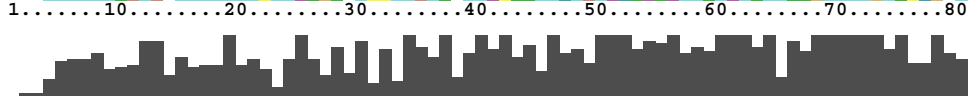


S2 Fig. Alignment of full-length bird MOXD2 sequences

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1 Rifleman ---MMAIVFSRIKRMFFLLFFPCFCGQOLAPPPLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
24 Barn owl ---MMAVLLSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
25 Turkey vulture ---MMAVLFSSRIKMDLFLFLFCFCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
26 White-tailed eagle ---MMAVLFSSGIKGMFLFLLFLFCFCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
27 Golden eagle ---MAVLFSSGIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 76
28 White-tailed tropicbird ---MMAVLFSSRIKGMFLFLLFLFCFCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
30 Red-throated loon ---MMAVLFSSRIKGMFLFLLFLFCFCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
33 Northern fulmar ---MMAVLLSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
38 East African crowned crane ---MMAVLLSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 76
39 Hoatzin ---MAVLLSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 76
40 Red-crested turaco ---MMAVLFSSRIKGMFLFLLFLFCFCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
41 MacQueen's bustard ---MKAUVFSSRIKSMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTAGVAFGFSPHGEL 77
42 Common cuckoo ---MMAVLFSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
43 Chuck-will's-widow ---MMAVLFSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
45 Flamingo ---MMAVLFSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
46 Great crested grebe ---MMAVLFSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 80
50 Mallard ---MMAVLFSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 76
56 White-throated tinamou ---MLVDFLSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77
57 African ostrich ---MVAVLFSSRIKGMFLFLLFLPFPCGQOPAPLLRFSTFLDPSNMVYLRWDHDEQELMTFELQVHTTGWVAFGFSPHGEL 77

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1 Rifleman PGSDIVIGGVFPNGSIYFSDCHMEGEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
24 Barn owl PGSDIVIGGVFPNGSIYFSDCHMVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
25 Turkey vulture PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
26 White-tailed eagle PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
27 Golden eagle PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 156
28 White-tailed tropicbird PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMMFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
30 Red-throated loon PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGM 157
33 Northern fulmar PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
38 East African crowned crane PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 156
39 Hoatzin PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 156
40 Red-crested turaco PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
41 MacQueen's bustard PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
42 Common cuckoo PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETCTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
43 Chuck-will's-widow PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPDDQDITMDTARLVAFAFGT 157
45 Flamingo PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
46 Great crested grebe PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 160
50 Mallard PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 156
56 White-throated tinamou PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMMFKRHLRTCDPNDLDTMDTARLVAFAFGT 157
57 African ostrich PGSDIVIGGVFPNGSIYFSDCHVDEATLEEDSQDYQLLSVTENETSTTMLFKRHLRTCDPNDLDTMDTARLVAFAFGT 157

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1 Rifleman DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
24 Barn owl DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
25 Turkey vulture DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
26 White-tailed eagle DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
27 Golden eagle DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 236
28 White-tailed tropicbird DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
30 Red-throated loon DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
33 Northern fulmar DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 235
38 East African crowned crane DDIQVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 236
39 Hoatzin DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 236
40 Red-crested turaco DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
41 MacQueen's bustard DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
42 Common cuckoo DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
43 Chuck-will's-widow DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
45 Flamingo DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
46 Great crested grebe DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 240
50 Mallard DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 236
56 White-throated tinamou DDIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237
57 African ostrich ADIVQFFKGRFSSKSLFLMRYRGPSTDPKIFFTYDLRLDNFAVPVEETKYACTFIPLPVVKQKHHIYKFFPVITPHNI 237

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1 Rifleman TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
24 Barn owl TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
25 Turkey vulture TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
26 White-tailed eagle TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
27 Golden eagle TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 316
28 White-tailed tropicbird TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
30 Red-throated loon TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
33 Northern fulmar TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 315
38 East African crowned crane TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 316
39 Hoatzin TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 316
40 Red-crested turaco TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
41 MacQueen's bustard TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
42 Common cuckoo TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
43 Chuck-will's-widow TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
45 Flamingo TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
46 Great crested grebe TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 320
50 Mallard TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 316
56 White-throated tinamou TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317
57 African ostrich TLVHHILVYACGNASVLPSSGIDDCYGANPDFALCSQVLVGVAVGGESYQFPDEAAVSIPTPWPDPQYRLEIHYSNFDLLP 317

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1 Rifleman GLIDSSGIRIYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
24 Barn owl GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
25 Turkey vulture GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
26 White-tailed eagle GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
27 Golden eagle GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 396
28 White-tailed tropicbird GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
30 Red-throated loon GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
33 Northern fulmar GLIDSSGVRYYTPELRKHDVGILOTGIFSPVHFIPPGAESYRSYGLCNSSQFDEMNGMAVPDMHFVAYLLHHTLAGRG 382
38 East African crowned crane GWIDSSGIRIYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 396
39 Hoatzin GLIDSSGIRIYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 396
40 Red-crested turaco GLIDSSGVRYYTPELRKYDAGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEINGMLVDPDLHFVAYMLHHTLSGRG 397
41 MacQueen's bustard GLIDSSGIRIYYTPELRKYDVGILQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
42 Common cuckoo GLIDSSGIRIYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
43 Chuck-will's-widow GLIDSSGVRYYTPELRKHDVGVLTQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
45 Flamingo GLIDSSGVRYYTPELRKYDVGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
46 Great crested grebe GLIDSSGVRYYTPELRKYDVGVLQGVIFSPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 400
50 Mallard GLIDSSGVRYYTPEVRKYDVGILQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGTPVDPDLHFVAYLLHHTLAGRG 396
56 White-throated tinamou GLIDSSGVRYYTSELRKYDAGVLQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEINGMLVDPDLHFVAYLLHHTLSGRG 397
57 African ostrich GLIDSSGVRYYTPELRKYDVGILQGVIFFPVHFIPPGAESYRSYGLCNSSQFDEMNGMLVDPDLHFVAYLLHHTLSGRG 397
.....330.....340.....350.....360.....370.....380.....390.....400

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1 Rifleman VKVAYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
24 Barn owl VKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
25 Turkey vulture VKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
26 White-tailed eagle VKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
27 Golden eagle VKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 476
28 White-tailed tropicbird VRAAQYRNGEPLGIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
30 Red-throated loon VKAAQYRNGEQLGIICEDNKYDFRLEIRDMKENLIIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
33 Northern fulmar LKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEIVIVKSGDEILVECNFQTLDRSQSTFGGPGSTMNEMCLTFLFYPRNN 462
38 East African crowned crane VKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 476
39 Hoatzin VKAAQYRNGEQLGIICEDNKYDFRLEIRDMKEITLVRPGDEILVECNFQTLDRSGITYGGPSTMNEMCLTFLFYPRNN 476
40 Red-crested turaco LKAAQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
41 MacQueen's bustard VKAVQYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRKIFFGGPGSTMNEMCLTFLFYPRNN 477
42 Common cuckoo VKTQYRNGKQLNIIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFRLDRSEITFGGPGSTMNEMCLTFLFYPRNN 477
43 Chuck-will's-widow VKAAQYRNGKQLGILCEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSEITFGGPGSTMNEMCLTFLFYPRNN 477
45 Flamingo VKAAQYRNGEQLGIICEDNKYDFRLEIRDMKEILIKSGDEILVECNFQTLDRSEITFGGPGSTMNEMCLTFLFYPRNN 477
46 Great crested grebe VKAAQYRNGEQLGIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSEITFGGPGSTMNEMCLTFLFYPRNN 480
50 Mallard VKVAYRNEKQLGIICEDNKYDFRLEIRDMKEILVIKPGDEILVECNFQTLDRSGITFAGPSTMNEMCLTFLFYPRNN 476
56 White-throated tinamou VKVAYRNGEQLRIICEDNKYDFRLEIRDMKEILIKPGDEILVECNFQTLDRSVITFGGPGSTMNEMCLTFLFYPRNN 477
57 African ostrich VKVAYRNGEQLGIICEDNKYDFRLEIRDMKEIVIKPGDEILVECNFQTLDRSGITFGGPGSTMNEMCLTFLFYPRNN 477
.....410.....420.....430.....440.....450.....460.....470.....480

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:****:***:.. :***: *::: *::***: *::***:***: * * * : :***: **
1 Rifleman ISSCMGYPDILYVAHVKQASDALEGMMAMFVDWDDTVKIAEKAKEANQVVMIKTINELQRNESGLIRDISIPEQA 557
24 Barn owl ISSCMGYPDILYIAHVLKQASDAVEGMMAMFVDWDDTVKIAEKAKEANQVVMIKTINELQRNESGLIRDISIPEQA 557
25 Turkey vulture ISSCMGYADILYIAHVLKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNESGLIRDISIPERA 557
26 White-tailed eagle ISSCMGYPDILYVAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTIDELQRNESGLIRDISIPERA 557
27 Golden eagle ISSCMGYPDILYIAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTIDELQRNESGLIRDISIPERA 556
28 White-tailed tropicbird MSSCMGYPDILYIAHVLKQASDALEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNETGLIRDISIPERA 557
30 Red-throated loon ISSCMGYPDILYVAHVLKQASDVVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNESGLIRDISIPERA 557
33 Northern fulmar ISSCMGYPDILYVAHVKQASDALEGMMAMFVDWDDTVKIAEKAKEADQVVIKIDELQRNETGLVIRDISIPERA 542
38 East African crowned crane ISSCMGYPDILYIAHVKQASDVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTITELQRNESGLIRDISIPEQA 556
39 Hoatzin ISSCMGYPDILYIAHVKQASDAVEAIMALDFVDWDDTVKIAEKAKEADQVVMIKTINELQRNETGLIRDISIPEWS 556
40 Red-crested turaco ISSCMGYPDILYIAHVLKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNESGLIRDISIPERA 557
41 MacQueen's bustard ISSCMGYPDILYIAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNESGLIRDISIPERA 557
42 Common cuckoo ISSCMGYPDILYIAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVIKIDELQRNESGLIRDISIPERA 557
43 Chuck-will's-widow ISSCMGYPDILYIAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNETGLIRDISIPERA 557
45 Flamingo ISSCMGYPDILYIAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVIKIDELQRNESGLIRDISIPERA 557
46 Great crested grebe ISSCMGYPDILYVAHVKQASDVVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQRNESGLIRDISIPERA 560
50 Mallard ISSCMGYPDILYVAHVKQASDAVEGMMAMFVDWDDTVKIAEKAKEADQVVIKIDELQRNESGLIRDISIPERA 556
56 White-throated tinamou ISSCMGYPDILYIAHVKQASDVEGMMAMFVDWDDTVKIAEKAKEANQVVMIKTINELQKIGESGLIRDISIPERA 557
57 African ostrich ISSCMGYPDILYIAHVKQASDVEGMMAMFVDWDDTVKIAEKAKEADQVVMIKTINELQKIGESGLIRDISIPERA 557
.....490.....500.....510.....520.....530.....540.....550.....560

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**:* . . . . . **:* **:* **:* **:*
1 Rifleman ACHNISGHVLSLSD-----LRVTAIDTSESSSTTKETASPLLSLTLQVFAWLILASEYK 611
24 Barn owl ACHNISGQLSLSG-----LRATANLRLTAVCTSESSATTEIASPLLSLTLQVFAWLILASEYK 617
25 Turkey vulture ACHNISGHLSLSH-----LRATANLRLTAVCTSESSSTTKETASPLLSLTLQVFWLILASEYK 617
26 White-tailed eagle ACHNISGHLSLSG-----RRATANLRLTAVCTSESSPTTKETAILPLLSLTLQVFWLILASEYK 617
27 Golden eagle ACHNISGHLSLSG-----LRATANLRLTAVCTSESSPTTKETAILPLLSLTLQVFWLILASEYK 616
28 White-tailed tropicbird ACHNISGHLSLSG-----LRATANLRLTAVCTSESSPTTKETASPLLSLTLQVFAWLILASEYK 617
30 Red-throated loon ACHNISGYLSLSG-----LKAATANLRLTAVCTSESSPTTKETASPLLSLTLQVFAWLILASEYK 617
33 Northern fulmar ACHNISGHLSLPG-----LRAAANLRLTAVCTSESSPTTKETASPLLSLTLQVFAWLILASEYK 602
38 East African crowned crane ACHNISGHLSLSG-----LRSVANRLTALCTSESSPTTKETASPLLSLTLQVFAWLILASEYK 616
39 Hoatzin PCHNISGHLISGHLSPGLRAATNCPCLTAVCTSESSLRETASPLLSLTLQVFWLILASEYK 622
40 Red-crested turaco TCHNISGHLSLSG-----LRATANLCLTAVHTPESSTTKETASPLLSLTLQVFAWLLAS---- 613
41 MacQueen's bustard ACHNISGHFPLSG-----LRATANLRLTAVCTSESSNKRITSLPLLSLTLQVFAWLILASEYK 617
42 Common cuckoo ACHNISGHLSLSG-----PRASANLRLTACTLESFATKGTASPLLSLTLQVFWLILASEYK 617
43 Chuck-will's-widow ACHNISGYLSLSH-----LRATANLRLTAVCTSESSPTTKETASPLLSLTLQVFAWLILASEYK 617
45 Flamingo ACHNISGHRRSRG-----LRATANLRLTAACTSESSPTTKETASPLLSLTLQVFAWLILASEYK 617
46 Great crested grebe ACHNISGHLSLSG-----LRATANLRLTAVHTSESSATKGNPSPPLLSLTLQVFAWLILASEYK 620
50 Mallard VCHNISVQQLSD-----LRATANLRLTAVHNFESSTTKETASPLLSLTLQVFAWLILASEYK 616
56 White-throated tinamou VCHNISENISLS-----LKAATNLNFAAVLRSSESSPTTKEMASPLLSLTLQVFAWLILASEYK 616
57 African ostrich ACHNISENLSL-----LRAATNLRLAAVCRSESSPTTKEMASPLLSLTLQVFAWLILASEYK 610
.....570.....580.....590.....600.....610.....620.....

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