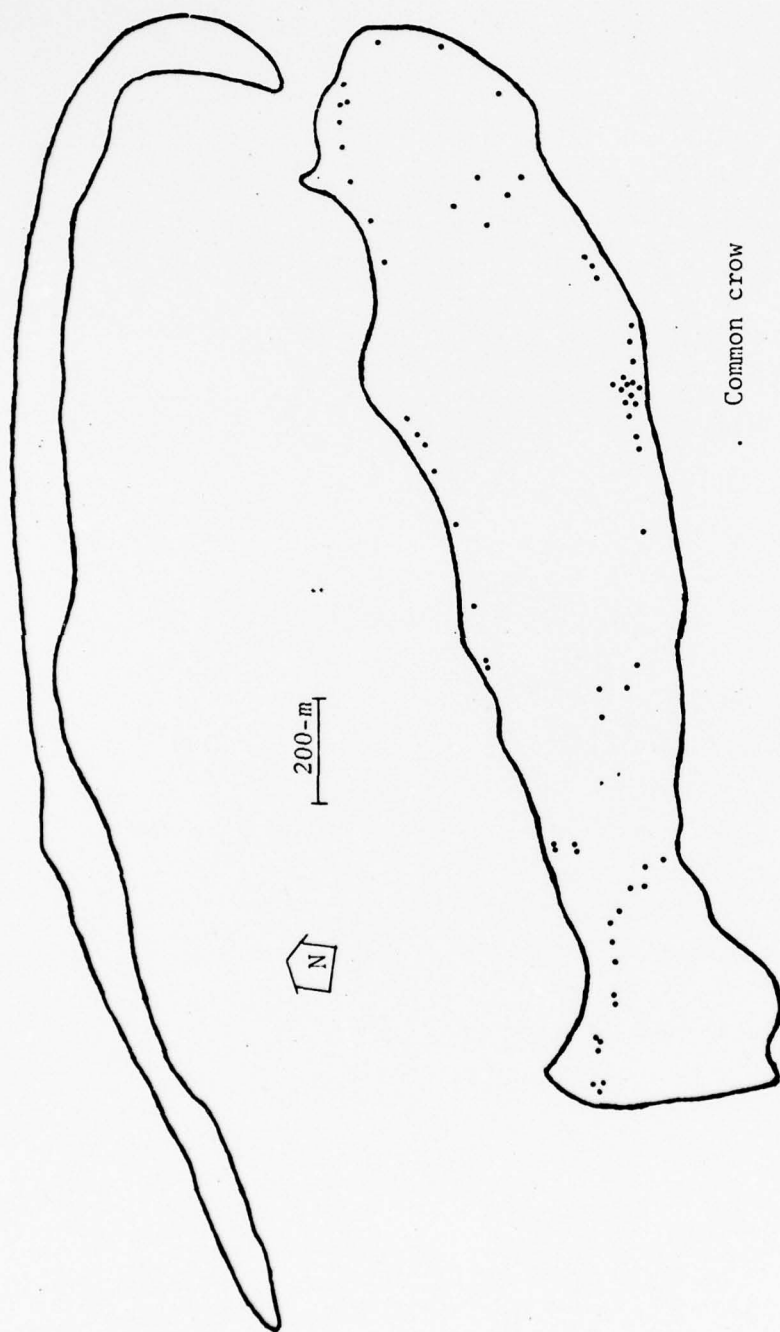
(Continued)

Table A14 (Continued)

	INAP			IMA			SNAP			SMA			MMA		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Unidentified Laridae	0	0.83	0.12	0	0	0.02	0	0.33	0.05	0.17	0.33	0.09	0.67	1.17	0.33
Unidentified Picidae															
Willow flycatcher															
Barn swallow	6.33	7.33	8.91	0.83	3.83	4.24	5.00	20.50	24.83	12.00	32.00	37.35	0.50	4.33	4.24
Cliff swallow	0.17	0	0				0	1.67	2.12	0	0.50	0.64	0.17	0	0
Tree swallow	0.44	0.33	0.42	0	0.17	0.21	0	0.83	1.06	0	0.17	0.21			
Unidentified Hirundinidae	2.00	3.00	0.45	0			0	0	0.28				0	0.17	0.45
Common Crow	0.93	2.00	0.68	0	1.00	0.14	0	0.17	0.19	0	0.17	0.05	0	0.33	0.40
Black-capped chickadee															
Bewick's wren															
American robin													0	0.17	0.11
Swainson's thrush															
Starling	0	0.33	0.11	0	385.71	47.75									
Red-winged blackbird															
Brown-headed cowbird	1.17	0	0	0	0.50	0.44							0	0.17	1.33
American goldfinch															
Savannah sparrow							0	0.17	0.05				0	0.33	0.11
White-crowned sparrow							0.24	0.17	0.33				0	0.83	1.66
Song sparrow															

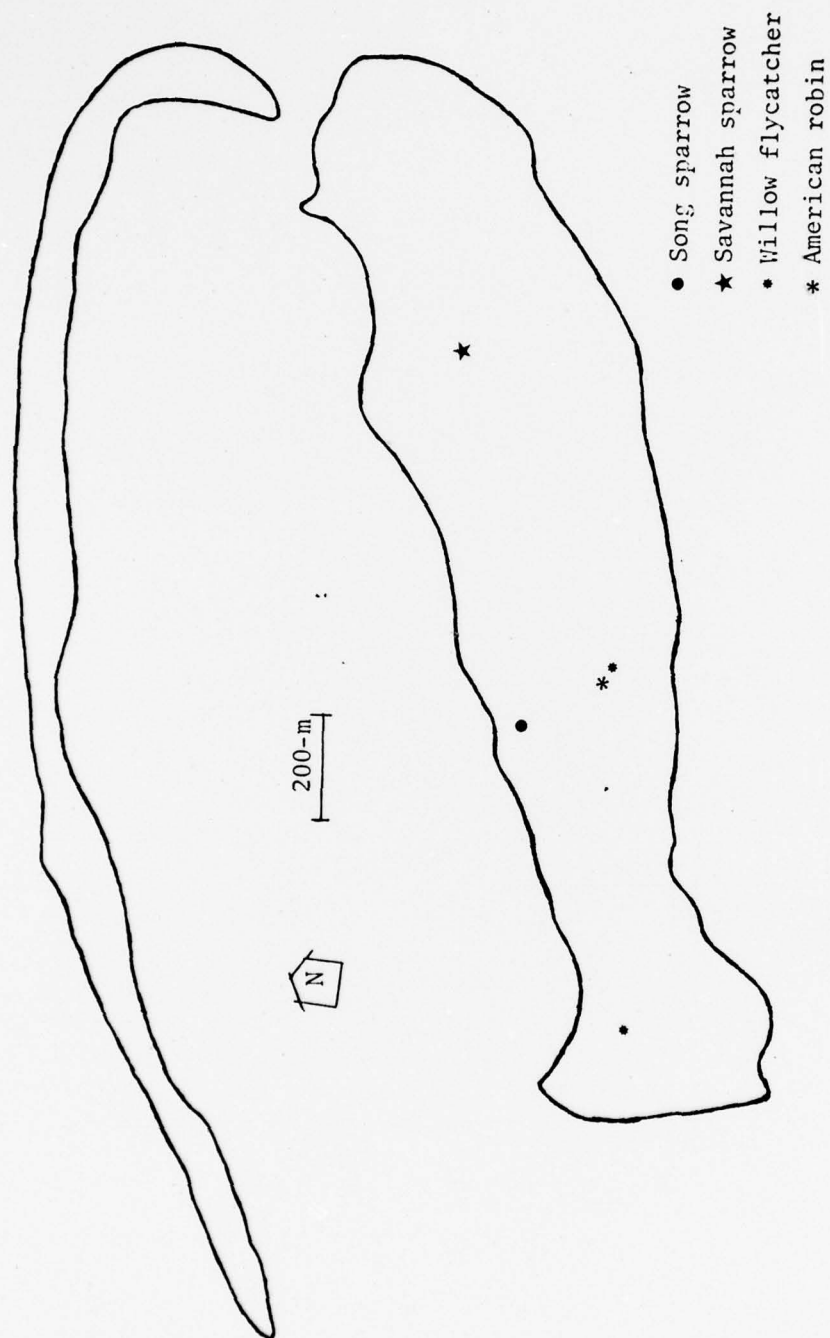
Table A14 (Concluded)

	IBIP			IBI			SBIP			SBI			SBE		
	T	S	VP	T	S	VP	T	S	VP	T	S	VP	T	S	VP
Unidentified Laridae	1.17	0.17	0.05	0	0	0.07	2.67	0.67	0.26	0.33	0.33	0.33	0.17	0.67	0.66
Unidentified Picidae															
Willow flycatcher															
Barn swallow	0	0.17	0.11	0	0.33	0.54	6.17	17.33	12.13	1.00	10.50	6.82	2.67	5.00	4.98
Cliff swallow							0	0.17	0.08	0	0.83	0.17	0	0	0.08
Tree swallow				0	0.33	0.22	0.21	0.17	0.11	0	0.17	0	0.21	0.33	0.22
Unidentified Hirundinidae															
Common crow	0.33	0	0				0.50	0.17	0.24	0.17	0	0.07	0	0	0.11
Black-capped chickadee															
Bewick's wren															
American robin															
Swainson's thrush															
Starling															
Red-winged blackbird															
Brown-headed cowbird	0	0	0.15	0	0.50	0.44									
American goldfinch															
Savannah sparrow															
White-crowned sparrow															
Song sparrow															



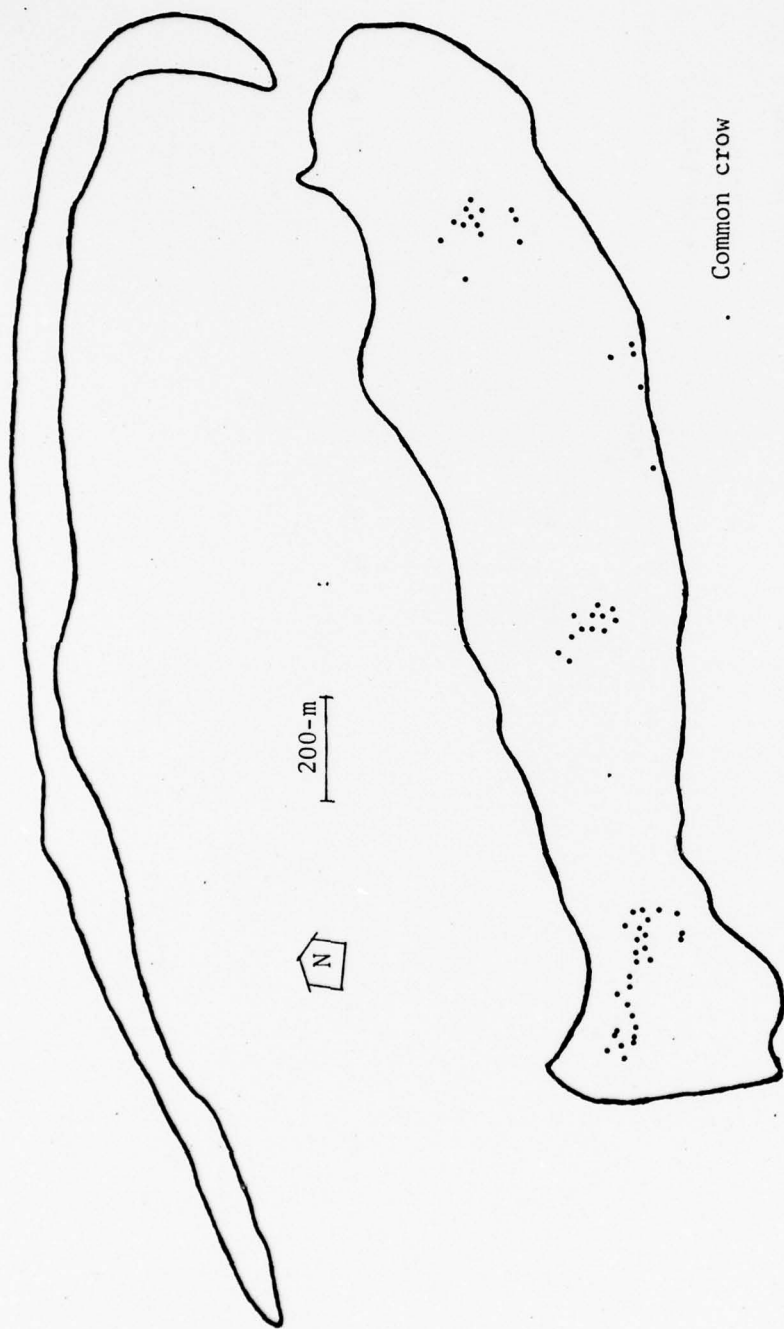
B1

Figure B1. Location of common crow nests found on Miller Sands, Oregon, 1976.



B2

Figure B2. Location of nests, other than common crow, found on Miller Sands, Oregon, 1976.



B3

Figure B3. Location of common crow nests found on Miller Sands, Oregon, 1977.

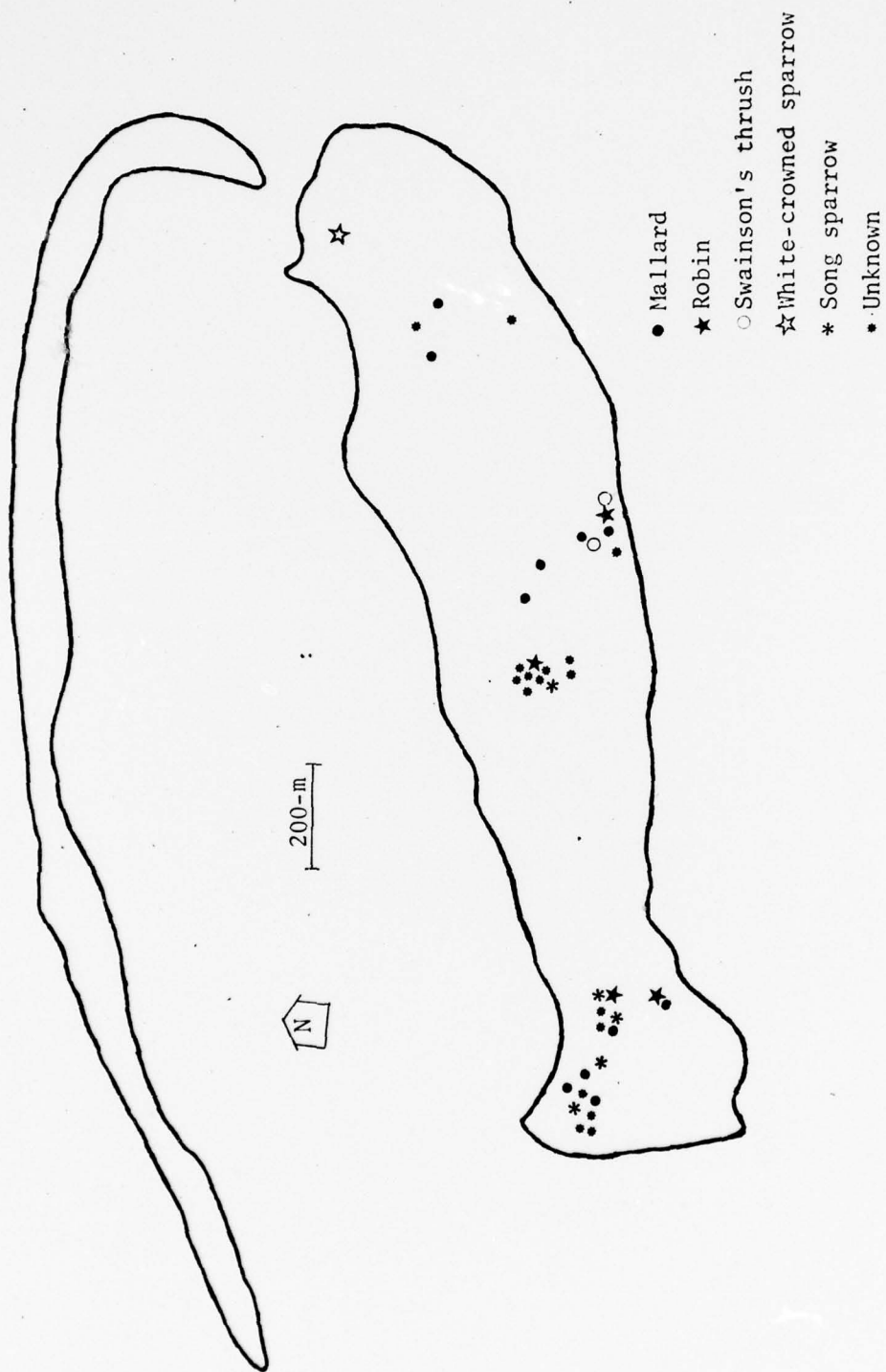


Figure B4. Location of nests, other than common crow, found on Miller Sands, Oregon, 1977.

Table C1

List of All Animals Observed on Miller Sands, Oregon, July 1976 - August 1977

Class	Subclass	Order	Family	Common Name
Crustacea	-	Isopoda	Armadillodidae	Sow bugs
Arachnida	Araneae			Spiders
Insecta	-	Odonata	Coenagrionidae	Narrow-winged damsel flies
			Acrididae	Short-horned grasshoppers
			Forficulidae	Common earwigs
		Hemiptera	Miridae	Leaf bugs
			Nabidae	Damsel bug
			Saldidae	Shore bug
		Homoptera	Pentatomidae	Stink bug
			Cercopidae	Meadow spittlebug
			Cicadellidae	Leafhoppers
		Neuroptera	Chrysopidae	Green lacewings
			Staphylinidae	Rove beetles
			Coccinellidae	Ladybird beetles
		Lepidoptera	Elateridae	Click beetles
			Curculionidae	Snout beetles
			Pyrallidae	Pyrallid moths
Diptera			Tipulidae	Crane flies
			Trichoceridae	Winter crane flies

(Continued)

Table C1
(Continued)

Class	Subclass	Order	Family	Common Name
			Chironomidae	Midges
			Anisopodidae	Wood gnats
			Therevidae	Stillette flies
			Dolichopodidae	Long-legged flies
			Syrphidae	Syrphid flies
			Sciomyzidae	Marsh flies
			Lauxaniidae	Lauxanid flies
			Heleomyzidae	Heleomyzid flies
			Ephydriidae	Shore flies
			Anthomyiidae	Anthomyiid flies
			Muscidae	Muscid flies
			Tachinidae	Tachinid flies
			Calliphoridae	Blow flies
		Hymenoptera	Braconidae	Braconids
			Ichneumonidae	Ichneumous
			Formicidae	Ants
			Apidae	Bumble bees
			Colubridae	Garter snakes
Reptilia	-	Squamata		
Mammalia	-	Insectivora		
		Chiroptera	Vespertilionidae	Vagrant shrew
				Big brown bat
			(Continued)	

Table C1
(Continued)

Class	Subclass	Order	Family	Common Name
Aves		Rodentia	Capromyidae	Nutria
			Cricetidae	Muskrat
				Townsend's vole
			Muridae	Norway rat
		Pinnipedia	Otariidae	California sea lion
			Phocidae	Harbor seal
		Gaviiformes	Gaviidae	Common loon
				Arctic loon
				Red-throated loon
		Podicipediformes	Podicipedidae	Western grebe
				Horned grebe
		Pelecaniformes	Phalacrocoraciidae	Double-crested cormorant
		Anseriformes	Anatidae	Whistling swan
				Canada goose
				Black brant ^a
				Snow goose
				Mallard
				Pintail
				American wigeon
				Northern shoveler
(Continued)				

(Continued)

Table C1

Class	Subclass	Order	Family	Common Name
				Blue-winged teal
				Cinnamon teal
				American green-winged teal
				Canvasback
				Greater scaup
				Lesser scaup
				White-winged scoter
				Bufflehead
				Ruddy duck
				Common merganser
				Red-breasted merganser
				Turkey vulture ^a
				Cooper's hawk ^a
				Marsh hawk
				Red-tailed hawk
				Bald eagle
				Merlin
				American kestrel
				Great blue heron
				Black-bellied plover
				(Continued)

Table C1
(Continued)

Class	Subclass	Order	Family	Common Name
				Semipalmated plover
				Killdeer
				Whimbrel
			Scolopacidae	Spotted sandpiper ^a
			:	Greater yellowlegs
				Lesser yellowlegs ^a
				Long-billed dowitcher
				Ruddy turnstone ^a
				Dunlin
				Sanderling
				Least sandpiper
				Western sandpiper
				Common snipe
				Glaucous-winged gull
				Western gull
				Herring gull
				California gull
				Ring-billed gull
				Mew gull
				Black-legged kittiwake
				(Continued)

Table C1
(Continued)

Class	Subclass	Order	Family	Common Name
				Bonaparte's gull
				Caspian tern
	Columbiiformes		Columbidae	Mourning dove ^a
	Strigiformes		Strigidae	Great horned owl ^a
				Barn owl ^a
	Caprimulgiformes		Caprimulgidae	Common nighthawk ^a
	Apodiiformes		Trochilidae	Rufous hummingbird
	Coraciiformes		Alcedinidae	Belted kingfisher
	Piciformes		Picidae	Common flicker
				Downy woodpecker
	Passeriformes.		Tyrannidae	Western kingbird ^a
				Willow flycatcher
			Alaudidae	Horned lark ^a
			Hirundinidae	Barn swallow
				Cliff swallow
				Violet-green swallow
				Tree swallow
				Bank swallow
				Rough-winged swallow
			Corvidae	Common raven

(Continued)

Table C1

(Continued)

Class	Subclass	Order	Family	Common Name
			Paridae	Common crow
			Troglodytidae	Black-capped chickadee
				House wren
				Winter wren
				Bewick's wren
				Long-billed marsh wren
			Turdidae	American robin
				Swainson's thrush
			Sylviidae	Golden-crowned kinglet
				Ruby-crowned kinglet
			Motacillidae	Water pipit
			Bombycillidae	Cedar waxwing
			Sturnidae	Starling
			Parulidae	Orange-crowned warbler
				Yellow warbler
				Yellow-rumped warbler
				Black-throated gray warbler ^a
				Common yellowthroat ^a
				MacGillivray's warbler ^a
				Wilson's warbler

(Continued)

Table C1
(Concluded)

Class	Subclass	Order	Family	Common Name
			Icteridae	Western meadowlark
				Red-winged blackbird
				Brewer's blackbird
			:	Brown-headed cowbird
				Western tanager ^a
			Thraupidae	Black-headed grosbeak
			Fringillidae	House finch
				American goldfinch
				Rufous-sided towhee
				Savannah sparrow
				Dark-eyed junco
				White-crowned sparrow
				Golden-crowned sparrow
				Song sparrow

^a Birds which were observed on Miller Sands but not recorded on transects or stations.

Table D1
List of Common and Scientific Names of Plants
Mentioned in this Report

<u>Common Name</u>	<u>Scientific Name</u>
Sitka spruce	<u>Picea sitchensis</u> (Bong.) Carr
Shore pine	<u>Pinus contorta contorta</u> Dougl.
Douglas fir	<u>Pseudotsuga menziesii</u> Carr
Western hemlock	<u>Tsuga heterophylla</u> (Raf.) Sarg.
Australian pine	<u>Casuarina equisetifolia</u> Forst.
Hickory	<u>Carya</u> spp.
Black cottonwood	<u>Populus trichocarpa</u> T. & G.
Pacific willow	<u>Salix lasiandra</u> Benth.
Red alder	<u>Alnus rubra</u> Bong.
Oregon white oak	<u>Quercus garryana</u> Dougl.
Scot's broom	<u>Cytisus scoparius</u> (L.) Link
Black locust	<u>Robinia pseudoacacia</u> L.
Red clover	<u>Trifolium pratense</u> L.
White clover	<u>Trifolium repens</u> L.
False indigo	<u>Amorpha fruticosa</u> L.
Hairy vetch	<u>Vicia villosa</u> (Kell.) Hermann
Croton	<u>Croton</u> spp.
Tamarisk	<u>Tamarix gallica</u> L.
Dayflower	<u>Commelina diffusa</u> F.
Goldenrod	<u>Solidago</u> spp.
Silverling	<u>Baccharis halimifolia</u> L.
Sea oxeye	<u>Borrichia frutescens</u> (L.) D. C.
Toothache tree	<u>Zanthoxylum clava-herculis</u> L.
Slough sedge	<u>Carex obnupta</u> Bailey
Lyngby's sedge	<u>Carex lyngbyei</u> Hornem.
Spike rush	<u>Eleocharis palustris</u> (L.) R. & S.
Tall wheatgrass	<u>Agropyron elongatum</u> (Host.) Beauv.
Bentgrass	<u>Agrostis oregonensis</u> Vasey.

(Continued)

Table D1
(Completed)

<u>Common Name</u>	<u>Scientific Name</u>
Beachgrass	<u>Ammophila arenaria</u> (L.) Link
Tufted hairgrass	<u>Deschampsia cespitosa</u> (L.) Beauv.
Alta fescue	<u>Festuca elatior</u> L.
Creeping red fescue	<u>Festuca rubra</u> L.
Hannchen barley	<u>Hordeum vulgare</u> L.
Panic grass	<u>Panicum</u> spp.
Reed canary grass	<u>Phalaris arundinacea</u> L.
Common reed	<u>Phragmites communis</u> Trin.
Saltmeadow cordgrass	<u>Spartina patens</u> (Ait) Muhl.
Gulf cordgrass	<u>Spartina spartinae</u> (Trin.) Hitchc.
Natal grass	<u>Rhynchelytrum roseum</u> (Nees) Stapf. & Hubb.

Table D2
List of Common and Scientific Names of Insects and Reptiles
Mentioned in this Report

<u>Common Name</u>	<u>Scientific Name</u>
Ant	<u>Crematogaster ashmeadii</u>
Ant	<u>Pseudomyrmex elongatus</u>
Garter snake	<u>Thamnophis</u> spp.

Table D3

List of Common and Scientific Names of Mammals

Mentioned in this Report

<u>Common Name</u>	<u>Scientific Name</u>
Vagrant shrew	<u>Sorex vagrans</u>
Trowbridge's shrew	<u>Sorex trowbridgii</u>
Short-tailed shrew	<u>Blarina brevicauda</u>
Eastern mole	<u>Scalopus aquaticus</u>
Big brown bat	<u>Eptesicus fuscus</u>
Marsh rabbit	<u>Sylvilagus palustris</u>
Beaver	<u>Castor canadensis</u>
Marsh rice rat	<u>Oryzomys palustris</u>
Deer mouse	<u>Peromyscus maniculatus</u>
White-footed mouse	<u>Peromyscus leucopus</u>
Hispid cotton rat	<u>Sigmodon hispidus</u>
Meadow vole	<u>Microtus pennsylvanicus</u>
Montane vole	<u>Microtus montanus</u>
Townsend's vole	<u>Microtus townsendii</u>
Prairie vole	<u>Microtus ochrogaster</u>
Creeping vole	<u>Microtus oregoni</u>
Muskrat	<u>Ondatra zibethicus</u>
Norway rat	<u>Rattus norvegicus</u>
House mouse	<u>Mus musculus</u>
Meadow jumping mouse	<u>Zapus hudsonius</u>
Nutria	<u>Myocaster coypus</u>
Raccoon	<u>Procyon lotor</u>
California sea lion	<u>Zalophus californianus</u>
Harbor seal	<u>Phoca vitulina</u>
Mule deer	<u>Odocoileus hemionus</u>
White-tailed deer	<u>Odocoileus virginianus</u>

Table D4
List of Common and Scientific Names of Birds
Mentioned in this Report

<u>Common Name</u>	<u>Scientific Name</u>
Common loon	<u>Gavia immer</u>
Arctic loon	<u>Gavia arctica</u>
Red-throated loon	<u>Gavia stellata</u>
Western grebe	<u>Aechmophorus occidentalis</u>
Horned grebe	<u>Podiceps auritus</u>
Double-crested cormorant	<u>Phalacrocorax auritus</u>
Whistling swan	<u>Olor columbianus</u>
Canada goose	<u>Branta canadensis</u>
Black brant	<u>Branta bernicla</u>
Snow goose	<u>Chen caerulescens</u>
Mallard	<u>Anas platyrhynchos</u>
Pintail	<u>Anas acuta</u>
American wigeon	<u>Anas americana</u>
Northern shoveler	<u>Anas clypeata</u>
Blue-winged teal	<u>Anas discors</u>
Cinnamon teal	<u>Anas cyanoptera</u>
American green-winged teal	<u>Anas carolinensis</u>
Canvasback	<u>Aythya valisineria</u>
Greater scaup	<u>Aythya marila</u>
Lesser scaup	<u>Aythya affinis</u>
White-winged scoter	<u>Melanitta deglandi</u>
Bufflehead	<u>Bucephala albeola</u>
Ruddy duck	<u>Oxyura jamaicensis</u>
Common merganser	<u>Mergus merganser</u>
Red-breasted merganser	<u>Mergus serrator</u>
Turkey vulture	<u>Cathartes aura</u>
Cooper's hawk	<u>Accipiter cooperii</u>
Marsh hawk	<u>Circus cyaneus</u>

Continued

Table D4
(Continued)

<u>Common Name</u>	<u>Scientific Name</u>
Red-tailed hawk	<u>Buteo jamaicensis</u>
Bald eagle	<u>Haliaeetus leucocephalus</u>
Merlin	<u>Falco columbarius</u>
American kestrel	<u>Falco sparverius</u>
Great blue heron	<u>Ardea herodias</u>
Black-crowned night heron	<u>Nycticorax nycticorax</u>
Yellow-crowned night heron	<u>Nyctanassa violacea</u>
Glossy ibis	<u>Plegadis falcinellus</u>
White ibis	<u>Eudocimus albus</u>
American oystercatcher	<u>Haematopus palliatus</u>
Black-bellied plover	<u>Pluvialis squatarola</u>
Semipalmated plover	<u>Charadrius semipalmatus</u>
Killdeer	<u>Charadrius vociferus</u>
Whimbrel	<u>Numenius phaeopus</u>
Spotted sandpiper	<u>Actitis macularia</u>
Greater yellowlegs	<u>Tringa melanoleucus</u>
Lesser yellowlegs	<u>Tringa flavipes</u>
Long-billed dowitcher	<u>Limnodromus scolopaceus</u>
Ruddy turnstone	<u>Arenarius interpres</u>
Dunlin	<u>Calidris alpina</u>
Sanderling	<u>Calidris alba</u>
Least sandpiper	<u>Calidris minutilla</u>
Western sandpiper	<u>Calidris mauri</u>
Common snipe	<u>Capella gallinago</u>
Glaucous-winged gull	<u>Larus glaucescens</u>
Western gull	<u>Larus occidentalis</u>
Herring gull	<u>Larus argentatus</u>
California gull	<u>Larus californicus</u>
Ring-billed gull	<u>Larus delawarensis</u>

(Continued)

Table D4
(Continued)

Common Name	Scientific Name
Mew gull	<u>Larus canus</u>
Black-legged kittiwake	<u>Rissa tridactyla</u>
Bonaparte's gull	<u>Larus philadelphia</u>
Caspian tern	<u>Sterna caspia</u>
Black skimmer	<u>Rynchops niger</u>
Mourning dove	<u>Zenaida macroura</u>
Ground dove	<u>Columbina passerina</u>
Great horned owl	<u>Bubo virginianus</u>
Barn owl	<u>Tyto alba</u>
Common nighthawk	<u>Chordeiles minor</u>
Rufous hummingbird	<u>Selasphorus rufus</u>
Belted kingfisher	<u>Megasceryle alcyon</u>
Common flicker	<u>Colaptes auratus</u>
Downy woodpecker	<u>Picoides pubescens</u>
Western kingbird	<u>Tyrannus verticalis</u>
Willow flycatcher	<u>Empidonax traillii</u>
Horned lark	<u>Eremophila alpestris</u>
Barn swallow	<u>Hirundo rustica</u>
Cliff swallow	<u>Petrochelidon pyrrhonota</u>
Violet-green swallow	<u>Tachycineta thalassina</u>
Tree swallow	<u>Iridoprocne bicolor</u>
Bank swallow	<u>Riparia riparia</u>
Rough-winged swallow	<u>Stelgidopteryx ruficollis</u>
Common raven	<u>Corvus corax</u>
Common crow	<u>Corvus brachyrhynchos</u>
Black-capped chickadee	<u>Parus atricapillus</u>
Bushtit	<u>Psaltiriparus minimus</u>
House wren	<u>Troglodytes aedon</u>

(Continued)

Table D4
(Continued)

<u>Common Name</u>	<u>Scientific Name</u>
Winter wren	<u>Troglodytes troglodytes</u>
Bewick's wren	<u>Thryomanes bewickii</u>
Long-billed marsh wren	<u>Cistothorus palustris</u>
American robin	<u>Turdus migratorius</u>
Swainson's thrush	<u>Catharus ustulatus</u>
Golden-crowned kinglet	<u>Regulus satrapa</u>
Ruby-crowned kinglet	<u>Regulus calendula</u>
Water pipit	<u>Anthus spinoletta</u>
Cedar waxwing	<u>Bombycilla cedrorum</u>
Starling	<u>Sturnus vulgaris</u>
Orange-crowned warbler	<u>Vermivora celata</u>
Yellow warbler	<u>Dendroica petechia</u>
Yellow-rumped warbler	<u>Dendroica coronata</u>
Black-throated gray warbler	<u>Dendroica nigrescens</u>
Common yellowthroat	<u>Geothlypis trichas</u>
MacGillivray's warbler	<u>Oporornis tolmiei</u>
Wilson's warbler	<u>Wilsonia pusilla</u>
Western meadowlark	<u>Sturnella neglecta</u>
Red-winged blackbird	<u>Agelaius phoeniceus</u>
Brewer's blackbird	<u>Euphagus cyanocephalus</u>
Brown-headed cowbird	<u>Molothrus ater</u>
Western tanager	<u>Piranga ludoviana</u>
Black-headed grosbeak	<u>Pheucticus melanocephalus</u>
House finch	<u>Carpodacus mexicanus</u>
American goldfinch	<u>Carduelis tristis</u>
Rufous-sided towhee	<u>Pipilo erythrophthalmus</u>
Savannah sparrow	<u>Passerculus sandwichensis</u>
Dark-eyed junco	<u>Junco hyemalis</u>

(Continued)

Table D4
(Concluded)

<u>Common Name</u>	<u>Scientific Name</u>
White-crowned sparrow	<u>Zonotrichia leucophrys</u>
Golden-crowned sparrow	<u>Zonotrichia atricapilla</u>
Song sparrow	<u>Melospiza melodia</u>