A MARKHAM'S STORM-PETREL IN THE NORTHEASTERN PACIFIC

PETER PYLE, Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, California 94970

On 27 July 1991 I observed a Markham's Storm-Petrel (*Oceanodroma markhami*) at 29°59'N, 123°43'W, 293 nautical miles west-southwest of San Nicolas Island, California, and 416 nautical miles due west of Punta Baja, Baja California. I made the sighting at 1245 PST, while censusing birds and marine mammals from a research vessel, as part of a California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruise. The wind was light and high clouds were overhead, resulting in excellent observation conditions. From the bridge of the northbound vessel, about 15 meters above the water surface, I watched the storm-petrel fly toward the bow of the ship from the northeast, zigzag back and forth across the path of the ship 3–5 meters in front of the bow, then fly down the west side of the ship. I had excellent views as the bird banked two or three times in front of me. I then went up to the flying bridge where I resumed watching it for 6–8 minutes as it glided back and forth over the wake, at times tending to follow the ship, until I lost sight of it far to the south. I wrote a complete description of the bird an hour after the observation.

The bird was close in size to a Black Storm-Petrel (*O. melania*), being much larger than a Leach's (*O. leucorhoa*) or Ashy (*O. homochroa*) Storm-Petrel. The wings were slightly shorter and broader than a Black's. The tail was quite long, with a deep notch extending about an inch from the tip of the tail. The feet did not extend beyond the tip of the tail. The color of the bird was brown, slightly browner than a dark-phase Leach's Storm-Petrel, and similar to the color of a Brown Noddy (*Anous stolidus*). Large and very prominent pale brown bars on the upper surface of the wings extended from the wrists to the base of the tail. The coloration was otherwise uniformly brown, including the shafts of the primaries, which I closely studied as the bird banked in front of the ship. The bird flew in a very languid, graceful, and looping fashion. Its flight style alternated between short 3– 6-meter glides on stiff wings and three-dimensional forays in the air, up to 2 meters above the water. When looping its flight style resembled that of Leach's Storm-Petrel except that it was noticeably slower and more graceful.

The bird was too big for all other dark storm-petrels except the Black, Matsudaira's (*O. matsudairae*), Tristram's (*O. tristrami*), and the rare dark-phase White-throated (*Nesofregetta fuliginosa*) Storm-Petrels (Harrison 1987). All criteria on the observed bird match those of Markham's while several marks eliminate each of the other species: the White-throated has more rounded wings, feet that extend beyond the tail, and a completely different flight style that includes kicking off of the water; Tristram's has grayer plumage, a paler rump, and a lower, faster flight style; Matsudaira's is blacker with prominent white primary shafts, a shorter tail, and a lower, more erratic flight style (Murphy 1936, Bailey et al. 1968, Harrison 1987, Pratt et al. 1987, pers. obs.).

Markham's and Black Storm-Petrels have been considered difficult to distinguish in the field (Murphy 1936, Harrison 1987); however, recent experience (Brown 1980, L. Spear pers. comm., D. Roberson pers. comm.) suggest that they are readily separated. I saw approximately 70 Black Storm-Petrels during the cruise, all within 20 km of the California coast, including 40 subsequent to my observation of the Markham's. These differed from the Markham's in being blacker and noticeably shorter-tailed, lacking prominent marks on the upper wing, and having a completely different flight style, remaining low to the water, looping up only when upon an item of food, and otherwise flying much more erratically, like a nighthawk, with deep wing beats interspersed with short glides. The different flight style and tail length seem to

be the best features to distinguish the Markham's from the Black Storm-Petrel, while differences in plumage color and prominence of the wing bar, marks that depend on the amount of feather wear, appear to be useful at least during the late summer.

In the area where the Markham's Storm-Petrel was observed (Scripps Institute of Oceanography 1992 for stations 90 120 to 93 120), the sea surface temperature was 18° C, sea surface salinity was about 33.6 parts per thousand, and the temperature–salinity curve was typical of the eastern Pacific transitional zone (Roden 1971, Lynn 1986, A. Mantyla pers. comm.). The frontal boundary between these subtropical waters and the colder and less saline subarctic water mass lay 20–30 nautical miles northeast of the observation locality. The position of this front was typical, and no major anomalous water patterns were noted during the cruise (A. Mantyla pers. comm.).

Markham's Storm-Petrel occurs in the cooler waters of the Peru Current, off western South America, from January to July but is scarce there during the rest of the year (Murphy 1936). From July to September it has been recorded in warm equatorial waters west to 111° W and north as far as 10° N, in the vicinity of Clipperton Island (Loomis 1918, Pitman 1986, L. Spear pers. comm., D. Roberson pers. comm.). My sight record of a Markham's Storm-Petrel, approximately 2500 km to the northwest of Clipperton, could have represented a vagrant that had overshot this normal dispersal pattern. Alternatively, it may indicate that the species occasionally but regularly visits waters of the transitional zone or frontal boundary well off California or Baja California in late summer, in an area poorly covered by ornithologists.

The CalCOFI program is jointly sponsored by the Scripps Institution of Oceanography (SIO), the Southwest Fisheries Center, and the National Oceanographic and Atmospheric Administration (NOAA). I thank George Hemmingway of SIO and the captain and crew of the NOAA ship *David Starr Jordan* for arranging and facilitating my participation. The bird and marine mammal censusing on these cruises is supported by National Science Foundation grant OCE 9019394 to J. A. McGowan and R. R. Veit. I also thank A. Mantyla and S. Gripp of SIO for assistance with the oceanographic analysis and R. G. B. Brown, D. Roberson, L. B. Spear, R. R. Veit, and P. Unitt for information and helpful comments on the manuscript. This is Point Reyes Bird Observatory contribution 540.

LITERATURE CITED

Bailey, R. S., Pocklington, P., and Willis, P. R. 1968. Storm-petrels *Oceanodroma* spp. in the Indian Ocean. Ibis 110:27–34.

Brown, R. G. B. 1980. The field identification of Black and Markham's storm-petrels *Oceanodroma melania* and *O. markhami*. Am. Birds 34:868.

Harrison, P. 1987. Seabirds of the World. A Photographic Guide. Chistopher Helm, London.

Loomis, L. M. 1918. A review of the albatrosses, petrels, and diving petrels. Proc. Cal. Acad. Sci. Ser. 2, part 2, 12:1–187.

Lynn, R. J. 1986. The subarctic and northern subtropical fronts in the eastern North Pacific Ocean in spring. J. Phys. Oceanogr. 16:209–222.

Murphy, R. C. 1936. Oceanic Birds of South America. Am. Mus. Nat. Hist., New York.

Pitman, R. L. 1986. Atlas of seabird distribution and relative abundance in the eastern tropical Pacific. Admin. Rep. LJ-86-02C, Southwest Fisheries Center, P.O. Box 271, La Jolla, CA 92038.

Pratt, D., Bruner, P. L., and Barrett, D. G. 1987. A Field Guide to the Birds of Hawaii and the Tropical Pacific. Princeton Univ. Press, Princeton, NJ.

Roden, G. I. 1971. Aspects of the transition zone in the northeastern Pacific. J. Geophys. Res. 76: 3462–3475.

Scripps Institute of Oceanography. 1992. Physical, chemical and biological data report. CalCOFI cruises 9108 and 9110. SIO Ref. 92-16.

Accepted 21 October 1992

OBSERVATIONS OF DARK-RUMPED PETRELS OFF OREGON AND CALIFORNIA

PETER PYLE, LARRY B. SPEAR, and DAVID G. AINLEY, Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, California 94970

We report two observations of the Dark-rumped Petrel (*Pterodroma phaeopygia*) off Oregon and California. Spear and Ainley made the first observation on 19 October 1986 at 0830 PST, while censusing birds from a southbound research vessel, at 44° 10' N, 130° 34' W, 500 km (270 nautical miles) off Cape Arago, Oregon. They watched the bird from the flying bridge as it flew west for about 45 seconds, as close as 150 meters, in good lighting. Pyle made the second observation on 2 August 1991 from a vessel conducting research as part of the California Cooperative Fisheries Investigations (CalCOFI) program, at 31° 55' N, 124° 11' W, 419 km (226 nautical miles) west-southwest of San Miguel Island, California, or 710 km (383 nautical miles) due west of Ensenada, Baja California. The bird was studied from the stern of the vessel, as close as 15 meters distance, at 0700 PST while the ship was collecting oceanographic data at CalCOFI station 83 110. The bird was attracted to a slick created behind the ship, over which it sallied for several minutes before departing.

Both birds were large long-winged *Pterodroma* petrels. Field marks noted on each included white underparts with bold black borders on the leading edge of the underwing, extending from the wrist to the center of the underwing coverts, dark gray to brownish gray upperparts with, at certain angles of lighting, an indistinct M-pattern across the upperwing coverts, black nape and crown that contrasted with the lighter back and extended below the eye and to the sides of the neck, and a large white patch at the base of the bill. The combination of these features is diagnostic of the Dark-rumped Petrel (Harrison 1987). The most similar Pacific *Pterodroma* petrels, the Juan Fernandez (*P. externa*) and White-winged (*P. leucoptera*), are ruled out by size and structure along with the combination of the bold underpart pattern, indistinct upperpart pattern, and ample amount of white on the forehead. All three observers had had extensive prior field experience with Dark-rumped and similar *Pterodroma* petrels.

Sea surface temperatures and salinities were similar at each observation locality: 16.4°C and 32.7 parts per thousand off Oregon, 16.5°C and 32.9 parts per thousand off California. The low salinities (<33.4 parts per thousand) combined with additional data collected on the CalCOFI cruise (Scripps Institution of Oceanography 1992) indicate that the birds were sighted over subarctic water (Roden 1971, A. Mantyla pers. comm.), in the extensive area where the California Current and central Pacific water masses intermingle (Peláez and McGowan 1986). Regions of this mixing, with temperatures and salinities similar to those where the Dark-rumped Petrels were observed, often extend within 185 km (100 nautical miles) of the North American coast.