

Periodic Status Review for the Snowy Plover



Derek W. Stinson

*Washington Department of
FISH AND WILDLIFE
Wildlife Program*

The Washington Department of Fish and Wildlife maintains a list of endangered, threatened, and sensitive species (Washington Administrative Codes 232-12-014 and 232-12-011). In 1990, the Washington Wildlife Commission adopted listing procedures developed by a group of citizens, interest groups, and state and federal agencies (Washington Administrative Code 232-12-297). The procedures include how species listings will be initiated, criteria for listing and delisting, a requirement for public review, the development of recovery or management plans, and the periodic review of listed species.

The Washington Department of Fish and Wildlife is directed to conduct reviews of each endangered, threatened, or sensitive wildlife species at least every five years after the date of its listing by the Washington Fish and Wildlife Commission. The periodic status reviews are designed to include an update of the species status report to determine whether the status of the species warrants its current listing status or deserves reclassification. The agency notifies the general public and specific parties who have expressed their interest to the Department of the periodic status review at least one year prior to the five-year period so that they may submit new scientific data to be included in the review. The agency notifies the public of its recommendation at least 30 days prior to presenting the findings to the Fish and Wildlife Commission. In addition, if the agency determines that new information suggests that the classification of a species should be changed from its present state, the agency prepares documents to determine the environmental consequences of adopting the recommendations pursuant to requirements of the State Environmental Policy Act.

This document is the Periodic Status Review for the Snowy Plover. It contains a review of information pertaining to the status of the Snowy Plover in Washington. It was reviewed by species experts and was available for a 90-day public comment period. All comments received were considered during the preparation of the final periodic status review. The Department presented the results of this periodic status review to the Fish and Wildlife Commission at the 22-23 January 2016 meeting in Vancouver. The recommendation to keep the Snowy Plover listed as endangered was affirmed by the Commission at their 26 February meeting in Olympia.

This report should be cited as:

Stinson, D. W. 2016. Periodic status review for the Snowy Plover in Washington. Washington Department of Fish and Wildlife, Olympia, Washington. 16 + iii pp.

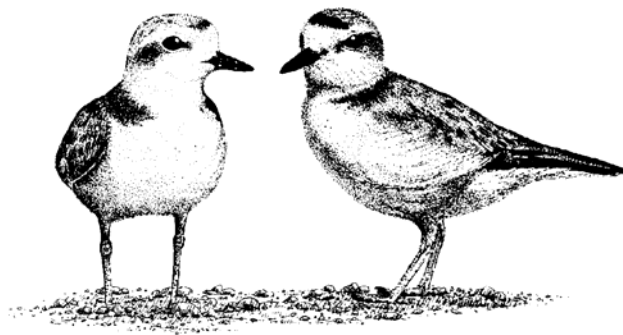
On the cover: photo of Snowy Plover by Joe Higbee; background of Midway Beach by Scott Pearson. Black and white illustration on title page by Darrell Pruett



This work was supported in part by personalized and endangered species license plates



Periodic Status Review for the Snowy Plover in Washington



Prepared by
Derek W. Stinson

Washington Department of Fish and Wildlife
Wildlife Diversity Division, Wildlife Program
600 Capitol Way North
Olympia, WA 98501-1091

January 2016

TABLE OF CONTENTS

ACKNOWLEDGMENTS	ii
EXECUTIVE SUMMARY	iii
DESCRIPTION AND LEGAL STATUS	1
DISTRIBUTION.....	1
NATURAL HISTORY	1
POPULATION AND HABITAT STATUS	3
Habitat Status–Nesting Areas	6
Factors Affecting Snowy Plovers in Washington	6
Adequacy of Regulatory Mechanisms	6
Habitat Degradation, Predation, and Human Disturbance	7
MANAGEMENT ACTIVITIES.....	8
CONCLUSIONS AND RECOMMENDATION.....	11
REFERENCES CITED.....	12
Personal Communication	15
APPENDIX A. Public Comments on the DRAFT periodic status review.....	16
Washington State Status Reports, Periodic Status Reviews, Recovery Plans, and Conservation Plans.....	18

LIST OF TABLES

Table 1. Mean counts ^a (95% CI) of breeding adults at four nesting areas in Washington, 2006-2015 (Pearson et al. 2015, unpublished data).	3
Table 2. Number and 4-year average of breeding pairs and chicks fledged per adult male Snowy Plover in Washington, 2006-2015 (Pearson et al. 2009b, 2010, 2012, 2013, 2014b, 2015, unpubl.).....	4

LIST OF FIGURES

Figure 1. Snowy Plover	1
Figure 3. Snowy Plover eggs in a nest scrape.....	2
Figure 4. Trend of average yearly count of adult plovers for all Washington sites, 2006–2014	3
Figure 5. Public lands and Snowy Plover nest locations in Washington, 2010-2014.....	5
Figure 6. Snowy Plover nest success in Washington, 2006-2015	9
Figure 7. Brochure created for distribution during razor clam tides.....	10

ACKNOWLEDGMENTS

The draft was improved by reviews by Scott Pearson, Daniel Elbert, Cyndie Sundstrom, Eleanor Gaines, Anthony Novack, William Ritchie, Penny Becker, Gerry Hayes, and Kevin Kalasz. Copies of reports or survey data were provided by William Ritchie.

EXECUTIVE SUMMARY

The Pacific coast population of Snowy Plover (*Charadrius nivosus*) breeds from Midway Beach, Washington, south to Bahia Magdalena, Baja California, Mexico, and winters mainly in coastal areas from southern Washington to Central America. The Snowy Plover is currently state listed as endangered in Washington and a state recovery plan was completed in 1995 (Richardson 1995). The Pacific coast population of the Snowy Plover was listed as threatened by the U. S. Fish and Wildlife Service in 1993, and a federal recovery plan was completed in 2007 (USFWS 2007).

Snowy Plovers currently nest at 3 sites in Washington, and the 2015 population was estimated at 77 adults. Factors affecting Snowy Plovers in Washington include degradation of habitat by introduced beach grasses, human disturbance during the nesting period, and low productivity due to predation on eggs and chicks. In 2013, a new predator management strategy that includes direct hazing and removal of crows and ravens, the main nest predators, was initiated on Washington nesting beaches and may be contributing to improved nesting and fledging success in recent years. A population viability analysis suggested that the West Coast population would not reach the recovery objective of 3,000 individuals identified in the federal recovery plan, without additional habitat restoration (Hudgens et al. 2014). As a result of this need for additional Snowy Plover habitat, control of beachgrass and management to reduce human disturbance are ongoing.

According to the Washington State Recovery Plan for the Snowy Plover, the species will be considered for down listing to threatened when the state supports a 4-year average of at least 25 breeding pairs that fledge an average of at least one young per adult male per year at two or more nesting areas with “secure” habitat. In 2015, the 4-year average attained 26 breeding pairs at the two main sites for the first time in many years, and they averaged ≥ 1.0 fledgling/male in 2011, 2014, and 2015. In 2015, an estimated 69–77 chicks fledged, the highest number since formal surveys began in 2007.

Although the Snowy Plover population in the region appears to be increasing as a result of management actions in Washington and Oregon, the number in Washington is still very small. It is recommended that the Snowy Plover remain listed as an endangered species in Washington at this time.

DESCRIPTION AND LEGAL STATUS

The Snowy Plover (*Charadrius nivosus*) is a small shorebird (about 6.5 inches [15-17 cm] long; approximately 1.4 oz [40 g]); they are pale gray-brown above and white below, with dark bill and legs (Page et al. 1995). The Snowy Plover was formerly considered conspecific with the Old World *C. alexandrinus* (Kentish Plover) (Chesser et al. 2011). The birds in Washington and along the Pacific coast are the Western subspecies (*C. n. nivosus*), and are part of the Distinct Population Segment listed under the U. S. Endangered Species Act (USFWS 1993, 2006).



Gregg Thompson

Figure 1. Snowy Plover (photo by Gregg Thompson).

The species was listed as endangered in Washington in 1981, and a state recovery plan was completed in 1995 (Richardson 1995). The Pacific coast population of the Snowy Plover was listed as threatened by the U. S. Fish and Wildlife Service in 1993, and a federal recovery plan was completed in 2007 (USFWS 2007). Critical Habitat was designated in 2005 and revised in 2012 (USFWS 2012). According to the U.S. Fish and Wildlife Service (2007), “Habitat degradation caused by human disturbance, urban development, introduced beachgrass (*Ammophila* spp.), and expanding predator populations have resulted in a decline in active nesting areas and in the size of the breeding and wintering populations”.

DISTRIBUTION

The Pacific coast population of the Snowy Plover breeds from southwestern Washington, south to Bahia Magdalena, Baja California, Mexico and winters mainly in coastal areas from southern Washington to Central America (Page et al. 1995). In Washington, Snowy Plovers historically nested in five areas including Graveyard Spit, Leadbetter Point, Damon Point, Westport Spit, and Copalis Spit (Richardson 1995). In recent years, they’ve only nested on Midway Beach, Graveyard Spit, Damon Point, and Leadbetter Point (Pearson et al. 2007). During the 2009-2011 nesting seasons, only Leadbetter Point and Midway Beach were occupied and Graveyard Spit was again occupied in 2012–2014.

NATURAL HISTORY

Habitat requirements. Snowy Plovers nest primarily above the high tide line in unvegetated or sparsely vegetated areas of coastal



Figure 2. Snowy Plover nesting in Washington, 2006-2014.

beaches. Less common nesting habitats include bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars. In winter, Snowy Plovers are found on many of the beaches used for nesting as well as on beaches where they do not nest, in man-made salt ponds, and on estuarine sand and mud flats. Snowy Plovers also seem to nest semi-colonially (territorial, but aggregating at low densities) (Pearson et al. 2014a).

Diet and foraging. Snowy Plovers are primarily visual foragers, using the run-stop-peck method of feeding typical of *Charadrius* species. They forage on invertebrates in the wet sand and amongst surf-cast kelp within the intertidal zone, and in dry sand areas above the high tide. They sometimes probe for prey in the sand and pick insects from low-growing plants. They eat marine and terrestrial invertebrates; during the breeding period on the Oregon coast, adult Snowy Plovers fed on sand hoppers (Orchestoidea) and tiny fish (USFWS 2007). Other food items reported include Pacific Mole Crabs (*Emerita analoga*), Striped Shore Crabs (*Pachygrapsus crassipes*), polychaetes (Neridae, *Lumbrineris zonata*, *Polydora socialis*, *Scoloplos acmaceps*), amphipods (*Corophium* spp., *Ampithoe* spp., *Allorchestes angustus*), tanadacians (*Leptocheilia dubia*), shore flies (Ephydriidae), beetles (Carabidae, Buprestidae, Tenebrionidae), clams (*Transenella* sp.), and ostracods (Page et al. 1995).

Reproduction. Males defend nesting territories from conspecifics, but “off-duty” parents often forage with other plovers in non-defended areas of wet sand up to several kilometers from the nest (Page et al. 1995). Snowy plovers initiate clutches of eggs (3 typically) from April through July. Nests are a simple shallow scrape on open sand, or sometimes under an object or clump of vegetation. Many clutches are lost to predators, or abandoned due to human disturbance during the incubation period of about 27 days. The precocial chicks are led from the nesting territory shortly after hatching and quickly become mobile and elusive. The female leaves the mate and brood within a few days of hatching to obtain a new mate and initiate a new nest, while the male rears the brood. Females attempt to produce two or occasionally three clutches during a season. Males may also remate to initiate a second nest after the brood learns to fly.



Figure 3. Snowy Plover eggs in a nest scrape.

Migration and dispersal. Snowy Plovers are a partial migrant, with some individuals residing year-round in their breeding areas and others migrating, typically further south, for the winter. Many Washington birds winter locally, while some winter in Oregon and northern California, and a very small number have been observed further south. In northern California, chicks that fledged early in the season were more likely to be migratory, while later fledging birds more often joined a local post-breeding flock and became winter residents (Colwell et al. 2007). In central California, most birds (64%) settled <10 km from natal sites, but 16% moved >50 km for their first breeding period (maximum = 360 km for males, 790 km for females; Stenzel et al. 2007). Colwell et al. (2007) reported that the average dispersal distance for both males and females in northern California approached 20 km (median distances were ~5 km; similar to those reported by Stenzel et al. 2007).

The Pacific coast populations of Snowy Plovers are linked by occasional dispersal between breeding areas. Plovers banded on nesting areas in California and Oregon have been observed on Washington nesting beaches during the breeding period, and birds banded in Washington have been observed elsewhere, including 2 banded in 2013, observed in Oregon in 2014 (Lauten et al. 2014). Colwell et al. (2007) recorded several plovers hatched from northern California nests that bred at Leadbetter Point or Midway Beach, Washington.

POPULATION AND HABITAT STATUS

Snowy Plovers are believed to have nested at about 78 locations on the U.S. West Coast prior to 1970, but today only 28 major nesting areas remain (USFWS 2007). Historically, five areas supported nesting plovers in Washington (Fig. 2; Richardson 1995), but that number has slowly declined to just 2 or 3 areas since 2009 (Table 1). The standardized range-wide Breeding Window Survey in 2015 tallied 2,260 adult Snowy Plovers along the U.S. Pacific Coast (<http://www.fws.gov/arcata/es/birds/WSP/plover.html>).

Table 1. Mean counts^a (95% CI) of breeding adults at four nesting areas in Washington, 2006-2015 (Pearson et al. 2015, unpublished data).

Year	Damon Point	Midway	Graveyard	Leadbetter Pt.	Total
2006	1 (0–2)	21(14–28)	2 (-1–5)	35 (26–45)	59 (48–70)
2007	0	18 (14–21)	2 (-1–4)	25 (20–30)	44 (36–53)
2008	0	14 (10–19)	1 (0–2)	32 (23–40)	47 (33–60)
2009	0	15 (13–17)	0	17 (10–24)	31 (23–39)
2010	0	14 (11–18)	0	21 (17–26)	36 (33–38)
2011	0	19 (8–30)	0	12 (6–19)	31 (15–47)
2012	0	14 (5–23)	2 (0–3)	18 (6–29)	33 (15–52)
2013	0	20 (16–24)	4 (1–6)	20 (19–20)	43 (41–45)
2014	0	11(9–13)	7 (6–8)	24 (21–28)	41(40–43)
2015	0	24 (19-33)	8(3-11)	43 (34–54)	77 (65-98)

^aBreeding window protocol with ~3 replicates.

Between 2006 and 2011, the Washington population declined, but the population has been stable or increased during the last 4 years (Fig. 4). Given the relatively low fledging rates, the population decline in Washington would likely be greater without immigration of birds from Oregon and California. Many birds banded in Oregon and California as chicks, are observed at Leadbetter and Midway Beach in their first potential breeding period. In 2014, nest success was high—of 47 monitored nests, 32 (68%) hatched (later observation of broods and remains of additional nests indicated that 39 of 57 known nests were successful) and 45–49 chicks fledged (8–10 at Midway, 14 at Graveyard Spit, and 23–25 at Leadbetter Point) (Pearson et al. 2015). In 2015, 69–77 chicks fledged (C. Sundstrom, pers. comm.).

Population modeling indicates that productivity of at least 1 chick fledged per breeding male per year is needed for a stable population and productivity of 1.2 or more chicks fledged per breeding male should increase population size at a moderate pace (Nur et al. 1999). In 2015, the average number of young fledged per adult male in Washington was 1.74 (range = 1.24–2.20). The Washington population clearly produced ≥ 1 fledgling/male in 2011, 2014, and 2015 and about 1 fledgling/male in 2013, but fledged fewer than 1.0/male in 2012; (Table

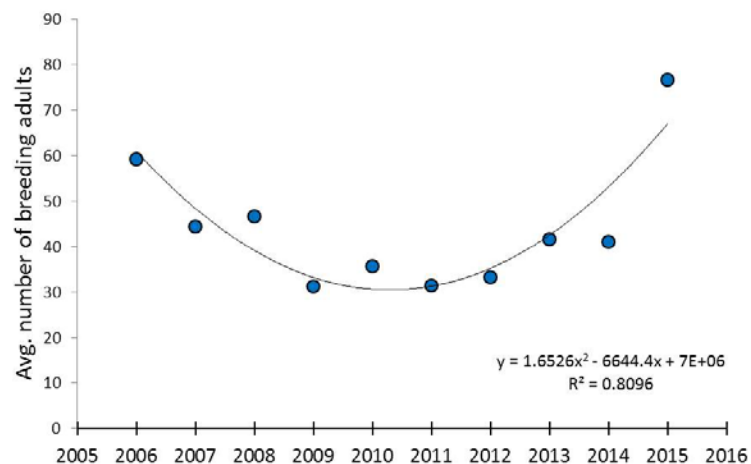


Figure 4. Trend of average yearly count of adult plovers for all Washington sites, 2006–2015 (S. Pearson, unpubl. data).

2; Pearson et al. 2013, 2014b, 2015, C. Sundstrom pers. comm.). Nesting and fledging success likely has improved since predator management began in 2013, but fledging success was also high in 2011, prior to predator management.

Eberhart-Phillips and Colwell (2014) reported that the Washington and northern California populations appeared to be ‘sinks,’ which are supported by immigration from the more productive areas. For example, Colwell et al. (2013) reported that in 2013, 1/3 of breeding adults in northern California came from elsewhere, primarily Oregon.

Herman and Colwell (2015) reported that in northern California, reproductive success was highly skewed toward a few individuals, with 13% of males and 14% of females producing 50% of fledglings. Most adults (72%) fledged <2 juveniles over their lifetime, and 40% of adults fledged no young. A skew in lifetime reproductive success, with most individuals producing few or no offspring, is a common pattern in birds, including shorebirds. Higher productivity from nests on gravel substrates suggested that corvids were less able to detect eggs and chicks there (Herman and Colwell 2015). The high variances in reproductive success would be expected to reduce the effective population size (N_e), decreasing genetic diversity and increasing the potential for inbreeding depression (Colwell and Pearson 2011, Herman and Colwell 2015).

Hudgens et al. (2014) reported that even sites projected to be sink habitat based on their demographic rates play an important role in maintaining and recovering Snowy Plovers if they represent substantial protected habitat; they also suggested that habitat restoration increased the metapopulation size regardless of where habitat was restored. The population viability analysis conducted by Hudgens et al. (2014) suggested that the West Coast population would not reach the recovery objective of 3,000 identified in the federal recovery plan (USFWS 2007), without additional habitat restoration. It also suggested that range-wide demographic objectives (e.g. 1 fledgling/male/year) may not be appropriate and consistently attainable for all recovery units, in part because productivity is affected by density, with populations at carrying capacity showing lower productivity (Hudgens et al. 2014).

State recovery objectives. According to the Washington State Recovery Plan for the Snowy Plover (Richardson 1995), the Snowy Plover will be considered for down listing to threatened when there is:

1) *A minimum 4-year average of at least 25 breeding pairs.*

The four-year average in Washington attained 26 breeding pairs in 2015 (Table 2);

2) *Average production of at least one fledged young per breeding pair per year.*

Production met this objective in 2011, 2014, and 2015, and was about 1 fledgling/male in 2013; productivity in 2006 was unclear due to incomplete data; the objective was not met in

Table 2. Number and 4-year average of breeding pairs and chicks fledged per adult male Snowy Plover in Washington, 2006-2015 (Pearson et al. 2009b, 2010, 2012, 2013, 2014b, 2015, unpubl.).

Year	No. chicks fledged/male	No. breeding pairs (95%CI)	4-year average of breeding pairs
2006	1.02 (range = 0.76–1.45) ^a	32 (26–39)	-
2007	0.91 (range = 0.77–1.13)	24 (19–28)	-
2008	0.46 (range = 0.36–0.64)	27 (19–35)	-
2009	0.71 (range = 0.5–0.96)	17–18 (13–22)	25 (19-31)
2010	0.57 (range = 0.53–0.62)	21–22 (20–23)	22.5 (18-27)
2011	1.59 (range = 1.4–1.66)	22 (11–33)	22 (16-28)
2012	0.68 (range = 0.46–0.94)	19	20 (11-20)
2013	1.04 (range = 0.92–1.18)	22–24	21 (13-20)
2014	1.88 (range = 1.67–2.13)	23–27	22 (14-21)
2015	1.74 (range = 1.24–2.2)	42 (35-55)	26 (20-32)

^a2006 data does not include Leadbetter Point because of inadequate number of surveys.

2007-2010 and 2012;

and there are,

3) *Two or more nesting areas with “secure” habitat.*

There are 3 current nesting areas (Midway Beach, Graveyard Spit, and Leadbetter Point); Leadbetter is the only nesting area with secure habitat (see habitat discussion below).

Federal recovery objectives. The primary recovery criteria for Recovery Unit 1 (Washington and Oregon) in the federal Recovery Plan for the Snowy Plover are to maintain 250 breeding adults for 10 years, and a 5-year average productivity of at least 1.0 fledged chick per adult male (U.S. Fish and Wildlife Service 2007). In 2014, estimates of breeding adults totaled 368 birds (41 in Washington; and 327 birds in Oregon– the highest since intensive monitoring began in 1990; Lauten et al. 2014, Pearson et al. 2015). The number of chicks fledged/male in Unit 1 was 1.71, and the 5-year average was 1.26 young/male. In Washington, the average chicks fledged /male was 1.15, but this was driven by 2011, an unusual year, and most years did not meet this objective. With predator management, this objective was met again in 2014. An additional criteria is that mechanisms are in place to assure long-term protection and management of habitat to maintain the subpopulation sizes and productivity (USFWS 2007).

Wintering numbers. A total of 71 plovers were detected in January 2014 at Midway Beach and Leadbetter Point, during the Winter Window Survey in Washington, the highest count since the survey began in 2007; many of the plovers observed were unbanded birds indicating that they are likely local birds, or hatch-year birds from Oregon (W. Ritchie, pers. comm.). The number detected ranged from 19 to 35 plovers from 2009–2013 (Pearson et al. 2014b, 2015). Only 22 were detected during the survey in

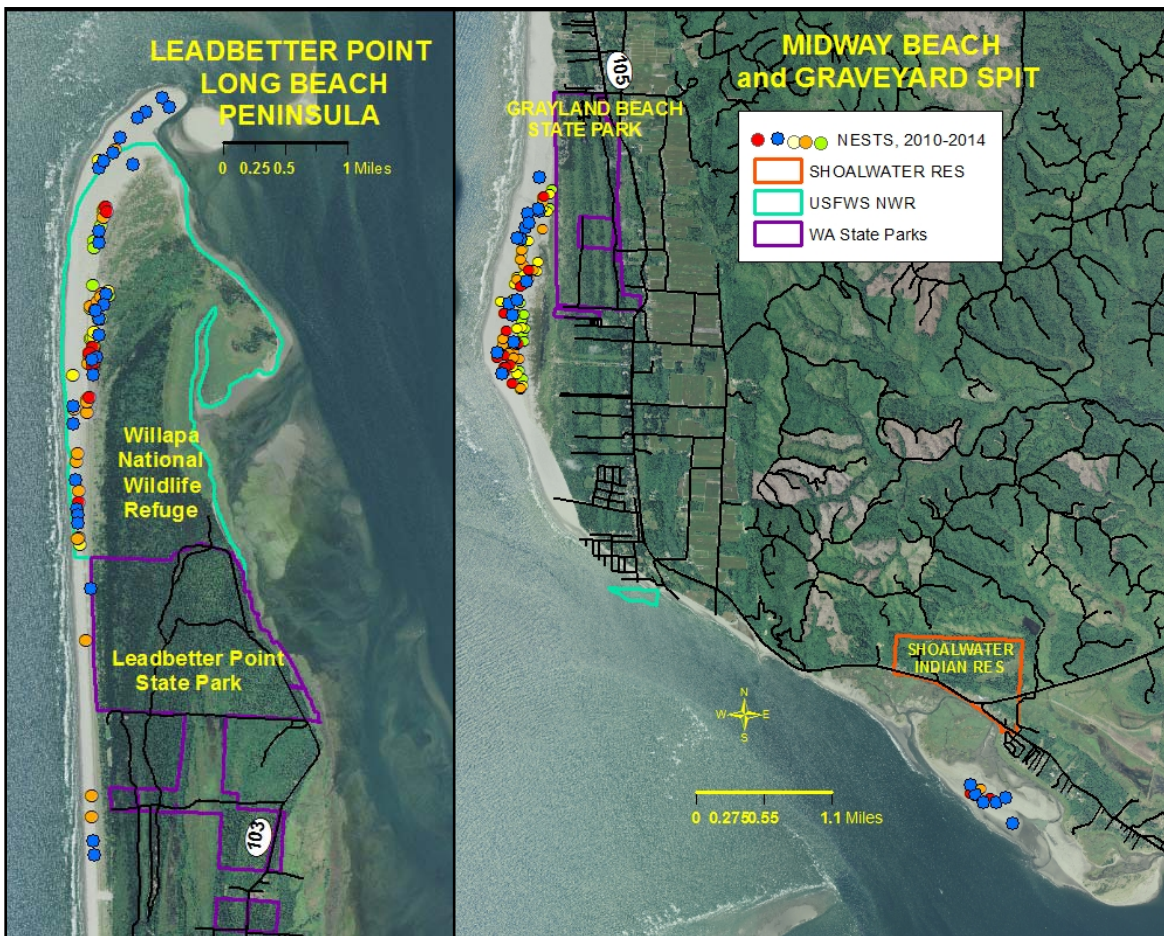


Figure 5. Public lands and Snowy Plover nest locations in Washington, 2010-2014.

2015, but numbers detected the day of the survey were not very representative of wintering numbers (C. Sundstrom, pers. comm.).

Habitat Status–Nesting Areas

Most Snowy Plover nests have been on Willapa National Wildlife Refuge (NWR), state park, and Shoalwater Bay Tribe lands (Fig. 5). There is also some nesting on private land at Midway Beach, and Graveyard Spit. An objective in the state recovery plan calls for at least two nesting areas on “secure” habitat. Leadbetter Point is in the NWR, but it is not clear if the other main site (Midway, also called Grayland) meets this definition due to mixed ownerships and disturbance issues. Despite seasonal postings intended to restrict human presence in the dune areas where Snowy Plovers nest, recreational disturbances at coastal sites continue, including by off-leash dogs, vehicles, bicycles, horseback riders and clam diggers (Richardson 1995; C. Sundstrom, pers. comm.).

Graveyard Spit is a 1.8 mi long sand spit east of Cape Shoalwater, across the mouth of Willapa Bay from Leadbetter Point in Pacific County. It is owned by the Shoalwater Bay Indian Tribe and private landowners (Richardson 1995). There is also a recent increase in disturbance there from beach walkers and ATV use from residential and commercial establishments on the nearby mainland.

These sandy coastal nesting areas are also dynamic, and winter storms can change the area of sand available, or create or eliminate islands; for example, Leadbetter Point changes shape year to year. In addition, these coastal habitats are particularly vulnerable to climate change related factors such as sea level rise, beach erosion, and storm surges which may cause declines in important habitat. Future changes may affect the area of sandy habitat available, and affect human access and the level of disturbance. As described below (see *Habitat Degradation...*), all the nesting beaches are affected to some degree by introduced invasive vegetation, particularly beachgrasses (*Ammophila* spp.).

Factors Affecting Snowy Plovers in Washington

Adequacy of Regulatory Mechanisms

Federal protection. The Pacific coast population of the Western Snowy Plover was listed as threatened under the U.S. Endangered Species Act by the U. S. Fish and Wildlife Service in 1993 (USFWS 1993). Critical Habitat was designated in 2005 and revised in 2012 (USFWS 2012). The Endangered Species Act protects endangered and threatened species and their habitats by prohibiting take of listed animals and the interstate or international trade in listed plants and animals, including their parts and products, except under Federal permit. Critical habitat designation affects actions that have a federal nexus (federal entity funds, authorizes or carries out an action) occurring on designated lands.

Critical habitat. In 2012, the U.S. Fish and Wildlife Service designated approximately 24,527 acres of coastal habitat in Washington, Oregon and California as critical habitat for the Pacific Coast population of the Snowy Plover (USFWS 2012). The designation revises the Service’s 2005 critical habitat designation for the species. Designated critical habitat includes coastal beach-dune ecosystem habitat along the Pacific Coast essential to the survival and recovery of the plover. A total of 60 units were designated, with 4 of those units in Washington totaling 6,077 acres. These included Copalis Spit (WA1), Damon Point (WA2), Midway Beach and Shoalwater/Graveyard Spit (WA3), and Leadbetter Point and Gunpowder Sands (WA4).

Critical habitat identifies geographic areas containing features essential for the conservation of a

threatened or endangered species, and which may require special management considerations or protection. Designation of critical habitat does not affect non-federal land ownership and has no impact on private landowners taking actions on their land that do not require federal funding or permits. It is used to notify federal agencies of areas that must be given special consideration when they are planning, implementing, or funding activities that may affect designated critical habitat.

State, county, and city protections. The Snowy Plover is protected from ‘take’ as an endangered species in state law (RCW 77.12.020, RCW 77.15.130). Protecting plovers from disturbance that can crush eggs and/or chicks, or lead to nest abandonment or predation is a complicated issue, which requires considerable attention. The area occupied by nesting plovers on the nesting beaches shifts and changes in size during and between nesting seasons and requires monitoring to adapt signage, symbolic fencing, and enforcement presence to the current situation. Also managing human activities requires cooperation between multiple agencies with different mandates.

Shoreline Management Act. The ocean beaches are considered ‘Shorelines of Statewide Significance’ under Washington’s Shoreline Management Act (SMA). Preferred uses, in order of priority, are to "recognize and protect the state wide interest over local interest; preserve the natural character of the shoreline; result in long term over short term benefit; protect the resources and ecology of the shoreline; increase public access to publicly owned shoreline areas; and increase recreational opportunities for the public in the shoreline area" (RCW 90.58.020). The SMA establishes a balance of authority between local and state government, with cities and counties as the primary regulators. The state Department of Ecology acts in a support and review capacity, providing technical assistance, and funding in the form of grants. Ecology is also required to review certain kinds of permits (*conditional use* and *variance permits*) for compliance with state law, and must review local shoreline master programs to ensure they also comply. Under SMA, each city and county with "shorelines of the state" must prepare and adopt a Shoreline Master Program that is based on state laws and rules but is tailored to the specific geographic, economic and environmental needs of the community. The local Shoreline Master Program is essentially a shoreline-specific combined comprehensive plan, zoning ordinance, and development permit system. Most shoreline master programs were originally written between 1974 and 1978. Ecology adopted updated Guidelines in 2003, and Pacific and Grays Harbor counties are in the process of a comprehensive update of their shoreline programs to meet the requirements of the new Guidelines.

Habitat Degradation, Predation, and Human Disturbance

Three main factors are thought to limit recovery of Snowy Plovers via negative effects on breeding productivity: 1) excessive predation of eggs, chicks, and adults; 2) encroachment of invasive vegetation that degrades breeding habitats; and 3) human activity, which causes direct mortality of eggs, chicks, and adults, facilitates predation, or indirectly affects the distribution of plovers (USFWS 2007).

Tall perennial beachgrasses can eliminate sparsely vegetated sand used for nesting by Snowy Plovers. Two species, European Beachgrass (*Ammophila arenaria* (L.) Link) from Europe, and American Beachgrass (*Ammophila breviligulata* Fern.) from eastern North America (Seabloom and Wiedemann 1994), have become naturalized along the West Coast of North America and replaced much of the native vegetation that comprised foredune habitat (Wiedemann 1987). Beachgrass control has been ongoing at Willapa National Wildlife Refuge to restore nesting areas for Snowy Plovers.

Habitat loss due to beach stabilization and development has eliminated many nesting areas. The number of nesting locations in California, Oregon and Washington has declined 68% from the number known historically. Factors affecting Snowy Plover habitat include development on beaches and interruptions of the dynamic erosion/accretion processes by jetties, the Columbia River dams (which trap sediment), and other structures.

Human activity on beaches, such as pedestrians, dog-walking, clam digging, horseback riding, and vehicular traffic, during the plover breeding period can cause nest failure directly through the destruction of eggs and chicks, or indirectly by flushing adults, and exposing eggs to predation by American Crows (*Corvus brachyrhynchos*) and Common Ravens (*Corvus corax*). Mortality of Snowy Plover chicks at Point Reyes National Seashore, California, was about three times greater on weekends and holidays than on weekdays (Ruhlen et al. 2003). Human related disturbance negatively affects hatching success (Warriner et al. 1986, Schulz and Stock 1993). Disturbances to wintering Snowy Plovers were 16 times higher at a public beach than at beaches with little or no public access (Lafferty 2001a). Humans, dogs, crows and ravens, and other birds are the main sources of disturbance. In addition, Snowy Plover feeding rates declined in response to disturbance (Lafferty 2001a).

Although Washington code (WAC 352-37-030) prohibits driving on dry sand areas of the beach where nesting occurs, this is difficult to monitor and enforce, and violations occur. Where not prohibited, vehicle traffic is allowed on the wet, packed sand portion of beaches. Once the eggs hatch, chicks often forage on the wet sand where foraging may be interrupted by human activity, and there is more potential for collisions with vehicles. High levels of traffic, which occurs during razor clam seasons at both Midway Beach, and Leadbetter Point, can result in destruction of nests (Pearson et al. 2014, C. Sundstrom, pers. comm.), and likely higher levels of abandonment and loss to predation, and reduced chick survival (Lafferty 2001b, 2006, Ruhlen et al. 2003, USFWS 2007). Razor clam season days are popular and require continued management, outreach and enforcement attention to minimize conflicts with nesting plovers. Eggs and chicks may also experience high predation rates from the high populations of ravens and crows associated with human food sources, as well as occasional predation by Northern Harriers (*Circus cyaneus*) and Great Horned Owls (*Bubo virginianus*). Peregrine Falcons (*Falcon peregrinus*) take chicks and adults.

MANAGEMENT ACTIVITIES

Monitoring. Monitoring is needed to assess progress toward the state and federal recovery goals and to inform recovery actions. Monitoring is also necessary to evaluate the impact of conservation actions on Snowy Plover populations, such as the use of wire nest enclosures to exclude potential predators and the effectiveness of habitat restoration efforts. Washington Department of Fish and Wildlife (WDFW) coordinates surveys with Willapa NWR, the Shoalwater Bay Tribe, USFWS, and Oregon Biodiversity Information Center. This coordinated effort was initiated in 2006, although state-specific monitoring was initiated much earlier. Surveys are conducted annually to determine the number of breeding Snowy Plover adults and to estimate fledging success at sites in Washington. The Breeding Window Survey occurs annually in late May-June along the entire U.S. Pacific coastline where Snowy Plovers are known to nest. The specific dates for a particular year are selected by the USFWS and all participants follow the methods of Elliot-Smith and Haig (2006a). The Winter Window Survey occurs annually in January along the entire U.S. Pacific coastline where Snowy Plovers nest or historically nested. All sites are surveyed using the same protocol (Elliot-Smith and Haig 2006b), during a specific week and the USFWS selects the dates for any given year.

Predator management. Egg and chick predation, particularly where crows and ravens benefit from human sources of food, is an important factor limiting Snowy Plover population growth. Predator management has been a component of plover conservation in most recovery regions. Wire nest enclosures were used for several years to protect nests from predators (since 1992 in Oregon; 2006 in Washington); they succeeded in improving nest success, but may have resulted in increased predation on adults and chicks, require time to install and maintain, and may not increase fledging success (Hardy and

Colwell 2008, Dinsmore et al. 2014, Pearson et al. 2014a). Pearson et al. (2014a) recommended that exclosures not be used at sites with resident or migrant falcons, and where used, they should be monitored for effectiveness. No exclosures were used in 2014 or 2015 (Pearson et al. 2015). In 2013, an Integrated Predator Damage Management Program was initiated at Willapa NWR to identify predators and minimize nest predation, through a contract with USDA-APHIS. The only observed nest predators were crows and ravens. Communication between plover biologists and wildlife specialists helped focus activities on locations and individual predators that were apparently causing the most plover depredations. Management activities included observing predator activities in plover nesting sites and then conducting targeted dispersal or lethal removal as appropriate. The success of the predator management program will be determined by comparing nest and fledging success, post-hatching survival rates, and breeding adult population size before and after predator removal activities. The high nest success in 2013 and 2014 (Fig. 6) was likely a result of active predator management, but further study is needed. Productivity in Oregon, as measured by fledging success, brood success, number of fledglings/male, and overall number of fledglings produced, have all improved since active predator management was implemented in 2004 (Lauten et al. 2014).

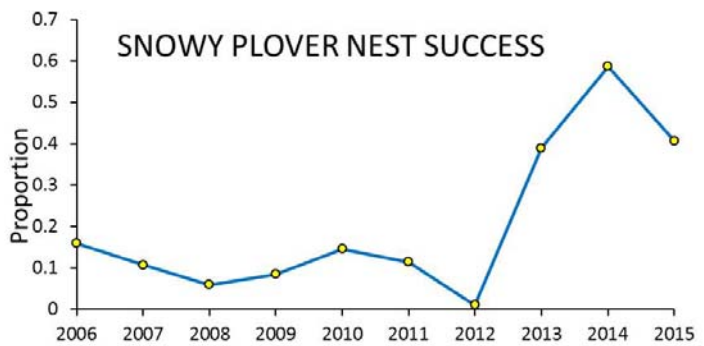


Figure 6. Snowy Plover nest success in Washington, 2006-2015 (predator management began in 2013).


Habitat restoration. Hudgens et al. (2014) stated that restoration sites that promote dispersal to relatively isolated populations in Washington and northern California may stabilize these populations. A habitat Restoration Area (HRA) at Leadbetter Point which is mostly cleared of non-native beachgrass using mechanical and chemical methods, has increased in size annually since Willapa NWR began work in 2001. The Leadbetter HRA is probably the largest on the Pacific coast, now totaling about 400 acres, and has been an important nesting area for the Washington population. Soon after its creation, plover nesting activity was concentrated there (e.g. 2007-2011); but nesting has been more dispersed to include areas outside the HRA in recent years. WDNR has been working on control of invasive vegetation, particularly Scotch Broom (*Cytisus scoparius*), on Damon Point; 28 ac were controlled during 2014-2015 (R. Mitchell, pers. comm.), and they are seeking funding for additional work.

Management of human disturbance. Several management actions intended to minimize human disturbance of nesting Snowy Plovers have been conducted in Washington since their state-listing in 1981. More detail is provided in Richardson (1995) and Pearson et al. (2007-2014b, 2015). Recent actions include:

- Closure of nesting beaches above the wet sand using symbolic fencing (rope) and signs. Midway Beach Road access, which cuts through the plover nesting area with the highest use, has been closed to vehicle use since 2009. During 2013-2015, a foot trail was established on the Midway Beach Road right-of-way, with rope to allow access, but minimize disturbance. This trail was closed in 2015, when plover nests were found on or adjacent to the trail.
- Since 2012, WDFW, State Parks, and USFWS have coordinated enforcement activities during clam tides which reduced the amount of human activity in active nesting areas. USFWS and WDFW provided funding for two portable toilets that were placed on Willapa NWR beaches during the busiest razor clam weekend days during the nesting season to discourage people from traversing the dunes.
- In spring 2015, WDFW produced an educational brochure focused on alleviating potential

Razor Clamming and Nesting Birds


How you can help protect Snowy Plovers and Streaked Horned Larks



RAZOR CLAM DIGGING IS A HIGHLY POPULAR pursuit that draws hundreds of thousands of people to Washington's coastal beaches every year. Most diggers can harvest their limit of clams in an hour or two and still have plenty of time to enjoy beachcombing, kite-flying and a wide range of other seaside activities.

While on the beach, clam diggers should be aware that two bird species – the Snowy Plover and the Streaked Horned Lark – nest in the soft sand above the high tide line. Both birds are listed as threatened under the federal Endangered Species Act.

Normal nesting season generally runs from April 1 through September 15. During this time, it is very easy to disturb the birds and their vulnerable young.




A Snowy Plover nests in the dry sand.


Watch for nesting birds

Nesting season for two federally protected shorebirds – the Snowy Plover and the Streaked Horned Lark – begins in spring when thousands of razor clam diggers are also on the beach. Wildlife managers ask that diggers take care to avoid disturbing these small birds by steering clear of their nesting areas. Both species are listed as threatened under the federal Endangered Species Act.


For more information, contact:

Washington Dept. of Fish and Wildlife
48 Devonshire Rd.
Montesano WA 98563
(360) 249-4028






A Streaked Horned Lark chick sits in the dunes.




Watch your step: it would be easy to trample this Streaked Horned Lark nest and never know it.



How to protect nesting birds


- **Beach driving:** When driving to clam-digging areas, enter the beach only at designated access points and stay on the hard-packed sand below or near the high tide line.
- **Follow the rules:** Observe all agency regulations, and never walk past nesting birds' signs into the upper parts of the beach.
- **Keep dogs on a leash:** Don't allow your dog to play in the dunes or soft sand where birds may be nesting.
- **Avoid the dunes:** Birds often nest in these areas. If you need to take a break from clam digging, use the restrooms located at most beach-access points.
- **Kites:** Do not fly kites near nesting areas. To small shorebirds, kites look like predators.
- **Move on:** Limit the amount of time you spend near nesting areas. Once you've finished digging, move to another location.



LEADBETTER POINT
Long Beach Peninsula


Active nesting areas for Snowy Plovers and Streaked Horned Larks have been identified on parts of Twin Harbors Beach and on the Long Beach Peninsula near Leadbetter Point.

Wildlife managers urge clam diggers to take special care to avoid disturbing nesting birds in these areas.



Twin Harbors

PRIME NESTING AREAS



OCEAN

WET SAND - People Area

NESTING AREA

DUNE

DRY SAND - Plover Area

Figure 7. Brochure created for distribution during razor clam tides.

conflicts during razor clam seasons (Fig. 7). Willapa NWR distributed a “Share the Beach” brochure informing the public about plover conservation and habitat restoration.

- At Leadbetter Point, the beach is closed to vehicle traffic north of Oysterville Road from 15 April to the day after Labor Day, except driving is allowed on the wet sand during razor clam openings.

Research. Pearson et al. (2014a) described the influence of habitat characteristics, proximity of other Snowy Plover nests, and nest exclosures on nest survival in Washington (<http://wdfw.wa.gov/publications/01672/>). This research provides important information for restoration activities (e.g., size, and vegetation structure) and helps inform the use of nest exclosures to improve nest success. In collaboration with the Oregon Biodiversity Information Center and Steve Dinsmore, WDFW personnel completed a manuscript that examines chick survival in Oregon and Washington for the 28 days post-hatching (submitted for peer-review). This information may play a critical role in evaluating the effectiveness of predator management on chick survival.

CONCLUSIONS AND RECOMMENDATION

From 2006–2009, the number breeding adult Snowy Plovers counted in Washington declined from 59 to 31. Counts at Damon Point declined from 15 adults in 1985 to 0 in 2007, perhaps as a result of invasion by vegetation, including Scotch Broom that eliminated much of the open sand habitat. The main issues affecting plover recovery include habitat limitation, predation, and human-related disturbance. Band re-sight data and demographic modeling conducted before predator management suggested that the Washington sites were dependent upon immigration from populations further south to maintain their populations. However, modeling by Hudgens et al. (2014) indicated that habitat restoration may help stabilize small populations like Washington and northern California, and that even these small populations contribute to reaching range-wide recovery objectives for the listed population.

Plover numbers have recovered somewhat, particularly since management of ravens and crows at nesting beaches began in 2013; in 2015, 59 birds were counted during the Breeding Window Survey, and 69–77 chicks fledged (C. Sundstrom, pers. comm.); the highest number fledged during any year from 2007–2012 was ~25. Plovers are also once again nesting on Graveyard Spit and 5 were observed on Gunpowder Sands east of Leadbetter Point. The HRA on Leadbetter Point is now 400 acres, and management of human disturbance on nesting beaches has been ongoing. Further recovery will require that management of crows, ravens, human disturbance, and maintenance of the Leadbetter HRA continues. Habitat restoration at Damon Point and Oyhut Wildlife Area may expand available nesting area as the population recovers.

While there appears to be improvement in both the number of pairs and nesting success, the population exceeded 25 pairs for the first time in recent decades in 2015. Snowy Plovers have not met the recovery objective of two secure nesting areas required to consider down-listing to threatened. It is recommended that the species remain state-listed as endangered.

REFERENCES CITED

The references cited in the Periodic *Status Review for the Snowy Plover* are categorized for their level of peer review pursuant to section 34.05.271 RCW, which is the codification of Substitute House Bill 2661 that passed the Washington Legislature in 2014. A key to the review categories under section 34.05.271 RCW is provided in Table A. References were categorized by the author in October 2015.

Individual papers cited cover a number of topics discussed in the report, including information on: 1) the species' description, taxonomy, distribution, and biology; 2) habitat requirements; 3) population status and trends; 4) conservation status and protections; 5) research, monitoring, and restoration activities; and 6) factors affecting the continued existence of the species.

Table A. Key to 34.05.271 RCW Categories:

Category Code	34.05.271(1)(c) RCW
i	(i) Independent peer review: review is overseen by an independent third party.
ii	(ii) Internal peer review: review by staff internal to the department of fish and wildlife.
iii	(iii) External peer review: review by persons that are external to and selected by the department of fish and wildlife.
iv	(iv) Open review: documented open public review process that is not limited to invited organizations or individuals.
v	(v) Legal and policy document: documents related to the legal framework for the significant agency action including but not limited to: (A) federal and state statutes; (B) court and hearings board decisions; (C) federal and state administrative rules and regulations; and (D) policy and regulatory documents adopted by local governments.
vi	(vi) Data from primary research, monitoring activities, or other sources, but that has not been incorporated as part of documents reviewed under the processes described in (c)(i), (ii), (iii), and (iv) of this subsection.
vii	(vii) Records of the best professional judgment of department of fish and wildlife employees or other individuals.
viii	(viii) Other: Sources of information that do not fit into one of the categories identified in this subsection (1)(c).

Reference	Category
Chesser, R. T., R. C. Banks, F. K. Barker, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, J. D. Rising, D. F. Stotz, K. Winker. 2011. Fifty-second supplement to the American Ornithologists' Union Check-List of North American Birds. <i>Auk</i> 128(3):600-613.	i
Colwell, M. A., S. E. McAllister, C. B. Millett, A. N. Transou, S. M. Mullin, Z. J. Nelson, C. A. Wilosn, and R. R. LeValley. 2007. Philopatry and natal dispersal of the Western Snowy Plover. <i>Wilson Journal of Ornithology</i> . 119:378-385.	i
Colwell, M.A., A.M. Patrick, D.M. Herman, M.J. Lau, S.D. Leja, D.J. Orluck, A.D. DeJoannis, A.R. Gottesman, T.R. King, G.J. Moulton, and S.E. McAllister. 2013. Final Report: 2013 Snowy Plover Breeding in Coastal Northern California, Recovery Unit 2. Wildlife Dept., Humboldt State University, Arcata, CA. 14 pp.	vi
Colwell, M.A., and W.J. Pearson. 2011. Four cases of inbreeding in a small population of the Snowy Plover. <i>Wader Study Group Bulletin</i> 118:181-183.	i
Dinsmore, S. J., D. J. Lauten, K. A. Castelein, E. P. Gaines, and M. A. Stern. 2014. Predator exclosures, predator removal, and habitat improvement increase nest success of for Oregon Snowy Plovers. <i>The Condor: Ornithological Applications</i> 116:619-628.	i
Eberhart-Phillips, L.J., and M. A. Colwell. 2014. Conservation challenges of a sink: viability of an isolated population of the Snowy Plover. <i>Bird Conservation International</i> 24:327-341.	i
Elliot-Smith, E., and S.M. Haig. 2006a. Western Snowy Plover breeding window survey protocol – final draft.	viii
Elliot-Smith, E., and S.M. Haig. 2006b. Western Snowy Plover winter window survey protocol – final draft.	viii
Hardy, M. A., and M. A. Colwell. 2008. The impact of predator exclosures on Snowy Plover nesting success: a seven-year study. <i>Wader Study Group Bulletin</i> 115(3): 161-166.	i
Herman, D. M., and M. A. Colwell. 2015. Lifetime Reproductive Success of Snowy Plovers in Coastal Northern California. <i>Condor</i> 117 (3): 473–481.	i
Hudgens, B., L. Eberhart-Phillips, L. Stenzel, C. Burns, M. Colwell, and G. Page. 2014. Population Viability Analysis of the Western Snowy Plover. Report prepared for the U.S. Fish and Wildlife Service. Arcata, California. 33 pp.	viii
Lafferty, K.D. 2001a. Disturbance to wintering western Snowy Plovers. <i>Biological Conservation</i> 101:315-325.	i
Lafferty, K.D. 2001b. Birds at a Southern California beach: seasonality, habitat use and disturbance by human activity. <i>Biodiversity and Conservation</i> 10: 1949–1962.	i
Lauten, D.J., K.A. Castelein, E.P. Gaines, and M.A. Stern. 2004. The efficacy of nest exclosures for the Western Snowy Plovers (<i>Charadrius alexandrinus nivosus</i>) on the Oregon Coast, 1990-2003. Unpublished report for U.S. Fish and Wildlife Service, Newport, OR.	vi
Lauten, D. J., K. A. Castelein, J. D. Farrar, A. Kotiach, and E. P. Gaines. 2014. The distribution and reproductive success of the western snowy plover along the Oregon coast – 2014. The Oregon Biodiversity Information Center, Institute for Natural Resources, Portland State University, Portland, Oregon.	vi
Lutmerding, J. A. and A. S. Love. 2015. Longevity Records of North American Birds. Version 2015.1. Patuxent Wildlife Research Center. Bird Banding Laboratory. Laurel MD.	viii
Nur, N., G. W. Page, and L. E. Stenzel. 1999. Population viability analysis for Pacific coast snowy plovers. Point Reyes Bird Observatory, Stinson Beach, California.	viii
Page, G. W., J. S. Warriner, J. C. Warriner, and P. W. C. Paton. 1995. Snowy plover (<i>Charadrius alexandrinus</i>). In <i>The Birds of North America</i> , No. 154 (A. Poole and F. Gill, eds.). The Academy	i

Reference	Category
of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.	
Pearson, W.J., and M. A. Colwell. 2013. Effects of nest success and mate fidelity on breeding dispersal in a population of Snowy Plovers <i>Charadrius nivosus</i> . Bird Conservation International DOI: http://dx.doi.org/10.1017/S0959270914000331	i
Pearson, S. F., S. M. Knapp and C. Sundstrom. 2014a. Evaluating the ecological and behavioural factors influencing Snowy Plover <i>Charadrius nivosus</i> egg hatching and the potential benefits of predator exclosures. Bird Conservation International, Available on CJO2014 doi:10.1017/S0959270914000331	i
Pearson, S. F., C. Sundstrom, K. Brennan, and M. Fernandez. 2007. Snowy Plover distribution, abundance, and reproductive success: 2006 research progress report. Washington Department of Fish and Wildlife, Olympia, Washington.	ii
Pearson, S. F., C. Sundstrom, W. Ritchie, and K. Gunther. 2009. Snowy plover population monitoring, research, and management actions: 2009 nesting season research progress report. Washington Department of Fish and Wildlife, Olympia, Washington.	ii
Pearson, S. F., C. Sundstrom, W. Ritchie, and K. Gunther. 2010. Washington State snowy plover population monitoring, research, and management: 2010 nesting season research progress report. Washington Department of Fish and Wildlife, Olympia, Washington.	ii
Pearson, S.F., C. Sundstrom, W. Ritchie, and W. Pearson. 2012. Washington State Snowy Plover Population Monitoring, Research, and Management: 2011 Nesting Season Research Progress Report. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia.	ii
Pearson, S.F., C. Sundstrom, W. Ritchie, and S. Peterson. 2013. Washington State Snowy Plover Population Monitoring, Research, and Management: 2012 Nesting Season Research Progress Report. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia.	ii
Pearson, S.F., C. Sundstrom, B. Hoenes, and W. Ritchie. 2014b. Washington State Snowy Plover Population Monitoring, Research, and Management: 2013 Nesting Season Research Progress Report. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia.	ii
Pearson, S.F., C. Sundstrom, and W. Ritchie. 2015. Washington State Snowy Plover Population Monitoring, Research, and Management: 2014 Nesting Season Research Progress Report. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia.	ii
Richardson, S. A. 1995. Washington State recovery plan for the snowy plover. Washington Department of Fish and Wildlife, Olympia, Washington. 87 pp.	ii, iii
Ruhlen, T. D., A. Abbot, L. E. Stenzel, and G. W. Page. 2003. Evidence that human disturbance reduces snowy plover chick survival. <i>Journal of Field Ornithology</i> 74:300-304.	i
Seabloom, E.W., and A.M. Wiedemann. 1994. Distribution and effects of <i>Ammophila breviligulata</i> Fern. (American beachgrass) on the foredunes of the Washington coast. <i>Journal of Coastal Research</i> 10(1):178-188.	i
Schultz, R. and M. Stock. 1993. Kentish plovers and tourists: competitors on sandy coasts? <i>Wader Study Group Bulletin</i> 68:83-91.	i
Stenzel, L. E., J. C Warriner, J. S. Warriner, K. S.Wilson, F. C. Bidstrup, and G. W. Page. 1994. Long-distance breeding dispersal of snowy plovers in western North America. <i>Journal of Animal Ecology</i> , 887-902.	i
USFWS (U.S. Fish and Wildlife Service). 1993. Final rule. Endangered and threatened wildlife and plants; Determination of threatened status for the Pacific coast population of the western snowy plover. <i>Federal Register</i> 58 FR 12864 03/05/93.	v
USFWS (U.S. Fish and Wildlife Service). 2006. 12-month finding on a petition to delist the Pacific Coast population of the Western Snowy Plover <i>Federal Register</i> Vol71, No. 77Friday, April 21, 2006/Proposed Rules.	v

Reference	Category
USFWS (U.S. Fish and Wildlife Service). 2007. Recovery plan for the Pacific coast population of the western snowy plover (<i>Charadrius alexandrinus nivosus</i>). 2 volumes. U.S. Fish and Wildlife Service, Sacramento, California.	v
USFWS (U.S. Fish and Wildlife Service). 2012. Revised Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover; Final Rule. Federal Register / Vol. 77, No. 118 / Tuesday, June 19: 36728-36869.	v
Warriner, J. S., J. C. Warriner, G. W. Page, and L. E. Stenzel. 1986. Mating system and reproductive success of a small population of polygamous snowy plovers. <i>Wilson Bulletin</i> 98:15-37.	i
Wiedemann, A.M. 1987. The ecology of European beachgrass (<i>Ammophila arenaria</i> (L.) Link) a review of the literature. Technical Report # 87-1-01. Oregon Department of Fish and Wildlife, Nongame Wildlife Program. 18 pp.	viii

PERSONAL COMMUNICATION

Daniel Elbert, Fish and Wildlife Biologist,
U.S. Fish & Wildlife Service
Newport, Oregon

Renee Mitchell, Natural Areas Manager
Pacific Cascade Region - North
Washington Department of Natural Resources
Olympia, Washington

Scott Pearson, Research Scientist
Wildlife Science Division
Washington Department of Fish and Wildlife
Olympia, Washington

William Ritchie, Biologist
Willapa National Wildlife Refuge
Ilwaco, Washington

Cyndie Sundstrom, Wildlife Biologist
Washington Department of Fish and Wildlife
Montesano, Washington

APPENDIX A. PUBLIC COMMENTS ON THE DRAFT PERIODIC STATUS REVIEW

	Comment and response
General comments	Please keep the Snowy Plover on the endangered species list.
	<i>Comment noted. Although they have increased somewhat in recent years, by any measure (<100 birds) they are still endangered. We will review their status again in 5 years as required in the WAC for listed species.</i>
	Extinction is natural; if the Snowy Plover goes extinct because of human activity or natural events, let it happen.
	<i>It is the mission of Washington Department of Fish and Wildlife “to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities”. As part of that mission, state law (RCW 77.12.020) directs the Department to, “determines that a species of wildlife is seriously threatened with extinction in the state of Washington, the director may request its designation as an endangered species. The commission may designate an endangered species”. By law (WAC 232-12-297), species listings and delistings by the state must be based solely on the biological status of the species and its continued existence in the state. Conservation of endangered species has had widespread public support since the passage of the federal Endangered Species Act in 1973.</i>
Management of human disturbance	I spend quite a bit of time on the beach observing the people and their activities. I think something that could easily and fairly inexpensively improve the situation for the Snowy Plover would be to increase the signage at the access roads. You really have to slow down and pretty much stop to read the signs making them pretty much useless to those that need to read them the most. Speed limits, driving on the upper part of the hard sand, no "doughnuts" etc. I would also propose specifying a particular distance from the daily high tide mark that could be traveled with a vehicle, not just an arbitrary "hard packed sand" indication. I constantly see people crashing around in the foredunes in their 4x4s. Perhaps some fines and enforcement would help.
	<i>Thank you for the suggestions; bigger signs are a good idea. Protection of nesting plovers can be a challenge due to multiple jurisdictions, shifting locations of nests, and the large number of people present during clam tides. We are working with Washington State Parks and USFWS, to improve protection of plovers. Specifying a particular distance from daily high tide would require a change in state law not under the authority of WDFW, and requiring the estimation of a distance while driving a vehicle may not be any more effective than judging ‘hard packed sand’.</i>

WASHINGTON STATE STATUS REPORTS, PERIODIC STATUS REVIEWS, RECOVERY PLANS, AND CONSERVATION PLANS

Status Reports

2015 Tufted Puffin
2007 Bald Eagle
2005 Mazama Pocket Gopher,
Streaked Horned Lark, and
Taylor's Checkerspot
2005 Aleutian Canada Goose
2004 Killer Whale
2002 Peregrine Falcon
2000 Common Loon
1999 Northern Leopard Frog
1999 Olympic Mudminnow
1999 Mardon Skipper
1999 Lynx Update
1998 Fisher
1998 Margined Sculpin
1998 Pygmy Whitefish
1998 Sharp-tailed Grouse
1998 Sage-grouse
1997 Aleutian Canada Goose
1997 Gray Whale
1997 Olive Ridley Sea Turtle
1997 Oregon Spotted Frog
1993 Larch Mountain Salamander
1993 Lynx
1993 Marbled Murrelet
1993 Oregon Silverspot Butterfly
1993 Pygmy Rabbit
1993 Steller Sea Lion
1993 Western Gray Squirrel
1993 Western Pond Turtle

Periodic Status Reviews

2015 Brown Pelican
2015 Steller Sea Lion

Recovery Plans

2012 Columbian Sharp-tailed Grouse
2011 Gray Wolf
2011 Pygmy Rabbit: Addendum
2007 Western Gray Squirrel
2006 Fisher
2004 Sea Otter
2004 Greater Sage-Grouse
2003 Pygmy Rabbit: Addendum
2002 Sandhill Crane
2001 Pygmy Rabbit: Addendum
2001 Lynx
1999 Western Pond Turtle
1996 Ferruginous Hawk
1995 Pygmy Rabbit
1995 Upland Sandpiper
1995 Snowy Plover

Conservation Plans

2013 Bats

Status reports and plans are available on the WDFW website at:
<http://wdfw.wa.gov/publications/search.php>

