

TPWD Waterfowl Program and Tech Committee Request for Proposal FY2012

Study Title: Body Condition and Feeding Habits of Northern Pintails Wintering Along the Texas Gulf Coast Prairies, Bays, and Marshes

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Introduction:

Texas plays an important role for northern pintails wintering in the Central Flyway, and the Gulf Coast is one of the primary wintering areas for northern pintails in Texas. In light of changing agricultural practices, freshwater flows, saltwater intrusion, and urban expansion the habitats associated with the prairies, bays, and marshes of this region are being threatened. Recent research looking at movements and survival of northern pintails in this region resulted in an alarming survival estimates during the winter months. In light of this recent research, more specific information about the health of wintering northern pintails is needed.

Traditional waterfowl biology suggests that northern pintails utilize the sanctuaries and food resources available in wetlands associated with the Gulf Coast to carry out biological functions such as molt, courtship, and nutrient buildup to prepare them for migration and reproduction.

Northern pintails have the potential to consume a diversity of plant and animal foods during the non-breeding period, including agricultural grain, tubers and rhizomes, and seeds of moist-soil plants. Invertebrate consumption has been documented in many waterfowl studies, but with a few exceptions invertebrates make up a small percentage of the winter diet. Wintering waterfowl activities such as flight, thermoregulation, and courtship depend primarily on dietary energy. However, molt requires increased protein intake. Agricultural grains are probably interchangeable as sources of dietary energy, but neither are adequate sources of protein. Invertebrates and moist-soil seeds provide a greater quantity and better quality of protein than agricultural grains.

Waterfowl undergo a complete body molt known as the prebasic molt in late winter, which is influenced by age, pairing status, and habitat conditions. Replacement of feathers represents a period of increased nutrient demand for an individual duck. Feather growth during the peak of the molt increased daily protein requirements. The prebasic molt is usually initiated only after pairing occurs. Waterfowl that remain unpaired molt only in late winter immediately preceding migration. Similarly, waterfowl are able to initiate molt earlier during wet winters when water conditions are favorable for invertebrate and moist-soil seed production. Likewise body mass tends to be higher in wet vs. dry years.

Increasing day length after winter solstice triggers hormonal mechanisms that eventually result in egg laying and gonad maturity. Because behavioral changes and

physiological conditions are modified soon after changes in day length, the late winter period may be especially important to breeding and recruitment of northern pintails the following spring.

Condition can be defined as a measure of the chances of survival of an individual at a particular time of the year and/or of its potential for successful breeding. During winter months, fat is the component of condition that is most unstable and potentially limiting to waterfowl. Dynamic relationships among endogenous fat reserves, body weight, and condition occur when waterfowl experience severe weather and other stressful conditions. Waterfowl are known to store large amounts of lipids before courtship and pairing, molt, migration, and reproduction. Heavier waterfowl initiate and complete these annual events earlier, and potentially more successfully, than waterfowl with low fat reserves. Molt, migration, and reproduction require different quantities and qualities of nutrients, and waterfowl adjust food intake, behavior, and nutrient reserves to balance nutrient use and needs. Northern pintails may optimize fat storage by eating foods that contain larger quantities of fatty acids that are efficiently stored in fat depots and by occupying habitats where these foods are available during energy demanding periods. Body weights of wintering waterfowl are known to increase preceding molt and gradually declined midway through the molt.

Justification:

This project is the number one research priority outlined in the Texas Parks & Wildlife Department Waterfowl Strategic Plan and is directly related to the following action items in that plan:

Action Item: Continue support of the GCJV by providing financial support and technical expertise on issues related to the conservation of coastal habitats in Texas that are important for breeding and migratory waterfowl.

Action Item: Develop sanctuaries to address the declining snow goose population and to influence low survival rates for wintering northern pintails along the Texas coast.

Action Item: Support the use of easements and acquisitions by TPW and their partners to protect priority wetland and prairie habitat from conversion for other land uses.

Action Item: Identify areas of important marsh habitat adjacent to the GIWW and other canals for nautical transportation that are at high risk of being impacted from shoreline erosion. Support shoreline protection projects that reduce erosion of coastal marshes. Identify funding sources and potential partners to assist in accomplishing this action.

Action Item: Provide access to WMAs and State Parks having degraded wetlands to agencies, permit applicants, and other interested parties for large scale restoration and beneficial use projects that provide significant benefit to waterfowl.

Action Item: Work to restore landscape scale hydrologic functions, especially in the coastal zone where channelization has cut landscape freshwater sheet flows off from coastal tidal marshes.

Action Item: Continue financial and technical support of wetland management assistance programs for private landowners such as the Texas Prairie Wetlands Project and Gulf Coast Prairies State Acres for Wildlife Enhancement that provide wintering habitat for migratory waterfowl and nesting and brood rearing habitat for mottled ducks (see GCJV Mottled Duck Conservation Plan for guidance). Coordinate with partners to develop best management practices for wetlands and waterfowl to be implemented by private landowners.

Action Item: Continue financial and personnel support for internal and external programs that provide assistance to private landowners to control and remove non-native and invasive plants from habitats that can provide benefits to waterfowl.

Action Item: Work with River Authorities to provide sufficient water supplies during the winter and spring months to meet the demands of wintering and breeding waterfowl.

Action Item: Support research to find successful habitat management techniques that control and reduce non-native and invasive vegetation in wetlands, coastal prairies and aquatic habitats. Develop education materials for public distribution that describe successful preventive and control measures.

Action Item: Work with the agricultural community to identify ways to maintain rice production at or above current levels. Work to develop programs that return rice fields to be taken out of production back into productive coastal prairie/wetland complexes which benefit resident and migrating waterfowl.

Action Item: Identify and work with water regulatory authorities to ensure that water for farming and waterfowl related activities are priorities during planning for future water needs.

Objectives:

Form a partnership of universities, NGO's, and government organizations that represent the interest of the wetlands and waterfowl associated with the Gulf Coast to study the physical condition, foods consumed, and molt status of Northern Pintails (*Anas Acuta*) found wintering in the prairies, bays, and marshes along the Gulf Coast for three seasons. Our preference as to scale would be across the range of the Gulf Coast Joint Venture, but a study site exclusive to Texas is desirable as well. Funding should be shared among the partnership.

Expected Management Implications:

This project should provide new information about the ecology and management of northern pintails wintering in along the Texas Gulf Coast. This project will supply valuable information to northern pintail modeling and harvest management across North America associated with the Pintail Action Group and Derived Pintail Harvest Strategy. The project will also aid with the wintering waterfowl planning and management

associated with the multi-state partnership of the Gulf Coast Joint Venture. This research could contribute the justification to begin an initiative and partnership to provide strategic sanctuary and habitat across the Texas Gulf Coast.