Supplemental Materials

SM 1: AOU Species Codes in Family Order.

AOU Species Codes in Family Order		
common name	code*	species
Black-bellied Whistling-Duck	BBWD	*Dendrocygna autumnalis*
Fulvous Whistling-Duck	FUWD	*Dendrocygna bicolor*
Greater White-fronted Goose	GWFG	*Anser albifrons*
Snow Goose (all morphs)	SNGO	*Anser caerulescens*
Blue Goose	*BLGO*	*Anser caerulescens*
Ross's Goose	ROGO	*Anser rossii*
Unidentified Snow, Blue or Ross's Goose	*RSGO*	~
Brant	BRAN	*Branta bernicla*
Cackling Goose	CACG	*Branta hutchinsii*
Canada Goose	CANG	*Branta canadensis*
Mute Swan	MUSW	*Cygnus olor*
Trumpeter Swan	TRUS	*Cygnus buccinator*
Tundra Swan	TUSW	*Cygnus columbianus*
Wood Duck	WODU	*Aix sponsa*
Gadwall	GADW	*Mareca strepera*
Eurasian Wigeon	EUWI	*Mareca penelope*
American Wigeon	AMWI	*Mareca americana*
American Black Duck	ABDU	*Anas rubripes*
Mallard	MALL	*Anas platyrhynchos*
Mottled Duck	MODU	*Anas fulvigula*
Blue-winged Teal	BWTE	*Spatula discors*
Cinnamon Teal	CITE	*Spatula cyanoptera*
Unidentified Cinammon or Blue-winged Teal	*CBTE*	~
Northern Shoveler	NSHO	*Spatula clypeata*
Northern Pintail	NOPI	*Anas acuta*
Green-winged Teal	GWTE	*Anas crecca*
Canvasback	CANV	*Aythya valisineria*
Redhead	REDH	*Aythya americana*
Ring-necked Duck	RNDU	*Aythya collaris*
Greater Scaup	GRSC	*Aythya marila*
Lesser Scaup	LESC	*Aythya affinis*
Common Eider	COEI	*Somateria mollissima*
Harlequin Duck	HADU	*Histrionicus histrionicus*
Surf Scoter	SUSC	*Melanitta perspicillata*
White-winged Scoter	WWSC	*Melanitta fusca*
Black Scoter	BLSC	*Melanitta americana*
Long-tailed Duck	LTDU	*Clangula hyemalis*
Bufflehead	BUFF	*Bucephala albeola*
Common Goldeneye	COGO	*Bucephala clangula*
Barrow's Goldeneye	BAGO	*Bucephala islandica*
Hooded Merganser	HOME	*Lophodytes cucullatus*
Common Merganser	COME	*Mergus merganser*
Red-breasted Merganser	RBME	*Mergus serrator*
Ruddy Duck	RUDU	*Oxyura jamaicensis*
Unidentified Goose	*UNGO*	~
Unidentified Swan	*UNCY*	~
Unidentified Teal	UNTE	*Anas (sp)*
Unidentified Dabbling Duck	*UDAD*	~

AOU Species Codes in Family Order		
common name	code*	species
Unidentified Diving Duck	*UDID*	~
Unidentified Scaup	*UNSC*	~
Unidentified Goldeneye	*UNGL*	~
Unidentified Duck	UNDU	*Anatinae (gen, sp)*
Unidentified Waterfowl	*UNWF*	~
Pied-billed Grebe	PBGR	*Podilymbus podiceps*
Horned Grebe	HOGR	*Podiceps auritus*
Red-necked Grebe	RNGR	*Podiceps grisegena*
Eared Grebe	EAGR	*Podiceps nigricollis*
Western Grebe	WEGR	*Aechmophorus occidentalis*
Unidentified Clark's or Western Grebe	*WCGR*	~
Clark's Grebe	CLGR	*Aechmophorus clarkii*
Yellow Rail	YERA	*Coturnicops noveboracensis*
Black Rail	BLRA	*Laterallus jamaicensis*
Ridgway's Rail	RIRA	*Rallus obsoletus*
Clapper Rail	CLRA	*Rallus crepitans*
King Rail	KIRA	*Rallus elegans*
Virginia Rail	VIRA	*Rallus limicola*
Sora	SORA	*Porzana carolina*
Purple Gallinule	PUGA	*Porphyrio martinicus*
Common Gallinule	COGA	*Gallinula galeata*
American Coot	AMCO	*Fulica americana*
Limpkin	LIMP	*Aramus guarauna*
Sandhill Crane	SACR	*Antigone canadensis*
Whooping Crane	WHCR	*Grus americana*
Black-necked Stilt	BNST	*Himantopus mexicanus*
American Avocet	AMAV	*Recurvirostra americana*
American Oystercatcher	AMOY	*Haematopus palliatus*
Black Oystercatcher	BLOY	*Haematopus bachmani*
Black-bellied Plover	BBPL	*Pluvialis squatarola*
American Golden-Plover	AMGP	*Pluvialis dominica*
Unidentified American or Pacific ("Lesser") Golden Plover	*LGPL*	~
Pacific Golden-Plover	PAGP	*Pluvialis fulva*
Snowy Plover	SNPL	*Charadrius nivosus*
Wilson's Plover	WIPL	*Charadrius wilsonia*
Semipalmated Plover	SEPL	*Charadrius semipalmatus*
Piping Plover	PIPL	*Charadrius melodus*
Killdeer	KILL	*Charadrius vociferus*
Mountain Plover	MOPL	*Charadrius montanus*
Upland Sandpiper	UPSA	*Bartramia longicauda*
Whimbrel	WHIM	*Numenius phaeopus*
Long-billed Curlew	LBCU	*Numenius americanus*
Hudsonian Godwit	HUGO	*Limosa haemastica*
Marbled Godwit	MAGO	*Limosa fedoa*
Ruddy Turnstone	RUTU	*Arenaria interpres*
Black Turnstone	BLTU	*Arenaria melanocephala*
Red Knot	REKN	*Calidris canutus*
Surfbird	SURF	*Calidris virgata*
Stilt Sandpiper	STSA	*Calidris himantopus*
Sanderling	SAND	*Calidris alba*
Dunlin	DUNL	*Calidris alpina*

AOU Species Codes in Family Order		
common name	code*	species
Rock Sandpiper	ROSA	*Calidris ptilocnemis*
Purple Sandpiper	PUSA	*Calidris maritima*
Baird's Sandpiper	BASA	*Calidris bairdii*
Least Sandpiper	LESA	*Calidris minutilla*
White-rumped Sandpiper	WRSA	*Calidris fuscicollis*
Buff-breasted Sandpiper	BBSA	*Calidris subruficollis*
Pectoral Sandpiper	PESA	*Calidris melanotos*
Semipalmated Sandpiper	SESA	*Calidris pusilla*
Western Sandpiper	WESA	*Calidris mauri*
Short-billed Dowitcher	SBDO	*Limnodromus griseus*
Long-billed Dowitcher	LBDO	*Limnodromus scolopaceus*
Wilson's Snipe	WISN	*Gallinago delicata*
Spotted Sandpiper	SPSA	*Actitis macularius*
Solitary Sandpiper	SOSA	*Tringa solitaria*
Wandering Tattler	WATA	*Tringa incana*
Greater Yellowlegs	GRYE	*Tringa melanoleuca*
Willet	WILL	*Tringa semipalmata*
Lesser Yellowlegs	LEYE	*Tringa flavipes*
Wilson's Phalarope	WIPH	*Phalaropus tricolor*
Red-necked Phalarope	RNPH	*Phalaropus lobatus*
Red Phalarope	REPH	*Phalaropus fulicarius*
Unidentified Ringed Plover, Sandpiper or Stint	*PEEP*	~
Unidentified Godwit	*UNGD*	~
Unidentified Dowitcher	UNDO	*Limnodromus sp.*
Unidentified Yellowlegs	*UNYE*	~
Unidentified Phalarope	*XPHL*	~
Unidentified Shorebird	*UNSH*	~
Bonaparte's Gull	BOGU	*Chroicocephalus philadelphia*
Laughing Gull	LAGU	*Leucophaeus atricilla*
Franklin's Gull	FRGU	*Leucophaeus pipixcan*
Heerman's Gull	HEEG	*Larus heermanni*
Mew Gull	MEGU	*Larus canus*
Ring-billed Gull	RBGU	*Larus delawarensis*
Western Gull	WEGU	*Larus occidentalis*
Unidentified Western / Glaucous-winged Gull	*WGGU*	~
Yellow-footed Gull	YFGU	*Larus livens*
California Gull	CAGU	*Larus californicus*
Herring Gull	HERG	*Larus argentatus*
Thayer's Gull	THGU	*Larus gaucoides thayeri*
Iceland Gull	ICGU	*Larus glaucoides*
Unidentified Iceland / Thayer's Gull	*ITGU*	~
Lesser Black-backed Gull	LBBG	*Larus fuscus*
Glaucous-winged Gull	GWGU	*Larus glaucescens*
Glaucous Gull	GLGU	*Larus hyperboreus*
Great Black-backed Gull	GBBG	*Larus marinus*
Unidentified Gull (Laridae spp)	*UNGU*	~
Unidentified Larus Gull (Laridae spp)	UNLG	*Larus (sp)*
Unidentified Small Gull	*UNSG*	~
Unidentified Large Gull	*XLGU*	~
Least Tern	LETE	*Sternula antillarum*
Gull-billed Tern	GBTE	*Gelochelidon nilotica*

AOU Species Codes in Family Order		
common name	code*	species
Caspian Tern	CATE	*Hydroprogne caspia*
Black Tern	BLTE	*Chlidonias niger*
Common Tern	COTE	*Sterna hirundo*
Forster's Tern	FOTE	*Sterna forsteri*
Royal Tern	ROYT	*Thalasseus maximus*
Sandwich Tern	SATE	*Thalasseus sandvicensis*
Elegant Tern	ELTE	*Thalasseus elegans*
Black Skimmer	BLSK	*Rynchops niger*
Unidentified Large Tern	*UNLT*	~
Unidentified Small Tern (Sterna spp)	*UNST*	~
Unidentified Tern (Sterna spp)	*UNTN*	~
Red-throated Loon	RTLO	*Gavia stellata*
Pacific Loon	PALO	*Gavia pacifica*
Common Loon	COLO	*Gavia immer*
Unidentified Loon	*UNLO*	~
Wood Stork	WOST	*Mycteria americana*
Brandt's Cormorant	BRAC	*Phalacrocorax penicillatus*
Neotropic Cormorant	NECO	*Phalacrocorax brasilianus*
Double-crested Cormorant	DCCO	*Phalacrocorax auritus*
Great Cormorant	GRCO	*Phalacrocorax carbo*
Pelagic Cormorant	PECO	*Phalacrocorax pelagicus*
Unidentified Cormorant	*XXCO*	~
Anhinga	ANHI	*Anhinga anhinga*
American White Pelican	AWPE	*Pelecanus erythrorhynchos*
Brown Pelican	BRPE	*Pelecanus occidentalis*
American Bittern	AMBI	*Botaurus lentiginosus*
Least Bittern	LEBI	*Ixobrychus exilis*
Great Blue Heron	GBHE	*Ardea herodias*
Great Egret	GREG	*Ardea alba*
Snowy Egret	SNEG	*Egretta thula*
Little Blue Heron	LBHE	*Egretta caerulea*
Tricolored Heron	TRHE	*Egretta tricolor*
Reddish Egret	REEG	*Egretta rufescens*
Cattle Egret	CAEG	*Bubulcus ibis*
Green Heron	GRHE	*Butorides virescens*
Unidentified Heron	*UNHE*	~
Black-crowned Night-Heron	BCNH	*Nycticorax nycticorax*
Yellow-crowned Night-Heron	YCNH	*Nyctanassa violacea*
Unidentified Night-heron	*UNNH*	~
White Ibis	WHIB	*Eudocimus albus*
Glossy Ibis	GLIB	*Plegadis falcinellus*
White-faced Ibis	WFIB	*Plegadis chihi*
Unidientified Glossy/White-faced Ibis	*XPLE*	~
Roseate Spoonbill	ROSP	*Platalea ajaja*
* codes not included in the 58th AOU supplement in italic.		

SM 2: AOU Species Codes in Alphabetical Order

AOU Species Codes in Alphabetical Order		
common name	code*	species
American Avocet	AMAV	*Recurvirostra americana*
American Bittern	AMBI	*Botaurus lentiginosus*
American Black Duck	ABDU	*Anas rubripes*
American Coot	AMCO	*Fulica americana*
American Golden-Plover	AMGP	*Pluvialis dominica*
American Oystercatcher	AMOY	*Haematopus palliatus*
American White Pelican	AWPE	*Pelecanus erythrorhynchos*
American Wigeon	AMWI	*Mareca americana*
Anhinga	ANHI	*Anhinga anhinga*
Baird's Sandpiper	BASA	*Calidris bairdii*
Barrow's Goldeneye	BAGO	*Bucephala islandica*
Black Oystercatcher	BLOY	*Haematopus bachmani*
Black Rail	BLRA	*Laterallus jamaicensis*
Black Scoter	BLSC	*Melanitta americana*
Black Skimmer	BLSK	*Rynchops niger*
Black Tern	BLTE	*Chlidonias niger*
Black Turnstone	BLTU	*Arenaria melanocephala*
Black-bellied Plover	BBPL	*Pluvialis squatarola*
Black-bellied Whistling-Duck	BBWD	*Dendrocygna autumnalis*
Black-crowned Night-Heron	BCNH	*Nycticorax nycticorax*
Black-necked Stilt	BNST	*Himantopus mexicanus*
Blue Goose	*BLGO*	*Anser caerulescens*
Blue-winged Teal	BWTE	*Spatula discors*
Bonaparte's Gull	BOGU	*Chroicocephalus philadelphia*
Brandt's Cormorant	BRAC	*Phalacrocorax penicillatus*
Brant	BRAN	*Branta bernicla*
Brown Pelican	BRPE	*Pelecanus occidentalis*
Buff-breasted Sandpiper	BBSA	*Calidris subruficollis*
Bufflehead	BUFF	*Bucephala albeola*
Cackling Goose	CACG	*Branta hutchinsii*
California Gull	CAGU	*Larus californicus*
Canada Goose	CANG	*Branta canadensis*
Canvasback	CANV	*Aythya valisineria*
Caspian Tern	CATE	*Hydroprogne caspia*
Cattle Egret	CAEG	*Bubulcus ibis*
Cinnamon Teal	CITE	*Spatula cyanoptera*
Clapper Rail	CLRA	*Rallus crepitans*
Clark's Grebe	CLGR	*Aechmophorus clarkii*
Common Eider	COEI	*Somateria mollissima*
Common Gallinule	COGA	*Gallinula galeata*
Common Goldeneye	COGO	*Bucephala clangula*
Common Loon	COLO	*Gavia immer*
Common Merganser	COME	*Mergus merganser*
Common Tern	COTE	*Sterna hirundo*
Double-crested Cormorant	DCCO	*Phalacrocorax auritus*
Dunlin	DUNL	*Calidris alpina*
Eared Grebe	EAGR	*Podiceps nigricollis*
Elegant Tern	ELTE	*Thalasseus elegans*
Eurasian Wigeon	EUWI	*Mareca penelope*

AOU Species Codes in Alphabetical Order		
common name	code*	species
Forster's Tern	FOTE	*Sterna forsteri*
Franklin's Gull	FRGU	*Leucophaeus pipixcan*
Fulvous Whistling-Duck	FUWD	*Dendrocygna bicolor*
Gadwall	GADW	*Mareca strepera*
Glaucous Gull	GLGU	*Larus hyperboreus*
Glaucous-winged Gull	GWGU	*Larus glaucescens*
Glossy Ibis	GLIB	*Plegadis falcinellus*
Great Black-backed Gull	GBBG	*Larus marinus*
Great Blue Heron	GBHE	*Ardea herodias*
Great Cormorant	GRCO	*Phalacrocorax carbo*
Great Egret	GREG	*Ardea alba*
Greater Scaup	GRSC	*Aythya marila*
Greater White-fronted Goose	GWFG	*Anser albifrons*
Greater Yellowlegs	GRYE	*Tringa melanoleuca*
Green Heron	GRHE	*Butorides virescens*
Green-winged Teal	GWTE	*Anas crecca*
Gull-billed Tern	GBTE	*Gelochelidon nilotica*
Harlequin Duck	HADU	*Histrionicus histrionicus*
Heerman's Gull	HEEG	*Larus heermanni*
Herring Gull	HERG	*Larus argentatus*
Hooded Merganser	HOME	*Lophodytes cucullatus*
Horned Grebe	HOGR	*Podiceps auritus*
Hudsonian Godwit	HUGO	*Limosa haemastica*
Iceland Gull	ICGU	*Larus glaucoides*
Killdeer	KILL	*Charadrius vociferus*
King Rail	KIRA	*Rallus elegans*
Laughing Gull	LAGU	*Leucophaeus atricilla*
Least Bittern	LEBI	*Ixobrychus exilis*
Least Sandpiper	LESA	*Calidris minutilla*
Least Tern	LETE	*Sternula antillarum*
Lesser Black-backed Gull	LBBG	*Larus fuscus*
Lesser Scaup	LESC	*Aythya affinis*
Lesser Yellowlegs	LEYE	*Tringa flavipes*
Limpkin	LIMP	*Aramus guarauna*
Little Blue Heron	LBHE	*Egretta caerulea*
Long-billed Curlew	LBCU	*Numenius americanus*
Long-billed Dowitcher	LBDO	*Limnodromus scolopaceus*
Long-tailed Duck	LTDU	*Clangula hyemalis*
Mallard	MALL	*Anas platyrhynchos*
Marbled Godwit	MAGO	*Limosa fedoa*
Mew Gull	MEGU	*Larus canus*
Mottled Duck	MODU	*Anas fulvigula*
Mountain Plover	MOPL	*Charadrius montanus*
Mute Swan	MUSW	*Cygnus olor*
Neotropic Cormorant	NECO	*Phalacrocorax brasilianus*
Northern Pintail	NOPI	*Anas acuta*
Northern Shoveler	NSHO	*Spatula clypeata*
Pacific Golden-Plover	PAGP	*Pluvialis fulva*
Pacific Loon	PALO	*Gavia pacifica*
Pectoral Sandpiper	PESA	*Calidris melanotos*
Pelagic Cormorant	PECO	*Phalacrocorax pelagicus*

AOU Species Codes in Alphabetical Order		
common name	code*	species
Pied-billed Grebe	PBGR	*Podilymbus podiceps*
Piping Plover	PIPL	*Charadrius melodus*
Purple Gallinule	PUGA	*Porphyrio martinicus*
Purple Sandpiper	PUSA	*Calidris maritima*
Red Knot	REKN	*Calidris canutus*
Red Phalarope	REPH	*Phalaropus fulicarius*
Red-breasted Merganser	RBME	*Mergus serrator*
Reddish Egret	REEG	*Egretta rufescens*
Redhead	REDH	*Aythya americana*
Red-necked Grebe	RNGR	*Podiceps grisegena*
Red-necked Phalarope	RNPH	*Phalaropus lobatus*
Red-throated Loon	RTLO	*Gavia stellata*
Ridgway's Rail	RIRA	*Rallus obsoletus*
Ring-billed Gull	RBGU	*Larus delawarensis*
Ring-necked Duck	RNDU	*Aythya collaris*
Rock Sandpiper	ROSA	*Calidris ptilocnemis*
Roseate Spoonbill	ROSP	*Platalea ajaja*
Ross's Goose	ROGO	*Anser rossii*
Royal Tern	ROYT	*Thalasseus maximus*
Ruddy Duck	RUDU	*Oxyura jamaicensis*
Ruddy Turnstone	RUTU	*Arenaria interpres*
Sanderling	SAND	*Calidris alba*
Sandhill Crane	SACR	*Antigone canadensis*
Sandwich Tern	SATE	*Thalasseus sandvicensis*
Semipalmated Plover	SEPL	*Charadrius semipalmatus*
Semipalmated Sandpiper	SESA	*Calidris pusilla*
Short-billed Dowitcher	SBDO	*Limnodromus griseus*
Snow Goose (all morphs)	SNGO	*Anser caerulescens*
Snowy Egret	SNEG	*Egretta thula*
Snowy Plover	SNPL	*Charadrius nivosus*
Solitary Sandpiper	SOSA	*Tringa solitaria*
Sora	SORA	*Porzana carolina*
Spotted Sandpiper	SPSA	*Actitis macularius*
Stilt Sandpiper	STSA	*Calidris himantopus*
Surf Scoter	SUSC	*Melanitta perspicillata*
Surfbird	SURF	*Calidris virgata*
Thayer's Gull	THGU	*Larus gaucoides thayeri*
Tricolored Heron	TRHE	*Egretta tricolor*
Trumpeter Swan	TRUS	*Cygnus buccinator*
Tundra Swan	TUSW	*Cygnus columbianus*
Unidentified Cinammon or Blue-winged Teal	*CBTE*	~
Unidentified American or Pacific ("Lesser") Golden Plover	*LGPL*	~
Unidentified Clark's or Western Grebe	*WCGR*	~
Unidentified Cormorant	*XXCO*	~
Unidentified Dabbling Duck	*UDAD*	~
Unidentified Diving Duck	*UDID*	~
Unidentified Dowitcher	UNDO	*Limnodromus sp.*
Unidentified Duck	UNDU	*Anatinae (gen, sp)*
Unidentified Godwit	*UNGD*	~
Unidentified Goldeneye	*UNGL*	~
Unidentified Goose	*UNGO*	~

AOU Species Codes in Alphabetical Order		
common name	code*	species
Unidentified Gull (Laridae spp)	*UNGU*	~
Unidentified Heron	*UNHE*	~
Unidentified Iceland or Thayer's Gull	*ITGU*	~
Unidentified Large Gull	*XLGU*	~
Unidentified Large Tern	*UNLT*	~
Unidentified Larus Gull	UNLG	*Larus (sp)*
Unidentified Loon	*UNLO*	~
Unidentified Night-heron	*UNNH*	~
Unidentified Phalarope	*XPHL*	~
Unidentified Ringed Plover, Sandpiper or Stint	*PEEP*	~
Unidentified Scaup	*UNSC*	~
Unidentified Shorebird	*UNSH*	~
Unidentified Small Gull	*UNSG*	~
Unidentified Small Tern (Sterna spp)	*UNST*	~
Unidentified Snow, Blue or Ross's Goose	*RSGO*	~
Unidentified Swan	*UNCY*	~
Unidentified Teal	UNTE	*Anas (sp)*
Unidentified Tern (Sterna spp)	*UNTN*	~
Unidentified Waterfowl	*UNWF*	~
Unidentified Western / Glaucous-winged Gull	*WGGU*	~
Unidentified Yellowlegs	*UNYE*	~
Unidientified Glossy/White-faced Ibis	*XPLE*	~
Upland Sandpiper	UPSA	*Bartramia longicauda*
Virginia Rail	VIRA	*Rallus limicola*
Wandering Tattler	WATA	*Tringa incana*
Western Grebe	WEGR	*Aechmophorus occidentalis*
Western Gull	WEGU	*Larus occidentalis*
Western Sandpiper	WESA	*Calidris mauri*
Whimbrel	WHIM	*Numenius phaeopus*
White Ibis	WHIB	*Eudocimus albus*
White-faced Ibis	WFIB	*Plegadis chihi*
White-rumped Sandpiper	WRSA	*Calidris fuscicollis*
White-winged Scoter	WWSC	*Melanitta fusca*
Whooping Crane	WHCR	*Grus americana*
Willet	WILL	*Tringa semipalmata*
Wilson's Phalarope	WIPH	*Phalaropus tricolor*
Wilson's Plover	WIPL	*Charadrius wilsonia*
Wilson's Snipe	WISN	*Gallinago delicata*
Wood Duck	WODU	*Aix sponsa*
Wood Stork	WOST	*Mycteria americana*
Yellow Rail	YERA	*Coturnicops noveboracensis*
Yellow-crowned Night-Heron	YCNH	*Nyctanassa violacea*
Yellow-footed Gull	YFGU	*Larus livens*
* codes not included in the 58th AOU supplement in italic.		

SM 3: Waterbird Survey Form Single Unit (2 sides)

This is the standard field recording form for weekly waterbird counts. ONE FORM PER SURVEY UNIT (MAY BE SEVERAL UNITS PER project). Either Ctrl+Click anywhere on data sheet or refer to the website for the most up-to-date data form: http://iwmmprogram.org/protocols-data-forms/

Integrated Waterbird Management and Monitoring Approach

Waterbird & Unit Condition Survey

Project Name	**Unit Code**	**Date** __ /__ /___ MM/DD/YYYY	**Start Time** (24hr) _ _ : _ _	**End Time** (24hr) _ _ : _ _	**Observer (s)** :

Start Temp (^{o}F)		**Survey Type:** Aerial ☐ Whole Area (ground) ☐	**Wind (Beaufort)**		**Visibility (> 70%)**	

Local Tide Conditions[a]		**Salinity**		**Water Gauge (units =)**[b]	

Water Depth: % of unit in each category (sum to 100) ***Estimation method:*** *Bathymetry + gage* *Ocular* ☐ *other*	***Dry***	***Saturated /mud***	***0 to 5 cm ≈ 0-2”***	***5 to 15 cm ≈ 2-6”***	***15 to 25 cm ≈ 6-10”***	***>25 cm ≈ >10”***

Percent Ice Cover		Flood Duration *c*		Flood duration assessment method: *1st hand info* ☐ *2nd hand info* ☐ *other*

Habitat Cover % of unit in each category (sum to 100)	**Water (Include SAV**[d] **& Floating–Leaved)**	**Scrub-shrub**	**Forest**	**Emergent**	**Bare Ground**

Interspersion[e]		**Disturbance Severity**[f]		**Disturbance Sources**[g]		**Chronic Disturbance**[h]	

Height (%) of unit in each category (sum to 100)	***<2.5cm ≈<1”***	***2.5 to 15 cm ≈1-6”***	***15 to 30 cm ≈6-12”***	***30 to 60 cm ≈1-2’***	***60 cm to 3 m ≈2-10’***	***3 to 6 m ≈10-20’***	***>6 m ≈>20’***

Species	**Count**	**Species**	**Count**	**Species**	**Count**

* Please leave blank if unknown

a, tide conditions: 1 = high; 2 = almost high, rising; 3 = almost high, falling; 4 = half tide, rising; 5 = half tide, falling; 6 = almost low, rising; 7 = almost low, falling; 8 = low; 9 = not observed, not applicable, or observations made during more than one period
b, gauge units: 1=feet/tenths, 2=feet/inches, 3=meters
c, flood duration: 1 = surface water present for > 90 days; 2 = surface water present 30-90 days, 3 = surface water present < 30 days; 4 = permanent inundation; 5 = no information
d, submersed aquatic vegetation
e, interspersion: class "L" = includes large water/bare ground features with connected patches and linear edge; Class "S"= contains small, disconnected patches of water/bare ground with increased random distribution and fewer instances of connection; Class "M" = consists of patterns that contain discernible regions of both configuration classes L and S
f, disturbance severity: 1 = no effect on waterbirds; 2 = some waterbirds move but stay within unit; 3 = some waterbirds leave unit; 4 = most/all waterbirds leave unit
g, disturbance codes (may be more than one): 1=Pedestrian, 2=Loose dog, 3=Hunting, 4= Fishing, 5=Boats, 6=Motor Vehicles, 7=Aircraft, 8=Raptor
h, chronic disturbance: 1 = no entry into the unit for any reason; 2 = Closed to all use with entry into unit by resource managers or designees for management activities, surveys, or other controlled non-hunting activities; 3 = Managed access for all activities including firearms hunting. May include effort to control use levels and temporal closures; 4 = open access via trail, viewing platforms etc. No firearms hunting allowed; 5 = Open access, including firearms hunting, often with routine restrictions but without a specific management program to control the level of authorized use; 6 = unknown

SM 4: Waterbird Survey Form Multiple Units (2 sides)

This is the standard field recording form for weekly waterbird counts - **for up to six units surveyed on the same day**. ***Print double-sided***. If printed single sided, be sure to add project, unit and date to the second sheet! Either Ctrl+Click anywhere on data sheet or refer to the website for the most up-to-date data form: http://iwmmprogram.org/protocols-data-forms/

IWMM - Waterbird & Unit Condition Survey

Recording form for multiple units

Project Name		**Observers**						
Start temp (°F)		**Date**	__/__/____	**Wind** (Beaufort 0-6)		**Notes:**		
Unit Code:								
Survey start/end time (24 hr Clock)		/	/	/	/	/	/	
Survey type (whole area, aerial)								
% Visibility								
Local Tide Conditions[a]								
Salinity								
Water Gauge[b] (units=)								
Water Depth % of unit in each category (sum to 100)	Dry							
	Saturated/mud							
	0 to 5 cm(≈ 0-2")							
	5 to 15 cm(≈ 2-6")							
	15 to 25 cm(≈ 6-10")							
	>25 cm(≈ >10")							
Estimation method: Bathymetry +gage, Ocular, or Other								
Percent of ice cover								
Flood Duration[c]								
Flood duration Assessment method: 1st hand , 2nd hand, or other								
Habitat Cover % of unit in each category (sum to 100)	Water (Include SAV.[d] & Floating-Leaved							
	Scrub-shrub							
	Forest							
	Emergent							
	Bare Ground							
Interspersion[e]								
Disturbance severity[f]								
Disturbance sources[g]								
Chronic human disturbance[h]								
Height % of unit in each category (sum to 100)	<2.5 cm (≈<1")							
	2.5 to 15 cm (≈1-6")							
	15 to 30 cm (≈6-12")							
	30 to 60cm (≈1-2')							
	60 cm to 3 m (≈2-10')							
	3 to 6 m (≈10-20')							
	>6 m (≈>20')							

IWMM - Waterbird & Unit Condition Survey

To be completed if not printed double-sided:		Project		Date	_ _ /_ _ /_ _	
Species	unit:	unit:	unit:	unit:	unit:	unit:

a, tide conditions: 1 = high; 2 = almost high, rising; 3 = almost high, falling; 4 = half tide, rising; 5 = half tide, falling; 6 = almost low, rising; 7 = almost low, falling; 8 = low; 9 = not observed, not applicable, or observations made during more than one period
b, gauge units: 1=feet/tenths, 2=feet/inches, 3=meters
c, flood duration: 1 = surface water present for > 90 days; 2 = surface water present 30-90 days, 3 = surface water present < 30 days; 4 = permanent inundation; 5 = no information
d, submersed aquatic vegetation
e, interspersion: class "L" = includes large water/bare ground features with connected patches and linear edge; Class "S"= contains small, disconnected patches of water/bare ground with increased random distribution and fewer instances of connection; Class "M" = consists of patterns that contain discernible regions of both configuration classes L and S
f, disturbance severity: 1 = no effect on waterbirds; 2 = some waterbirds move but stay within unit; 3 = some waterbirds leave unit; 4 = most/all waterbirds leave unit
g, disturbance codes (may be more than one): 1=Pedestrian, 2=Loose dog, 3=Hunting, 4= Fishing, 5=Boats, 6=Motor Vehicles, 7=Aircraft, 8=Raptor
h, chronic human disturbance: 1 = no entry into the unit for any reason; 2 = Closed to all use with entry into unit by resource managers or designees for management activities, surveys, or other controlled non-hunting activities; 3 = Managed access for all activities including firearms hunting. May include effort to control use levels and temporal closures; 4 = open access via trail, viewing platforms etc. No firearms hunting allowed; 5 = Open access, including firearms hunting, often with routine restrictions but without a site specific management program to control the level of authorized use; 6 = unknown

SM 5: Annual Vegetation Survey Form

Either Ctrl+Click anywhere on data sheet or refer to the website for the most up-to-date data form: http://iwmmprogram.org/protocols-data-forms/

Integrated Waterbird Management and Monitoring Program

Annual Vegetation Survey - Recording Form

Unit code	_ _-_ _ _-_ _	**Date**	_ _/_ _/_ _	**Start Time** 24 hour Clock		**End Time** 24 hour Clock	
Observers			**Percent near tall edge**		**Percent Vegetation**[a]		
If using ocular, non-entry to estimate plant species cover, estimate the % of the unit that is visible from perimeter					**% Visibility**		

Plant Species	% Cover[b]	Seed Head Size (**A**verage; **L**arge; **S**mall)				Seed Head Density			
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
		A	L	S	NA	High	Mod.	Low	NA
Data Entry Date	_ _ /_ _ / _ _								

a, percent vegetation = estimate portion with vegetative cover for the entire survey unit
b, % cover for individual plants = estimate as a canopy cover percentage of each species within the vegetated area only; percent cover total across individuals species may sum to >100%

SM 6: Seed Head Assessment Guide for Selected Wetland Plants with Food Value to Waterfowl

Seed head assessments for the purposes of the IWMM habitat protocol will consist of assigning seed head size and density categories to selected emergent plant species based on the methodology developed by Naylor et al. 2005. Naylor et al. developed methods to evaluate percent cover and seed-head characteristics of 6 common moist-soil plant types and used these data to create an index of seed production.

The species selected for this guide originated from pilot IWMM vegetation surveys (Fall 2010 through Spring 2013). Initially, a candidate list included all co-dominant plant species listed on pilot vegetation surveys. We narrowed this list by applying two filters: (1) the species must have a high food value to waterfowl (refer to table SM-6.1) and (2) the species must be listed as a co-dominant on at least 50 vegetation surveys from the pilot survey seasons. **We acknowledge that this guide will not be comprehensive, so we intend this guide to be a living document. Additional species will be added based on suggestions from IWMM cooperators.**

Average seed head size for selected plant species was calculated using technical drawings for each species, knowledge of natural seed head variability for selected species across the IWMM study area, and reviews of the following references: USDA National PLANT Database, Common Marsh, Underwater and Floating-leaved Plants of the United States and Canada (Hotchkiss 1972), Food of Game Ducks in the United States and Canada (Martin and Uhler 1939), and A Manual of Marsh and Aquatic Vascular Plants of North Carolina with Habitat Data (Beal 1977).

How to Use this Guide

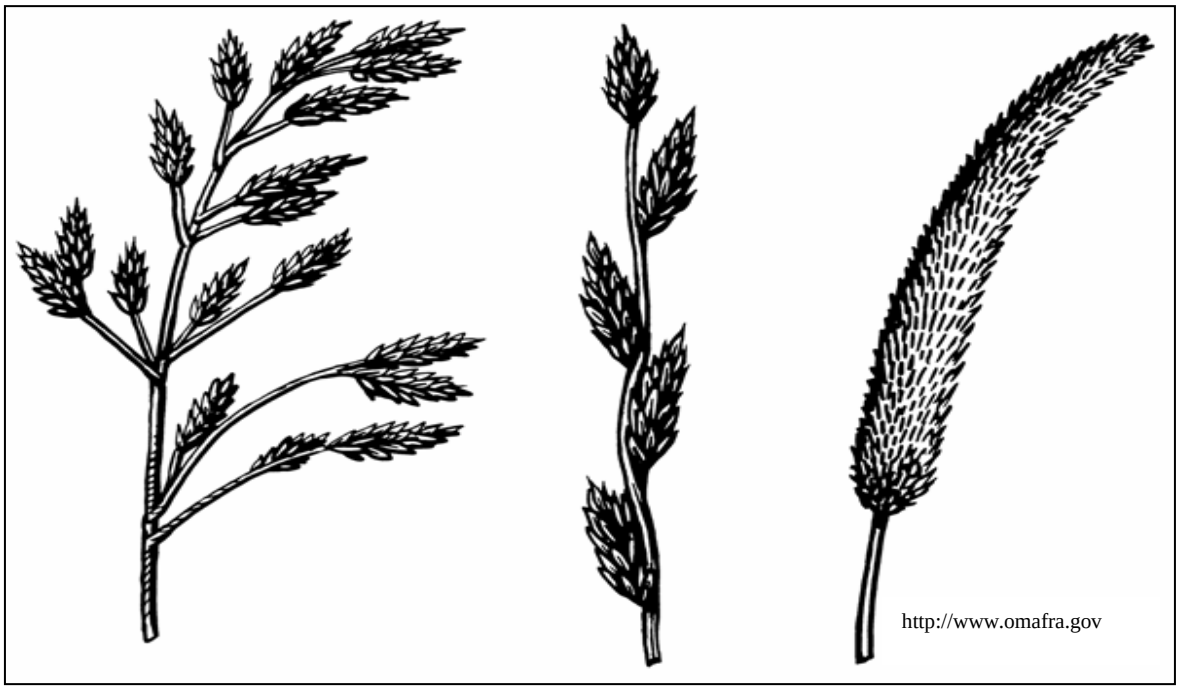
Seed head size—Seed head size categorization was plant-type specific and based on the deviation of the average size of inflorescences (for each plant species) within a wetland from that of the observed average size throughout a managed wetland (Naylor et al. 2005). For all the selected species in this guide, an average seed head size by species is indicated by a blue "arrow" to allow you to quantitatively assess seed head size as average, smaller than average, or larger than average (see below).

For example, in the field, Pennsylvania smartweed (*Polygonum pensylvanicum*) would be compared to its average size of seed head size for this species. If the seed head size is consistent with the size displayed by the blue arrow, assign it to the "average" category. If the seed head size is greater than average indicated by the blue arrow, assign it to the "large seed" category. Finally, if the seed head size is below the average seed head size as indicated by the blue arrow, assign it to the "small seed" category. Lastly, use the "Not Assessed" category for species that have deteriorated seed heads at the time of assessment or are too difficult to assess seed heads (e.g. damaged).

NOTE**:** Refer to the red arrow on individual plant photos or line drawings to maintain consistency when measuring actual seed heads in the field.

Types of inflorescence (seed heads)—There are three forms of seed heads, but for the purposes of this guide all three forms of seed heads will be treated collectively as inflorescences.

Panicle (e.g. fall panicgrass) Spike (e.g. smartweed) Spike-like panicle (e.g. foxtail)

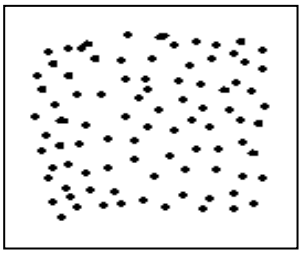


Seed head density—Seed head density should be assigned to ordinal categories by visually assessing the relative abundance of seed heads within a patch of each plant species. In the field, visually assess seed head density based on two considerations: (1) the density of stems for a species; (2) the proportion of a species' stems with seed heads.

Conduct a visual assessment in the field of seed head density by assigning a seed head density category to a species by ordinal categories of high, moderate, or low using the pictorial representation of these ordinal categories below.

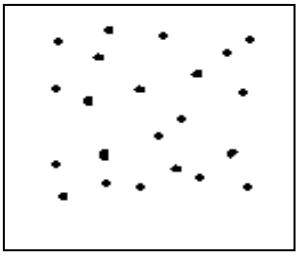
Stem Density—High stem density is assigned to areas with little bare ground, open water, or other plant species and a high proportion of seed heads to stems. Low seed head density is characterized by large areas of bare ground, open water, or other plant species and a low proportion of seed heads to plant stems for the species being assessed. Moderate stem densities fall between these two extremes.

High seed head density & **High** stem density



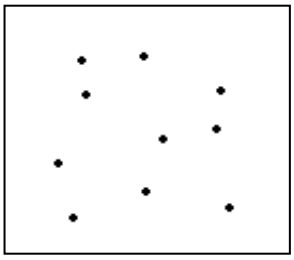
High stem density
Low bare ground

Moderate seed head density & **Moderate** stem density



Moderate stem density
Moderate bare ground

Low seed head density & Low stem density

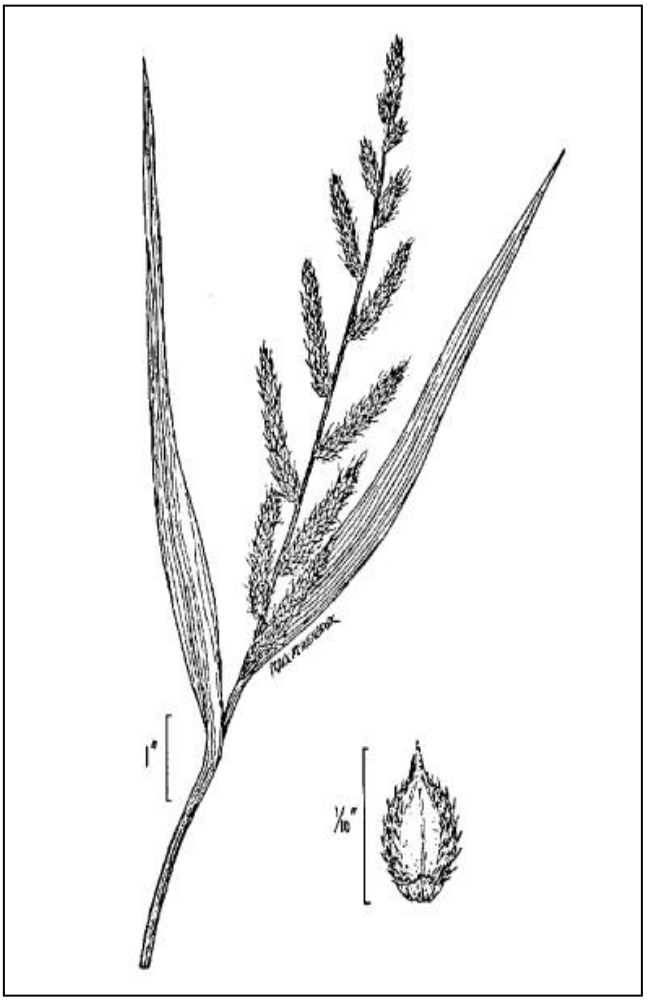


Low stem density
High bare ground

Seed Head Size Assessment Guide for Selected Wetland Plants

Barnyardgrass or wild millet (*Echinochloa crus-galli*)

http://plants.usda.gov



http://plants.usda.gov

4-8" AVERAGE

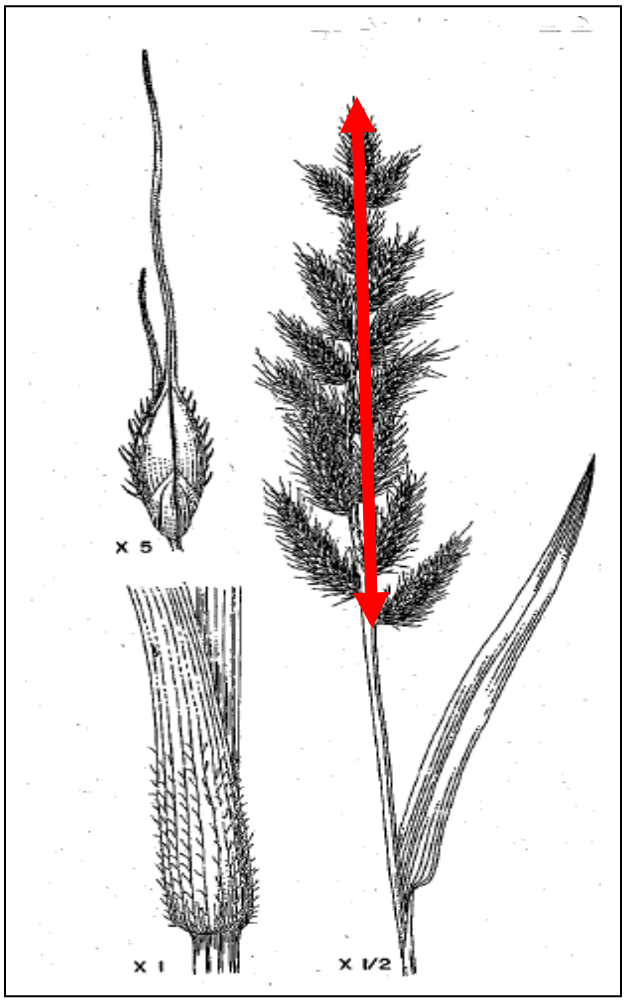
Less than 4 inches **(SMALL)**

Greater than 8 inches **(LARGE)**

- Measure 1 - 2 individual inflorescences from 3-5 separate plants; calculate average for seed head size.

Coast cockspur grass or Walter's millet (*Echinchloa walteri*)

USFWS



Martin and Uhler

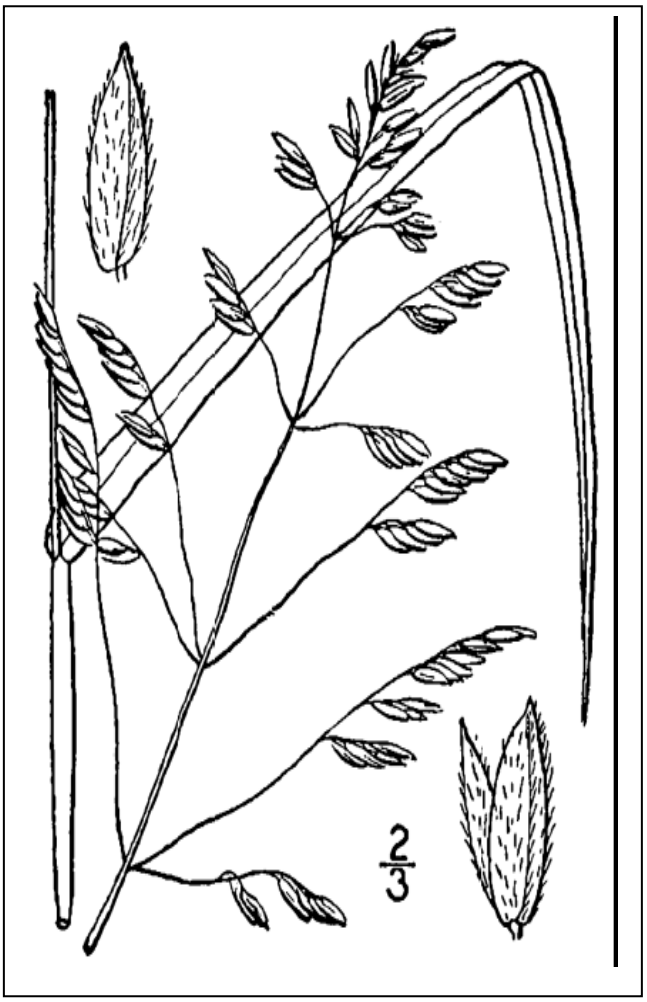
6-10" AVERAGE

Less than 6 inches (**SMALL**) Greater than 10 inches (**LARGE**)

- Measure 1-2 individual inflorescences (for this species it would include the entire seed head cluster) from the top to the bottom of the seed head cluster from 3-5 separate plants; calculate average for seed head size.

Rice Cutgrass (*Leersia oryzoides*)

http://plants.usda.gov



http://plants.usda.gov

5-8" AVERAGE

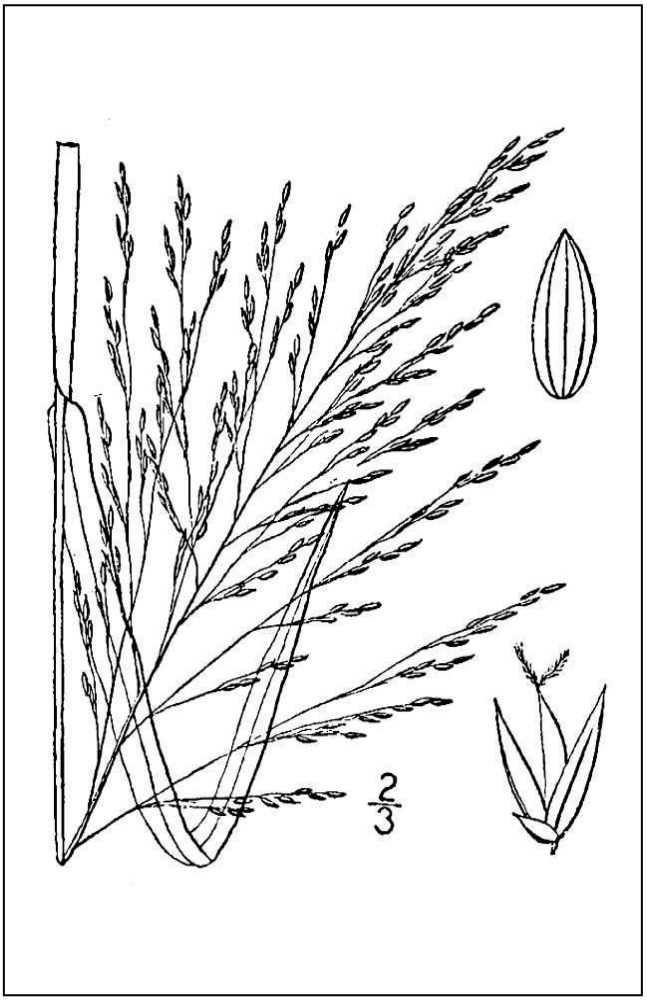
Less than 5 inches (**SMALL**)

Greater than 8 inches (**LARGE**)

- Measure 1-2 individual inflorescences from 3-5 separate plants; calculate average for seed head size.

Fall panicgrass (*Panicum dichotomiflorum*)

USFWS



http://plants.usda.gov

5-8” AVERAGE

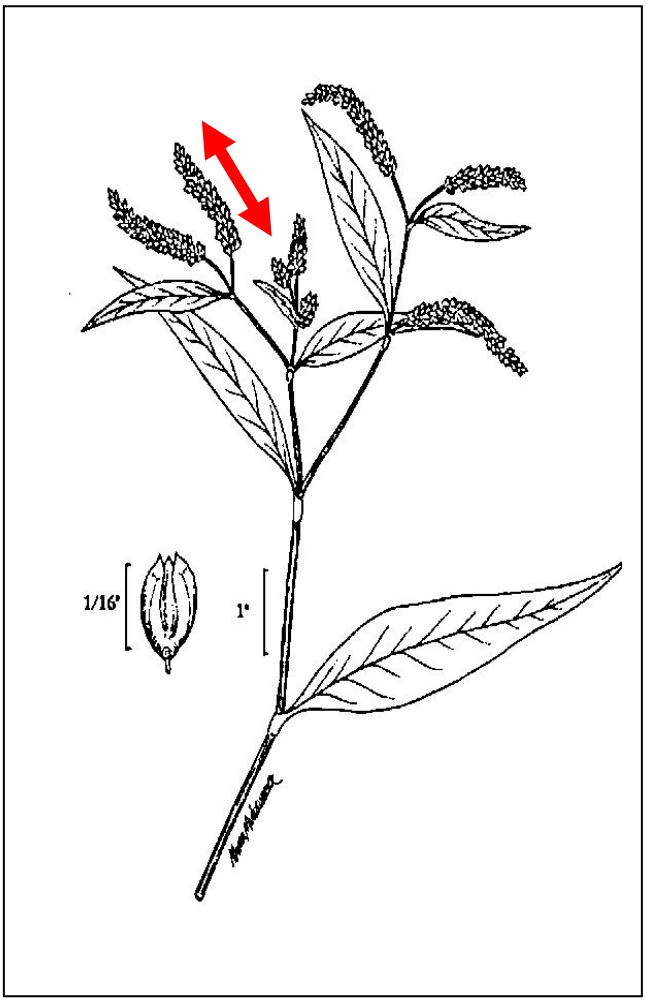
Less than 5 inches (**SMALL**)

Greater than 8 inches (**LARGE**)

- Measure 1-2 individual inflorescences (for this species it would include the entire seed head cluster) from the top to the bottom of the seed head cluster from 3-5 separate plants; calculate average for seed head size.

Curlytop knotweed (*Polygonum lapathifolium*)

USFWS



http://plants.usda.gov

2-4" AVERAGE

Less than 2 inches (**SMALL**)

Greater than 4 inches (**LARGE**)

- Measure 1-2 individual inflorescences from 3-5 separate plants; calculate average for seed head size.

Pennsylvania smartweed or pinkweed or big seeded smartweed (*Polygonum pensylvanicum*)

http://plants.usda.gov

http://plants.usda.gov

1-2”AVERAGE

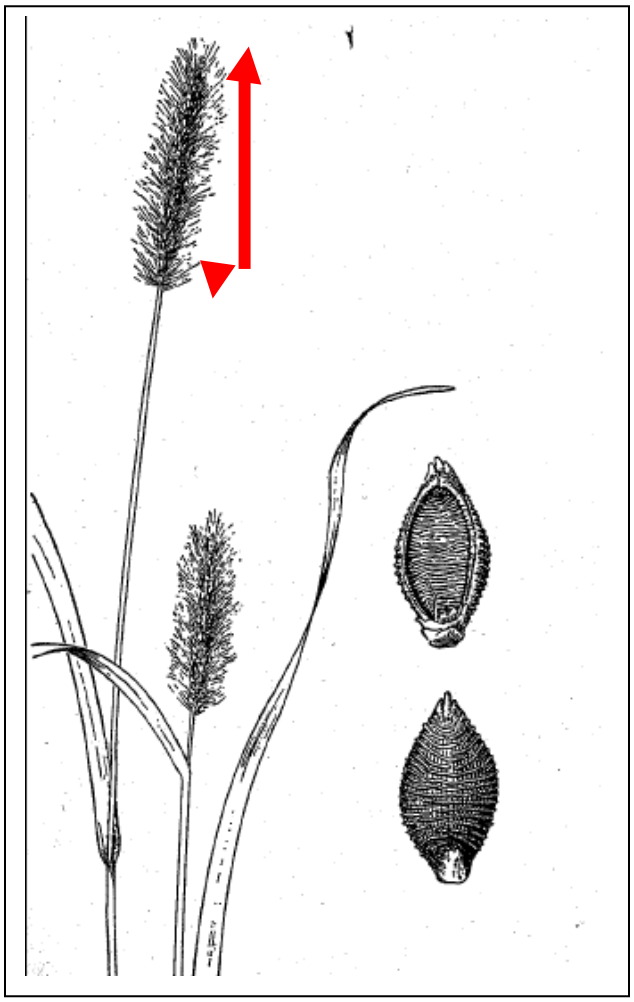
Less than 1 inch (**SMALL**)

Greater than 2 inches (**LARGE**)

- Measure 1-2 individual inflorescences from 3-5 separate plants; calculate average for seed head size.

Foxtail (*Setaria spp*.)

http://plants.usda.gov



Martin and Uhler

Giant Foxtail *S. Faberi*
2-4" AVERAGE

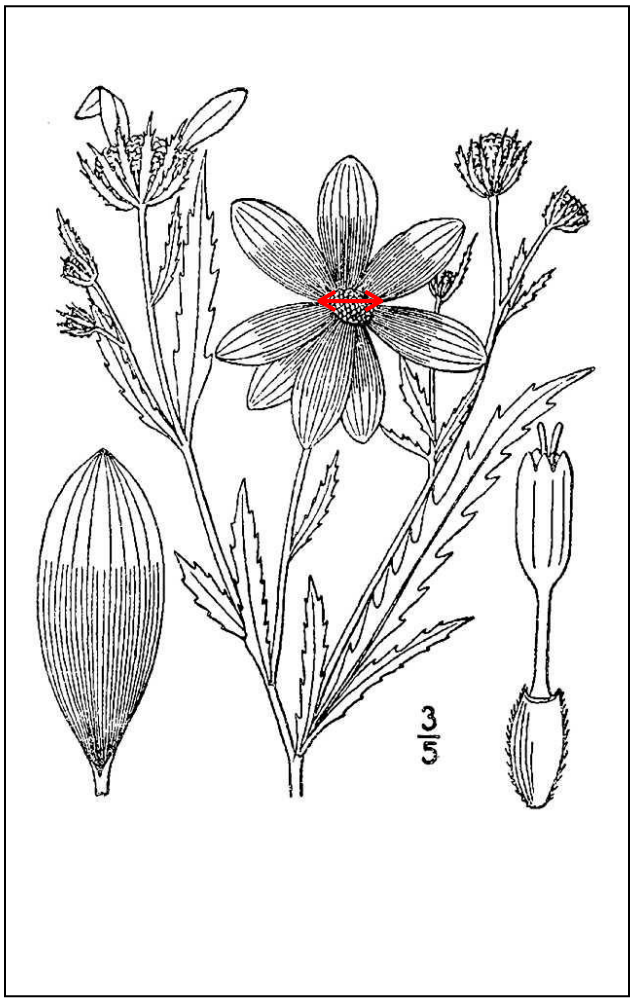
Less than 1.75 inches (**SMALL**) ⟷ Greater than 1.75 inches (**LARGE**)

Green & yellow Foxtail S. pumila & S. viridis
1-2" AVERAGE

- Measure 1-2 individual inflorescences from 3-5 separate plants; calculate average for seed head size.

Beggarticks (*Bidens spp.*)

http://plants.usda.gov



http://plants.usda.fgov

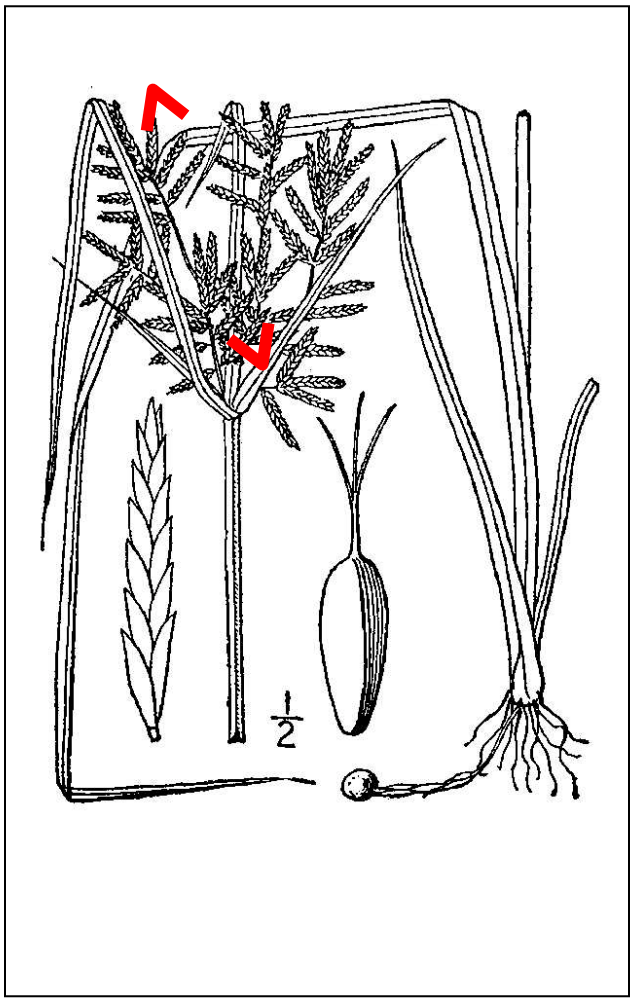
AVERAGE

Less than 0.375 inches **(SMALL)** Greater than 0.375 inches **(LARGE)**

- Measure the width of 1-2 seed heads (excluding the flower petals) from 3-5 separate plants; calculate average for seed head size.

Yellow Nutsedge (*Cyperus esculentus*)

http://plants.usda.gov



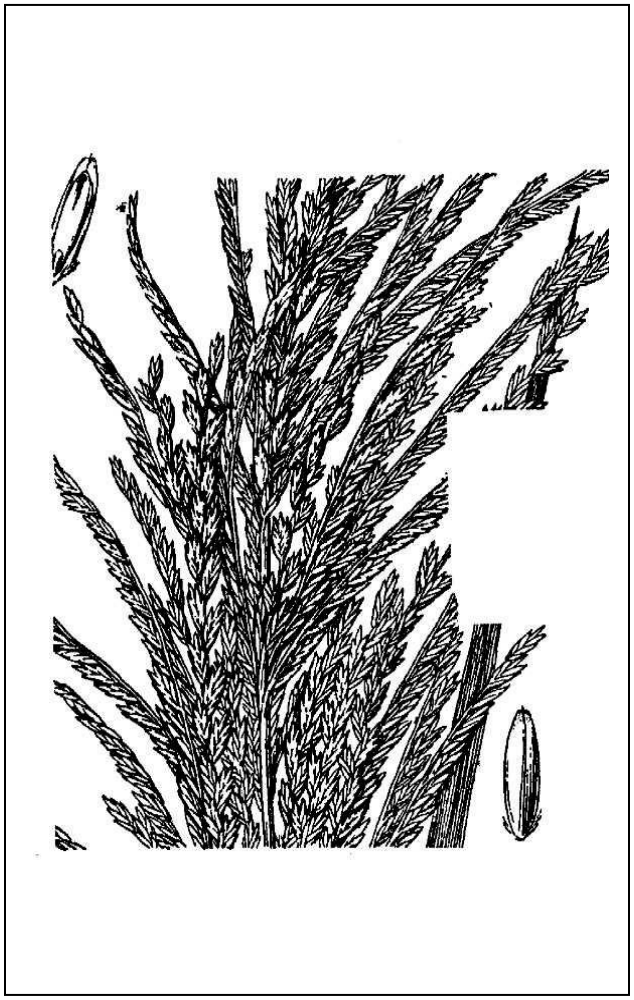
http://plants.usda.gov

2-4” AVERAGE

Less than 2 inches **(SMALL)** Greater than 4 inches **(LARGE)**

- Measure 1-2 individual inflorescences (for this species it would include the entire seed head cluster) from the top to the bottom of the seed head cluster from 3-5 separate plants; calculate average for seed head size.

Amazon sprangletop (*Leptochloa panicoides*)



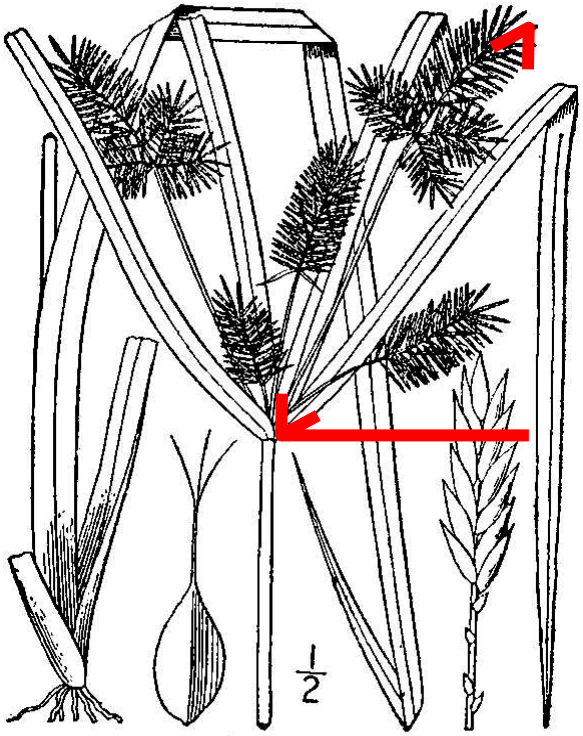
http://courses.missouristate.edu/pbtrewatha/amazon_sprangletop.htm

6-8” AVERAGE

Less than 6 inches **(SMALL)** Greater than 8 inches **(LARGE)**

- Measure 1-2 individual inflorescences (for this species it would include the entire seed head cluster) from the top to the bottom of the seed head cluster from 3-5 separate plants; calculate average for seed head size.

Redroot flatsedge (*Cyperus erythrorhizos*)



http://plants.usda.gov/

4-6” AVERAGE

Less than 4 inches **(SMALL)** Greater than 6 inches **(LARGE)**

- Measure 1-2 individual inflorescences from 3-5 separate plants; calculate average for seed head size.

References

Beal, EO. 1985. A manual of marsh and aquatic vascular plants of North Carolina with habitat data.. The North Carolina Agricultural Research Service, Raleigh, North Carolina. Technical Bulletin 247.

Hotchkiss N. 1972. Common marsh plants of the United States and Canada. New York, New York. Dover Publications.

Martin AC, Uhler FM. 1939. Food of game ducks in the United States and Canada. U.S. Department of Agriculture, Washington, D.C. Technical Bulletin No. 634.

Naylor LW, Eadie JM, Smith WD, Eichholz M, Gray MJ. 2005. A simple method to predict seed yield in moist-soil habitats. Wildlife Society Bulletin 33:1335–1341.

USDA, NRCS. 2014. The PLANTS Database. Available: http://plants.usda.gov. (April 2014). National Plant Data Team, Greensboro, North Carolina.

Table SM-6.1. Relative waterfowl food values (high =H; medium = M; low = L) for selected wetland plant species.

Plant species	No. of Veg. surveys in which spp. was recorded as a co-dominant	Food value	Parts Consumed	Included in seed head size assessment guide
Acer rubrum	50	L	seed	
Acer saccharinum	19	L	seed	
Amaranthus spp.	227	M	seed	
Ambrosia artemisiifolia	102	L	seed	
Ammannia spp.	14	L	seed	
Bacopa spp.	57	H	stem/leaves	
Bidens spp.	240	H	seed	X*
Brasenia schreberi	17	L	seed	
Carex lacustris	11	M	seed	
Carex spp.	130	M	seed	
Cephalanthus occidentalis	239	L	seed	
Chara spp.	11	M	stem/leaves	
Cyperus erythrorhizos	45	H	seed	X**
Cyperus esculentus	83	H	seed/tuber	X*
Cyperus spp.	60	H	seed	X[1]
Digitaria spp.	39	L	seed	
Distichlis spicata	106	L	seed	
Echinochloa crus-galli	655	H	seed	X*
Echinochloa esculenta	28	H	seed	
Echinochloa muricata	13	H	seed	
Echinochloa spp.	23	H	seed	
Echinochloa walteri	58	H	seed	X*
Eleocharis parvula	63	H	seed	
Eleocharis quadrangulata	15	H	seed	
Eleocharis spp.	249	H	seed	X[1]
Eragrostis spp.	12	M	seed	
Fagopyrum esculentum	17	L	seed	
Glycine max	86	H	seed	
Juncus spp.	101	L	seed	
Lachnanthes caroliniana	11	H	seed	
Leersia oryzoides	153	H	seed/roots	X*
Lemna spp.	133	M	leaves	
Leptochloa fascicularis	47	H	seed	
Leptochloa panicoides	11	H	seed	X**
Ludwigia palustris	10	L	seed	
Ludwigia spp.	159	L	seed	

Myriophyllum spp.	22	L	stem/leaves	
Najas guadalupensis	15	H	stem/leaves	
Nelumbo lutea	87	L	seed	
Nuphar spp.	58	L	seed	
Nymphaea odorata	83	L	seed	
Panicum dichotomiflorum	187	H	seed	X*
Panicum spp.	138	H	seed	
Phalaris arundinacea	433	L	seed	
Polygonum coccineum	300	M	seed	
Polygonum hydropiperoides	125	M	seed	
Polygonum lapathifolium	130	H	seed	X*
Polygonum pensylvanicum	169	H	seed	X*
Polygonum punctatum	10	M	seed	
Polygonum sagittatum	11	M	seed	
Polygonum spp.	422	L	seed	
Pontederia cordata	35	M	seed	
Potamogeton pectinatus	41	H	stem/turions/leaves	
Potamogeton spp.	37	H	seed/leaves	
Rumex spp.	47	M	seed	
Ruppia maritima	44	H	stem/leaves	
Sagittaria spp.	45	M	seed	
Salicornia europaea	13	M	stem/leaves	
Salicornia spp.	36	M	stem/leaves	
Schoenoplectus fluviatilis	306	L	seed	
Schoenoplectus spp.	67	L	seed	
Scirpus americanus	81	M	seed	
Scirpus cyperinus	61	L	seed	
Scirpus robustus	110	M	seed	
Scirpus spp.	24	L	seed	
Scirpus validus	59	M	seed	
Sesbania spp.	139	L	seed	
Setaria spp.	122	H	seed	X*
Sorghum vulgare	36	H	seed	
Sparganium spp.	51	M	seed	
Spartina alterniflora	213	L	seed	
Spartina cynosuroides	140	L	seed	
Spartina patens	306	L	seed	
Spartina pectinata	11	L	seed	
Typha angustifolia	10	L	tuber	
Typha spp.	1106	L	tuber	
Zea mays	258	H	seed	
Zizania aquatica	30	H	seed	
Zizania miliacea	31	H	seed	

*Plants with >50 records and High food value

**Some selected plants were included with <50 records and high food value.

[1]We did not generate seed assessment page for this genus because of the wide variation in seed head size for this genus.

SM 7: Wetland Management Record

This is the standard field data collection form for management activities. ONE FORM PER SURVEY UNIT (MAY BE SEVERAL PAGES PER UNIT). Refer to the IWMM Ning website for the most up-to-date data form: http://iwmmprogram.ning.com/

Wetland Management Record

Unit Name	*Unit Code*	*Activity Year*[1]

Log of Planned and Implemented Actions[2]: Page 1 of _____

Action Code[3]	Planned start date	Planned end date	Planned % of unit	Actual start date	Actual end date	Implemented % of unit[4]

1. Start of growing season year one through start of the growing season for year two (e.g. 2014/15).
2. Create a new entry for repeated applications of an action when the interval between applications exceeds the time required for a single application.
3. See Habitat Management Action Table (Table SOP-6.1).
4. Report as surface coverage of manipulated water for water level actions.

SM 8: Health and Safety Guidance for Handling Sick or Dead Wild Birds.

This document guides procedures for protecting personnel while handling wild birds. Also refer to the Wildlife Health office internal website at https://sites.google.com/a/fws.gov/fws-wildlife-health/products for additional information.

GUIDANCE FOR HANDLING WILD BIRDS DEPENDING ON THE CURRENT CONDITIONS:			
CONDITIONS	**ACTIVITY**	**PPE**	**WORK PRACTICE**
1.a. Zoonotic avian influenza is **not known or suspected** in wild birds within North America or the Pacific Islands.	Handling apparently healthy birds.	Follow all PPE and standard work practices recommended for normal operations at your station. Consult regional health and safety expertise regarding zoonotic disease risks in your area.	1. Wash your hands often and thoroughly for at least 30 seconds (using soap/water or alcohol-based hand sanitizer) before eating, smoking, using cell phone and touching your face, hair, or exposed skin. 2. If working indoors, work in well-ventilated areas. When working outdoors, work upwind of animals to decrease the risk of inhaling airborne particulate matter such as dust, feathers, or dander. 3. Gloves, aprons, goggles, face shields, rubber boots, and coveralls that can be easily disinfected may also be worn to prevent skin and mucous membrane contact with biological materials, and prevent movement of biological materials to other sites.
1.b. Zoonotic avian influenza is **not known or suspected** in wild birds within North America or the Pacific Islands.	Handling sick or dead birds.	Follow all PPE and standard work practices recommended for normal operations at your station. Consult regional health and safety expertise regarding zoonotic disease risks in your area.	1. Remove gloves and wash your hands often and thoroughly for at least 30 seconds (using soap/water or alcohol-based hand sanitizer) before eating, smoking, using cell phone and touching your face, hair, or exposed skin. 2. If working indoors, work in well-ventilated areas. When working outdoors, work upwind of animals to decrease the risk of inhaling airborne particulate matter such as dust, feathers, or dander. 3. Aprons, goggles, face shields, rubber boots, and coveralls that can be easily disinfected may also be worn to prevent skin and mucous membrane contact with biological materials, and prevent movement of biological materials to other sites.
2.a. Zoonotic avian influenza is **confirmed**[1] **or presumed to be present** in wild birds within North America or the Pacific Islands.	Handling, investigation, or disposal of any healthy or sick, live or dead wild birds.	• Impermeable gloves (pvc or nitrile) or heavy duty rubber work gloves • Goggles • NIOSH-approved disposable N-95 particulate respirator[2]. Workers must be fit-tested and medically cleared annually prior to wearing a respirator. • Disposable Tyvek coveralls or raingear that can be disinfected • Waders, hip-boots, rubber boots or boot covers	In addition to the work practices listed above: 1. Suppress dust at the work site using water 2. Minimize direct contact with birds and their secretions, feathers, and dander. 3. Minimize contact with carcasses when bagging birds. 4. Contact recipient laboratories prior to collection and shipping; follow their guidelines. Remove PPE in the following order: 1. Carefully remove coveralls and boot covers and discard as contaminated material if disposable. 2. Disinfect rubber boots. 3. Remove gloves and immediately wash hands thoroughly with soap and water (or an alcohol-based hand gel when soap and clean water are not available). 4. Remove eye protection and place in designated receptacle for subsequent cleaning and disinfection. 5. Remove N-95 disposable respirator and discard. 6. Immediately after all PPE has been removed, wash hands thoroughly a second time and wash face.

2.b. Zoonotic avian influenza is **confirmed**[1] **or presumed to be present** in wild birds within North America or the Pacific Islands	Cleaning and disinfecting equipment known or suspected to be contaminated with zoonotic avian influenza	• Impermeable gloves (pvc or nitrile) or heavy duty rubber work gloves • Goggles • NIOSH-approved disposable N-95 particulate respirator[2]. Workers must be fit-tested and medically cleared annually prior to wearing a respirator. • Disposable Tyvek coveralls or raingear that can be disinfected • Waders, hip-boots, rubber boots or boot covers	In addition to the work practices listed above: 1. Clean surfaces of equipment and reusable PPE with detergent and water, then disinfect with a virucide (such as Virkon®) that kills avian influenza viruses. Follow the label instructions. 2. www.epa.gov/pesticides/factsheets/avian.htm lists registered products. If a registered product is not available, use 3/4 cup of household bleach (5.25-6.00% sodium hypochlorite) per gallon of water for hard, non-porous surfaces. 3. Avoid generating mists with water sprayers during equipment decontamination procedures. 4. Do not touch any part of exposed person (especially the face) with gloved hands. Replace torn or damaged gloves immediately. 5. Additional protection (such as aprons and face shields) may be desired during equipment decontamination to prevent contact with contaminated material. 6. If there is known exposure to body fluids of the carcass (examples: knife cut, needle stick) contact your health care professional and provide a complete history of your activities. Carefully remove PPE in the order as described above in section 2a.
Key for colored conditions sections:	Green - Low risk conditions	Orange - Medium risk conditions	Red - High risk conditions