

Wind Permit by Rule (PBR) GUIDANCE
Department of Environmental Quality (DEQ)
Section III: Coastal Avian Protection Zone (CAPZ) Narrative

(NOTE: This section of Guidance, along with the interactive CAPZ map, is posted on the [Coastal GEMS website](#).)

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CAPZ Map

The Coastal Avian Protection Zone (CAPZ) map was created in 2010 to assist small wind energy project applicants wishing to construct and operate wind turbines in Virginia's coastal areas in the identification of those zones that are critically important to avian resources, to help guide pre-construction field surveys, and to aid in the development of mitigation plans designed to offset significant adverse impacts to wildlife. Virginia's small renewable energy permit by rule regulation (9 VAC 15-40) for wind facilities is administered by the Virginia Department of Environmental Quality (DEQ).

The CAPZ map was the result of a collaborative effort by the Center for Conservation Biology at the College of William and Mary and Virginia Commonwealth University, the Virginia Department of Game and Inland Fisheries (DGIF), the Virginia Coastal Zone Management Program (CZM) and the Virginia Department of Conservation and Recreation – Natural Heritage Program (DCR-NH). The effort was conducted under the auspices of DEQ's Offshore/Coastal Wind Regulatory Advisory Panel as part of DEQ's rulemaking for the Small Renewable Energy Projects (Wind) Permit by Rule Regulation (9 VAC 15-40). The underlying information used to develop the CAPZ map came from a number of existing data sources, and represents the synthesis of years of field research by a variety of agencies and institutions that are presented and summarized in reports and peer-reviewed publications, some of which are provided on the following pages.

CAPZ Criteria and Boundaries

The CAPZ boundaries were determined using a variety of criteria, the majority of which were based on known avian occurrences substantiated by previous or ongoing studies as listed in the supporting literature noted in the descriptions of each CAPZ. The boundaries for CAPZ 1 and 2 were designed to encompass all nearshore waters that fall under the Commonwealth's jurisdiction except for the mouth of the Chesapeake Bay. The exclusion of the mouth of the Bay was based on its likely, but unknown, significance to seabirds and sea ducks and its requirement for field studies. CAPZ 1 and 2 do not require field studies because both are known to serve as a major migratory corridor for a variety of species. The delineation between the two zones is based primarily on the fact that migratory bird densities along the very nearshore fringe (CAPZ 2) are likely to be higher than the density of birds occurring farther offshore, but still within state waters (CAPZ 1). Moreover, CAPZ 2 is likely to harbor foraging breeding birds, including Threatened and Endangered (T&E) species, thereby extending the season of high avian use to year round. By contrast, CAPZ 1 is likely to have the highest avian use during the non-breeding season.

CAPZ 3, 4, 9, 10, 11 and 14 encompass lands and waters that have been designated as "Important Bird Areas" by the National Audubon Society for their local, regional, continental or global importance to birds. It should be noted that the 100 meter offshore buffer for CAPZ 3 includes foraging habitat for beach nesting shorebirds and seabirds breeding on the barrier islands which feed in the intertidal zone and over open nearshore waters, respectively. CAPZ 5 boundaries encompass the remaining upland portion of the Delmarva Peninsula, which is within the migratory pathway of migrant landbirds and is known to support breeding Bald Eagles. The delineations of CAPZ 6, 7, 8, and 13 encompass lands and waters considered to be important to birds but for which there are not enough data to indicate their overall significance to avian resources and/or to steer mitigation actions. Lastly, the boundaries for CAPZ 12 were established to protect a significant number of breeding Bald Eagles known to nest on the outer fringes of the lower, middle and northern peninsulas.

CAPZ Map Availability

The CAPZ map was generated using DEQ's Coastal GEMS geospatial data system (9 VAC 15-40-120 B 1) and will ultimately be made available for direct access by applicants who are proposing to locate a small wind energy project in Virginia's coastal areas; however, currently an applicant interested in obtaining original datasets must do so by contacting the Coastal Zone Management Program directly:

Laura McKay
629 East Main Street
Richmond, VA 23219
Phone: (804) 698-4323
Fax: (804) 698-4319
Email: laura.mckay@deq.virginia.gov

Additional information can be found through DGIF and DCR-NH at the following websites: Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services: <http://vafwis.org/fwis/>.

Virginia Department of Conservation and Recreation Natural Heritage Program Resource Information: http://www.dcr.virginia.gov/natural_heritage/infoservices.shtml#lists

Disclaimer:

This document is provided as Guidance and, as such, sets forth standard operating procedures for the agency. It does not mandate any particular method nor does it prohibit any alternative method. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

CAPZ Descriptions and Associated Field Study Guidance

The relevant portions of the Wind PBR Regulation (9 VAC 15-40-40 A 5) are reprinted within this CAPZ narrative for the convenience of users. If any contradiction appears to exist between the regulatory provisions and the CAPZ narrative (which constitutes agency Guidance), the regulatory provision governs.

ZONE I

Regulatory Provision: 9 VAC 15-40-40 A 5 b (1)

Zone 1: Nearshore waters extending 1 - 4.83 km (0.62 - 3 mi) from Virginia's ocean-facing shoreline, excluding the mouth of the Chesapeake Bay. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (migratory Piping Plovers, Wilson's Plovers, Peregrine Falcons, Gull-billed Terns, and Roseate Terns); hemispherically important migratory corridor for shorebirds, seabirds and waterfowl; and hemispherically important migratory staging area and wintering area for seabirds and waterfowl. The applicant shall either perform avian field studies regarding

the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (migratory Piping Plovers, Wilson's Plovers, Peregrine Falcons, Gull-billed Terns and Roseate Terns), a hemispherically important migratory corridor for shorebirds, seabirds and waterfowl, and a hemispherically important migratory staging area and wintering area for seabirds and waterfowl.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map because currently there are no known survey techniques or technologies that can adequately assess avian impacts or help with the development of mitigation measures that will effectively reduce risk to birds.

Supporting Literature

Forsell, D. 2003. Special Report on the distribution and abundance of wintering seaducks and waterbirds in Mid-Atlantic Coastal waters emphasizing the mouth of the Chesapeake Bay. U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD. 10 Pp.

Stucker, J.H., F.J Cuthbert, B. Winn, B.L. Noel, S.B. Maddock, P.R. Leary, J. Cordes, and L.C. Wemmer. 2010. Distribution of Non-Breeding Great Lakes Piping Plovers (*Charadrius melodus*) along Atlantic and Gulf of Mexico Coastlines: Ten Years of Band Sightings. *Waterbirds* 33(1): 22-32.

US Fish and Wildlife Service. 2009. Piping Plover (*Charadrius melodus*) 5-Year Review: Summary and Evaluation. Northeast Region, Hadley, MA and the Midwest Region's East Lansing Field Office, MI. 206 Pp.

Watts, B. D. 2010. Wind and waterbirds: Establishing sustainable mortality limits within the Atlantic Flyway. Center for Conservation Biology Technical Report Series, CCBTR-10-05. College of William and Mary/Virginia Commonwealth University, Williamsburg, VA. 43 pp.

Williams, J. W. and B. J. Paxton. 2004a. The Fall 2003 Capes Charles, Virginia Sea bird Watch. Center for Conservation Biology Technical Report Series, CCBTR-04-16. College of William and Mary, Williamsburg, VA. 19 p.

Williams, J. W. and B. J. Paxton. 2004b. The Spring 2004 Capes Charles, Virginia Seabird Watch. Center for Conservation Biology Technical Report Series, CCBTR-04-17. College of William and Mary, Williamsburg, VA. 18 p.

ZONE 2

Regulatory Provision: 9 VAC 15-40-40 A 5 b (2)

Zone 2: Nearshore waters that extend from Virginia's ocean-facing shoreline out to 1 km (0.62 mi), excluding the mouth of the Chesapeake Bay. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (migratory and breeding Piping Plovers, Wilson's Plovers, Peregrine Falcons and Gull-billed Terns, and migratory Roseate Terns) and hemispherically important migratory corridor, migratory staging area, and wintering area for shorebirds, seabirds and waterfowl. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (migratory and breeding Piping Plovers, Wilson's Plovers, Peregrine Falcons, and Gull-billed Terns, and migratory Roseate Terns), and a hemispherically important migratory corridor, migratory staging area and wintering area for shorebirds, seabirds and waterfowl.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Literature

Boettcher, R., T. Penn, R.R. Cross, K.T. Terwilliger, and R.A. Beck. 2007. An overview of the status and distribution of Piping Plovers in Virginia. *Waterbirds* 30(sp1): 138-151.

Boettcher, R. and A.L. Wilke. 2009. 2008 Colonial Waterbird Breeding Status on Virginia's Barrier Islands. Final report to the Virginia Department of Conservation and Recreation Division of Natural Heritage, Nassawadox, VA. 23 Pp.

Cohen, J.B., S.M. Karpanty, J.D. Fraser, B.D. Watts, and B.R. Truitt. 2009. Residence probability and population size of Red Knots during spring stopover in the mid-Atlantic Region of the United States. *Journal of Wildlife Management*. Vol. 73 (6): 939-945.

Forsell, D. 2003. Special Report on the distribution and abundance of wintering seabirds and waterbirds in Mid-Atlantic Coastal waters emphasizing the mouth of the Chesapeake Bay. U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, MD. 10 Pp.

Stucker, J.H., F.J. Cuthbert, B. Winn, B.L. Noel, S.B. Maddock, P.R. Leary, J. Cordes, and L.C. Wemmer. 2010. Distribution of Non-Breeding Great Lakes Piping Plovers (*Charadrius melodus*) along Atlantic and Gulf of Mexico Coastlines: Ten Years of Band Sightings. *Waterbirds* 33(1): 22-32.

US Fish and Wildlife Service. 2009. Piping Plover (*Charadrius melodus*) 5-Year Review: Summary and Evaluation. Northeast Region, Hadley, MA and the Midwest Region's East Lansing Field Office, MI. 206 Pp.

Watts, B. D. 2010. Wind and waterbirds: Establishing sustainable mortality limits within the Atlantic Flyway. Center for Conservation Biology Technical Report Series, CCBTR-10-05. College of William and Mary/Virginia Commonwealth University, Williamsburg, VA. 43 pp.

Williams, J. W. and B. J. Paxton. 2004a. The Fall 2003 Capes Charles, Virginia Sea bird Watch. Center for Conservation Biology Technical Report Series, CCBTR-04-16. College of William and Mary, Williamsburg, VA. 19 p.

Williams, J. W. and B. J. Paxton. 2004b. The Spring 2004 Capes Charles, Virginia Seabird Watch. Center for Conservation Biology Technical Report Series, CCBTR-04-17. College of William and Mary, Williamsburg, VA. 18 p.

ZONE 3

Regulatory Provision: 9 VAC 15-40-40 A 5 b (3)

Zone 3: Barrier island/seaside lagoon system, including a 100 m (328 ft) offshore buffer. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (breeding and migratory Piping Plovers, Wilson's Plovers, Gull-billed Terns, Peregrine Falcons and Bald Eagles, and hemispherically important staging area and wintering area for shorebirds, seabirds and waterfowl. The applicant shall either perform avian field studies regarding the actual or likely occurrences of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding and migratory Piping Plovers, Wilson's Plovers, Peregrine Falcons, Gull-billed Terns and Bald Eagles), and a hemispherically important migratory staging area and wintering area for shorebirds, seabirds and waterfowl. Additional considerations include the potential presence of migratory Roseate Terns (a federally endangered species), and designation of Zone 3 as a globally Important Bird Area.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Data: Mid-winter aerial waterfowl survey counts conducted each year in early January, 1998 - 2010(file name: MidwinterSurvey_all yrs.xls) These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/>. **Caution:** The purpose of these data is to confirm the presence of wintering waterfowl in Virginia's coastal waters and to provide some measure of species diversity within relevant CAPZ. They should not be used to estimate and/or draw inferences about waterfowl population trends.

Supporting Literature

- Boettcher, R., T. Penn, R.R. Cross, K.T. Terwilliger, and R.A. Beck. 2007. An overview of the status and distribution of Piping Plovers in Virginia. *Waterbirds* 30(sp1): 138-151.
- Boettcher, R. and A.L. Wilke. 2009. 2008 Colonial Waterbird Breeding Status on Virginia's Barrier Islands. Final report to the Virginia Department of Conservation and Recreation Division of Natural Heritage, Nassawadox, VA. 23 Pp.
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- Watts, B. D. and B. J. Paxton. 2004. Digital atlas of colonial waterbirds in coastal Virginia:2003 breeding season. CCBTR-04-05. Center for Conservation Biology, College of William and Mary, Williamsburg, VA.
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- Watts, B. D. and M. A. Byrd. 1998. Status and distribution of colonial waterbirds in coastal Virginia. *The Raven* 69:20-31.
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- Watts, B. D. and M. A. Byrd 2010. Virginia bald eagle nest and productivity survey: Year 2010 report. Center for Conservation Biology Technical Report Series, CCBTR-10-09. College of William and Mary and Virginia Commonwealth University, Williamsburg, VA. 40 pp.

- Watts, B. D., B. R. Truitt, F. M. Smith, E. K. Mojica, B. J. Paxton, A. L. Wilke, and A. E. Duerr. 2008. Whimbrel tracked with satellite transmitter on migratory flight across North America. *Wader Study Group Bulletin* 115:55-57.
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ZONE 4

Regulatory Provision: 9 VAC 15-40-40 A 5 b (4)

Zone 4: Southern end of the Delmarva Peninsula (mainland only), including a 10 km long (6.21 mi) strip along the western (bayside) fringe of peninsula that extends from Wise Point to (and including) Savage Neck. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (migratory Peregrine Falcons and breeding and migratory Bald Eagles), the designation as an Important Bird Area, and hemispherically important migratory staging area for passerines and other landbirds. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (migratory Peregrine Falcons and breeding and migratory Bald Eagles), the designation as an Important Bird Area, and hemispherically important migratory staging area for passerines and other landbirds.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Literature

- Center for Conservation Biology. 2010. Virginia eagle nest locator. <http://www.ccb-wm.org/virginiaeagles/locator.php>
- Lukei, R. F., Jr. and M. A. Byrd. 2001. Lower Delmarva Peninsula raptor migration study: Year 2000 report. Center for Conservation Biology Technical Report CCBTR-01-01, College of William and Mary: 10 pp.
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- Watts, B. D., B. J. Paxton, and Z. Smith. 2004. Raptor trapping at Wise Point Station: Year 2003 report. Center for Conservation Biology Technical Report Series, CCBTR-04-02. College of William and Mary, Williamsburg, VA. 24 pp.
- Watts, B. D. and M. A. Byrd 2010. Virginia bald eagle nest and productivity survey: Year 2010 report. Center for Conservation Biology Technical Report Series, CCBTR-10-09. College of William and Mary and Virginia Commonwealth University, Williamsburg, VA. 40 pp.
- Watts, B. D. and M. A. Byrd 2010. Virginia bald eagle nest and productivity survey: Year 2010 report. Center for Conservation Biology Technical Report Series, CCBTR-10-09. College of William and Mary and Virginia Commonwealth University, Williamsburg, VA. 40 pp.
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ZONE 5

Regulatory Provision: 9 VAC 15-40-40 A 5 b (5)

Zone 5: Delmarva Peninsula, excluding zones 3 and 4. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles) and regionally to hemispherically important fall migratory staging area for landbirds. The applicant shall either perform

avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles) and regionally to hemispherically important fall migration staging areas for landbirds.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Literature

Center for Conservation Biology. 2010. Virginia eagle nest locator. <http://www.ccb-wm.org/virginiaeagles/locator.php>

Smith, F. M., B. D. Watts, and B. J. Paxton. 2010. Autumn Migration of the Northern Saw-whet Owl on the Lower Delmarva Peninsula: Fall 2010 Report. Center for Conservation Biology Technical Report Series, CCBTR-10-12. College of William and Mary & Virginia Commonwealth University, Williamsburg, VA. 17 pp.

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ZONE 6

Regulatory Provision: 9 VAC 15-40-40 A 5 b (6)

Zone 6: Southern end and mouth of the Chesapeake Bay, including the waters off of the western shore of the Delmarva Peninsula that extend from Wise Point north to the mouth of Craddock Creek. In this zone, the relevant avian species and other avian mitigation factors are: migratory staging area and wintering area for seabirds and waterfowl that may be of hemispheric importance. The applicant shall conduct aerial transect surveys for waterfowl and seabirds during the fall migration, spring migration and wintering seasons to determine the distribution, density and relative abundance of these species within this zone throughout the nonbreeding season.

Guidance

Mitigation Triggers: Migratory staging and wintering areas for seabirds and waterfowl that may be of hemispheric importance.

Actions: Preconstruction waterfowl and seabird aerial surveys should be conducted to gather information on the distribution, density, abundance and relative importance of these waters during the non-breeding season (October – March).

Survey method: Aerial transect surveys should be performed in a fixed wing aircraft using two observers on high visibility days. Surveys should be flown approximately 100 m above the water on a fixed GPS-generated transect route (i.e., a series of parallel, evenly spaced flight lines that enable observers to visually scan the waters along either side of the transect line out to adjacent transect lines) that adequately covers all waters within 5 miles of the disturbance zone. Applicants should submit a Google Earth map to DEQ *showing* GPS waypoints of the proposed aerial transect route two weeks prior to the survey period to ensure adequate coverage of waters surrounding the disturbance zone. All waterfowl and seabirds observed along each transect line should be counted and identified to species when possible. Individual transect counts and species should be kept as separate totals and a general description of behavior (feeding, flying, resting on water, etc.). In addition, observers should record weather conditions, sea state, beginning and ending tide stage, survey start and end times.

Time of year and frequency of surveys: *Fall migration:* Three aerial surveys at least 14 days apart from mid-October to the end of November. *Spring migration:* Five aerial surveys at least 14 days apart from late February to the end of April. *Winter:* Two surveys, at least 14 days apart, from January 1 to mid-February.

Supporting Data: Mid-winter aerial waterfowl survey counts conducted each year in early January, 1998 – 2010 (file name: MidwinterSurvey_all yrs.xls) These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm the presence of wintering waterfowl in Virginia's coastal waters and to provide some measure of species

diversity within relevant CAPZ. They should not be used to estimate and/or draw inferences about waterfowl population trends.

Supporting Literature

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ZONE 7

Regulatory Provision: 9 VAC 15-40-40 A 5 b (7)

Zone 7: Lower portions of the James, York and Rappahannock Rivers and small tributaries along the south side of the lower Potomac River. In this zone, relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles), regionally important fall migratory staging areas and wintering areas for waterfowl, and spring migratory staging areas of unknown significance. The applicant shall conduct aerial transect surveys for waterfowl during the spring migration season to determine the distribution, density and relative abundance of these species within this zone during the spring season. The applicant shall either perform avian field studies regarding the actual or likely occurrences of breeding Bald Eagles and waterfowl during the fall and winter seasons, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles) and regionally important fall migratory staging areas and wintering areas for waterfowl and spring migratory staging areas of unknown significance.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of breeding Bald Eagles and waterfowl, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map. Preconstruction waterfowl surveys should be conducted to gather information on the distribution, density, abundance and relative importance of these waters during spring migration (late February – end of March). Current survey data exist for the fall migration and winter seasons.

Survey method: Aerial transect surveys. Aerial transect surveys should be performed in a fixed wing aircraft using two observers on high visibility days. Surveys should be flown approximately 100 m above the water on a fixed GPS- generated transect route (i.e., a series of parallel, evenly spaced flight lines that enable observers to visually scan the waters along either side of the transect line out to the adjacent transect lines) that adequately covers all waters within 5 miles of the disturbance zone. Applicants should submit a Google Earth map to DEQ showing GPS waypoints of the proposed aerial transect route two weeks prior to the survey period to ensure adequate coverage of waters surrounding the disturbance zone. All waterfowl and seabirds observed along each transect line should be counted and identified to species when possible. Individual transect counts and species should be kept as separate totals and a general description of behavior (feeding, flying, resting on water, etc.). In addition, observers should record weather conditions, sea state, beginning and ending tide stage, survey start and end times.

Time of year and frequency of surveys: *Spring migration:* Two aerial surveys, at least 21 days apart, from late February to the end of March.

Supporting Data: Mid-winter aerial waterfowl survey counts conducted each year in early January, 1998 – 2010 (file name: MidwinterSurvey_all yrs.xls). These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm the presence of wintering waterfowl in Virginia's coastal waters and to provide some measure of species diversity within relevant CAPZ. They should not be used to estimate and/or draw inferences about waterfowl population trends.

Supporting Literature

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ZONE 8

Regulatory Provision: 9 VAC 15-40-40 A 5 b (8)

Zone 8: Western portions of the Chesapeake Bay. In this zone, the relevant avian species and other avian mitigation factors are: migratory staging area and wintering area for seabirds and waterfowl of unknown significance. The applicant shall conduct aerial transect surveys for waterfowl and seabirds in the fall migration, spring migration and wintering

seasons to determine the distribution, density and relative abundance of these species within this zone throughout the nonbreeding season.

Guidance

Zone 8 includes western portions of the Chesapeake Bay, Lynnhaven Inlet, Lynnhaven Bay, western and eastern branches of the Lynnhaven River and Broad Bay.

Mitigation triggers: Migratory staging and wintering areas for seabirds and waterfowl of unknown significance.

Actions: Preconstruction waterfowl and seabird surveys are needed to gather information on the distribution, density, abundance and relative importance of these waters during the non-breeding season (October – March).

Survey method: Aerial transect surveys. Aerial transect surveys should be performed in a fixed wing aircraft using two observers on high visibility days. Surveys should be flown approximately 100 m above the water on a fixed GPS- generated transect route (i.e., a series of parallel, evenly spaced **flight** lines that enable observers to visually scan the waters along either side of the transect line out to the adjacent transect lines) that adequately covers all waters within 5 miles of the disturbance zone. Applicants should submit a Google Earth map to DEQ showing GPS waypoints of the proposed aerial transect route two weeks prior to the survey period to ensure adequate coverage of waters surrounding the disturbance zone. All waterfowl and seabirds observed along each transect line should be counted and identified to species when possible. Individual transect counts and species should be kept as separate totals and a general description of behavior (feeding, flying, resting on water, etc.). In addition, observers should record weather conditions, sea state, beginning and ending tide stage, survey start and end times.

Time of year and frequency of surveys: *Fall migration:* Three aerial surveys at least 14 days apart from mid-October to the end of November. *Spring migration:* Five aerial surveys at least 14 days apart from late February to the end of April. *Winter:* Two surveys, at least 14 days apart, from January 1 to mid-February.

Supporting Literature

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ZONE 9

Regulatory Provision: 9 VAC 15-40-40 A 5 b (9)

Zone 9: Virginia's northeast sector of the Chesapeake Bay, including all nearshore waters, marshes and islands within Tangier and Pocomoke Sounds and all islands and marshes located along the western fringe of the Delmarva Peninsula from Craddock Creek north to the Virginia/Maryland border. This zone is recognized as a migratory staging area and wintering area for seabirds and waterfowl of unknown significance. The applicant shall conduct aerial transect surveys for waterfowl and seabirds during the fall migration, spring migration and wintering seasons to determine the distribution, density and relative abundance of these species within this

zone throughout the nonbreeding season. In this zone, additional relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles and Peregrine Falcons) and the designation as an Important Bird Area. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these additional resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles and Peregrine Falcons), the designation as an Important Bird Area, and migratory staging and wintering areas for waterfowl and seabirds of unknown significance.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of T&E species, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map. Pre-construction waterfowl and seabird surveys should be conducted to gather information on the distribution, density, abundance and relative importance of this zone during the non-breeding season (October – March).

Survey method: Aerial transect surveys. Aerial transect surveys should be performed in a fixed wing aircraft using two observers on high visibility days. Surveys should be flown approximately 100 m above the water on a fixed GPS- generated transect route (i.e., a series of parallel, evenly spaced flight lines that enable observers to visually scan the waters along either side of the transect line out to the adjacent transect lines) that adequately covers all waters within 5 miles of the disturbance zone. Applicants should submit a Google Earth map to DEQ showing GPS waypoints of the proposed aerial transect route two weeks prior to the survey period to ensure adequate coverage of waters surrounding the disturbance zone. All waterfowl and seabirds observed along each transect line should be counted and identified to species when possible. Individual transect counts and species should be kept as separate totals and a general description of behavior (feeding, flying, resting on water, etc.). In addition, observers should record weather conditions, sea state, beginning and ending tide stage, survey start and end times.

Time of year and frequency of surveys: *Fall migration:* Three aerial surveys at least 14 days apart from mid-October to the end of November. *Spring migration:* Five aerial surveys at least 14 days apart from late February to the end of April. *Winter:* Two surveys, at least 14 days apart, from January 1 to mid-February.

Supporting Data: Mid-winter aerial waterfowl survey counts conducted each year in early January, 1998 - 2010(file name: MidwinterSurvey_all yrs.xls) These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm the presence of wintering waterfowl in Virginia's coastal waters and to provide some measure of species diversity within relevant CAPZ. They should not be used to estimate and/or draw inferences about waterfowl population trends.

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ZONE 10

Regulatory Provision: 9 VAC 15-40-40 A 5 b (10)

Zone 10: Upper reaches of the James, Rappahannock and Potomac rivers. In this zone, the relevant avian species and other avian mitigation factors are T&E species (breeding Bald Eagles and continentally important Bald Eagle concentration areas), the designation as Important Bird Areas, and locally to continentally important waterfowl wintering areas. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles and continentally important Bald Eagle concentration areas), the designation as Important Bird Areas, and locally to continentally important waterfowl wintering areas.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Literature

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ZONE 11

Regulatory Provision: 9 VAC 15-40-40 A 5 b (11)

Zone 11: Lower reaches of the Mattaponi and Pamunkey tributaries. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles) and the designation as an Important Bird Area. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles) and the designation as an Important Bird Area.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Data: Mid-winter aerial waterfowl survey counts conducted each year in early January, 1998 – 2010 (file name: MidwinterSurvey_all yrs.xls) These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm the presence of wintering waterfowl in Virginia's coastal waters and to provide some measure of species diversity within relevant CAPZ. They should not be used to estimate and/or draw inferences about waterfowl population trends.

Supporting Literature

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ZONE 12

Regulatory Provision: 9 VAC 15-40-40 A 5 b (12)

Zone 12: Outer fringes of the lower, middle and northern peninsulas. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles). The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

As indicated on the Coastal Avian Protection Zones map, this zone includes the southern shoreline of James River from the Isle of Wight/Surry County line to the mouth of the river, and the outer mainland fringe from Portsmouth to Ft. Story.

Mitigation triggers: T&E species (breeding Bald Eagles). An additional consideration is that Craney Island Dredge Material Management Area, Portsmouth, VA, is a locally to regionally important migratory staging area and wintering area for shorebirds, seabirds, and waterfowl.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Data:

- 2009 monthly bird counts at Craney Island Dredge Material Management Area (file name: 2009CraneyIs_ebirdReports.xls)
- 2010 monthly bird counts at Craney Island Dredge Material Management Area (file name: 2010CraneyIs_ebirdReports.xls)

These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm avian occurrences and provide some measure of species diversity at Craney Island Dredge Material Management Area which located in Zone 12. They should not be used to estimate and/or draw inferences about overall avian population trends in Zone 12.

Supporting Literature

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- Center for Conservation Biology. 2010. Virginia eagle nest locator. <http://www.ccb-wm.org/virginiaeagles/locator.php>
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ZONE 13

Regulatory Provision: 9 VAC 15-40-40 A 5 b (13)

Zone 13: Interior portions of the lower, middle and northern peninsulas. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles, for which little information currently exists in this zone). The applicant shall perform ground surveys for breeding Bald Eagles to determine distribution and abundance of Bald Eagle nests within the disturbance zone and within .25 mile of the perimeter of the disturbance zone.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles, for which little information currently exists in this zone).

Actions: Preconstruction Bald Eagle breeding surveys to gather data on distribution and abundance of eagle nests in project area.

Survey method: One Bald Eagle ground survey should be conducted by a qualified observer skilled in bald eagle identification and eagle nest identification between mid-March and mid-April

within the disturbance zone and 0.25 mi beyond the perimeter of the disturbance zone (survey area). A series of GPS-generated transect lines that provide adequate coverage of the survey area should be placed on a Google Earth generated map and submitted to DEQ *two* weeks prior to the survey date if the applicant desires pre-approval. The observer should slowly walk along the pre-established transect lines using a GPS receiver, in which transect waypoints have been entered prior to the survey, for guidance. The observer should record all bald eagles encountered, regardless of age class and all nests found (occupied or inactive). For each eagle encountered, observers should record age class (HY, second year, third year, fourth year or adult), behavior, habitat type and GPS coordinates. For each eagle nest found, observers should record whether or not the nest is occupied, the species of tree in which the nest is located, whether or not adult eagles were present at the nest or in the territory, GPS coordinates and when possible, if eggs or hatchlings are present in the nest. A digital picture should be taken of each nest found. In addition, the observer should record weather conditions and survey start and end times. If the survey area is too large to cover by foot, the applicant may choose to conduct an aerial survey in lieu of a ground survey. A fixed-wing aircraft should be used to fly along pre-established transect lines 100 m above the ground and a qualified observer, skilled in eagle nest and nesting phase identification (i.e., nest building, incubation, brood rearing) from the air, should record the same information listed for ground surveys. If chicks are visible from the aircraft, the observer should record the number and approximate age of chicks observed.

Supporting Literature

- Watts, B. D. and M. A. Byrd. 1998. Status and distribution of colonial waterbirds in coastal Virginia. *The Raven* 69:20-31.
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ZONE 14

Regulatory Provision: 9 VAC 15-40-40 A 5 b (14)

Zone 14: Back Bay and surrounding private lands. In this zone, the relevant avian species and other avian mitigation factors are: T&E species (breeding Bald Eagles), the designation as Important Bird Area, and locally to continentally important migratory staging area and wintering area for waterfowl. The applicant shall either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the CAPZ map.

Guidance

Mitigation triggers: T&E species (breeding Bald Eagles), the designation as an Important Bird Area and a migratory staging area and wintering area for waterfowl, shorebirds and other waterbirds.

Actions: The applicant should either perform avian field studies regarding the actual or likely occurrence of these resources, or rely on existing scientific analysis as reflected on the Coastal Avian Protection Zones map.

Supporting Data: Mid-winter aerial waterfowl survey counts conducted each year in early January, 1998 - 2010 (file name: MidwinterSurvey_all yrs.xls) These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm the presence of wintering waterfowl in Virginia's coastal waters and to provide some measure of species diversity within relevant CAPZ. They should not be used to estimate and/or draw inferences about waterfowl population trends.

Recent supporting data made available by Back Bay NWR:

- 2008 peak monthly waterbird totals in Back Bay NWR impoundments (file name: 2008PeakWaterbirdPops.xls)
- 2009 peak monthly waterbird totals in Back Bay NWR impoundments (file name: 2009PeakWaterbirdPops.xlsx)
- 2009 weekly shorebird totals at Back Bay NWR and False Cape State Park beaches and impoundments (file name: Shorebirds2009.xls)
- 2009 weekly waterfowl totals at Back Bay NWR and False Cape State Park impoundments (file name: Waterfowl2009.xls)
- 2009 weekly marshbird, raptor and other species totals at Back Bay NWR and False Cape State Park impoundments (file name: Marshbirds,etc2009.xls)
- 2010 weekly shorebird totals at Back Bay NWR and False Cape State Park beaches and impoundments (file name: Shorebirds2010.xls)
- 2010 weekly waterfowl totals at Back Bay NWR and False Cape State Park impoundments (file name: Waterfowl2010.xls)
- 2010 weekly marshbird, raptor and other species totals at Back Bay NWR and False Cape State Park impoundments (file name: Marshbirds2010.xls)

These data are available at the Virginia Department of Game and Inland Fisheries Fish and Wildlife Information Services <http://vafwis.org/fwis/> **Caution:** The purpose of these data is to confirm avian occurrences and provide some measure of species diversity at Back Bay NWR, which is located in Zone 14. They should not be used to estimate and/or draw inferences about overall avian population trends in Zone 14.

Supporting Literature

Center for Conservation Biology. 2010. Virginia eagle nest locator. <http://www.ccb-wm.org/virginiaeagles/locator.php>

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