Captive breeding and release programmes are often criticized (correctly) for being executed ad hoc, with little attention paid to the science of recovery, to rigorous methodologies, or to an experimental approach. Nonetheless, it is our experience that captive breeding and release, when done in a systematic, science-based way, can be an important tool for bringing species back from the very brink of extinction. The Eastern Loggerhead Shrike (Lanius ludovicianus migrans) is critically endangered in Canada and the population, possibly the last of the migrans subspecies, continues to decline at an alarming rate. In 1997 Environment Canada established a captive population, and in 2001, under the guidance of Wildlife Preservation Trust Canada, began an experimental captive breeding and release program. It is the mandate of this multi-partner program to operate with the best available science; for example, the genetics of the captive population is strictly managed, disease screening is a regular component of the program, population modelling (PVA) helps determine the location and scope of field breeding sites, and experimentation is used to optimize both breeding and release techniques. Both successes and failures are documented, and management is adaptive. Attention is also paid to social context; by capitalizing on the public's fascination with captive breeding and release we are raising the species' profile and giving an important boost to the Eastern Loggerhead Shrike habitat stewardship program.