

Florida Shorebird Alliance Monitoring Data at Work

Florida Fish & Wildlife Conservation Commission

November 2022





Florida Fish & Wildlife Conservation Commission

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Cover photo by Britt Brown, adult black skimmer with chick

Editorial Team

<p>Shea Armstrong Florida Shorebird Alliance Coordinator Favorite shorebird-viewing location: St. Vincent National Wildlife Refuge</p>		<p>Ariam Jimenez Peninsular Project Manager Easy ways to be efficient in the field: Know your methods and assumptions, and enjoy the view</p>
<p>Janell Brush Associate Research Scientist Favorite field activity: resighting oystercatchers near Cedar Key</p>		<p>Emma LeClerc Data Engineer First shorebird ever spotted in Florida: American oystercatcher</p>
<p>Meaghan Evans Quantitative Analyst Data team fact: newest peep in the flock</p>		<p>Raya Pruner Panhandle Project Manager Migrates with snowy plovers- worked with populations in Utah, Oregon, and now Florida</p>
<p>Victoria Hawk Data Quality Manager Favorite nesting seabird: Black Skimmer</p>		<p>Kristin Rogers Ecological Data Specialist Florida Shorebird Database architect and data team member since 2009</p>

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Snowy plover chick, photo by Jean Hall

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NOTES FROM THE EDITORIAL ROOM



Wilson's plover chick, photo by Jean Hall

This year we are celebrating the ten-year milestone of coordinated monitoring by Florida Shorebird Alliance (FSA) partners! Partners follow the trusty Breeding Bird Protocol for Shorebirds and Seabirds (BBP) and diligently enter their data into the Florida Shorebird Database (FSD). The protocol and database were developed in coordination with FSA partners. This dream combination of the protocol, FSD, and FSA partners is an excellent model of a comprehensive bird monitoring program, and unique in the conservation world! With more than ten years of data, we can track species populations; measure effects of restoration, management, and conservation actions; and understand the effects of ecological processes on bird populations. This invaluable long-term dataset has been used countless times over the years. A decade of monitoring data has made it possible to track nesting outcomes, refine local conservation actions, develop strategies to recover statewide populations, and establish baseline population estimates. These capabilities are crucial for both gauging progress towards meeting population goals and adaptively managing important nesting sites across the state of Florida.

The most important thing we have learned in the last ten years is that FSA partners are essential for increasing the populations of the focal shorebirds and seabirds (American oystercatcher, black skimmer, least tern, snowy plover, and Wilson's plover). FSA partners have contributed to improved survey protocols, innovated new outreach strategies, informed predation management, and facilitated timely regulatory intervention. We rely on a suite of strategies to achieve conservation success at breeding sites, and partners make this approach possible. Complementary strategies implemented at individual sites over time lead to local, and ultimately statewide, conservation gains.

Shorebirds and seabirds are management-dependent and continued efforts are needed to maintain and increase gains. In this year's report, we look back at where we started, celebrate how far we have come and what we have learned, and look forward to what is next on the road to population recovery.

Glossary & Key Acronyms

BBP / protocol - the [Breeding Bird Protocol](#) for Florida's Shorebirds and Seabirds is the standardized set of methods for collecting breeding data. The protocol is used in tandem with the FSD.

CWA - Critical Wildlife Area

FLDEP - Florida Department of Environmental Protection

Focal Species - beach-nesting birds that are State-Listed as Threatened (American oystercatcher, black skimmer, least tern, snowy plover), and a Species of Greatest Conservation Need (Wilson's plover).

FSA - the [Florida Shorebird Alliance](#) is a statewide network of local partnerships committed to advancing shorebird and seabird conservation in Florida.

FSD - the [Florida Shorebird Database](#) is the online repository for Florida shorebird and seabird monitoring data collected using the BBP.

FWC - the [Florida Fish & Wildlife Conservation Commission](#)

IBNB - Imperiled Beach-nesting Bird

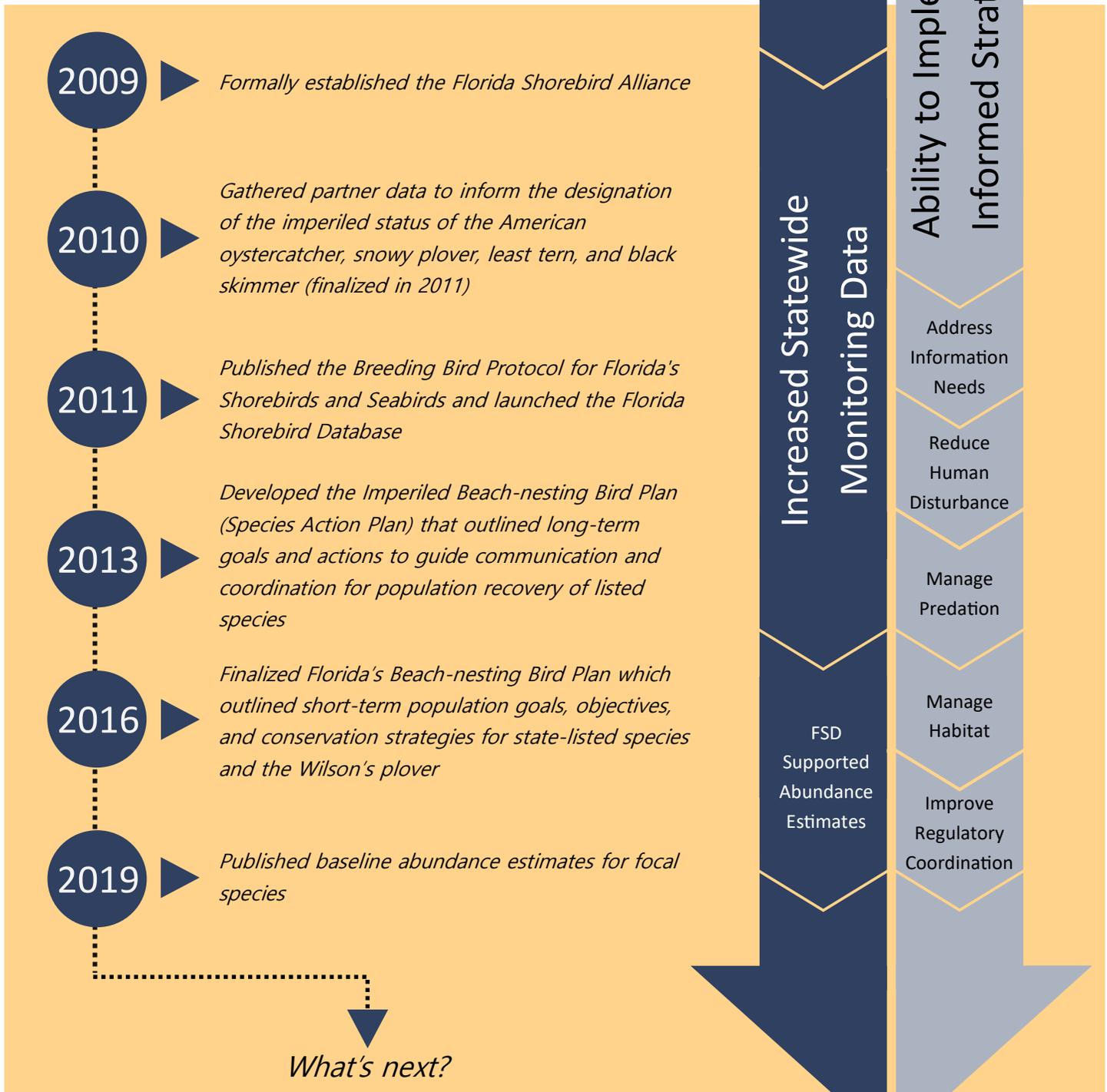
IBNB Region - six Imperiled Beach-nesting Bird management regions based on historical distributions of beach-nesting birds. Population recovery objectives are outlined by IBNB region.





CONSERVATION JOURNEY

Florida's collective response to declining shorebird and seabird populations began long before the development of a statewide monitoring protocol and the Florida Shorebird Database (FSD). Early baseline data combined with FSD data have facilitated the development of conservation plans, and effective implementation of adaptive management and strategies to benefit shorebirds and seabirds.





CONSERVATION JOURNEY

What's Next?

Data-informed conservation strategies have been expanded and refined by FSA partners over the last ten years. One recent effort has focused on contributions to FWC's [Imperiled Beach-nesting Bird Species Conservation Measures and Permitting Guidelines](#) (hereafter, IBNB Guidelines or Guidelines) for the American oystercatcher, black skimmer, least tern, and snowy plover. The IBNB Guidelines were approved in July following extensive stakeholder engagement and are incorporated into state rule. The Guidelines provide information on regulatory protections for IBNBs, options to avoid take, and include an online tool called ShoreMapper to help project planners locate areas where take is likely. FSA partner-collected data was and will continue to be essential for identifying and mapping IBNB sites in ShoreMapper. Due to the scale and scope of the Guidelines, they will not take effect until September 30, 2023. To read more about the IBNB Guidelines and supporting activities, visit www.MyFWC.com/IBNB.

Monitoring data underpin the FSA's ability to implement effective strategies to protect and grow populations of beach-nesting birds. Breeding success at ground and rooftop sites requires a combination of conservation strategies (inset right) that vary in response to site-

specific threats. It is the suite of strategies implemented at a site over time that ultimately leads to success. Shorebirds and seabirds in Florida are management-dependent species. Ever-increasing human populations mean continuing challenges in reducing human disturbance, managing predation, and regulating coastal development that impacts beach-nesting birds. The successful recovery of beach-nesting birds requires a multi-pronged and adaptive conservation approach.

5 CONSERVATION STRATEGIES TO BENEFIT FOCAL SPECIES

-  Reduce human disturbance
-  Manage habitat
-  Manage predation
-  Address management information needs
-  Improve regulatory coordination

Look for these dots in each section of the report to see the five strategies in action!



Snowy plover adult and chick, photo by Britt Brown



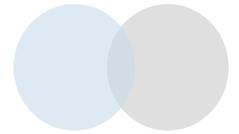


MONITORING MILESTONES

More than ten years of monitoring by FSA partners have made it possible to advance long-term conservation goals. This year, we are celebrating how far we have come, comparing data from 2011 versus 2021.



SHOREBIRD & SEABIRD ABUNDANCE ESTIMATES



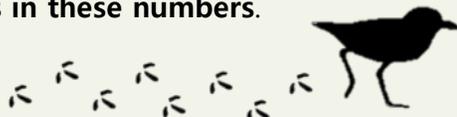
The FWC Data Team is excited to share the updated breeding abundance estimates for the five focal species, from 2019 to 2021! The abundance estimates are based on partner-collected data in the FSD. The methods for estimating statewide breeding abundance for shorebirds and seabirds are detailed in prior reports; see the [2020 report](#) for seabirds and the [2021 report](#) for shorebirds. With a short-term conservation target of a sustained increase of 10% in 10 years (by 2029), the baseline year for all five focal species is 2019.

We strive to use the best information possible to calculate the abundance estimates, and we expect the estimates to shift slightly as new information becomes available. Updates to the abundance estimates can result from data corrections, protocol adjustments, or analysis refinements. The 2019 baseline abundance estimates we report here are slightly different from the previously reported values. The adaptability of the FSD and analytical methods is central to the goal of producing the most biologically meaningful and statistically robust abundance estimates for the focal species.

Abundance Estimates

The 2021 abundance estimates on the following pages are highlighted in yellow. These estimates represent the most current information about the breeding abundance in Florida for each species. The confidence intervals for seabirds and the ranges for shorebirds are both a measure of uncertainty.

Although we present three years of abundance estimates, it is important to note that **population trends should not be inferred from fluctuations in these numbers.**



Trends

The next analytical challenge is determining population trends. As with the abundance estimates, these analyses will be developed by the FWC Data Team based on the data in the FSD for the five focal species. **Trend analyses enable us to differentiate real changes in population from fluctuation due to annual variations in monitoring frequency and coverage.**

Statistically robust trend analyses will improve our ability to evaluate progress toward achieving conservation goals. The dedication of FSA partners ensures the continuity of the long-term dataset in the FSD and will allow us to track changes in populations.

Snowy plover, photo by Kylie Wilson

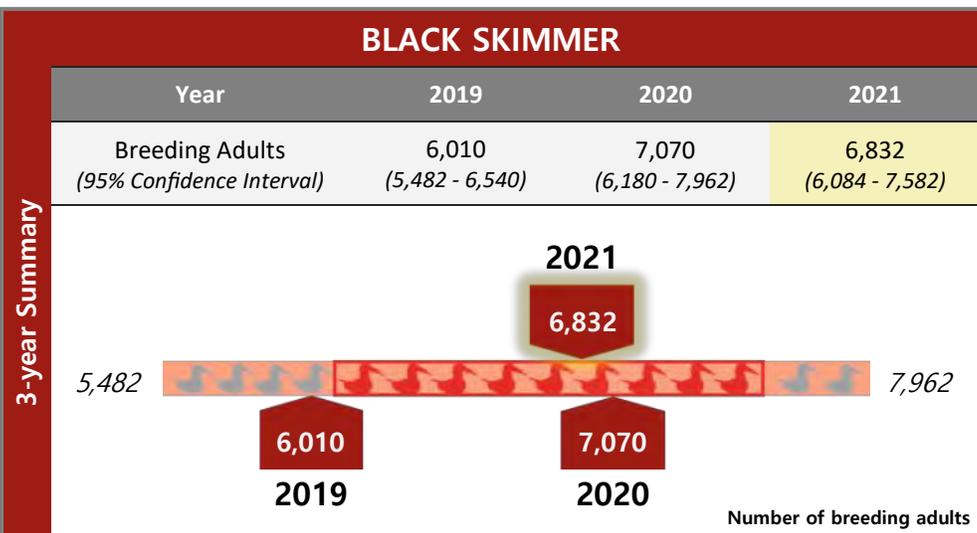
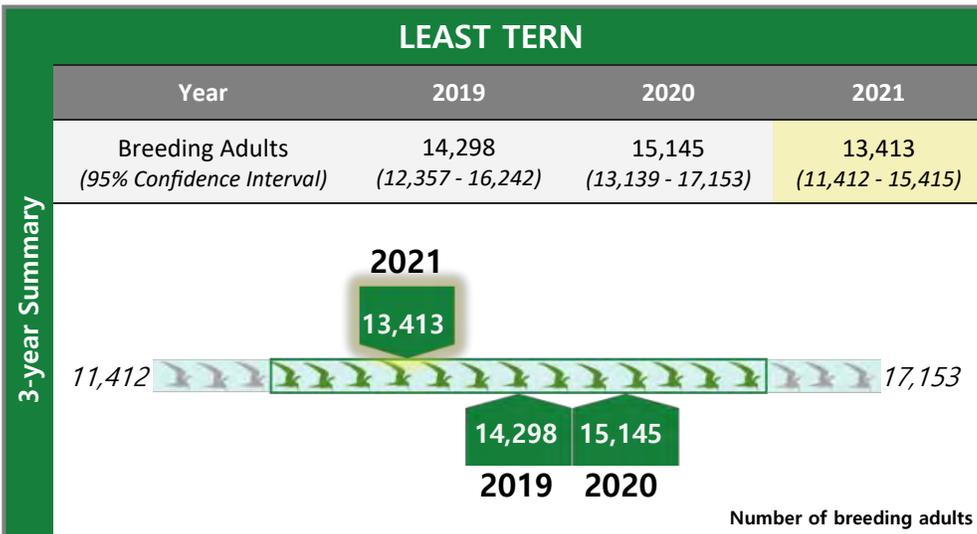




Least tern adult with chick, photo by Jean Hall

Shorebird & Seabird Abundance Estimates

Statewide Seabird Abundance Estimates 2019-2021



Key

- Estimated # of breeding adults**
- Multi-year overlapping confidence intervals**
- Non-overlapping confidence intervals**

Notes

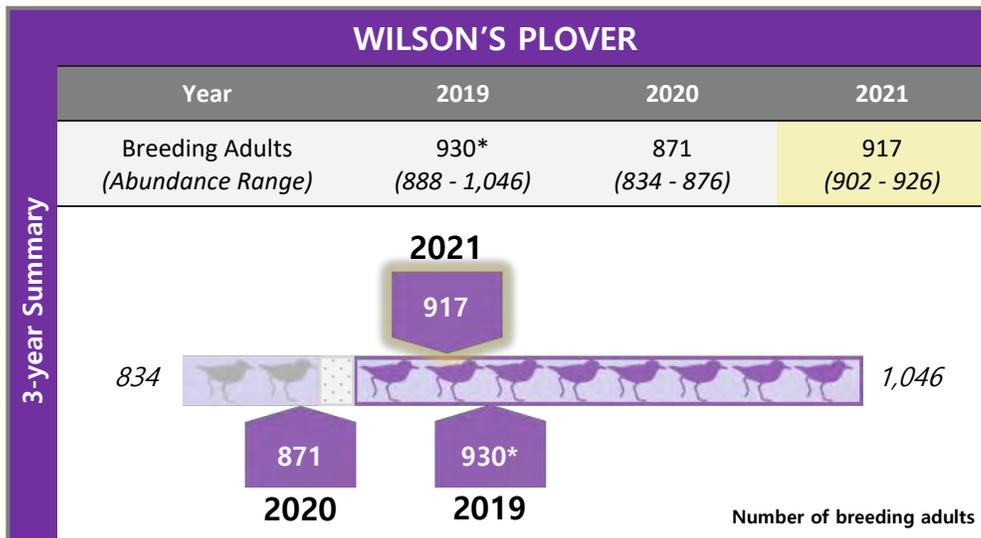
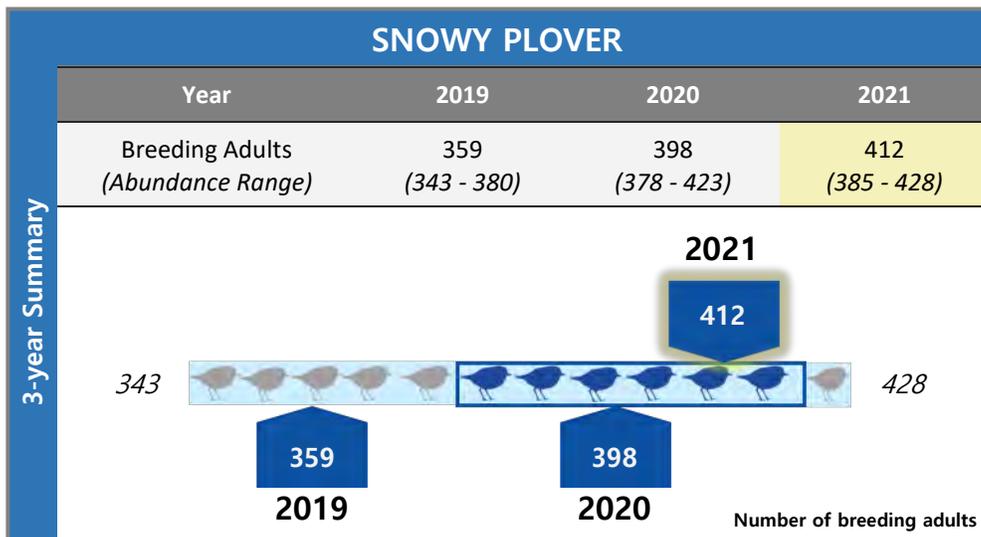
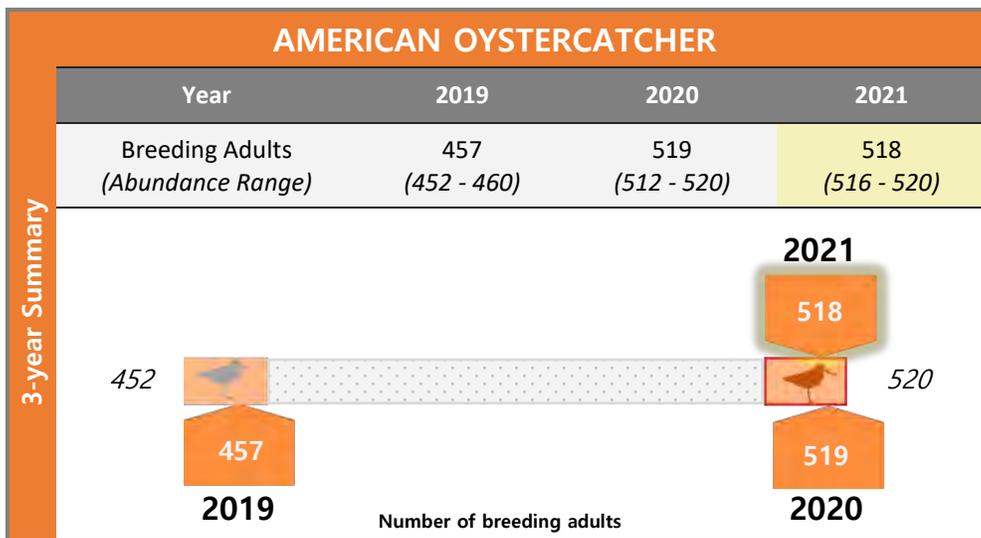
Rooftop Nesting
In 2021, rooftop nesting accounted for 46% of breeding least tern adults, and less than 1% of breeding black skimmer adults.

Estimate Overlap
The 95% confidence intervals overlap for the 3-year period for both least tern and black skimmer. We cannot infer annual differences because of the considerable overlap between 95% confidence intervals.

Trends
Trends should not be inferred at this time. A strategy for analyzing trend will be developed for both species.



Statewide Shorebird Abundance Estimates 2019-2021



Key

- Estimated # of breeding adults**
- Multi-year overlapping abundance range**
- Non-overlapping abundance range**
- No value**

Notes

American Oystercatcher
Uncertainty is based on documented reneest distance. Since this species does not move far to reneest, a small abundance range is expected.

Snowy Plover
Snowy plovers have a higher uncertainty due to the larger distances between reneesting. In 2019 several key snowy plover routes were too long to complete in a single day. In 2020 these routes were divided into multiple shorter routes resulting in more complete counts of breeding adults.

Wilson's Plover
The 2019 abundance range included 95% confidence intervals thanks to the double-observer study in the Florida Keys.

Trends
Trends should not be inferred at this time. A strategy for analyzing trend will be developed for all three species.



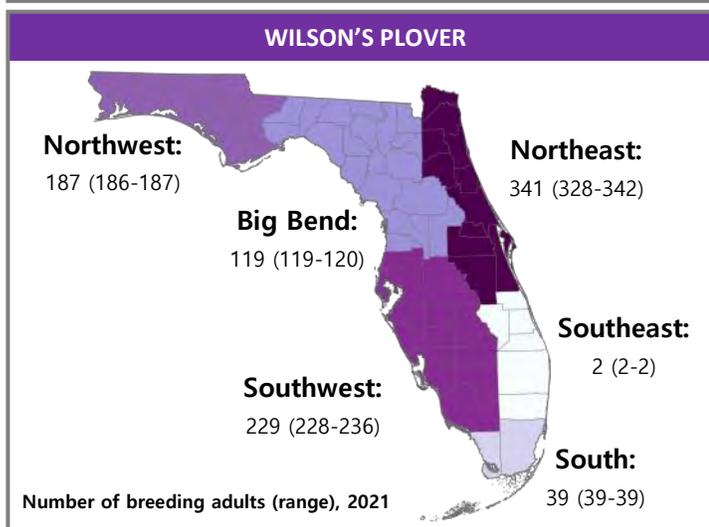
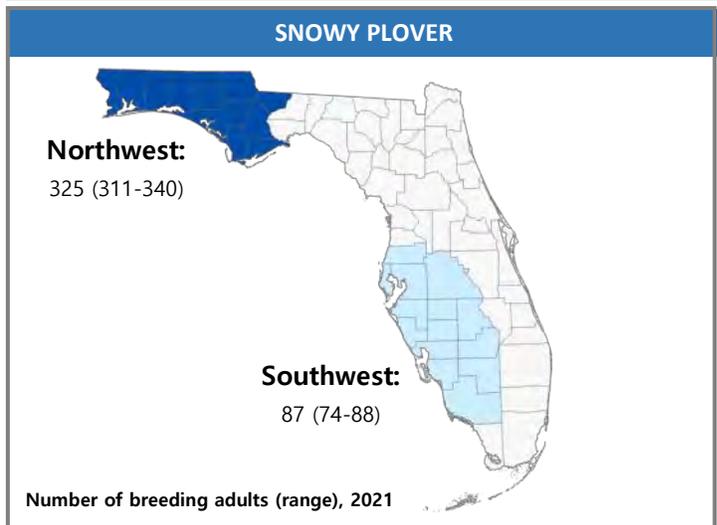
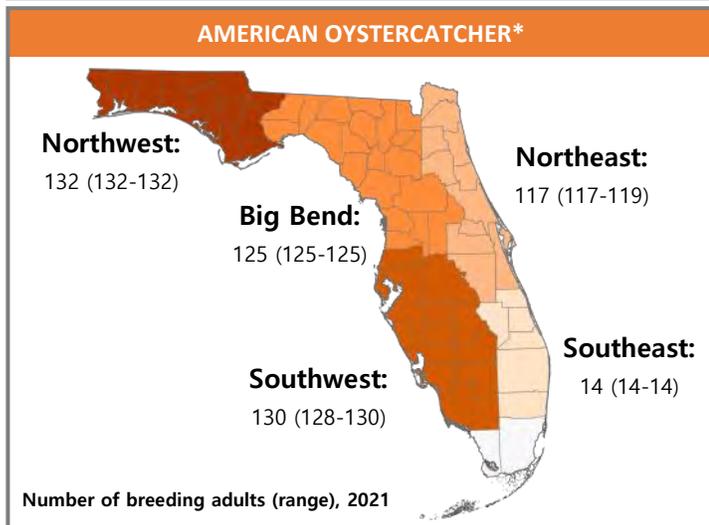
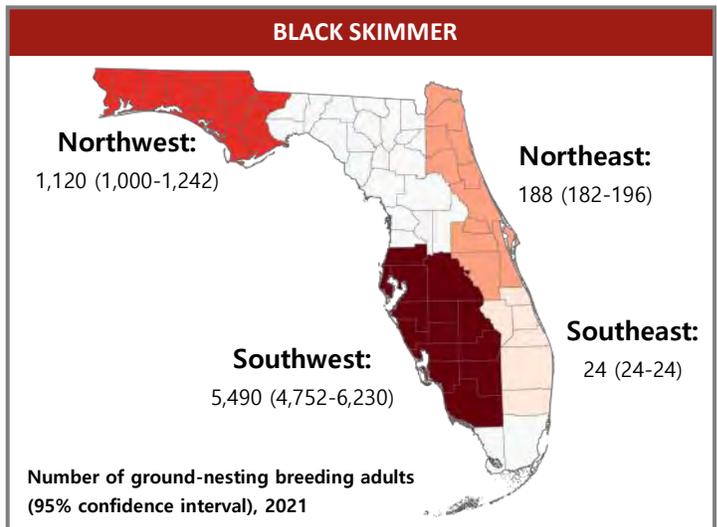
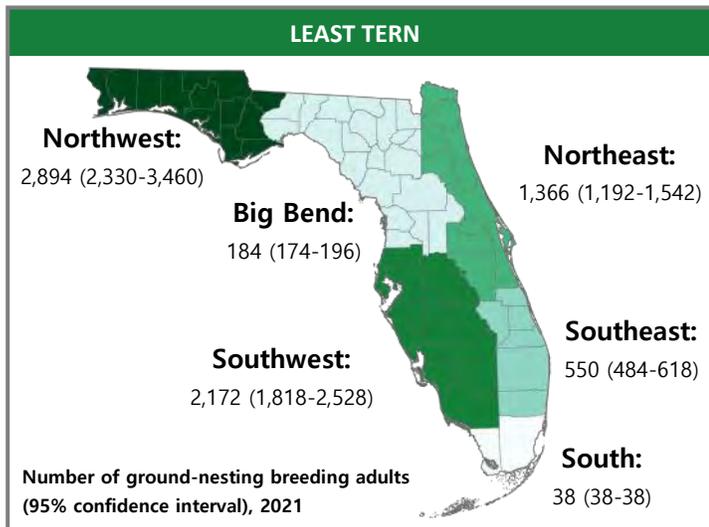
*Notes: The 2019 abundance estimates include data from a study of Wilson's plovers in the Florida Keys and Florida Bay.



SHOREBIRD & SEABIRD ABUNDANCE ESTIMATES



2021 Ground-nesting Breeding Adults by IBNB Region



Uncertainty for seabirds (least tern and black skimmer) is expressed by using 95% confidence intervals. Uncertainty for shorebirds (American oystercatcher, snowy plover, and Wilson's plover) is expressed by using abundance ranges based on re-nest distances.

*Note: The abundance estimates for American oystercatchers include roof-nesting birds.



ACCURACY OF ROOF-NESTING LEAST TERN ABUNDANCE ESTIMATES



Least tern pair, photo by Kara Cook

Gravel rooftops in Florida are an important alternative nesting habitat for least terns, with 46% of the statewide population nesting on rooftops in 2021. FSA partners who monitor rooftops from the ground using flush counts know that it is challenging to be sure how many birds are nesting. Using flush counts to develop abundance estimates requires a way to account for detection limitations. In 2018, the FWC conducted an intensive rooftop study to determine how to accurately adjust flush counts to calculate statewide abundance.

We developed a method to compare nesting detection between [Direct and Flush Counts](#). The method used a portion of active rooftops to compare counts during peak rooftop nesting (May 1-June 20) and provided a detection ratio to estimate the abundance of roof-nesting least terns using flush count data. We found that if only flush count data were used to estimate

abundance, the roof-nesting population of least terns would have been underestimated by 42%! The roof-nesting detection ratio is needed to accurately calculate how many least terns are nesting on rooftops since most rooftops are monitored using flush counts (88–94% of all active rooftop colonies).

To verify the accuracy of the detection ratio, we applied it to flush count data and then compared it with direct count data from 36 rooftops surveyed between 2002–2017. Combining the flush count data from those same rooftops with the detection ratio produced an abundance estimate that was only 11 individuals greater than the direct count data. We repeated the analysis using FSD data from 2019 and 2020 and produced similarly accurate results (within 22 birds!). We plan to test the detection ratio every three years.

Data to Support Accurate Abundance Estimates

Your survey data are essential for estimating the abundance of roof-nesting least terns in Florida. Flush counts are the foundation of rooftop surveys and are vital to testing the detection ratio accuracy. Equally important are direct counts from as many rooftop sites as possible. Flush count *and* direct count data from the same rooftops are needed to test the detection ratio and develop the rooftop abundance estimates.

Because of your ongoing dedication, FSA partners are already providing the data needed to test the accuracy of the detection ratio. Thank you for continuing to support rooftop monitoring and entering your data into the FSD!

Survey Tip

→ When possible, increase your survey frequency or the duration of your visits to better capture the maximum number of flying adults during a flush count.

→ If you survey rooftops using direct counts, you are encouraged to also conduct flush counts at the same rooftop.



BEHIND THE SCENES: THE DATA QUALITY PROCESS



Monitoring data are key to successfully conserving shorebirds and seabirds in Florida. The [Florida Shorebird Database \(FSD\)](#) houses over a decade of data collected by monitoring partners following a standard survey protocol, the [Breeding Bird Protocol \(BBP\)](#). FSA partners throughout the state use the monitoring data to inform and assess the effects of management, restoration, and conservation actions. The data are also used to calculate abundance estimates, detect population changes for focal species, and understand the ecological processes affecting breeding populations. Prior to using FSD data to support conservation, we must first review every piece of data. This process ensures that decisions and actions are based on high-quality, standardized data.

Like all monitoring datasets, the FSD has the potential to contain unexpected values and errors. Unusual but correct observations must be differentiated from true errors (e.g., typos) before FSD data can be used to support conservation planning, decision-making, or analyses. Data corrections improve the dataset and make it more suitable to meet a wide variety of conservation needs. A rigorous process of quality assurance and quality control ensures FSD data are robust enough to answer the pressing conservation questions in Florida.

Quality assurance is error prevention

Quality assurance is the process of reducing data variability and increasing data integrity. To create a high-quality dataset, the FSD team develops and maintains a suite of quality assurance tools that improve protocol interpretation and data entry accuracy. These materials include a variety of quick guides, online trainings, and error prevention messages within the website.

The FSA network provides a framework for continually improving quality assurance measures. We share data-related guidance in the Wrack Line newsletter, FSA meetings, and training sessions. In return, FSA partners provide essential feedback for improving the protocol, website, and monitoring guidance materials. Working collaboratively with FSA partners helps us identify and clarify confusing parts of the protocol and improve the user experience of the FSD. The reciprocal quality assurance process is key for maintaining the integrity of the ever-growing dataset in the FSD.

Quality control is error correction

Quality control is the process of finding and correcting errors after they have been entered into the FSD. A small team reviews every entry in the FSD—upwards of 18,000 records annually! If anything looks unexpected, they flag the record for further investigation. The review team checks survey notes for any contextualizing information before reaching out to monitoring partners to understand if the flagged entry was an unusual but accurate observation, a typo, or a misunderstanding about what to collect. This direct line of communication provides insight into how the protocol is interpreted and how surveys are conducted, which helps us better understand the data.

During the quality control process, we identify patterns where monitoring concepts need clarification. After evaluating sources of error, we then clarify the protocol, add data entry support features to the website, or work directly with partners to standardize data collection and data entry.



BEHIND THE SCENES: THE DATA QUALITY PROCESS

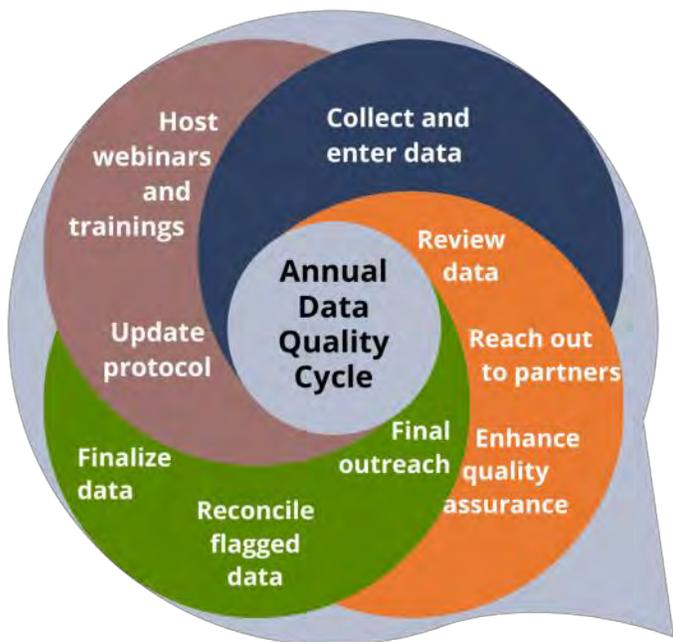


Why is data quality important?

Accurate data provide the foundation for the statewide conservation of shorebirds and seabirds. We review the data to ensure they are scientifically rigorous so that resulting analyses provide a reliable basis for advancing conservation efforts. For example, the accuracy of nesting locations will have regulatory implications under the upcoming Imperiled Beach-nesting Bird (IBNB) Guidelines. Accurate counts contribute to local management plans and, collectively, species action plans. FSD data are also used beyond Florida in regional and national work, contributing to range-wide species datasets.

How can you help?

The goal of high-quality data is to inform local and statewide conservation efforts. The quality control and assurance process maximizes the amount of data in the FSD that can be used during conservation planning and implementation. Data anomalies that cannot be resolved remain flagged and are rarely used in analyses or product development. Monitoring partners can help accelerate the quality control process by responding quickly to data review inquiries. Leaving detailed survey notes is another way to expedite data review. Correcting flagged data improves the dataset and increases the data’s value to all FSA partners. Partner participation in quality control is central to achieving the goals of the statewide monitoring program!



FSD data quality is **continually** improving, and the data quality steps overlap throughout the year. Records are reviewed during the breeding season as they are entered into the FSD, and outreach extends beyond the end of nesting periods. All FSD data are available through the Explore Data page of the FSD.

After the review process, FSA partners use the **finalized data** to support management, research, and regulatory coordination. The data quality process ensures that FSD data have the integrity required for these vital functions.

Management

- Assess effectiveness of management actions (posting, habitat restoration, predation management)

Research

- Identify information gaps
- Calculate statewide abundance estimates
- Contribute to range-wide datasets

Regulatory

- Supply data to inform listing status
- Provide data support for the IBNB Guidelines



REDUCING HUMAN DISTURBANCE



Background

Shorebirds and seabirds face numerous challenges when attempting to nest and raise chicks on Florida's beaches, including disturbance from human activities. Disturbance can cause breeding birds to spend energy avoiding perceived threats, leaving vulnerable chicks and eggs exposed to extreme temperatures and opportunistic predators. Research has demonstrated that chronic disturbance from human activities at a site can negatively affect reproductive outcomes, local abundance, and ultimately statewide populations. Human disturbance is considered one of the most significant threats to shorebird and seabird population recovery.

Florida Shorebird Alliance (FSA) partners implement a combination of disturbance reduction strategies at important sites to produce conservation benefits. In the past ten years, heightened efforts to strategically reduce disturbance have resulted in greater breeding success and reestablishment of historical breeding locations. This year, we are putting a spotlight on the important ways Florida shorebird partners reduce disturbance to shorebirds and seabirds.

Conservation Network

The FSA is a statewide network of [12 local partnerships](#) that are the coordination and communication structure for shorebird and seabird conservation in the state. The FSA is comprised of government and non-government entities where volunteers, land managers, researchers, and academic and business partners collaborate to identify and address shorebird conservation needs. In the past ten years, the FSA has collectively hosted more than 200 local partnership meetings to coordinate monitoring, conservation, and management efforts that ensure sites are adequately protected.

Effective communication strategies are essential to the FSA's disturbance reduction efforts. FSA membership increased 70% over the last five years, expanding conservation awareness and protection of shorebirds and seabirds. FSA partners spearhead conservation efforts by developing innovative communication strategies to encourage Floridians and visitors to share the shore with shorebirds and seabirds. Since 2011, the FSA has produced more than 160 unique communication tools that support everything from monitoring routes and rooftops to establishing buffer zones around breeding sites. With 33,000 subscribers,



REDUCING HUMAN DISTURBANCE



The [Wrack Line newsletter](#) has been published more than 100 times and serves as the primary source of shorebird and seabird conservation news in the state.

Communication Spotlight

FSA partners produced animated videos with the aim to support disturbance reduction efforts across the state. The videos highlight ways to be a shorebird-friendly pet owner, how to give birds space so they feel safe, and how to be a good neighbor during breeding season. Each video is in English and Spanish and is available on [FWC's YouTube](#) channel.

meet stewardship needs at important sites, Audubon Florida received a grant to hire staff in 2015. These new positions complemented and supported Chapter-led efforts to recruit and coordinate stewards in southwest and northeast Florida in 2015. Stewardship was expanded to non-breeding birds in 2016. New funding by the National Fish and Wildlife Foundation in 2017 allowed Audubon Florida to recruit, train, and support volunteer stewards across the Panhandle, southwest Florida, and northeast Florida. Since that time, almost 2,000 volunteer stewards have contributed over 30,000 hours stewarding and monitoring shorebirds and seabirds, extending protection and outreach to 250 beach and rooftop sites. With their intimate knowledge of breeding sites, stewards are uniquely positioned to expand knowledge about avian health, predator presence, and management effectiveness at breeding sites in Florida.

Bird Stewardship

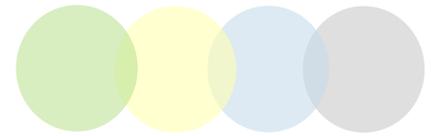
Dedicated volunteer bird stewards, organized by non-government organizations, businesses, state and federal land managers, and county and municipal governments, have been reducing disturbance to breeding birds on Florida's beaches and rooftops for decades. Bird stewards ensure beachgoers are aware of fragile nesting areas and educate visitors about the remarkable species that rely on Florida's coastal habitats for survival. Rooftop stewards monitor buildings where chicks are falling from unprotected rooftop edges and rain gutters and return them safely to the rooftop. They work with property owners to "chick proof" rooftops by installing chick fencing to reduce risks to hatchlings.

Local Audubon Chapters and Audubon Florida have a long history of organizing bird stewards in the state. In the early years of the FSA, Audubon Chapters organized volunteers and funded local efforts to protect and monitor shorebirds and seabirds from disturbance by beachgoers in southwest Florida. In 2010, Audubon Florida expanded stewardship and monitoring at beaches in the Panhandle. To increase capacity and



Photo by Jean Hall





REDUCING HUMAN DISTURBANCE



Posting

Visitors to Florida’s coast often do not know that shorebirds and seabirds nest on the ground in a variety of coastal habitats. These habitats (beaches, spoil islands, shell rakes, natural islands) are also sought after for recreation and are managed for various purposes. Posting is a management tool routinely used by FSA partners to reduce disturbance at important shorebird and seabird nesting sites. Posting is the process of installing signs and rope to create symbolic fencing around nesting habitat to protect breeding adults, nests, chicks, and brood-rearing activities. Partners across the state use the [Guidelines for Posting Shorebird and Seabird Sites in Florida](#) to provide consistent protection across diverse landscapes with different management challenges.

Since 2011, FSA partners have posted more than 599,000 shorebird and seabird nests! Establishing disturbance buffer zones can increase nesting abundance and reproductive success for shorebirds and

seabirds. Field observations also indicate the best protections are achieved when posting is combined with outreach, stewarding, and coordination with law enforcement.

Critical Wildlife Areas

Critical Wildlife Areas (CWA) are important disturbance reduction tools for focal species. CWAs are designated by the FWC under Florida Administrative Code (F.A.C.) to protect concentrations of vulnerable wildlife from human disturbance during critical life stages such as breeding, feeding, or migration. Between 2016–2017, the FWC undertook a statewide effort to identify areas where new CWAs could be established, or existing CWA protections could be improved. This effort led to 13 new, 5 reestablished, and 32 total CWAs in Florida.

The FWC’s Critical Wildlife Areas support 12 species of breeding shorebird and seabirds, including the five focal species. In 2021, 14 CWAs provided nesting habitat for the focal species. The CWAs hosted nearly 12,400



Photo by Hailey Garcia



REDUCING HUMAN DISTURBANCE

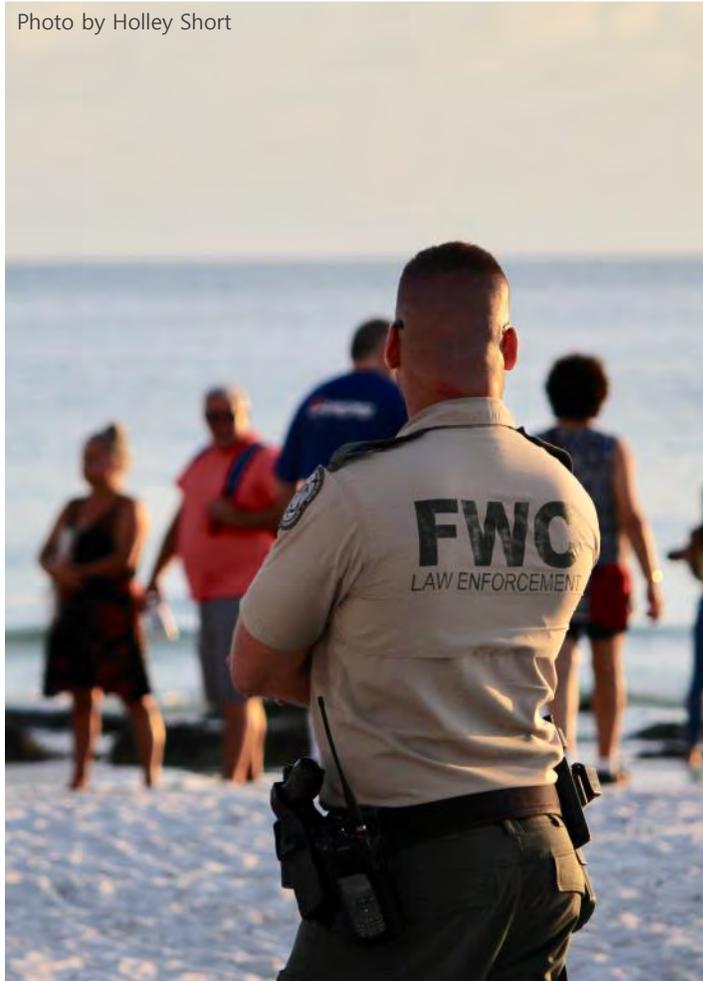


shorebird and seabird nests, including more than 1,500 focal species nests. FWC staff ensure each CWA is adequately posted with posts, signs, or markers to provide the public due notice of the status of the area. FWC and local law enforcement work with shorebird biologists to ensure adequate patrols and enforcement of closed areas.

Law Enforcement Coordination

Conservation of imperiled shorebirds and seabirds involves a coordinated approach with the aim to prevent and reduce disturbance. Law enforcement responds to a multitude of critical issues, including wildlife violations. FSA partners and local law enforcement have a long history of collaborating to provide essential coverage at sites with chronic disturbance. FSA partners improved coordination by initiating workshops to support law enforcement's wildlife violation response efforts and to create a shared awareness of chronic disturbance issues to coastal wildlife. Recurring coordination between a broad group of FWC, Federal, State, County, and City law enforcement entities continues to reduce impacts to shorebirds and seabirds.

Photo by Holley Short



A Case Study: Operation Wrack Line

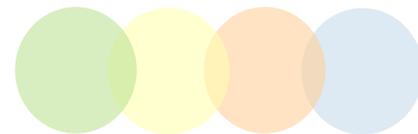
FWC Law Enforcement has a mission to protect natural resources and people through proactive and responsive law enforcement. FWC officers are dedicated to educating the public and enforcing state and federal wildlife laws. Protecting threatened and endangered species and habitats is core to this mission.

In 2016, FWC shorebird biologists and law enforcement collaborated on a pilot project to initiate proactive patrols at key seabird, shorebird, and wading bird nesting areas. In 2018, FWC Law Enforcement began conducting and reporting

proactive patrols statewide. Law enforcement efforts have demonstrated that the presence of officers at breeding areas can change the behavior of boaters and beachgoers, thus, preventing impacts from occurring. This initiative is now known as Operation Wrack Line. Through ongoing collaboration and data collected by FSA partners, FWC Law Enforcement patrol efforts have grown from 629 patrols in 2018 to up to 1,500 proactive patrols statewide each year. Operation Wrack Line has become vital to the FSA's efforts to reduce chronic disturbance to breeding shorebirds and seabirds.



ADAPTIVE MANAGEMENT AT THE BARGE CANAL ISLANDS



Location

The Barge Canal spoil islands are located within the Margorie Harris Carr Cross Florida Greenway State Park in Florida's Nature Coast (Fig. 1). A byproduct of the state's largest deauthorized public works project, the Barge Canal islands were created in the 1960s and now support one of the largest concentrations of nesting American oystercatchers in Florida.

Data

At the Barge Canal islands, monitoring partners have used the Breeding Bird Protocol since 2011 to track breeding adults, nest attempts, hatching outcomes, and chick survival. They collected data about human disturbance, overwash, and predation events and entered their observations into the FSD. Despite having many nesting pairs, monitoring data showed a repeated pattern of few fledglings at the Barge Canal islands.

Problem

Before managers could take effective action, they needed to understand why reproductive effort was not translating to reproductive success. Evidence from FSD data enabled FSA partners to secure funding to investigate the factors limiting nest and chick survival. Increased monitoring resources revealed overwash, human disturbance, and predation were all causes of failure. For example, of the nests that failed in 2018, 35% failed due to predation.¹ Chick survival was also low. Over time, the growth of woody vegetation attracted a variety of predators, and the funded research confirmed predation of American oystercatcher nests and chicks.²

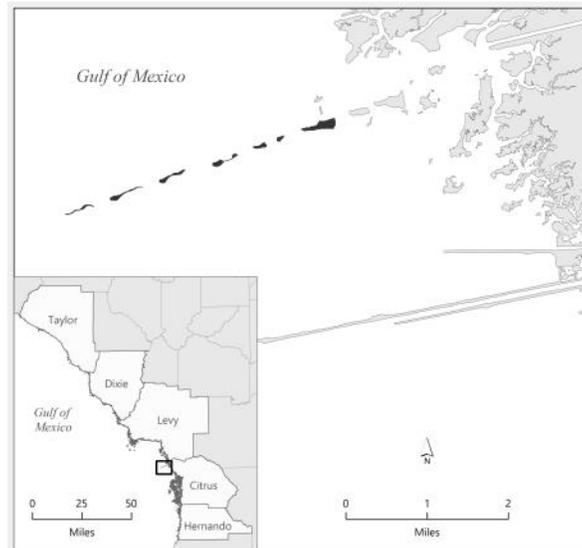


Fig. 1 Map of the Barge Canal islands in black. Inset map showing the counties in the Nature Coast; the black box indicates the location of the Barge Canal islands.

Management Actions

To improve nest and chick outcomes, FSA partners developed a management plan to reduce predation on the island with the greatest concentration of predators. Beginning in 2019, [FLDEP](#) and [FWC](#) removed vegetation used by species that were documented predating oystercatcher nests and chicks.

Outcome

The vegetation management actions to reduce predator pressures and improve reproductive outcomes were successful. After FSA partners coordinated to reduce vegetation, there were an astounding 25 fledglings in 2021. That is nearly four times the average of the previous eight years!

What's Next

Continued monitoring and management are essential for responding to the evolving suite of pressures at nesting sites. While human disturbance remains a concern at the Barge Canal islands, frequent monitoring and collaborative efforts have reduced predation and improved reproductive success. High-quality monitoring data and effective communication each nesting season help managers tailor actions to improve reproductive success.

¹ Florida Fish and Wildlife Conservation Commission (FWC) 2022. Monitoring data retrieved from the Florida Shorebird Database (FSD), August 12, 2022.

² Vitale N, Brush J, Powell A. 2021. Factors limiting reproductive success of American oystercatchers (*Haematopus palliatus*) in Florida's southern Big Bend region. *Waterbirds*. 44(4):449-462.





REFLECTIONS



American oystercatcher, photo by Britt Brown

Looking Back and Looking Forward

For decades, the Florida Shorebird Alliance has proved that collaboration is essential for making conservation gains. Through collaboration, a standardized monitoring protocol and a centralized database were established, propelling the shorebird conservation community into a new era of capacity-building and informed action. This comprehensive model of avian monitoring allowed the FSA to reach important conservation benchmarks, including implementing species conservation plans and developing abundance estimates for the focal species.

The anticipated release of the IBNB Guidelines in 2023 marks yet another substantial milestone in the FSA's contribution to data-informed management efforts across the state. With over ten years of data in the Florida Shorebird Database, partners have established a true long-term monitoring program that is invaluable for informing management actions

and measuring their effectiveness. As we move forward into the next decade, we will develop strategies to track population trends for the five focal species. Trend information will be central to gauging progress towards our overarching goal of growing focal species populations. Indeed, your continued dedication to the conservation of beach-nesting birds is already improving reproductive outcomes and increasing local awareness of these vulnerable species.

We can expect the next decade to be filled with new and recurring monitoring and management challenges. But we have shown the community of FSA partners will collaborate to overcome obstacles to achieving conservation success. We will continue to adapt our management strategies to ensure conservation progress in Florida's ever-changing coastal landscape.

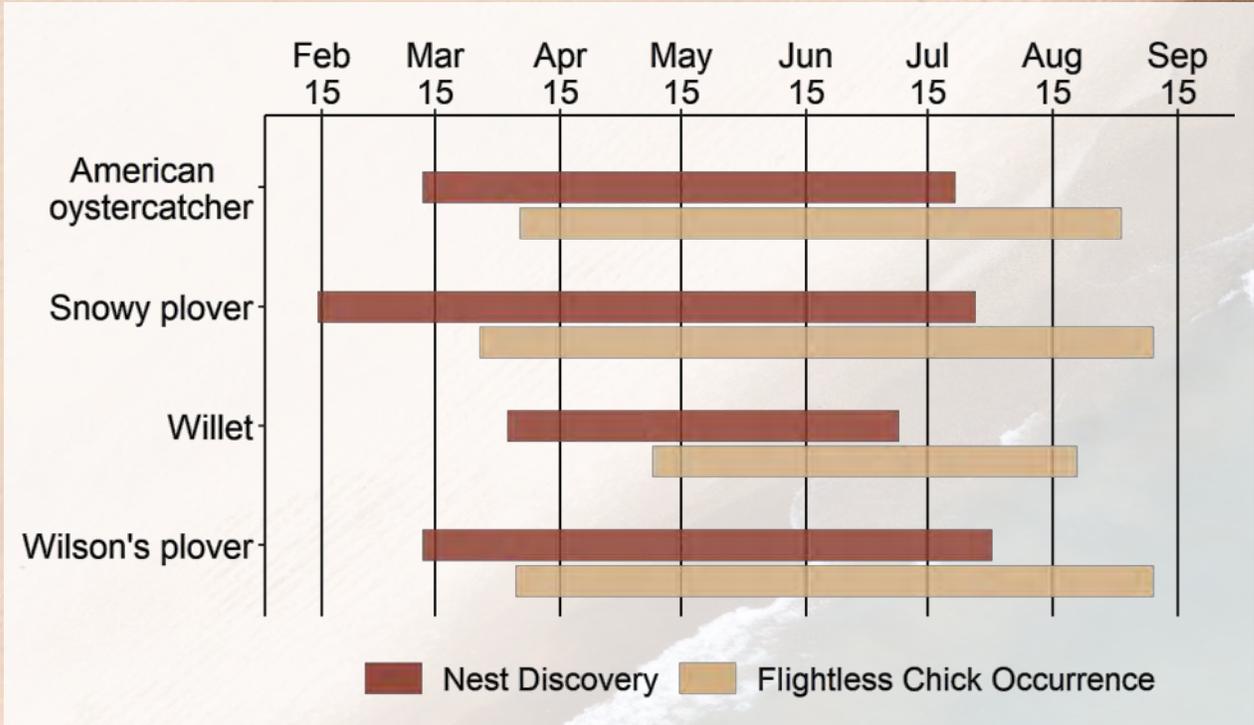


Timing of Ground Nesting & Flightless Chicks

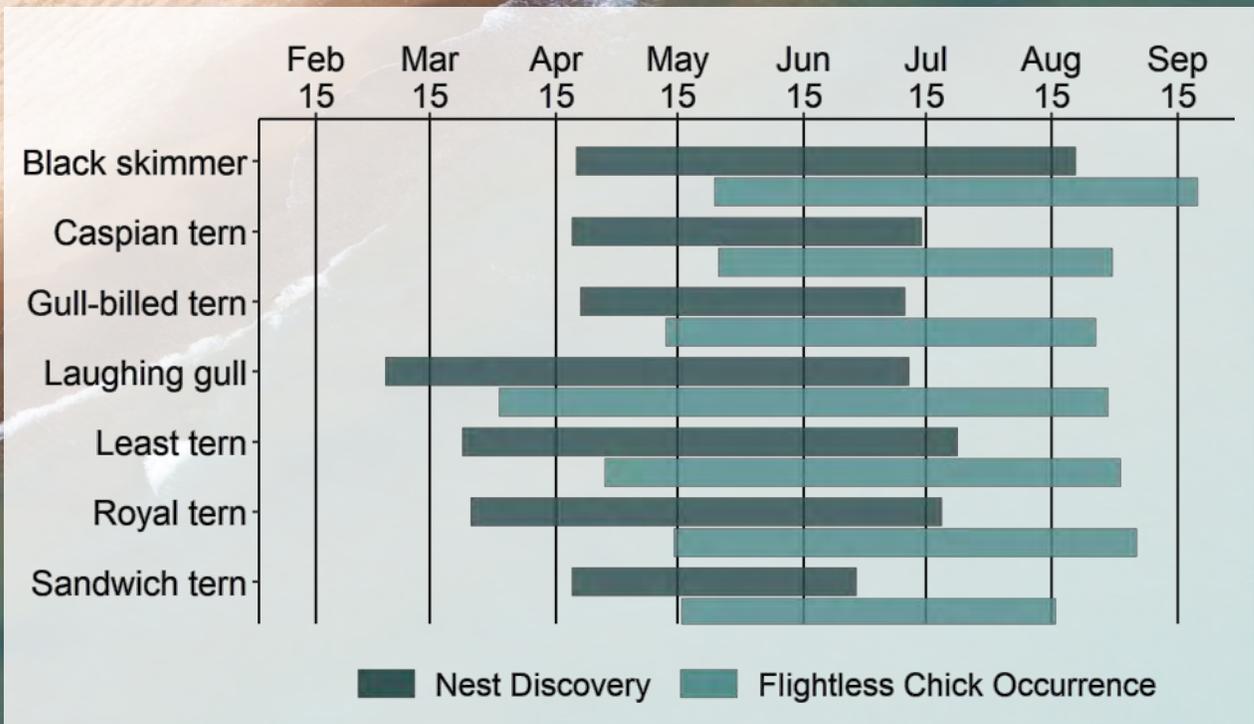
Sensitive time periods for nests and chicks on beaches throughout Florida

Discovery dates may be influenced by FSD survey windows; nests and chicks can occur outside these ranges.

SHOREBIRDS



SEABIRDS



Ground nest discovery dates and flightless chick observations from the Florida Shorebird Database (FSD) for 2014-2021

Query Date: July 8, 2022; source data server: FWC-WPCL001-A



AMERICAN OYSTERCATCHER

Haematopus palliatus

Conservation Status in Florida: Threatened
per 68A-27 F.A.C.

LOCAL POPULATION INCREASES

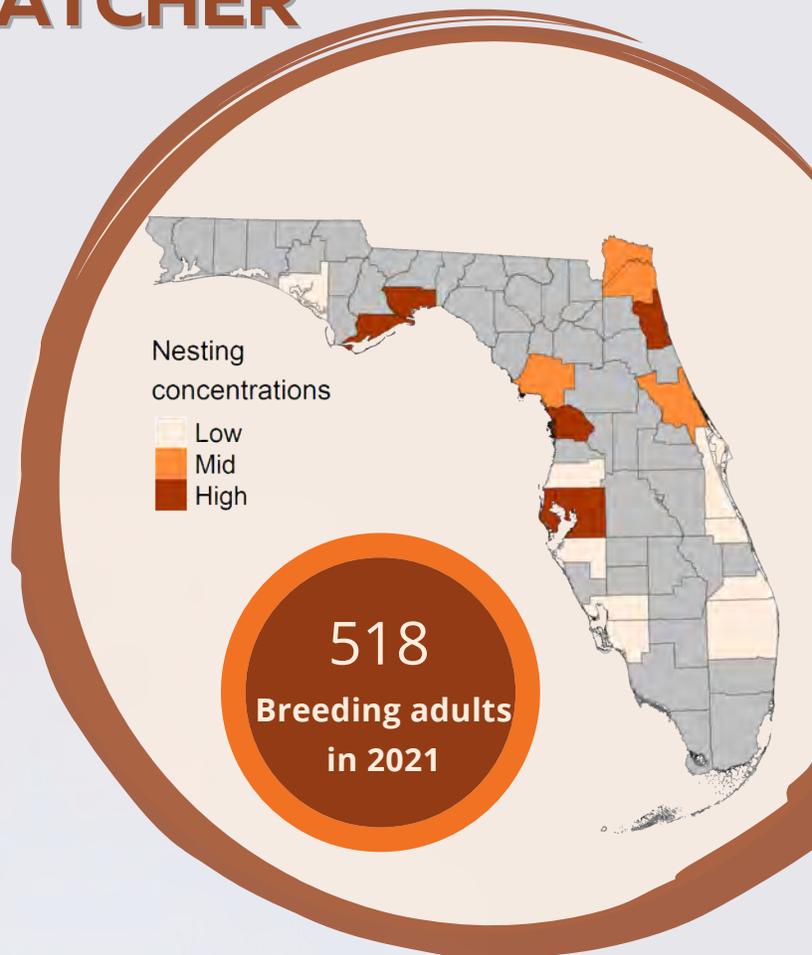
The Tolomato River area currently supports the largest concentration of nesting oystercatchers (72 adults) in Florida and has grown by 20 adults in just two years.

THREATS

Oystercatchers are dependent on low-lying coastal habitats for breeding and wintering and are particularly vulnerable to the effects of climate change and sea-level rise.

WHERE THEY BREED

They nest on sand/shell rakes, natural islands, spoil islands, beaches, and occasionally rooftops.



SOCIAL MEDIA SUPERSTAR

The most photographed oystercatcher in Florida resides in Pinellas County. Red AE is 10 years old and originally from Georgia. After exploring the Nature Coast, AE discovered the wonderful beaches of Outback Key and Shell Key Preserve and never left.

Banding Insights

GOING WEST

Banded oystercatcher chicks from the panhandle have been checking out possible real estate in Alabama - these are the first records of Florida banded birds in Alabama.

PRODUCTIVE

Red 19 "Julia" who breeds on Julia's Island in St. Johns County was banded as an adult and is at least 10 years old and has produced at least 10 fledglings.

YOUNG TRAVELERS

Band information has revealed that young birds do not always spend their first winter with their parents and they tend to move around until they are of breeding age.

LONG-LIVED

In Florida, the oldest documented oystercatcher is more than 14 years old. Red R5 was also the first oystercatcher ever banded in Florida.



BLACK SKIMMER

Rynchops niger

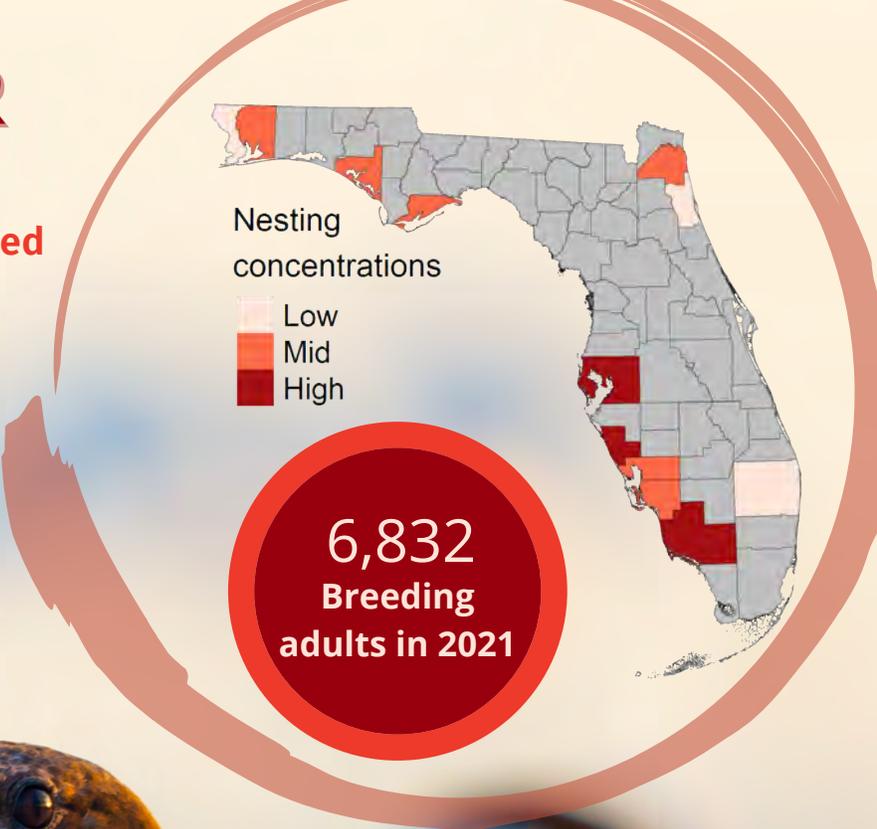
Conservation Status in Florida: Threatened per 68A-27 F.A.C.

COLONY CONCENTRATIONS

In 2021, the largest skimmer breeding colony on the Gulf Coast was in Big Marco Critical Wildlife Area. On the Atlantic Coast, the biggest colony was in Nassau Sound Islands Critical Wildlife Area.

SMALL NUMBER. BIG IMPACT.

Less than 1% of the Florida population nests on rooftops. Seemingly a small number, these rooftops are critical nesting habitats in areas where they occur.



PROTECTION IN THE MIX

For extra protection, skimmers nest in colonies with other species that have a greater response to predator disturbance.



MOVEMENT PATTERNS

NATAL COLONY

In Florida, only about 1/3 of black skimmers return to their natal colony to breed. Most skimmers join colonies within 50 miles from their natal colonies, but both males and females have been found breeding over 150 miles from where they were born!

LOCALS

The majority of skimmers born in Florida spend both the breeding and non-breeding seasons in the state. However, a few overwinter in Georgia, Louisiana, Mississippi, and even the Yucatan Peninsula in Mexico.

SNOW BIRDS

In winter, banded skimmers from Massachusetts, New York, New Jersey, Virginia, North Carolina, and even Mississippi have been seen on Florida beaches! These "snow birds" are particularly fond of Marco Island where large numbers mix with Florida birds.

LOVE BIRDS

Skimmers are monogamous, and pairs will stay together for many years, meeting at breeding grounds even if they are apart during winter.



Photos: Britt Brown



LEAST TERN

Sternula antillarum

Conservation Status in Florida: Threatened
per 68A-27 F.A.C.

COLONY CONCENTRATIONS

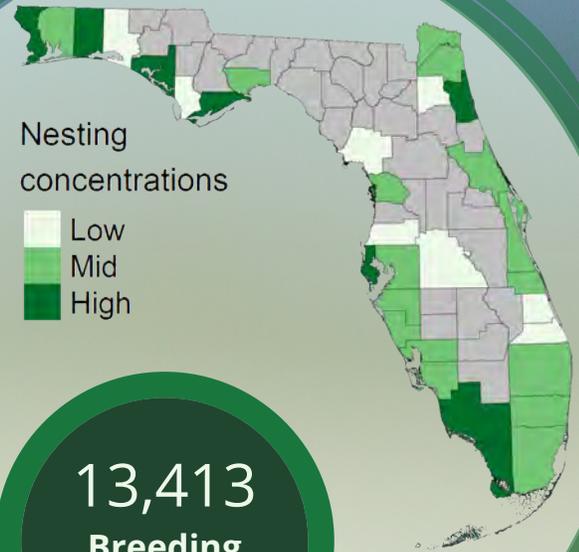
In 2021, the largest least tern ground colony was in Collier County. The largest rooftop colony was in Pinellas County.

FORAGING STRATEGIES

Research revealed that least terns can forage up to 18 miles away from the colony. During incubation and brood-rearing, adult least terns forage near colony resources (up to 5 mi). During later stages of the breeding cycle, they forage farther from the colony (up to 12 mi).

BREEDING AGE

Least terns in Florida do not breed when they are one year old, but most breed in their second year.



13,413
Breeding
adults in 2021



FLEDGLING DISPERSAL

Most fledglings disperse from the colony site within three weeks of fledging. They can travel up to 120 miles from their natal colonies six weeks after fledging.



DISTANCE TO WATER

Distance to a body of water is one of the most important features for predicting if a gravel rooftop will be occupied by least terns.

CHECK FOR CHICKS

When disturbed, flightless chicks gather at the edges and corners of a rooftop. Routinely check for fallen chicks when monitoring a rooftop-nesting site.

BEFORE MIGRATION

Most chicks who hatch on a rooftop go to a nearby beach, perhaps to practice their foraging techniques, before migrating to South America for the winter.



ROOFTOPS TO BEACHES

Not all least terns who hatch on rooftops become rooftop-nesters. Several banded rooftop-born chicks have been observed nesting on beaches.



Photos:
Britt Brown

November 2022
www.flshorebirdalliance.org



Snowy Plover

Charadrius nivosus

Conservation Status in Florida: Threatened
per 68A-27 F.A.C.

NEST SUCCESS

Snowy plovers experience higher hatch rates when nesting in locations with sparse vegetation and high densities of shell or other debris.

SITE FIDELITY

Site fidelity is often higher for male vs. female snowy plovers, and is driven by their success in hatching chicks the prior year.

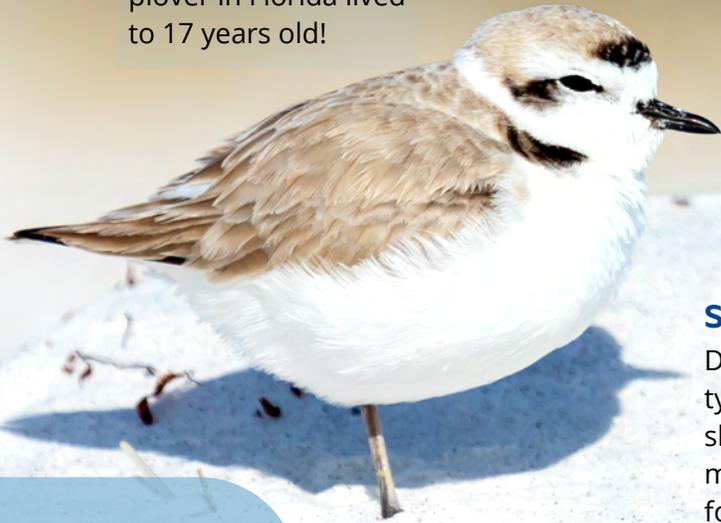
AGE OF FIRST NEST

Females have a **98%** likelihood to breed in their first year. In comparison, males have an **80%** likelihood. Males will often maintain territories in their first year in an attempt to attract a female.

17

LONG-LIVED

The oldest snowy plover in Florida lived to 17 years old!



Breeding Behavior

PRE-NESTING

Adults are usually observed paired, and alternate between scraping, preening, or chasing off individuals that enter their territory. May call a "churr" while chasing other adults.

NESTING

Adults may be incubating or shading eggs. When flushed from the nest, you may see only a single adult. Adults may slink away, head bob, or conduct ground distraction displays. Adults may call a "tooorEET" from the ground.

BROOD-REARING

One or both parents are typically alert, running and/or flying around, conducting distraction displays, and are very vocal. Using "purt purt churr" often repeating and alternating with "tooorEET" from the ground or in flight.

MISTAKEN IDENTITY

Did you know that late season females are often confused for fledglings? While both may lack dark markings, look for worn feathers on females and crisp, fresh feathers on fledglings.

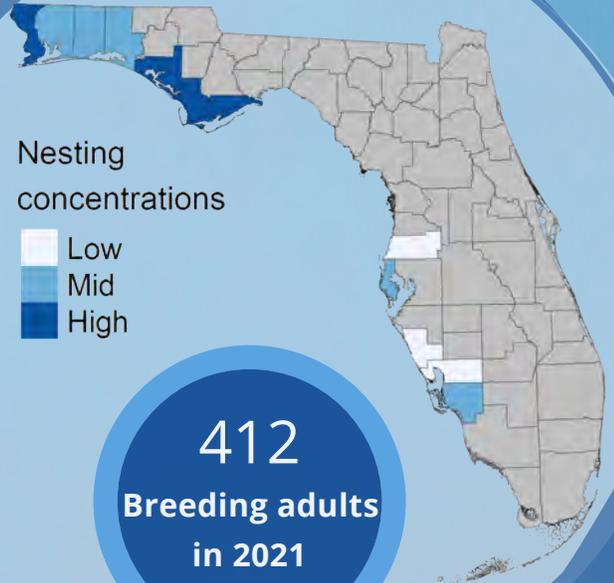
SKEWED SEX RATIO

Differences in adult survival typically result in a male-skewed sex ratio, creating more nesting opportunities for females than for males.

REGIONAL OCCURRENCE

80% of the Florida breeding population is found in the panhandle.

Nesting concentrations



412
Breeding adults
in 2021



Photos:
Britt Brown, Kevin Christman

November 2022
www.flshorebirdalliance.org



WILSON'S PLOVER

Charadrius wilsonia

Conservation Status in Florida: Species of Greatest Conservation Need

WHERE THEY BREED

They nest in a variety of high salinity habitats along the Atlantic and Gulf coasts, including salt flats, sandy beaches, shell rakes, lagoons, and marsh edges.

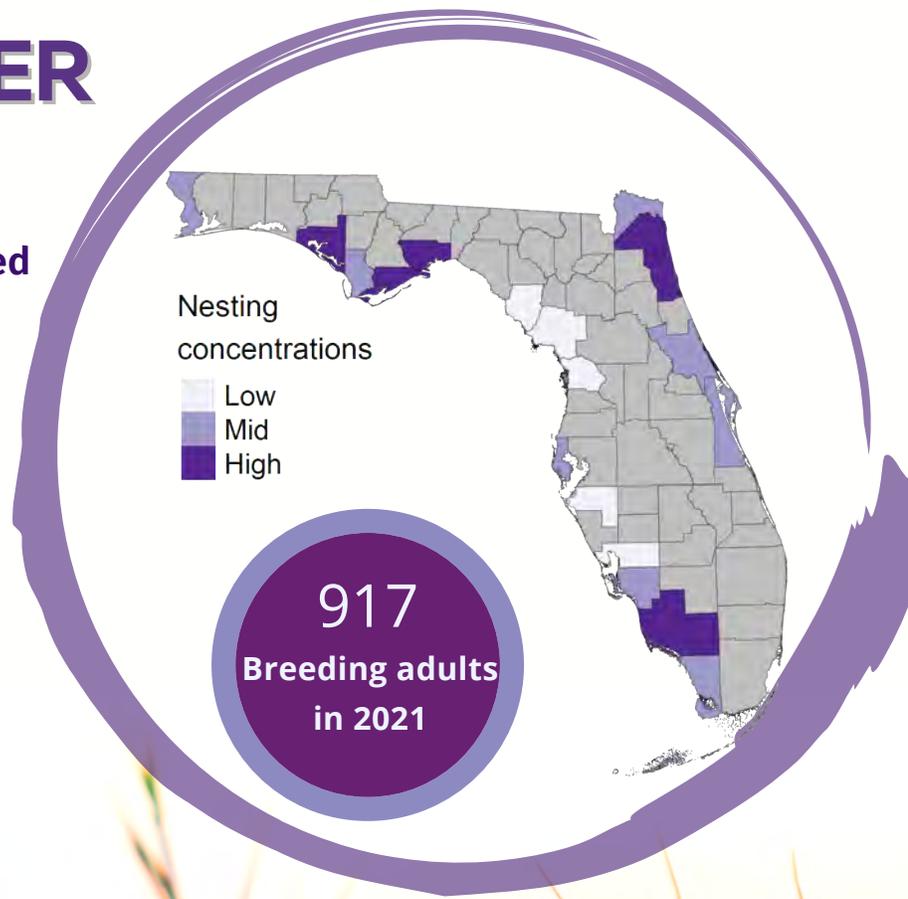


DIET

Although fiddler crabs are a preferred food source, when breeding at locations where fiddler crabs are not present, they have a varied diet, including marine worms, sand flies, dragonflies, amphipods, and ghost crabs.

HIGHEST CONCENTRATION

The highest abundance of breeding Wilson's plovers in 2021 were found at St. Marks National Wildlife Refuge and Anastasia State Park.



COAST TO COAST

Banding data show Wilson's plovers move between the Gulf and Atlantic coasts of Florida. Individuals banded in the panhandle have been recorded (or re-sighted) along the eastern seaboard, and the inverted pattern has also been reported.

GROUP RESPONSE

Although they are a solitary species, they will move in small groups to raise alarm when intruders enter their breeding territories.

Movement Patterns

INTERANNUAL VARIATION

Wilson's plovers exhibit considerable variation in breeding abundance between seasons in response to local habitat conditions.

ACROSS THE GULF

Based on band resights, fledglings from the Florida panhandle are likely breeding in other Gulf States like Mississippi.

11

OLDEST PLOVERS

The oldest banded Wilson's plovers in Florida are 11 years old. Three males from Tyndall Air Force Base in the panhandle hit this milestone.



Photos:
Britt Brown

November 2022
www.flshorebirdalliance.org

