Nebraska SWG (FY07) PROGRAM NARRATIVE

State: Nebraska
Grant Title: Least Tern and Piping Plover Conservation
Grant Number: T-68-R Segment 1
Grant Period: April 1, 2008 to March 31, 2009

Project Summary:

The Tern and Plover Conservation Partnership (TPCP) is recognized, nationally and internationally, as the model for proactively resolving endangered and threatened species controversies and conflicts. The TPCP has demonstrated that by working cooperatively with commercial interests, local communities, and government agencies, effective conservation and management measures can be implemented. This strategy can work in situations well beyond the TPCP's stated mission to protect and secure the future of endangered interior least terns (*Sternula antillarum athalassos*) and threatened piping plovers (*Charadrius melodus*) in Nebraska. In addition to their federal Endangered Species Act status, least terns and piping plovers are identified by the Nebraska Legacy Project as Tier 1 At-Risk Species, indicating the critical need to increase their reproductive success and population size. The least terns and piping plovers nesting along the Platte, Loup and Elkhorn rivers are utilizing several of Nebraska's Unique Biological Landscapes (BULs), as identified by the Nebraska Legacy Project (page 24). By working in these areas, the TPCP has the additional opportunity to protect those habitats that multiple species depend upon while we are protecting the terns and plovers. Stresses and conservation strategies are outlined within the Tallgrass Prairie (page 49) and Mixed Grass Prairie (page 78) sections of the Legacy Plan. The adaptive management planned in this project is outlined in the Legacy Plan, page 157.

The TPCP has four principal goals. 1) Continue our primary mission of effective, responsive on-the-ground conservation and management of least terns and piping plovers. 2) Develop and implement an adaptive management framework to make the TPCP's activities as scientifically sound, effective and cost-efficient as possible. 3) Develop and implement an educational program appropriate for a range of audiences. 4) Develop and implement sustainable management solutions for least terns, piping plovers and other species along the lower Platte, Loup and Elkhorn rivers, which include protecting their habitat.

We believe we can build upon our past successes. To do this, we must broaden and develop our Partner community, expand our education program, build a scientifically sound adaptive management framework and become more cost-efficient. Our greatest success will be having secure populations of interior least terns and piping plovers, so they will no longer be state or federally endangered or threatened anywhere throughout their ranges.

Purpose and Need:

The Tern and Plover Conservation Partnership (TPCP) is recognized, nationally and internationally, as the model for proactively resolving endangered and threatened species controversies and conflicts. The TPCP has demonstrated that by working cooperatively with commercial interests, local communities, and government agencies, effective conservation and management measures can be implemented and costly conflicts can be avoided. There

is a critical need for the TPCP to continue its mission while developing sustainable solutions that ensure the recovery and survival of these two species of high conservation concern.

Endangered interior least terns and threatened piping plovers continue to be imperiled in Nebraska, and throughout their range due to loss and degradation of their riverine breeding habitat (USFWS 2002 Federal Register: Sept. 11). This is of particular concern as these birds nest in areas designated as Unique Biological Landscapes by the Nebraka Natural Legacy Project. The amount of high-elevation sandbar habitat where birds' nests are secure is declining because of water diversion and river modifications. Consequently, the birds are increasingly using human-constructed habitats, such as sand and gravel mines and lakeshore housing developments (Ziewitz et al 1992 Prairie Nat. 24: 1–20). Unfortunately, at these alternate sites, birds often suffer from excessive predation and human disturbance. This results in substantially reduced reproductive success which spirals both species deeper into crisis. Humans may also suffer when they unintentionally, or intentionally, interfere with the bird's breeding habitat or destroy nests or chicks. They may face legal prosecution and substantial fines due to Endangered Species Act (ESA) violations and/or lost revenue when commercial or industrial production is interrupted.

By working cooperatively with the sand and gravel mining industry, the TPCP has effectively implemented a program that not only directly benefits endangered wildlife, but also directly benefits Nebraska's economy when mining operations are not interrupted and the parent companies are not fined. Prior to formation of the TPCP, tern and plover conflicts at sand and gravel mines were essentially handled as federal law enforcement issues. When birds' nests, eggs or chicks are destroyed, often unintentionally, and mining companies are faced with substantial fines and lost revenue, there are no winners. The TPCP developed from a desire and vision that Nebraskan's, by working together, can do better. With the TPCP working cooperatively with the mining industry and government agencies, both birds and industry benefit. The facts prove this:

1) We estimate that at least 430 additional least terns and 130 additional piping plovers have been added to the population as the result of TPCP efforts. Our fledging success rate has been as high as 1.81 fledglings per nest for least terns and 2.27 fledglings per nest for piping plovers. For basic population size maintenance, the fledging success rate must be at least 0.71 fledglings per nest for least terns and 1.13 fledglings per nest for piping plovers (Kirsch 1992 PhD diss. Univ. Montana; Plissner and Haig 2000 Biol. Cons. 92: 163–173).
2) According to the sand and gravel mining industry's own estimates, working with the TPCP has saved them at least $2,000,000 since 1999. The industry now directly provides financial and in-kind support to the TPCP. This is clear validation of the TPCP's progress and the important role that it fills.

As time goes on, the pivotal need for the TPCP increases. There is an urgency to address new challenges while evolving to improve efficiency and effectiveness, as well as working to find long-term, sustainable solutions that will aid in the long-term recovery of these two species.

An increasingly worrisome challenge to the TPCP is the rapid increase in the number of lakeshore housing developments. As a mine site's productive life cycle comes to an end, these sites are becoming increasingly attractive to housing developers. Developers convert the sites into popular lakeshore-sandy beach housing developments, but birds continue to use these sites for nesting. Some developers are beginning to bypass the sand and gravel

mining stage and are excavating the lakes and beaches themselves. One such development near North Bend (Riverview Shores) supported the largest colony (76 nests) of terns and plovers on the Platte River system in 2007. However, the proximity of endangered nesting birds to frequent activity from home-owners, recreationists, contractors, utility workers, potential lot-buyers, and others, puts nests, eggs and chicks at substantially more risk than at mine nesting sites. The large number of people that freely access these sites increases the likelihood that someone will intentionally or inadvertently enter nesting areas even though fencing and signs are posted around the perimeter. The number of people involved challenges the capacity of the TPCP to resolve conflicts before they occur. There is an urgent need to saturate all available outlets with information about the birds and their habitat requirements and to make it clear that the TPCP is available to work cooperatively with people to find acceptable solutions that will benefit both birds and people.

The lakeshore housing development dilemma also illustrates the larger and broader issues confronting those working on Nebraska's tern and plover challenge. The benefits of mine site and lakeshore housing development nesting habitat are transient for the birds. Once fully developed, these sites no longer provide adequate habitat for successful breeding. Previous experience has taught us that it is unwise for the TPCP to take no proactive action at any of these sites, as it only causes larger and more difficult problems later, further imperiling both species. Thus, there is a definite need to secure and maintain the progress and accomplishments of the TPCP and also to turn our eyes to the future by identifying and developing long-term, sustainable solutions. Doing this, however, depends on formulating scientifically and practically sound targeted projects that will produce the needed results that will ensure the recovery of both species.

Objectives:

The overall objective of this project and the mission of the TPCP are to protect endangered least terns and threatened piping plovers. In the immediate future, we will continue to address any threats that directly harm nesting birds. In the long-term, we will develop a vision that will ensure the permanent recovery of both species. We are anticipating a 3 year time frame for this project. This grant request will fund our first field season. Specific objectives of this project are:

1) Continue the primary mission of the TPCP to protect endangered least terns and threatened piping plovers as we have since our founding in 1999.
2) Improve the efficiency and effectiveness of our efforts by implementing an adaptive management framework which will identify program areas that can be streamlined, as well as improve the effectiveness of our on-the-ground conservation efforts through sound research. We want our efforts to be as scientifically sound, effective and cost-efficient as possible.
3) Implement a rapid-response initiative that will proactively resolve the swiftly growing challenge of lakeshore housing developments
4) Develop a blueprint that identifies long-term, sustainable solutions to the least tern and piping plover conservation and management situation on the lower Platte, Loup and Elkhorn rivers.

Expected Results or Benefits:

The greatest benefit of our program will be the continued existence of least terns and piping plovers on the lower Platte, Loup and Elkhorn river systems in Nebraska and throughout their entire range. Our program will have a variety of other, perhaps equally or more important, results and benefits. Through our expanded education and outreach programs we will reach a much wider audience than we have in the past. Typically, environmental education programs reach the same audiences; school students, nature or wildlife study groups, environmental protection groups and the like. The new TPCP programs will include audiences that may not otherwise hear or be receptive to the topics of conservation and management. As an example, utility company field crews are rarely presented with the practical conservation and management information they need to perform their jobs properly. They are going to come into contact with terns and plovers with increasing frequency when they are working at lakeshore housing developments. These field crews need practical information that they can use on-site and on the job. The same situation is true for housing development and construction company employees and zoning board personnel. If we can reach commercial, industrial, government, and other private audiences and educate them on how wise environmental practices can positively affect their bottom line, we will have taken a great stride toward conserving, managing and protecting our environment well beyond least terns and piping plovers. We expect that the survey, monitoring and demographic modeling techniques we develop will be appropriate for use by others working in the field of endangered and threatened species management. By making these techniques known to others, we can improve the conservation and management status of these two and potentially many other species.

The TPCP is asking the State Wildlife Grants program primarily to fund the salary and benefits for one technician position for the first year of an anticipated 3 year project. In an effort to keep costs down, we are asking for a minimal amount to cover equipment and supplies. Our Partners, in particular the sand and gravel mining industry and area Natural Resource Districts, and other funding sources have been generous in providing in-kind, matching, and monetary support which enables us to request a small amount from the SWG program to cover our essential needs.

Approach:

1) *Continue the TPCP's proven on-the-ground conservation measures, in concert with broadened education and outreach initiatives.*

The mission of the TPCP is to study and protect interior least terns and piping plovers within the Platte, Elkhorn and Loup river systems in a manner that minimizes conflicts with commercial and private users, and to educate and involve local communities. The TPCP strongly believes that education is fundamental to achieving this goal. We are developing new educational programs that are appropriate for all of our constituents; mining personnel, housing developers, zoning boards, real estate professionals, utility workers, homeowners, school students, local governments, law enforcement, and others. With the advances in computer technology and wider internet access, we will be able to make our educational programs available to the public on-line via our web page. These advances also give us the ability to make our programs more interactive in nature. Our web page is currently being upgraded to accommodate these changes. We have programs under development designed

for audiences with specific needs, such as utility company field crews, zoning boards and development/construction companies. We will deploy those programs as they become available.

We will continue to protect, monitor, survey, and improve the reproductive success of least terns and piping plovers throughout the breeding season using our proven, non-confrontational and proactive techniques. As breeding sites are located, we will put up signs, fences, deterrent materials and nest exclosures as needed. Our data contributes to national least tern and piping plover annual survey programs, such as the Interior Least Tern Working Group Window Count and the International Piping Plover Census, both of which help formulate national recovery strategies.

2) *Improve efficiency and effectiveness through an adaptive management framework*

During its formative years, the TPCP was focused on establishing and building relationships and implementing common sense conservation measures that benefit both birds and people. As the TPCP matures, there is the need and opportunity to critically evaluate and assess our conservation actions to ensure that these efforts are producing the intended results and are not wasting precious resources. Furthermore, biological process and species management is complex and occasionally actions that come from good intentions are biologically meaningless and, occasionally, may even be counter-productive. Working with the NGPC, the TPCP will implement an intensive research program to identify where conservation action can have the greatest benefit, and also to identify areas where efforts can be relaxed and funds can be conserved.

There has been relatively little hypothesis driven research done on either of these two species. To date, most research efforts have focused on both large and small scale baseline population monitoring and survey programs. While providing invaluable information, we feel that these monitoring programs and surveys must be supplemented by more rigorous research efforts. Accurate, and appropriately collected, data on philopatry, dispersal, reproductive success (annual and lifetime) and survival (based on covariate analysis) are critical for us to optimize and refine our management techniques.

3) *Implement a rapid-response initiative that will proactively resolve the swiftly growing challenge of lakeshore housing developments*

The TPCP intends to improve our working relationship with the lakeshore housing development industry by increasing our capacity to educate stakeholders about the birds and to implement our proven on-the-ground conservation actions. We have already initiated this by beginning a dialogue with area zoning boards, elected community officials, city managers, utility companies, and housing developers. We are doing this before home sites are sold and construction begins so problems are resolved before they develop. We will extend this dialogue to new groups as situations warrant. This is a critical measure as two additional lakeshore housing developments will be started near Valley within the next few years. We believe we have the potential to resolve conflicts before they occur and before law enforcement is forced to intercede.

a) Monitor the reproductive success of least terns and piping plovers. Install fencing, signs, nest exclosures, and deterrent material as necessary to protect nests in the lakeshore housing areas.

b) Provide developers and homeowners with educational materials about the birds' special habitat needs and their protected legal status. Attend housing association meetings and contractor meetings, such as the Metro Omaha Builders Association (MOBA), to educate people in the industry, address their questions and ensure regular and timely communication.
c) Work with developers, contractors, utility companies, homeowners and others on-site to mitigate any conflicts that do arise.
d) Consult with developers and housing associations on methods to discourage least tern and piping plover nesting in areas of high human activity. Ideally, we will create site specific management plans that minimize conflicts.
e) Develop a working rapport with this industry as we have with the mining industry.

4) *Develop long-term, sustainable solutions that look toward the future with the ultimate goal of recovering the two species so they are no longer endangered or threatened.*

The TPCP's role and the results it achieves are critically important in improving the current situation for these two imperiled species. While the important proximate tasks of monitoring and protecting these birds on a day to day basis that the TPCP performs will continue, we realize that there is a need to look toward the future and develop long-term solutions to the tern and plover situation on the lower Platte, Loup and Elkhorn river systems The ultimate objective of our Partnership, and a product of all our efforts and objectives, is to develop a blueprint that will guide the implementation of solutions to the issue of these two, and other endangered and threatened species. This blueprint must include procedures to help protect their riverine habitat. The TPCP is in a unique position to implement the development of such a blueprint. The TPCP is not a government agency or a corporation; we are a neutral party and able to offer comprehensive solutions that are acceptable to all parties. Also, the TPCP has no direct regulatory power, unlike the USFWS, which makes us appear less threatening to private individuals and companies. This non-threatening, non-adversarial position, combined with our 9 years of proven success protecting least terns and piping plovers, makes the TPCP ideally positioned to take common sense conservation into the future. Bringing the TPCP, other partnerships and alliances, NRDs, industry, commercial and private interests, government agencies, elected officials, law enforcement and others together is likely to be a part the solution. The TPCP has taken strides toward this goal by developing our Partner community. We hope to add more Partners in the future.

Schedule:

Month/Year	Task Description:
April 2008	Prepare for summer 2008 field season. Complete required MSHA safety training program Contact property owners. Begin monitoring program. Put up signs, fence and deterrent as necessary. Prevent and mitigate conflict as necessary.
May 2008	Monitor colonies. Work with property owners. Maintain signs, fence and deterrent. Participate in research and education programs. Prevent and mitigate conflict as necessary.
June 2008	As May 2008. Participate in area wide population survey.
July 2008	As June 2008.
August 2008	As July 2008. Remove signs, fence and deterrent as appropriate.
September 2008	Repair and store supplies in warehouse for summer 2009 field season. Begin data summaries.

Location:

County(s) where project is located: Cass, Sarpy, Douglas, Saunders, Dodge, Butler, Colfax, Platte, Cuming, Stanton, Polk, Merrick, Hamilton, Nance, Howard, Hall, Kearney, Buffalo, Phelps, Dawson, Valley, Sherman, Custer, Logan, Loup, Blaine, Gosper, Lancaster

Lower Platte, Loup and Elkhorn rivers and adjacent or associated areas

Estimated Cost: Total Project Cost: $29,020
Total Federal Grant Request: $14,510
Total Non-federal Match: $14,510

Budget Category	Estimated Cost
Salaries and benefits	$ 19,524.00
Supplies/Materials	$ 3,000.00
Travel	$ 2,000.00
Indirect Costs	$ 4,496.00
Total	$ 29,020.00

Match: Partner cash and indirect costs. Any costs above the grant total will be covered by the partners:

- Sand and Gravel Mining Company Partners
- University of Nebraska (44.9% indirect cost rate)
- Nebraska Environmental Trust

Deliverables:

More interior least terns and piping plovers produced. Annual report detailing TPCP accomplishments toward grant objectives provided. Publications directed toward professional and general audiences produced. Educational materials and programs appropriate for variety of audiences developed and delivered. Public presentations delivered, including professional conferences, business and government meetings, schools, TV, radio, newspapers and magazines.

Project Duration: Start Date: 1 April 2008
End Date: 30 September 2008

Project Leader: Mary Bomberger Brown, Tern and Plover Conservation Partnership, 153C Hardin Hall, 3310 Holdrege Street, Lincoln, NE 68583-0931, (402) 472-8878, mbrown9@unl.edu

Literature Cited

KIRSCH, E. M. 1992. Habitat selection and productivity of least terns (*Sterna antillarum*) on the lower Platte River, Nebraska. PhD dissertation. University of Montana. 118 pp.

PLISSNER, J. H. AND S. M. HAIG. 2000. Viability of Piping Plover *Charadrius melodus* metapopulations. Biological Conservation 92:163-173.

ZIEWITZ, J. W., J. G. SIDLE, AND J. J. DINAN. 1992. Habitat conservation for nesting least terns and piping plovers on the Platte River, Nebraska. Prairie Naturalist 24(1):1-20.

Publications funded under previous SWG:

Marcus, J. F., J. J. Dinan, R. J. Johnson, E. E. Blankenship, and J. L. Lackey. 2007. Directing nest site selection of Least Terns and Piping Plovers. Waterbirds. 30: 251-258.

Brown, M. B., and J. G. Jorgensen. in review. Lower Platte River flow characteristics suitable for Interior Least Terns (Sternula antillarum athalassos) and Piping Plover (Charadrius melodus) nesting in Nebraska. Transactions of the Nebraska Academy of Sciences.

Brown, M. B., J. G. Jorgensen, and S. Rehme. in press. Endangered species responses to natural habitat declines: Nebraska's Interior Least Terns (Sternula antillarum athalassos) and Piping Plovers (Charadrius melodus) nesting in a novel habitat. Nebraska Bird Review.

Thody. C. M., R. J. Held, R. J. Johnson, and J. F. Marcus. in review.Grassroots conservation: volunteers contribute to projects and foster a supportive public. Journal of Extension.

Environmental Considerations

1. **Executive Order Number 11988, Flood Plain Management.** The project will take place in the Platte, Loup and Elkhorn river floodplains but will not result in any alteration or modification of flood plain environments. In no case will any flood plain be adversely impacted by the activities of this grant.

2. **Executive Order Number 11990, Protection of Wetlands.**
The work will take place at sand and gravel mining sites, lakeshore housing developments and along the Platte, Loup and Elkhorn rivers. The work will not result in any alteration or modification of wetland environments. In no case will any wetland be adversely impacted by the activities of this grant.

3. **Public Law 97-98, Farmland Protection Policy Act.**
The project will not take place in prime farmland.

4. **Historic and Cultural Preservation.**
The project will not create any soil disturbance.

5. **Endangered Species Act.**
Both species involved in the project are considered Tier 1 At-Risk Species in Nebraska, interior least terns are listed as federally endangered and piping plovers are listed as federally threatened species. Our stated mission is to protect and secure their future by taking proactive management steps and to mitigate any conflicts that may disturb their nesting activity. We work to increase their population sizes in Nebraska. We hold Federal Permit TE070027-0, for threatened and endangered species. The program coordinator holds Master Bander Permit 34817, with endorsements to handle and mark threatened and endangered species. We also hold Nebraska Game and Parks Commission Scientific Collecting Permit 536, allowing us to salvage interior least tern and piping plover eggs, chicks, and adults and is valid with our accompanying federal permit.

6. **Environmental Justice.**
The project will have no impact human health or environmental effects on low-income populations, minority populations or Indian tribes state that here.

7. Animal Welfare Act. This project will not involve animal mortality.

This proposal is completely covered by categorical exclusion 1.4B1 in 516 DM 2, Appendix 1; and/or 516 DM 6, Appendix 1.

This proposal does not have significant adverse effects on public health or safety.

This proposal does not have significant adverse effects on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds (Executive Order 13186); and other ecologically significant or critical areas under Federal ownership or jurisdiction.

This proposal does not have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources [NEPA Section 102(2)(E)].

This proposal does not have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks.

This proposal does not have a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.

This proposal does not have a direct relationship to other actions with individually insignificant but cumulatively significant environmental effects.

This proposal does not have significant adverse effects on properties listed or eligible for listing on the National Register of Historic Places as determined by either the bureau or office, the State Historic Preservation Officer, the Tribal Historic Preservation Officer, the Advisory Council on Historic Preservation, or a consulting party under 36 CFR 800.

This proposal does not have significant adverse effects on species listed, or proposed to be listed, on the List of Endangered or Threatened Species, or have significant adverse effects on designated Critical Habitat for these species.

This proposal does not have the possibility of violating a Federal law, or a State, local, or tribal law or requirement imposed for the protection of the environment.

This proposal does not have the possibility for a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898).

This proposal does not have the possibility to limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007).

This proposal does not have the possibility to significantly contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112).

NEBRASKA ENDANGERED AND THREATENED SPECIES and CANDIDATE SPECIES FOR FEDERAL LISTING

Common Name	Scientific Name	State Status	Federal Status
BIRDS - 6 Species			
Eskimo Curlew	Numenius borealis	Endangered	Endangered
Whooping Crane	Grus americana	Endangered	Endangered
Interior Least Tern	Sterna antillarum athalassos	Endangered	Endangered
Bald Eagle	Haliaeetus leucocephalus	Threatened	Threatened
Piping Plover	Charadrius melodus	Threatened	Threatened
Mountain Plover	Charadrius montanus	Threatened	
MAMMALS - 5 Species			
Black-footed Ferret	Mustela nigripes	Endangered	Endangered
Swift Fox	Vulpes velox	Endangered	
River Otter	Lutra canadensis	Threatened	
Southern Flying Squirrel	Glaucomys volans	Threatened	
FISH - 7 Species			
Pallid Sturgeon	Scaphirhyncus albus	Endangered	Endangered
Topeka Shiner	Notropis topeka	Endangered	Endangered
Sturgeon Chub	Macrhybopsis gelida	Endangered	
Blacknose Shiner	Notropis heterolepis	Endangered	
Lake Sturgeon	Acipenser fulvescens	Threatened	
Northern Redbelly Dace	Phoxinus eos	Threatened	
Finescale Dace	Phoxinus neogaeus	Threatened	
INSECTS - 2 Species			
American Burying Beetle	Nicrophorus americanus	Endangered	Endangered
Salt Creek Tiger Beetle	Cincidela nevadica lincolniana	Endangered	Endangered
REPTILES - 1 Species			
Massasauga	Sistrurus catenatus	Threatened	Eastern subspecies Endangered
MUSSELS 1 Species			
Scaleshell Mussel*	Leptodea leptodon	(Endangered)	(Endangered)
PLANTS -7 Species			
Hayden's (Blowout) Penstemon	Penstemon haydenii	Endangered	Endangered
Colorado Butterfly Plant	Gaura neomexicana ssp. coloradensis	Endangered	Threatened
Saltwort	Salicornia rubra	Endangered	
Western Prairie Fringed Orchid	Platanthera praeclara	Threatened	Threatened
Ute Lady's Tresses	Spiranthes diluvialis	Threatened	Threatened
Ginseng	Panax quinquefolium	Threatened	
Small White Lady's Slipper	Cypripedium candidum	Threatened	

14 State Endangered Species
8 Species State and Federal Endangered
1 Species State Endangered /Federal Threatened
4 Species State Endangered

13 State Threatened Species
4 Species State and Federal Threatened
9 Species State Threatened

*Species recorded for state but Nebraska is not included in distribution in federal listing.

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