by Paul Hess

Brown Skuas in North Atlantic?

The possibility that Brown Skuas (*Stercorarius antarcticus*) from the far Southern Hemisphere occur in the northern Atlantic Ocean has tantalized seabirders for decades. The problem is that Brown Skuas are not obviously separable from two close relatives regularly present in this oceanic region, the Great Skua and the South Polar Skua. Alan Brady photographed a bird off New Jersey in 1987 that had several features pointing to Brown Skua (*Cassinia* 62:7–11). Edward S. Brinkley watched an intriguing bird off North Carolina in 1992 that differed from the plain-mantled South Polar Skuas he saw that day. This one's back was "heavily spangled with dollops of whitish-gold" (*Chat* 58:94–101). Michael O'Brien and Michael Tove photographed a bird off North Carolina in 1993 that Tove believes is consistent with a juvenile Brown Skua and with no other species. The photographs and Tove's description are available on Richard Newell's web site, <www.magikbirds.com>. No Brown Skua reports on either side of the North Atlantic have been accepted by checklist or rarity committees, and many "mystery skuas" are shown in Brian Patteson's image gallery at <www.seabirding.com>.

Now, molecular evidence points for the first time toward appearances of *antarcticus* in the North Atlantic. Two debilitated birds were captured in Great Britain: one in the Scilly Islands, Cornwall, in October 2001 and one at Glamorgan, South Wales, in February 2002. Newell's web site includes extensive photographs and information about them. The birds' mitochondrial DNA was analyzed, and Stephen C. Votier and five coauthors announced the results in 2004 (*Ibis* 146:95–102): "[W]e can be confident that both birds have Brown Skua maternal lineages."

The researchers could not rule out Brown Skua × South Polar Skua hybrids by genetic evidence or morphology. Limited hybridization has been documented by David F. Parmelee, who cautioned that field identification of hybrid offspring is "extremely difficult and likely will confuse observers along the migratory routes" (*Wilson Bulletin* 100:345–356). But Votier and his colleagues suggested that the chances of encountering one hybrid, let alone two, in the northern Atlantic are extremely low. They estimated that hybrids are equivalent to only 2.5 percent of the South Polar Skua population in the Atlantic. Further, the authors said, the Glamorgan bird's measurements (the Scilly bird was not measured) were not within expected ranges for a Brown × South Polar hybrid.

Votier's team also sought to determine the Glamorgan bird's subspecies. Three subspecies of Southern Hemisphere "Brown" Skuas are generally recognized: Falkland (the nominate race), Tristan (*hamiltoni*), and Subantarctic (*lonnbergi*). These three groups are so closely related that they apparently cannot be distinguished by DNA and perhaps only by complex biometrics. The authors interpreted the Glamorgan bird's measurements as most likely those of a Falkland Skua, which breeds in the Falkland Islands and along the coast of southern Argentina. Documentation of both birds has been submitted to the British Birds Rarities Committee and the British Ornithologists' Union Records Committee.

Birders have long speculated that **Brown Skuas** have wandered into northern hemisphere waters but have been frustrated in their efforts to assign definitive identifications to candidate birds. Recently, molecular studies of two debilitated birds in the U.K. (one of them shown here) have provided evidence for the occurrence of Brown Skua in the North Atlantic. *Kenfig, South Wales, United Kingdom; 3 February 2002. © David G. Carrington.*

Kittlitz's Murrelet: A New Puzzle

Thirty years ago, in well-known serendipity, tree surgeon Hoyt Foster discovered the first tree nest of a Marbled Murrelet described in North America, 147 feet up in a Douglas-fir in California (*Wilson Bulletin* 87:303–319). Ninety years ago, by much-less-publicized fortune, naturalist Frank E. Kleinschmidt found the first undoubted Kittlitz's Murrelet nest described in the world while he was bear-hunting high on a mountain in southwestern Alaska. "There on the bare lava, without even the pretension of a hollow, lay a single egg," Kleinschmidt marveled (*Condor* 16:117–118). Evidently, an

appropriate rule when studying these two unusual seabird species is to expect the unexpected.

A recent surprise came during research into the biology of Kittlitz's Murrelet in Prince William Sound, Alaska. Robert H. Day and Debora A. Nigro, who are experts in the natural history of this species, found at least 21 cases of apparent mixed-species "pairs" of Kittlitz's and Marbled Murrelet in the Sound during research between 25 May and 15 August from 1996 to 1998. Reporting the findings in 2004 (*Waterbirds* 27:89–95), Day and Nigro emphasized that they could not determine visually whether the birds were truly paired males and females, so they used the term "pair" in a general sense. They did note, however, that behaviorally the birds appeared to be mixed-species pairs in the strict sense; in each case the two individuals stayed with each other, swam away near each other when one of them was disturbed by the researchers, and searched for each other when they became separated.

In the first large-scale study of **Kittlitz's Murrelet** biology ever undertaken, researchers were surprised to find at least 21 instances of mixed pairs of Kittlitz's and Marbled Murrelets. If these are truly mated pairs, they might reflect the scarcity of "correct" mates for the declining Kittlitz's Murrelet. *Harriman Fjord, Alaska; June 1997. © R.H. Day.*

The authors made the discovery during the first large-scale study of Kittlitz's Murrelet biology ever undertaken. The *Exxon Valdez* Oil Spill Trustee Council funded it because an undetermined number of Kittlitz's Murrelets died in the Prince William Sound oil disaster in 1989 and because little was known about the status or ecology of the species. The small size of its population and its restricted distribution, breeding only in Alaska and far-eastern Russia, led the U.S. Fish & Wildlife Service to classify it as a "Species of Special Concern" and to designate it as a candidate for listing under the Endangered Species Act. The Service has estimated the Alaskan population of Kittlitz's Murrelet at only 9,500–26,700 birds, according to Kathy Kuletz at the Service's Anchorage office—a broad range that reflects difficulties in censusing the species. Numbers in Russia's Kamchatka region are less certain and require further investigation. Four sites in Alaska for which trend data are available showed declines of 75–84 percent during the past 10–16 years. The findings by Day and Nigro added considerable weight to that concern. In three years of cruises during the fledging period, they saw only one newly-fledged Kittlitz's Murrelet in the Sound. The near-total absence of young birds suggested that reproductive output was virtually zero in all three years.

Though the mixed-species "pairs" represented only 1.5 percent of Kittlitz's Murrelets and only 0.3 percent of Marbled Murrelets observed, the authors wondered whether the phenomenon might be a small-scale symptom of a large-scale reproductive and population problem. They speculated that the mixed pairs could represent attempts at hybridization by females of the relatively rare Kittlitz's Murrelet with males of the relatively more common Marbled Murrelet. Day and Nigro said that no genetic evidence has identified hybrid individuals; perhaps, then, if the mixed pairs were interbreeding, they were not producing young. In that case, such mixed matings could result in "wasted" breeding attempts, depressing the reproductive output of Kittlitz's Murrelet even further. The authors emphasized that those were inconclusive speculations, and they urged further study. The new puzzle is one more reason justifying the reputation of Kittlitz's Murrelet as mysterious, enigmatic, and poorly known.

Brown Pelican In Louisiana

George H. Lowery, Jr., spiced the Brown Pelican species account in his *Louisiana Birds* (1974) with a droll anecdote. Legislation adopting it as the official state bird neglected to specify which pelican was meant, and one year the American White Pelican appeared on Louisiana's license plates. But Lowery's drollery ended abruptly when he explained that "by 1958, when the lawmakers finally got around to specifying the Brown Pelican as the choice really intended, almost no individuals of the species could be found anywhere on our mainland shores!" Within five more years, all of the state's Brown Pelicans were gone—victims of the pesticide endrin washing into the Mississippi Delta, killing fish on which the pelicans' diet depended, and poisoning the birds themselves. The magnitude of the crash was astounding because the state's pre-pesticide population was conservatively estimated at 50,000 birds. Today, three decades after federal regulations sharply curtailed the use of endrin, Brown Pelicans have made a

remarkable comeback in Louisiana, according to a report in 2003 by G.O. Holm, Jr., and five colleagues (*Wilson Bulletin* 115:431–437).

The recovery plan originated in 1968, when 50 young pelicans were transplanted from colonies in Florida to several sites in Louisiana. The transplanted birds began to nest in 1971, and numbers grew to more than 400 by 1975. But endrin remained in the environment, and suddenly 40 percent of that restored population was lost during the spring of 1975 in another massive die-off linked to endrin contamination. Since that tragic stumble, endrin use was sharply restricted, the reintroduction project continued, and Louisiana's population grew exponentially to 16,405 nests that produced 34,641 young in 2001. Meanwhile in Texas, where reproductive failure caused by DDT was blamed for the collapse of that state's colonies, the population also increased swiftly, from fewer than 50 adults in the 1960s to a peak of 3,373 breeding pairs in 2001. The picture was different in Florida, where the population grew at increasing rates between 1968 and 1990 but then declined to 6,432 nests in 2001, far below the 1968–1990 average of 8,000. The decline occurred mainly along Florida's Gulf Coast, while Atlantic Coast colonies remained relatively stable, suggesting that subadults might have emigrated from western Florida and augmented Louisiana's boom.

Louisiana's official state bird, once extirpated, is now thriving along the south-central Gulf Coast. The **Brown Pelican's** recovery has resulted in large part from human intervention, and continued successes are likely to depend on continued proactive management on behalf of the species. *Louisiana coast; April 1999. © Brian E. Small.*

Eastern Brown Pelican populations breeding in Louisiana, Mississippi, and Texas remain on the Endangered Species list, although the U.S. Fish & Wildlife Service considers populations breeding in Florida, Alabama, and on the U.S. Atlantic coast to have recovered and has "delisted" them. The authors view stability of natural nesting habitat as the greatest potential problem facing the species in Louisiana. Barrier islands, the birds' preferred and most-successful nesting sites, are eroding rapidly and must be replenished with dredge material. Fortunately, the pelicans seem to adapt quickly to created islands. Recently, within one year more than 60 percent of the state's nesting population initiated a colony on a small island of dredge spoil. Stephen A. Nesbitt, one of the recent study's coauthors, warned in *Rare and Endangered Biota of Florida* in 1996 against comfortable optimism about the Brown Pelican's future anywhere: "[A]s was demonstrated by its disappearance in Louisiana, there is no security in population size." The Holm team's research shows encouragingly that a bit of human assistance with habitat and a lot of protection from poison will go far toward keeping Louisiana's state bird secure.

American Redstart Winter Habitat

Stable isotope analysis has evolved in less than a decade from an astonishing novelty to an increasingly versatile method of watching individual migrant birds year-round. Most famously, stable isotopes have bridged wide gaps of geographic knowledge about where a bird breeds, migrates, and spends the winter. More recently, the method has shown a remarkable power to identify not only general regions but also particular habitats. D. Ryan Norris and four coauthors took advantage of the latter capability in research they reported in 2004 (*Proceedings of the Royal Society of London–B* 271:59–64). By analyzing stable carbon isotopes in American Redstarts' blood, the team was able to relate the reproductive success of redstarts breeding in Ontario to the quality of their Neotropical winter habitat thousands of miles away. The results suggested that redstarts wintering in moist, "high-quality" habitats such as coastal mangroves and lowland forests produced more young in the subsequent nesting season than those wintering in arid, "low-quality" scrub-habitats.

Their findings rested on a useful atomic fact: The propor-

tion of the carbon-13 isotope in redstarts' blood differs between birds that have wintered in moist locations and those that have wintered in dry habitats. Each redstart arriving on the breeding grounds carries an "isotopic fingerprint" identifying whether its winter habitat was moist or dry. The distinction is significant because moist habitats provide enriched food for insectivorous birds at the end of the Neotropical dry season just before migration, when the best possible body condition is particularly important for survival.

Previous research by one of this study's coauthors, Peter P. Marra, had shown that redstarts wintering in high-quality habitats were in better physical condition, departed earlier for spring migration, and had higher annual survival rates than those occupying low-quality habitats. To project those findings toward the birds' reproductive success, Norris and his colleagues used "path analysis", a statistical approach designed to examine multiple causal relationships. Their path model indicated the following causal steps for adult males: (1) Those from high-quality habitats arrived earlier on the breeding grounds ➛ (2) Earlier arrival was correlated with earlier egg dates ➛ (3) Earlier egg dates led to earlier fledging dates ➛ and, finally, (4) Earlier fledging dates meant more young fledged. For females, no direct link appeared between habitat quality and arrival date, but the subsequent path was similar: (1) Those arriving earlier presumably paired with the earlier-arriving males ➛ (2) They had earlier egg dates ➛ (3) Earlier fledging dates resulted ➛ (4) More young were fledged. In fact, the path model predicted that redstarts from high-quality habitats would ultimately produce two more young than those from arid habitats. Second-year males, whose migration schedule differs from that of adult males, were not included in the path analysis.

Conservation of Neotropical migratory birds is aided by an understanding of how winter-habitat quality relates to breeding success. A recent study combining powerful and flexible statistical and molecular approaches (path analysis and stable isotope analysis, respectively) shows a link between habitat condition on the wintering grounds and reproductive success on the breeding grounds of the American Redstart. *Southern Ontario; May 2002. © Arthur Morris / Birds As Art.*

If the Norris team's model is correct, the prospect of a troubling outcome arises. The species has only a single brood each year and a clutch size of three to five eggs. For redstarts limited to low-quality winter habitats, some pairs would do no more than replace themselves in the population, and some would not even do that. Add the inevitable post-fledging mortality, and the outlook would be even worse. The researchers emphasized that coastal mangroves and tropical lowland forests—the very habitats that promote greater reproductive success—are among the world's most threatened ecosystems. If conserving them supports the productivity of American Redstarts, it should benefit the breeding success of many other Neotropical migrants as well.