



## **Duck Nesting Success: What Is It, and What Are The Important Things That Affect It?**

### ***The Bottom Line:***

***“The population growth rate of upland nesting ducks that breed in the Prairie Pothole Region is influenced more by their nesting success than by any other aspect of their life cycle. No factor is more important in determining nesting success than habitat.”***

### ***What is nesting success? How important is it?***

- Nesting success is defined as the percentage of nests that successfully hatch at least one egg.
- Nesting rate, clutch size, nesting success, re-nesting rate, brood survival and female survival are all important variables that affect the size of prairie duck populations. However, nesting success is normally the most important factor. Other factors may be more important in other breeding areas or for other species.

### ***What level of nesting success is necessary to maintain duck populations?***

- The nesting success rate necessary to maintain duck populations depends on other factors such as hen survival rates, brood survival rates, and nesting rates. For example, lower nesting success rates can sustain populations in an area if brood survival or female survival rates are higher.
- Most research suggests that 15% nesting success is necessary to maintain mallard populations. Other species such as pintails and blue-winged teal require 20% to maintain populations because they don't normally re-nest as readily if their first nest fails.
- Although 15% nesting success might seem low, ducks have experienced high predation rates for thousands of generations, even when breeding areas were completely natural. Re-nesting is a critical adaptation to allow the birds to overcome the effects of normally low nest success rates.

***I've heard that nesting success rates are below 15% at nearly all places across the breeding areas. Is this true?***

- No, it is not. Since 2000, DU has conducted long-term research across nearly 40 study sites in the Missouri Coteau region of North and South Dakota. Sites have had greater than 15% nesting success nearly 1/3 of the time with several areas with large blocks of intact native grassland yielding greater than 30% nesting success. One site had a phenomenal 54% nesting success.
- Environmental conditions across years are also important. Under the right conditions almost any site can have good nesting success while under other conditions even the best sites may have an “off” year.
- DU is obtaining long-term information from a wide range of sites across the PPR. We must better identify the habitat and landscape characteristics that produce higher nesting success in most years so we can focus protection/restoration efforts on those critical regions.

***I've heard nesting success in the Prairie Pothole Region has declined over time to an overall rate that is now lower than the rate necessary to maintain populations. Is this true?***

- Obviously not; we could not have had the 69% increase in some duck populations that we enjoyed on the prairies during the 1990's if that were true.
- The most recent analysis of historical nesting success from the 1930's – 2000's shows a short-term decline from the 1930's – 1950's followed by a pattern of up-and-down variability that we still observe today.

***I've heard that at least 40% grassland is necessary to achieve maintenance level nesting success rates. Is this true?***

- A study conducted by a group of partners, including DU, of CRP during the early 1990's demonstrated that, on the average, 15% nesting success was predicted to normally occur where the landscape was 40% grassland.
- That sets an important target for prairie habitat conservation objectives but it is not a “threshold” below which success is always low and above which it is always higher. Reality is much more complex. Nesting success in the CRP study, and many others, is found to be high even where there was less than 40% grassland, and low at times where grassland is greater than 40%.

***Given current nesting success rates, what's the best conservation strategy for maintaining or increasing duck populations?***

- We know that: areas with large, intact blocks of grassland have the highest nesting success rates over the long-term; almost all grassland areas can be very productive in some years, and; plowed cereal cropland is almost never productive.
- We also know that grasslands are under siege across the prairies and tens of thousands of acres of large and small blocks of cover are disappearing every year.
- It is most critical to do everything we possibly can to protect these “best of the best” habitats.
- It is also critical to work closely with the agricultural community to promote land management practices and public farm policies that are win-win for the farming enterprise and for prairie wildlife.
- We must not get distracted from these imperatives by shortsighted programs that do nothing for the long-term conservation of prairie waterfowl.